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The Development of Pre-service Teachers' Subject Knowledge during a Post-Graduate Physical Education Teacher Education Programme

By

Frank Herold

A Doctoral Thesis submitted in partial fulfilment for the award of Doctor of Philosophy at Loughborough University

May, 2013

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Publications related to this thesis

Herold, F. (2011). *Becoming an effective secondary physical education teacher*. In: Armour, K. (Ed.) Sport Pedagogy: An Introduction for Teaching and Coaching. Harlow: Pearson Education Ltd: 271-286.

Herold, F. A., and Waring, M. (2011). So much to learn, so little time…: pre-service physical education teachers' interpretations and development of subject knowledge as they learn to teach*. Evaluation and Research in Education*, 24(1), 61-77.

Herold, F. and Waring, M. (2009). Pre-service physical education teachers' perceptions of subject knowledge: Augmenting learning to teach, *European Physical Education Review*, 5(3), 337–364.

Herold F (2011). *What, Where, How and with Whom?: The impact of communities of practice on the development of subject knowledge and personal philosophies of teaching in PETE* "AIESEP 2011 International Conference, University of Limerick, 22-25 June 2011.

Herold F (2009). *Learning is best when the doors are open: The relevance of communities of practice in developing pedagogical content knowledge for pre-service teachers in physical education.* "Internationaler Turnfest Kongress", Frankfurt/Main, Germany, 3rd-5th June, 2009

Herold F. and Waring, M (2008). *Pre-service physical education teachers' perceptions of subject knowledge: augmenting learning to teach*: "Pre-Olympic Congress", Nanjing, China, 5th-7th August, 2008

Abstract

This study is concerned with the development of subject knowledge in pre-service teachers of secondary physical education (PE) during their one year Physical Education Teacher Education (PETE) course. It investigates the knowledge bases for teaching which pre-service teachers recognised, developed and prioritised, as well as the key influences that impacted on their subject knowledge development.

Adopting an interpretive methodology informed by constructivist grounded theory, the study employed interviews, lesson observations and post-lesson reflections as principal research methods.

Pre-service teachers were seen to make wide-ranging progress in their subject knowledge, including the development of content knowledge, pedagogical content knowledge, general pedagogical knowledge, knowledge of curriculum and knowledge of pupils. Through this they advanced their view of the nature of PE and 'how' they wanted to teach it.

The research highlights, that the process of knowledge development in PETE is socially constructed and complex. Much of the pre-service teachers' development was influenced by various communities of practice, particularly their school placements' PE departments, but also their University-based learning community. Of these, the legitimised practices within the PE departments were found to be especially important to pre-service teachers' development. University-based learning was credited by pre-service teachers with enhancing their holistic understanding of the learning process, developing those aspects of critical pedagogy that were under-developed in schools.

The impact of different subject knowledge profiles and the consequences of knowledge deficits are identified. This raises questions about the role and development of subject knowledge within PETE and calls for a re-vitalised debate on the nature of the knowledge in PE.

Framed within an ever-changing policy landscape is the need for enhanced and stable partnerships that promote shared visions of PETE, an essential part of which is the need to collaboratively design and evaluate explicit knowledge development pathways which allow pre-service teachers to fulfil their potential and genuinely decide 'how' they want to teach PE.

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1 Chapter One: Background to this research

1.1 Introduction

This thesis is concerned with the early stage of the life-long process of teacher professionalization: Initial Teacher Education (ITE). The motivation to conduct this research arose from the author's professional background as a teacher educator in physical education (PE), in which one of his fundamental professional concerns was to offer pre-service teachers effective education experiences, as they learned to teach. Central to this research was the desire to study the development of subject knowledge in pre-service teachers, who had embarked on a journey to become qualified teachers of secondary PE.

The participants in this study were following a programme of training on a one year Post-Graduate Certificate in Education (PGCE) course. One problem that had been associated with PGCE programmes was that on these relatively short programmes (36 weeks), there was insufficient time to fully address pre-service teachers' deficits in practical subject matter knowledge (OfSTED, 1999; Capel and Katene, 2000; Gower and Capel, 2004, Griggs and Wheeler, 2005). The issue of limited practical subject matter knowledge, and its potentially detrimental effect on future PE teachers, had previously been identified by Siedentop (2002), who raised concerns about the prioritisation of theory over practice in Physical Education Teacher Education PETE in the USA. Similarly, and nearly two decades ago, Capel (1995) had observed that UK undergraduate degrees were favouring sports science theory over other aspects of knowledge and identified this to be a concern for English PETE. According to Kirk (2010a, p. 30-31) these concerns continue to be highly relevant for contemporary PETE.

> I argued recently in Physical Education Futures (Kirk, 2010), that physical education teachers educated over the past 20 years, through no fault of their own, know substantially less about their subject matter – which is primarily games and sports and other socially valued practical physical activities – than

> earlier generations. Daryl Siedentop (2002/1989) among others pointed to this coming crisis in PETE well over two decades ago. The ongoing academicisation of PETE and consequent erosion of subject matter knowledge I suggest has been one reason among others for the resistance to change and perpetuation of a form of physical education that is concerned almost entirely with the teaching of de-contextualised sports techniques and what Inez Rovegno (1995) has called the molecularisation of physical education (Kirk 2010a, p. 30-31).

Concerns over practical subject matter knowledge and its importance to pre-service teachers were also experienced by the author of this study in his day to day professional practice. In his role as a teacher educator he held responsibilities for the teaching of university-based practical and theory sessions. He also mentored pre-service teachers during their school placements. As he worked with pre-service teachers over the course of the year, he observed their progress, and was appreciative of their many achievements. Like O'Sullivan (2006), he was also sympathetic to their struggles and admired the resilience of pre-service teachers in pursuing their goal to become qualified PE teachers.

As part of his mentoring responsibilities the author had frequent discussions with school-based mentors and pre-service teachers, considering pre-service teachers' learning and development needs. One particular aspect that continued to stand out as a challenge was pre-service teachers' concern over their practical subject matter knowledge. In these discussions, it was evident that pre-service teachers' varied knowledge profiles impacted significantly on their development during the relatively short and intensive PGCE course. Notably, pre-service teachers believed that a lack of activity specific content knowledge had adverse impacts on their development. There appeared to be the underlying assumption that a lack of practical, activity specific content knowledge made it difficult for pre-service teachers to teach effectively and with confidence. In other words, not knowing the intricate nature of *what* to teach was having an adverse impact on *how* to teach it.

These assumptions would, at least to some extent, appear to be supported by academic literature. Importantly, Shulman's (1987) conceptualisation of knowledge for teaching aligns pedagogical content

knowledge (PCK) - the knowledge of *how* to teach - very closely with content knowledge - the knowledge of *what* to teach. Shulman (1987) acknowledged that content knowledge had an important facilitative role and described it as the 'foundation' of all other knowledge bases. Without sufficient content knowledge, he argued, it would be hard for the teacher to employ other aspects of knowledge effectively. Likewise Armour (2011), in her conceptualisation of sport pedagogy, points out that sport pedagogy is the science that integrates learner, teacher and content. It is implicit therefore that content knowledge is influential in pedagogical acting. If, however, content knowledge is really important in pedagogical acting, what would be the consequences if pre-service teachers in English PETE were undergoing their teacher training without having enough of it? And if this were so, what would be the consequences for their confidence, their development, their teaching and ultimately the pupils they were going to teach in the future? At the outset of this study, this was the 'elephant in the room'. Remarkably, it has been standing there for near enough two decades, without having attracted a lot of attention.

Consideration by PE literature of the role of content knowledge, and its interaction with other components of subject knowledge, continues to be relatively scant. The recognition that a lack of content knowledge might constitute a threat to the implementation of high quality PETE programmes was noted by Griggs and Wheeler (2005), who tried to identify a range of strategies that could boost this type of knowledge in pre-service teachers on PGCE courses. Few authors, however, identify specific issues arising from a lack of content knowledge and regard this to be a potential barrier to effective teaching (Ayvazo et al., 2010; Kirk, 2010b; Siedentop, 2002; Sloan, 2007). The adverse effects that practical subject matter knowledge deficits (content knowledge and PCK) have on pre-service teachers, find little sympathetic and specific coverage in the PETE literature.

The specific role that content knowledge has to play in PE teaching remains under-explored and contested. Whilst Siedentop (2002) for instance sees this knowledge as an essential base for effective PE teaching, others stress that a prioritisation of content knowledge impedes more inclusive and pupil-centred approaches to PE (Capel, 2007; Hayes et al., 2008; Velija et al., 2009). Additionally, the concern that sport and content-focussed teaching practices

continue to prevail in English schools continues to be raised by many authors in the English PE literature (Capel, 2007; Capel et al., 2011; Curtner-Smith, 1999, 2001; Gower and Capel, 2004; Green, 2000, 2003, 2006; Hayes et al., 2008; Keay, 2007; Smith and Hodson, 2010; Stidder and Hayes, 2006; Tsangaridou, 2002).

This poses an interesting problem for PETE. On the one hand, PETE research continues to be critical of pre-service teachers' prioritisation of content knowledge over other aspects of knowledge (Capel et al., 2011; Hayes et al., 2008). On the other hand, it has also been noted that varied practical subject matter knowledge profiles adversely affect pre-service teachers' ability to teach across the practical activity areas that constitute major activities in the PE curriculum of many English schools (Capel and Katene, 2000; Gower and Capel, 2004; Kirk, 2010b; Herold and Waring, 2009, 2011; Sloan, 2007). Given the potentially adverse effects of limited practical subject matter knowledge, it would therefore be understandable that pre-service teachers in English PETE continue to value such practical subject knowledge (content knowledge and PCK), since they consider it to be of immediate use to them in their day to day practice (Capel et al., 2011; Herold and Waring, 2011; Kinchin, 2009).

One important question the research does not address is the relationship between the maturity of content knowledge and the ability to facilitate pupil focused learning. As the literature critically comments on pre-service teachers' efforts to acquire content knowledge, a key question that remains unresolved is whether having more, or less, content knowledge makes pre-service teachers focus more, or less, on content in their teaching. Whilst the general (ie non-PETE) teacher education literature acknowledges the facilitative nature of content knowledge and in particular its link to pedagogical content knowledge (PCK) (Shulman, 1987; Lowenberg Ball, 2008; Ellis, 2007) there remains a dearth of primary research that explores this issue in the context of PETE.

The author's own professional experience suggested that the presence, or absence, of such knowledge had multiple effects on pre-service teachers. This was a concern in his role as teacher educator. He felt that the important question of how content knowledge related to other knowledge bases and in particular PCK, remained under-explored. He also felt that the impact of this upon the development of pre-service teachers on PGCE courses and on similar PETE

programmes needed to be investigated more fully. This formed the starting point of this investigation. After developing an initial interest in the relationship between content knowledge and PCK, the author decided that he needed to widen the scope of his inquiry. This change of scope was also driven by the wish to understand the development of teaching knowledge more holistically. Wilson, Bloom and Harvey (2010) note that there are currently only very few detailed studies that investigate knowledge acquisition in PE teachers and emphasise the need for more research in this area. Shulman (2002) emphasises the need for more such local studies within existing teacher education programmes, asserting that 'whenever possible, studies of teacher learning should be embedded within on-going programs of teacher education' (p.253), thus fostering vital, on-going scholarship and reflection on teacher learning.

The author's desire to develop such scholarship, and to look at the issue of knowledge development with fresh eyes, made it necessary that he attempted to take a step back from the personal pre-conceptions and beliefs that he had developed during his own time as a PE teacher and teacher educator. Nevertheless, the study would remain grounded within the PETE framework in which he undertook his daily professional duties. This investigation aimed to explore pre-service teachers' development of subject knowledge within a current framework of teacher education. By so doing it aimed to make a contribution to the wider knowledge base in PETE, as well as in ITE.

1.2 The Importance of PETE

The 2nd World Summit of Physical Education in Magglingen, Switzerland (2005) acknowledged the central role of PETE in developing high quality PE teachers. A commitment to review systems of teacher preparation with respect to their pedagogical approaches was also included in the final declaration of the Summit (ICSSPE, 2005). In England, the aspiration for a 'World Class System of Physical Education' had been formulated by the Association of Physical Education (AfPE) and the importance of PETE in this process had been highlighted in its manifesto (AfPE, 2008).

The identification of teacher education as a key means to improve pupils' PE experiences has been emphasised by some (Amade-Escot, 2004; Rovegno, 2008; Siedentop and Locke, 1997). Siedentop and Locke (1997) proposed the following three critical elements that must exist to make a difference and achieve systemic success in PE: (a) quality PE in the schools, (b) effective physical education teacher education programs, and (c) a working relationship between the two. The significance of PETE for the development of high quality PE teachers is stressed by Amande-Escot (2004) who identifies quality teacher training to be the "first cornerstone" in quality PE, and Rovegno (2008, p. 89) puts the importance of continued research into teacher education (RTE) in PE into sharp relief :

> In terms of RTE, I believe our biggest challenge is to improve the quality of teachers, and, in turn, the quality of physical education and physical activity programs, especially for those children and adolescents who feel alienated and disengaged from physical education and physical activity. There is considerable evidence and widespread agreement that good teachers make a difference in the quality of students' education.

Whilst there is some agreement that the nature of teacher training programmes is likely to impact on pre-service teachers' development, research on the effects of teacher education programs is complicated by the large variety of training frameworks that exist internationally. Since the nature of the training framework is likely to have an impact on its outcomes, such diversity of frameworks makes it difficult to determine which specific aspects influence teacher quality (Brouwer and Korthagen, 2005; Metzler, 2009; Zeichner and Conklin, 2005). This makes it imperative for research in PETE to relate the development of pre-service teachers' knowledge to specific features of the frameworks in which they train, if an evidence-based understanding of the interplay between training framework, learning experiences and pre-service teachers' development of knowledge is to be gained.

The actual impact of PETE, and especially its effectiveness in facilitating transformative learning experiences, also continues to be a matter of debate (Capel et al., 2011). Frequently, the school-based element of PETE is singled out for criticism. In their analysis of significant influences on PE teachers' development of pedagogical practices, some authors identify the PE departments

in schools to be of central importance (Keay, 2005, 2006; Hodkinson and Hodkinson, 2005; Sirna, Tinning and Rossi, 2008). However, the professional and occupational socialisation in these departments is frequently observed to be of suspect quality (Capel et al., 2011; Chambers and Armour, 2012; Curtner-Smith, 2001; Green 2000; Velija et al, 2009; Sirna, Tinning and Rossi, 2008, 2010). Green (2000), for instance, likened PE departments to 'theoretical wastelands'. He concluded that many teachers within them were found to have no more than 'everyday' philosophies of teaching. Sirna, Tinning and Rossi (2010) showed concern about sexist undertones in the PE departments which 'supported' their pre-service teachers. Chambers and Armour (2011) reported personal stories of professional abandonment in unsupportive PE departments.

More generally speaking, Curtner-Smith (2001) and Capel et al. (2011) question the ability of PETE to influence aspiring teachers' future practice. They highlight that pre-service teachers' personal sporting biographies and occupational socialisation continue to perpetuate traditional, sport and content-centred approaches to teaching PE. According to these authors, such traditional viewpoints are in conflict with more progressive, pupil-centred approaches to teaching PE. Velija et al. (2009) found that university-based learning elements in PETE did not make a real difference to pre-service teachers' personal philosophies of teaching. They noted that pre-service teachers in their study experienced little synergy between their university-based learning and their school based learning and concluded that practice based knowledge development was habitually prioritised over other aspects of knowledge. Kinchin (2009) also found that pre-service teachers on his PGCE programme favoured such knowledge with direct practical application for the school setting, although he also reported a mediating influence of the university-based learning, and the university tutor, on pre-service teachers' development.

Nevertheless, much research in English PETE, stresses that pre-service teachers and their mentors were found to prioritise content knowledge over other knowledge bases during their teacher training (Capel, 1997, 2007; Capel et al. 2011; Hayes et al., 2008; Velija et al. 2009). It is noted by Hayes et al. (2008) that PETE in England has been largely unsuccessful in challenging the hegemony of such content-focussed teaching practices. Harris (2013) observes the failure of PETE in preparing pre-service teachers to promote Health-related Physical

Education (HRPE). Capel et al. (2011) conclude that the pre-dominance of traditional PE practices in many English schools, combined with the impact of pre-service teachers' personal sporting biographies and histories, continues to present significant challenges to developing critically reflective, pupil-centred teaching practices through PETE.

A salient issue in this debate is what type of knowledge is prioritised, valued and developed in the process of PETE. Most intriguing in this is the position that is accorded to content knowledge. Whilst too much focus on content and the prioritisation of content knowledge to the detriment of other knowledge bases constitutes a major criticism of PETE (Capel, 2007; Capel et al. 2011; Hayes et al. 2008; Velija et al. 2009), it is also recognised that knowledge deficits in this knowledge base can have multiple and profound negative impacts on pre-service teachers in PE (Capel and Katene, 2000; Gower and Capel, 2004; Mawer, 1995; Siedentop, 2002; Sloan, 2007; Smith, 2001). Whilst variable knowledge profiles in pre-service teachers are currently the norm in English PETE, their impact on pre-service teachers remains surprisingly under-researched (Griggs and Wheeler, 2005). Consequently, there continues to be a lack of clarity about how specific knowledge profiles affect pre-service teachers over the course of their training. There is also limited research about how specific aspects of knowledge for teaching develop over the course of their training.

It is not suggested here that learning in PETE, and specifically English PETE, is without purpose or consequence. It is, however, evident that the literature raises significant questions regarding its actual contribution to effective teacher learning and development. If English PETE programmes were indeed relatively ineffective in providing transformative development experiences for aspiring practitioners, then the search for causes, as well as solutions, to this problem is plainly a matter of interest for research. Current research offers some suggestions about the shortcomings and limitations of PETE, but continues to be far from comprehensive. More research is needed to gain a clearer picture about the nature of PETE experiences and its influences on the development of knowledge for teaching in pre-service teachers. Such research, in turn, needs to be contextualised within the wider knowledge base that relates to teacher learning. The following section gives a brief introduction to major research

approaches and theoretical frameworks that have explored the development of knowledge for teaching from a wider perspective.

1.3 Theoretical frameworks in teacher knowledge research

The most prominent theoretical framework considering the nature of the knowledge bases for teaching is the influential work of Lee Shulman (1986, 1987), whose research into teacher knowledge energised an unparalleled academic interest in this field. The impact of Shulman's (1986; 1987) work was not only felt throughout the 1980s and 1990s, when it influenced numerous key publications in this field (Calderhead, 1992; Clandinin and Connelly, 1996; Grossmann, 1989, 1990; Fenstermacher, 1986; Grimmett and MacKinnon, 1992; McEwan and Bull, 1991), but it continued to inspire a host of more recent publications across many subject areas which explored the importance and nature of teacher knowledge (e.g: Abell, 2008; Amade-Escot, 2000; Capel, 2007, Deng, 2007; Elllis, 2007; Gower and Capel, 2004; Hays et. al., 2008; Jenkins and Veal, 2002; Loewenberg Ball, 2008; Rollnik et. al, 2008; Smith, 2001).

Shulman (1987, p.8) conceptualised the 'knowledge base for teaching' in seven categories: content knowledge; general pedagogical knowledge; curriculum knowledge; pedagogical content knowledge; knowledge of learners and their characteristics; knowledge of educational ends. Whilst highlighting that the relationships between different aspects of teacher knowledge and that the different knowledge bases were intertwined, Shulman (1987) emphasised the role of PCK, making it clear that it is PCK, which informs and guides teachers in their interactions with pupils. In particular, Shulman (1987) identified PCK to be the dimension of teacher knowledge which makes learning accessible to the student. It was this new concept, PCK, which inspired many researchers to use Shulman's (1987) theoretical framework to underpin their research into diverse aspects of knowledge for teaching (Loewenberg Ball, 2008).

The interest in the study of teacher knowledge development continues to be lively and encompasses many aspects of teacher learning. Many authors have suggested new conceptualisations of teacher knowledge, as well as associated new terminology, which have added to the complexity of the debate (Amade-

Escot, 2000; Amade-Escot and Amans-Passaga, 2007; Borko, 2004; Den, 2007; Desimone et al., 2002; Ellis, 2007; Fisherman et al, 2003; Grossman, 2008; Hiebert et al., 2002, Hasweh, 2005; Ho, 2003; Hoang, 2008; Mishra and Koehler 2006; Toh, 2003; Mishra and Koehler, 2006; Rovegno, 2003; Segal, 2004). This myriad of conceptualisations has made it difficult to find a common language that describes specific concepts consistently across different fields of research (VanDriel and Berry, 2010).

Other, more contemporary research in teacher knowledge has argued for the need to acknowledge social and situated dimensions of learning, thereby taking a less individualistic perspective on knowledge development (Amade Escot and O'Sullivan, 2007; Edwards et al., 2002; Ellis, 2007; Hasweh 2005; Hiebert et al., 2002; Hodgkinson and Hodgkinson, 2005; Rovegno, 2003, 2006). In these explorations, the importance of situated learning experiences, as well as the wider social and cultural setting in which these learning experiences occur is considered to be of high significance (Edwards et al., 2005; Ellis, 2007; Grossman and McDonald, 2008; Hodgkinson and Hodgkinson, 2005, Korthagen, 2010; Shulman and Shulman, 2004). This research emphasises in particular two characteristics of situated learning which extend beyond previous, more and more individualistic conceptions of teacher learning: first, that the construction of any such knowledge should consider the Communities of Practice (CoP), which form the context in which knowledge evolves (Buitink 2009; Ellis, 2007; Kirk and Kichin, 2003; Shulman and Shulman, 2004) and secondly, that the development of such knowledge is a dynamic interaction process that has to take pupils into account, if the process of knowledge construction is to be fully understood (Amade-Escot and O'Sullivan, 2007; Kirk and Kinchin, 2003; Metzler and Woessman, 2010; Rovegno and Gregg, 2007).

Researchers who recognise the situative aspects of learning to be of high significance stress both individual and social aspects of learning to be important and interpret this process to be influenced by enculturation, professional socialisation and co-construction (Borko, 2004; Cobb and Bowers, 1999;Curtner-Smith, 1999; Curtner-Smith, Hastie and Kinchin, 2008; Driver et al. 1994; Ellis, 2007, Green, 1998, 2006; Miller, 2009; Sirna,

Tinning and Rossi, 2010). Such conceptions of teacher learning frequently draw upon Lave and Wenger's (1991) work on situated professional learning, which firmly locates the process of becoming 'knowledgeable' within the context of the Communities of Practice (CoP) in which this learning takes place.

From this perspective the process of learning for the novice or 'apprentice' is a process with important social dimensions. Becoming 'knowledgeable' happens within CoP and is therefore framed by the practices and values that are evident within it. Whilst learning to teach is situated in the classroom, gym or sports-hall, learning to become a teacher is situated within social and institutional networks. These will invariably influence pre-service teachers in their development (Keay, 2005, 2007).

Whilst CoP may be defined in various ways, they should be more than an arbitrary or temporary grouping of people (Wenger, 1998). For CoP to be effective, they should work in a sustained fashion. People within them should be committed to working towards common goals. In a shared area of interest they should develop common practices to achieve these goals. CoP are therefore governed by and dependent on processes of social interaction and social participation (Lave and Wenger, 1991; Lave, 1997). CoP, therefore are not only a reference point for the validation of professional practice, but also have an impact on the construction of individual identities and the formation of professional values (Shulman and Shulman, 2004).

Since pre-service teachers on PGCE courses are by definition members of various learning communities, the author was interested in exploring how the influences of these would impact on their learning. The general importance of school-based settings for PETE has been alluded to in the PE literature (Capel, 2003; Christie et. al, 2004; Hardy, 1997, 1999; Hayes et al., 2008; Laker and Jones, 1998; Mawer, 1995; Smith, 2001). However, there is to date, limited evidence as to how learning in school-based CoP is perceived by and impacts upon pre-service teachers during their PETE experiences (Smith, 2001; Velija, 2009). It was the intention of this study to gain a better understanding of how these experiences influenced the emerging practice and personal teaching philosophies of the pre-service teachers in question.

The author also felt that it was important to gain a better understanding of through which processes the pre-service teachers in this study developed their knowledge bases and how this affected their teaching. As Stran and Curtner-Smith (2010) point out, there is a connection between the types of knowledge that early career teachers acquire and the way they are likely to teach. Additionally, Metzler and Woessmann (2010) point out the correlation between teacher knowledge and student achievement, emphasising the need for continued research into the teacher knowledge base. In the view of the author, such research was needed to extend the existing body of knowledge in the field of PETE. The following section outlines the specific research questions that that were investigated. It also introduces to the general methodological approach to this study.

1.4 The research questions and the approach to this investigation

Accepting the central role that subject knowledge has for teaching, one critical aim for researchers in this field is to better comprehend the nature of such knowledge, as well as the processes that relate to this development in pre-service teachers. It was the purpose of this research to gain a better understanding of these issues. Located in its specific context, this study investigates how pre-service teachers developed their knowledge for teaching, during their one year PGCE course in Secondary PE. In a broader sense, it was its fundamental aim to improve the understanding of the factors that influenced the knowledge development of PETE pre-service teachers. At its core were the following two key questions:

1. Which knowledge bases for teaching did pre-service teachers recognise, develop and prioritise during different stages of their training?
2. What were the key influences on the development of pre-service teachers' knowledge for teaching?

To achieve this end, the author was searched for a suitable methodology that would allow him to investigate these research questions in their authentic real world research setting. He also searched for a methodology that would minimise his own pre-conceptions and their influence on the potential research outcomes. Given the context of this study, the author deemed an inductive, qualitative research approach suitable to achieve these ends. The author was aware of his initial concerns relating to the potentially negative effects that the lack of practical subject matter knowledge (context specific content knowledge and also PCK) had on pre-service teachers. He was keen to find a methodology that would allow him to step away from his pre-conceptions, at least to some extent, if this was possible. Whilst he found that reading around the topic in the initial stages of the investigation was valuable, he was also keen not to be too influenced by specific positions that were taken up by authors in this field.

The search for a suitable methodology to achieve these ends led him eventually to adopt a qualitative research methodology that was significantly influenced by grounded theory (Glaser and Strauss, 1967; Charmaz, 2000, 2006, 2008). This decision was supported by the discussions with his research supervisor, Dr. Mike Waring, from Loughborough University, who endorsed the suitability of such an approach and supported it with knowledge and passion during our subsequent meetings. In adopting this approach, this investigation was very much about the stories of the individual pre-service teachers. It explored how significant factors influenced their development of teaching competence and confidence, on their journey towards Qualified Teacher Status (QTS) within the given PETE and ITE framework of training (DfES, 2002). In investigating their individual progress, it was ultimately also the aim of this research to contribute to the wider knowledge base that is concerned with PETE and ITE. The process and outcomes of this research are presented in the following chapters:

Chapter 2 presents the literature review on related research on this topic. It must be noted that in line with grounded theory method (Glaser and Straus, 1967) the literature review was undertaken concurrently, rather than in-depth before the start of the study. The rationale for this was to avoid an

undue influence on the researcher. The downside was that the researcher's approach could have been informed earlier by a wider range of reading. The chapter firstly reviews key generic education literature related to knowledge for teaching. In its second part it reflects on the specific PE literature in this area of research.

Chapter 3 presents in its first part the general ontological, epistemological and methodological considerations underlying the research approach and locates the study in its research paradigm. In its second part it discusses the nature of grounded theory method and explains how specific aspects of grounded theory method have influenced this study.

Chapter 4 discusses the specific design of the study. In its first part, it considers participant selection, the research setting and the methods and tools that were employed for data collection. In its second part it describes the specific approach to the method of constant comparison, which was chosen as the principle framework for the data analysis process. The final section of this chapter delineates the limitations of this study.

Chapter 5 presents and discusses the findings. It is structured in two parts, reflecting the two major research questions that were addressed. Firstly, this chapter discusses the knowledge development that occurred throughout the course of training. It also analyses the relationships between different knowledge bases and discusses how having, or not having, certain knowledge affected the pre-service teachers in this study. In the second part, the chapter reviews the factors, processes and people that affected the development of knowledge in pre-service teachers. It specifically investigates the impact that CoP had on the development of knowledge and the emerging personal philosophies of teaching PE of pre-service teachers.

Chapter 6 presents the conclusions that were drawn from this study, followed by Chapter 7 in which recommendations for future action and research in the field of PETE are made.

2 Chapter Two: Literature Review

2.1 Introduction to the literature review

This literature review is concerned with the development of knowledge for teaching. Whilst the discussion of PE specific literature is central to this review, a brief overview of important education research in this area is undertaken, to locate this review in a wider context. Of particular interest here is the literature that examines the development of PCK and related knowledge bases. Taking a lead from Shulman's (1986, 1987) work on the knowledge bases for teaching, the review presents a brief historical overview exploring significant research on teacher knowledge from Shulman (1987) until the turn of the millennium. Following this, the second section of the generic review considers more recent research on teacher knowledge. The content of this section reflects the shift of research interest from the investigation of the nature of knowledge for teaching, to the factors that influence the development of such knowledge. The particular focus of this part of the review is the development of knowledge in CoP. Much of the research reviewed in this section is closely related to Lave and Wenger's (1991) influential work on apprenticeship learning in CoP. The focus on this literature is a direct consequence of the author's own independent conclusions from this study which highlighted the importance of CoP in pre-service teacher development.

In it's second part, subject specific research related to the field of PE, and in particular PETE, is examined. This section also reflects the two distinct research questions of this study. In the first section, it explores research that relates to the knowledge base for teaching PE and considers scholarly articles that investigate the impact of different aspects of knowledge on the teaching of PE. In its second part, the focus shifts to evaluating the body of PE research which considers how such knowledge is developed. This section also reflects the fact that the literature review has been constructed in a concurrent, rather than a priory approach. Its focus on research that relates to situated learning is a

consequence of the importance of CoP on the knowledge development of the pre-service teachers, which emerged as a central theme during this study.

2.2 The knowledge base for teaching

What is the role that knowledge plays for teaching? How does the presence, or absence, of particular knowledge influence teacher actions, and ultimately impact on learning and the lives of pupils? How important are particular aspects of knowledge and how can we conceptualise the complex construct of 'knowledge for teaching' into frameworks that allow for meaningful investigation of constituent components of such knowledge? It was the important work of Shulman (1986, 1987), which provided an influential framework for the conceptualisation of the 'knowledge bases for teaching' and sparked a wealth of publications in this field of study (Ellis, 2007; Loewenberg Ball, 2008). Throughout the last three decades, researchers across all subject areas of teaching have referred to Shulman's (1987) work, using it as a framework to conceptualise the nature of professional knowledge (Abell, 2008; Amade-Escot, 2000; Calderhead, 1992; Clandinin and Connelly 1996; Deng, 2007; Gower and Capel, 2004; Grossmann 1989, 1990; Fenstermacher 1986; Grimmett and MacKinnon, 1992; Hasweh, 2005; Jenkins and Veal, 2002; McEwan and Bull, 1991; Rollnik et. al, 2008; Rovegno, 2003). This research has contributed significantly to the body of knowledge in this area.

It has also introduced new frameworks and associated terminology that has inadvertently added to the complexity of the debate (Amade-Escot, 2007a; Borko, 2004; Desimone et al., 2002; Ellis, 2007; Fisherman et al, 2003; Grossman, 2008; Hiebert et al., 2002; Hoang, 2008; Toh et al., 2003; Mishra and Koehler, 2006; Rovegno, 2003; Segal, 2004). It is the intention of the first part of this literature review, to discuss significant research related to the knowledge bases for teaching, in order to clarify important theoretical positions in this field. It also provides the underlying rationale for the terminology that will be subsequently used in the thesis.

2.3 The starting point: Shulman's conceptualisation of the knowledge bases for teaching

The influential early work of Shulman (1986, 1987) was central to advancing the research on knowledge for teaching and thus provides a fitting starting point to the review of literature in this field. Shulman's work also established the concept of PCK, giving impetus to a wealth of research across different teaching disciplines. The extent to which Shulman (1986, 1987) has influenced the academic discourse in this field is captured by Loewenberg Ball et al. (2008, p. 392):

> This interest has been sustained with no less than 50 citations to these two articles in every year since 1990. Perhaps most remarkable is the reach of this work, with citations appearing in 125 different journals, in professions ranging from law to nursing to business, and regarding knowledge for teaching students preschool through doctoral studies. Much of the interest has focused directly on PCK. Thousands of articles, book chapters, and reports use or claim to study the notion of PCK, in a wide variety of subject areas: science, mathematics, social studies, English, physical education, communication, religion, chemistry, engineering, music, special education, English language learning, higher education, and others. Such studies show no signs of abating. Rarely does an idea catch on so widely (Loewenberg Ball et al., 2008, p. 392).

In his attempt to analyse the nature of the knowledge base for teaching, Shulman (1987) identifies seven categories:

> <u>Content knowledge:</u> the specific subject matter knowledge, understanding and skills that are to be learned by school children.
> <u>General pedagogical knowledge:</u> the broad principles and strategies of teaching and learning, classroom management and organisation that apply in most contexts of teaching, apparently transcending specific subject matter.
> <u>Curriculum Knowledge:</u> the materials and programmes that serve as 'tools of the exchange' for teachers.
> <u>Pedagogical Content Knowledge:</u> the special amalgam that is uniquely the province of teachers, their own special form of professional understanding. It represents the blending of content and pedagogy into an understanding of how particular topics, problems, or issues are organised for instruction.

> Knowledge of learners and their characteristics: this includes the cognitive, physical, emotional, social, historical and cultural factors which account for students' needs and interests.
> Knowledge of educational contexts: this ranges from an understanding of teaching contexts to the social dynamics of classes and groups to wider characteristics of the school and community culture.
> Knowledge of educational ends, purposes and values, and their philosophical and historical grounds: teachers' knowledge and beliefs about the wider purposes of school, and the perceived needs of learners as well as the eventual value of educational experiences to society as a whole. (Shulman, 1987, p.8)

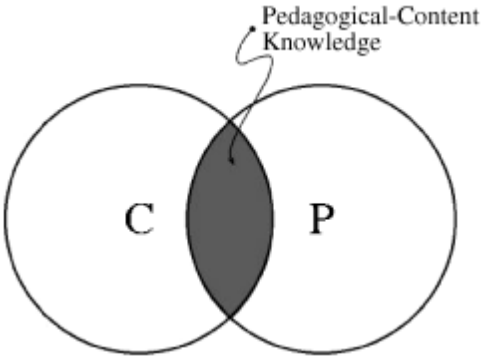
In his exploration, Shulman (1987) emphasises the importance of teacher knowledge in shaping the learning process. He also highlights the role of the pupil in this and contends that effective teaching and learning will ultimately result in 'a new comprehension by both, the teacher and the student' (p.7). Whilst acknowledging the complexity of the knowledge base for teaching, Shulman (1987) accords particular importance to PCK. It is this particular aspect of the teacher's knowledge base which facilitates the learning process at the intersection between teacher and pupil, between what is to be learnt, and how this can be done, so that learning is accessible to the student:

> Pedagogical content knowledge is of special interest, because it identifies the distinctive bodies of knowledge for teaching. It represents the blending of content and pedagogy into an understanding of how particular topics, problems or issues are organized, represented, and adapted to the diverse interests and abilities of learners, and presented for instruction. Pedagogical content knowledge is the category most likely to distinguish the understanding of the content specialist from that of the pedagogue (p.8).

Shulman's (1987) model offers an important distinction between the knowledge of the subject matter content, and the knowledge the teacher needs to bring the subject matter content alive. Shulman (1987) recognises, however, that the borders between his categories are fluid. The demarcation between different bases of knowledge is not always clear and their interconnections are frequently not fully understood. In particular, the relationship between content knowledge and pedagogical knowledge, which intersect to form the construct of PCK remains difficult to define precisely.

Mishra and Koehler (2006) attempted to capture the essence of Shulman's (1987) amalgam by graphically representing it as the intersection between pedagogical knowledge and content knowledge.

Figure 1.1 **PCK as an Amalgam of Pedagogical Knowledge and Content Knowledge** (Mishra and Koehler, 2006, p.1022)



This conceptualisation may, however, be seen to be too simplistic. The wider remit of teaching invariably demands an intersection with other aspects of knowledge, such as for instance the knowledge of pupils and the curriculum. Yet, it is PCK that is identified to transcend those divisions and in its transformative nature, brings the subject to life. In Shulman's (1987, p.9) view PCK embraced:

> the most regularly taught topics in one's subject area, the most useful forms of representation of those ideas, the most powerful analogies, illustrations, examples, explanations and demonstrations – in a word, the ways of representing and formulating the subject that make it comprehensible to others . . . an understanding of what makes the learning of specific topics easy or difficult: the conceptions and preconceptions that students of different ages and backgrounds bring with them to the learning of those most frequently taught topics and lessons (p.9).

Crucially, Shulman (1987, p.9) recognises content knowledge to be a necessary foundation for effective teaching and identifies it to be 'the first source of the knowledge base' for teaching. However, he falls short in deliberating what the specific consequences may be, should a teacher have deficiencies in this knowledge base. Shulman (1987) acknowledges the difficulties in framing the knowledge base, and suggests that these

complexities may be one reason for the problems that teachers encounter when they are trying to define what knowledge they actually possess and how they have acquired this. Van Driel and Berry (2010) confirm the importance of PCK as a concept in contemporary education research, but they point out that its popularity has eroded the shared understanding of this concept in the research community, stating that 'the general fuzzyness around the concept of PCK' accounts for many of the variable outcomes of research on this knowledge base (Van Driel and Berry, 2010, p. 657).

Given the complexity of real life scenarios in teaching, it is perhaps apt that Shulman's (1987) construct of PCK is an amalgam. In teaching scenarios, PCK stands for the knowledge which frames the interactions between teachers and pupils, and therefore has an important influence on the quality of learning experiences. It is mostly for this reason that research on PCK continues to be of interest in contemporary education research (Loewenberg Ball, 2008, Van Driel and Berry, 2010).

2.4 From and with Shulman into the new millenium: Critical issues in teacher knowledge research.

The significance of Shulman's (1986, 1987) early work, and in particular the influence of PCK, became evident throughout the decade that followed its publication. The discussion, assimilation and development of its ideas by education researchers from many disciplines led to further conceptualisations of the knowledge base for teaching (Calderhead, 1992; Cochran, DeRuiter and King, 1993; Fincher and Schempp, 1994; Grimmett and MacKinnon, 1992; Grossmann, 1987, 1990; Grossman et al., 1989; McEwan and Bull, 1991; Rovegno 1993, 1995). Such research invariably started to introduce additional terminology into the subject knowledge debate.

One of the most influential variations in terminology was introduced by Grossman et al. (1989). This work explored the concept of 'subject matter knowledge' and introduced new terminology as well as variation in the conceptualisation of teacher knowledge. Grossman (1990) suggested

that teachers' subject knowledge may be categorised under three main headings: subject matter content knowledge, PCK and curricular knowledge. Given her relationship as a co-researcher to Shulman, it is not surprising that Grossman (1990) also attached particular significance to PCK. The sub-categories she established in her conception of PCK subtly differed from Shulman's (1987) model. A distinctive feature of this conceptualisation was the importance that was attributed to teachers' beliefs about subject matter, a view that resonated strongly with other influential educational researchers at the time (Fenstermacher, 1986; Nespor, 1987; Pajares 1992).

Beliefs about subject matter in this context were characterised as the teachers' personal and subjective feelings and orientations about the nature and value of different areas of the subject. These beliefs were considered to have an influence on what teachers choose to teach, and how to teach it. Nespor (1987) for instance argued that it was important to know which orientation the teacher started from, to appreciate if, and to what extent, changes in their beliefs and practices had taken place. This view is echoed in much of today's contemporary research in PE (see for instance: Green, 2002, Capel, 2007; Capel et al. 2011; Ennis and Chen, 1995; Hayes et al., 2008). Nespor (1987) emphasised that fundamental changes in beliefs are achieved slowly and require considerable support. The need to understand teachers' beliefs and previous experiences was considered to be important, if teachers' thinking and decision making in teaching situations were to be fully understood (Fenstermacher, 1986; Grossman et al., 1989; Pajares, 1992).

Additionally, Fenstermacher (1986) pointed out that the often quoted difference between beliefs and knowledge could not easily be delineated and there remained a significant amount of subjectivity in determining what teachers *actually know*. In other words, there remains a challenge for researchers to determine how much of teachers' acting is linked to established belief systems, rather than a response to new knowledge, training or the demands of teaching situations. These relationships are of importance to the current study, which needs to take the existing beliefs of the pre-service teachers in this research into account, if it is to understand

and interpret pre-service teachers' individual positions and perspectives on the teaching of PE.

Whilst Grossman et al. (1989) were explicit about the importance of what they labelled 'subject matter knowledge,' they conceded that research had not addressed several important questions: for instance, insufficient research had been conducted to investigate the relationship between pupil achievement and teacher knowledge, failing to make a clear link between these two variables. Establishing this relationship has remained, in many ways, unresolved two and a half decades later. Furthermore, Grossman et al. (1989) also noted that there was little research that had investigated differences between the subject matter knowledge in different school disciplines.

Examining this at a later stage, Grossman and Stodolsky (1994, 1995) observed that there were important epistemological differences among subjects. They noted distinctions in the nature of the knowledge of individual disciplines including their structure, sequence, and desired goals. Variations in how subjects were perceived by policy makers were also likely to influence education reforms, curricular guidance and instruction which in turn affect teachers' curricular control and their autonomy in teaching their subject (Grossman and Stodolsky, 1995). The distinct identity of subjects was seen to frame classroom teachers' perspectives on curriculum and instruction, thereby affecting their approaches to teaching.

Other issues debated throughout the 1990s continue to be relevant two decades later. For instance, Ball and McDiarmid, (1990) argued that the knowledge acquired in Undergraduate degrees was frequently ill aligned to the knowledge that was needed to teach in schools and Bennet and Carre (1993) questioned the effectiveness of Undergraduate degree courses in the preparation of teachers. They emphasised the importance of a variety of other experiences that might influence students' understanding of their subject and the way in which it should be taught. In addition to this, these researchers also highlighted a relative lack of pre-service teachers' expertise and confidence in subject matter knowledge as an important factor that needed to be addressed during any teacher education courses, an observation that is highly relevant to this study.

Challenges for teachers and researchers were also foreseen through the emerging scenarios of ethnic diversity. Fincher and Schempp (1994) suggested that, as schools were becoming more culturally diverse, teachers would have to form a more in-depth understanding of students' cultural backgrounds and how this affected their understanding of curriculum subject matter. They therefore proposed 'knowledge of student culture' to be an additional category in any typology of knowledge base. Since Fincher and Schempp's (1994) observation, research on teacher knowledge and its effects on teaching in multi-cultural settings, has gathered some momentum (Benn, Dagkas and Jawad, 2011; Dagkas, 2004; Dagkas and Benn, 2006). In many ways, the more recent debate on teacher knowledge constitutes a development, rather than a conceptual break from the themes that were established in the decade that followed Shulman's (1986, 1987) original work.

The following section discusses more recent conceptualisations and issues relating to research in teacher knowledge development. This serves to provide the background to the review of research into teacher knowledge in PE.

2.5 Teacher knowledge: More recent conceptualisations

Research in teacher education emphasises that high quality learning continues to rely on effective teachers. Innovative teaching and the deployment of associated instructional practices requires an ever evolving knowledge base.

More contemporary research on teacher knowledge has emphasised the dynamic, situated and social aspects of such knowledge (Amade-Escot, 2000, 2007; Edwards et al., 2002; Ellis, 2007; Hasweh, 2005; Hiebert et al., 2002; Hodgkinson and Hodgkinson, 2005; Rovegno, 2003, 2006). In these explorations the role of situated learning experiences, and the wider social and cultural settings in which these learning experiences are located, is considered to be of high significance (Edwards et al., 2002; Ellis, 2007; Hodgkinson and Hodgkinson, 2005, Rovegno, 2003, Shulman and

Shulman, 2004). This research emphasises that the enactment and development of knowledge is inextricably linked to values and practices of the community of fellow teachers, in which such knowledge evolves (Buitink, 2009; Ellis, 2007; Shulman and Shulman, 2004; see Herold and Waring, 2011) and that teacher learning can only be understood within the context of the specific CoP in which it takes place.

2.6 Teacher learning in Communities of Practice

Recent research in teacher learning recognises both individual and social aspects of learning to be important. Scholars who emphasise situative aspects of learning note the importance of the social dimension of learning. This favours an understanding of learning as a process of enculturation and collaborative construction of knowledge (Bausmith and Barry, 2011; Borko, 2004; Curtner-Smith, 1999; Cobb and Bowers, 1999; Ellis, 2007, VanDriel and Berry, 2012; Vescio et al., 2008). From a situated perspective, learning is influenced through the learner's participation in social practices within the respective communities in which this learning takes place (Ferrier-Kerr, 2009; Goodnough et al., 2009). In novice learners much of their newly constructed knowledge results as a consequence of their interactions within established CoP (Greeno, 2003).

Such conceptions frequently relate to Lave and Wenger's (1991) work on situated learning, which locates the process of 'becoming knowledgeable' firmly within the context of CoP. According to Wenger (1998), CoP may be defined in various ways and their settings may range from very formal to informal environments. However, they should be more than an arbitrary or temporary grouping of people. CoP should work in a sustained fashion and be committed towards working for a common goal in a shared area of interest (Wenger et al., 2002). They should also develop and share common practice. In doing so, CoP are driven by processes of social interaction and social participation. They provide a reference point for the validation of professional practice, influencing the construction of individual identities and the formation of professional values.

Learning for the novice, or ‘apprentice’, is a process with important social dimensions. Becoming ‘knowledgeable’ happens within specific CoP and it is therefore framed by their values and practices. The process of learning is inextricably linked to the process of becoming a member of the CoP and Lave (1996, 1997) observes that becoming ‘knowledgeable’ involves developing an identity as a member of the CoP itself.

In their evaluation of such learning, Lave and Wenger (1991) coined the term of ‘Legitimate Peripheral Participation’ (LPP) in CoP. Through acknowledging the importance of the social dimensions of learning, LPP challenges learning theories that pre-dominantly focus on the individual as a learner (Chambers and Armour, 2011). In situated conceptualisations of learning, learning is no longer a de-contextualised, cognitive process of acquiring knowledge. Learning is a holistic concept, since it encompasses the development of knowledge as well as the internalisation of values.

The need to consider the impact of CoP on the development of teacher knowledge was also recognised, more recently, by Shulman (Shulman and Shulman, 2004) himself. In his later work, he abandoned the idea of further refining his original model. In recognition of the importance of collaborative acting and learning Shulman and Shulman (2004) give weight to the importance of CoP in their revised conceptualisation of teacher knowledge (Shulman and Shulman, 2004):

> In our earlier studies of teacher learning, one of us (LSS) employed constructs that were strictly cognitive and individual, such as *pedagogical content knowledge* and *pedagogical reasoning and action*, and was content to distinguish among different kinds of teacher knowledge (Shulman, 1986,1987). But neither of these conceptions seemed comprehensive enough to account for what we were encountering. Rather than attempt to repair our older models, we approached the challenge of developing a new conceptual scheme from a fresh starting point. …We recognized the need to frame a more comprehensive conception of teacher learning and development within communities and contexts (Shulman and Shulman, 2004, p.258-259).

In their new model, which has yet to establish a significant following or impact in the literature to date, Shulman and Shulman (2004) envisage teacher knowledge to be more holistic, and attempt to take individual

teacher characteristics and skills, as well as the context of the community of learners into account. Shulman and Shuman (2004) formulate their revised conception as follows:

> We would now stipulate that an accomplished teacher has developed along the following dimensions: *An accomplished teacher is a member of a professional community who is ready, willing, and able to teach and to learn from his or her teaching experiences*. Thus, the elements of the theory are: Ready (*possessing vision*), Willing (*having motivation*), Able (both *knowing and being able 'to do'*), Reflective (*learning from experience*), and Communal (*acting as a member of a professional community*) (Shulman and Shuman, 2004, p.259.)

Based on this new conceptualisation Shulman and Shulman (2004) proceed to identify the implications that their model might have for ITE and CPD. This now firmly locates teacher learning within active communities of practitioners and acknowledges the importance of this for teacher education research. The shift of Shulman and Shulman's (2004) approach from Shulman's (1987) original model of teacher knowledge, remains remarkably unnoticed in recent publications of teacher knowledge, which continue to emphasise the conceptualisations of his earlier model.

As far as Shulman and Shulman (2004) are concerned, their revised model represents a more dynamic view of teacher learning. It emphasises the teacher's *ability to learn* and *willingness to change* as part of a learning team. The importance of collective acting and learning is a departure from the more individualistic conceptualisation of teacher knowledge that defined Shulman's (1987) earlier work. This has implications for research into teacher education. Shulman and Shulman (2004) raise an important question about the need to consider the choice of the fundamental 'unit of analysis' in teacher learning research in the light of this.

> In our deliberations over the past years, we have struggled to discern how best to conceptualize our efforts. We have been particularly caught between conceptions of the individual teacher and his or her learning on the one hand, and the community of teachers on the other hand, as our fundamental unit of analysis. That is, to what extent are we coming to understand how individual teachers learn to engage in the teaching and curriculum development essential for this kind of teaching, and to what extent are we investigating learning and change in teacher communities? (Shulman and Shulman, 2004, p.265)

Similar tendencies are also detectable in the more recent work of Grossman (Grossman and McDonald, 2008), one of Shulman's significant early contemporaries and collaborators. With respect to teacher education, Grossman and McDonald (2008, p. 189) poignantly recognise the importance of these situated experiences in school-based CoP. They also remark that these are often left to chance, rather than being effectively integrated into teacher education programmes. In the author's view, this represents a significant threat to the quality of teacher education:

> University-based teacher educators leave the development of pedagogical skill in the interactive aspects of teaching almost entirely to field experiences, the component of professional education over which we have the least control. We argue that research in teacher education needs to return to sustained inquiry about the clinical aspects of practice and how best to develop skilled practice—to add pedagogies of enactment to our existing repertoire of pedagogies of investigation.
>
> (Grossman and McDonald, 2008, p. 189)

Grossman and McDonald's (2008) concern about the impact of field experiences that continue to be dominated by practice, without giving sufficient consideration to pedagogical theory, is echoed by Allen (2009), who observes that attempts of teacher educators to address the theory-practice gap continue to be largely ineffective. As Shulman and Shulman (2004) point out, the term 'Community of Learning' does not necessarily apply to all the settings in which pre-service teachers learn, and the word 'group' might in many instances be a more appropriate term to capture the nature of these settings. If effective learning is, however, dependent on effective CoP, the practices of the CoP have to be taken into account if the outcomes of teacher learning are to be better understood.

These observations from the general teacher education literature are also highly relevant to the field of PE and PETE. The following sections explore the issues raised above in relation to the PE and PETE specific literature.

2.7 Subject knowledge research in the context of PETE and PE

PE teachers play a critical role in facilitating pupils' motivation to take part in PE (Hassandra et al., 2003; Nicaise et al., 2007). Graham (2008) states that if teachers have comprehensive subject knowledge they can develop lessons that are interesting and enjoyable, therefore motivating pupils to actively engage in PE lessons.

Whilst the importance of subject knowledge is widely acknowledged in the literature, there is less clarity about what this term actually means. There are various different definitions and a lack of consistency of meaning makes an effective debate difficult (Herold and Waring, 2009). The phrases 'subject knowledge', 'practical subject matter knowledge', 'content knowledge' and 'technical knowledge', have all been used interchangeably in the PE literature to describe the practical dimensions of subject knowledge in PE (Herold and Waring, 2009).

Many authors have considered the knowledge base for teaching PE using theoretical methods alone, debating its nature and its meaning for teachers and teaching (Amade-Escot, 2000, 2007; Amade-Escot and O'Sullivan, 2007; Capel, 2007; Rovegno, 2003, 2006; Siedentop, 2002; Tinning, 2002). Others have examined the development and value of such knowledge in PE teachers through practical investigations (Capel and Katene, 2000; Gower and Capel, 2004; Hayes et. al, 2008; Rovegno et al, 2003; Smith, 2001, Sloan, 2007; Stran and Curtner-Smith, 2010). The body of work by Rovegno (1993, 1995, 1998, 2003, 2006, 2008; 2010; Rovegno et al., 2003; Rovegno and Gregg, 2007) represents one of the most substantial and influential contributions to the area of knowledge development in teachers in the field of PE. Exploring the nature and conceptualisation of knowledge for teaching, (which others term subject knowledge), Rovegno (2003) proposes four categories: (a) practical knowledge; (b) personal knowledge; (c) complex knowledge; and (d) situated knowledge.

Practical knowledge recognises the everyday nature and settings of teaching and the teacher's knowledge and strategies to deal with situations that

might arise from these. Practical knowledge incorporates the ability to manage situations that routinely present themselves. Personal knowledge refers to those aspects of knowledge that relate to the personal identity of the teacher, such as the teacher's individual history and biography and individual experiences which have impacted on and formed the teacher's beliefs and value orientations. Personal knowledge also includes the interpretations of experiences made during their professional practice. Personal knowledge serves as an important filter that potentially influences and explains the teacher's individual interpretation of circumstances and his or her choices when enacting other aspects of knowledge. Complex knowledge acknowledges the variety of settings as well as the many variables that may influence the choices and decisions the teacher has to make in order to react to constantly changing circumstances. It relates to the teacher's ability to be flexible and proficient in recognising and responding to pupils' learning needs as they arise. Finally, the concept of situated knowledge recognises that knowledge is contextualised and enacted in specific and dynamic settings. It also recognises that whilst the teacher's knowledge is shaping the situation, the situation also continues to shape and re-shape the teacher's knowledge.

More recent publications in PE (and in education literature in general) emphasise these situated aspects of subject knowledge in PE. This research looks not only at the individual but at the individual in context, thereby subtly re-interpreting some of Shulman's (1986, 1987) categories of knowledge. For instance, content knowledge now acquires situated components and the teaching contexts are considered to be an important aspect (Amade Escot and O'Sullivan, 2007; Rovegno and Gregg, 2007; Wallhead and O'Sullivan, 2007). In these conceptions, the emphasis is on a pupil-centred pedagogy. The development of 'content' is a shared activity in which both pupils and teachers are involved collaboratively. The emphasis is on the process through which the pupils develop knowledge of the content, thus blurring into Shulman's concept of PCK.

As far as the development of knowledge for pre-service teachers in PETE in England is concerned, the 'Manifesto for a World Class System of Physical Education' (AfPE, 2008) formulated a vision for PETE that was focussed on pupils and pupil learning. The manifesto advocates a shift from

activity specific content knowledge development to a wider approach of 'formative physical education' for all students:

> Reframing of specialist ITTE for physical education, to transform specialism towards formative physical education for all students, addressing transitions between primary and secondary schools; and/or life skills for physical education for 14-19. For all specialist trainee teachers, the focus must be on quality and diversity, to support appropriate differentiated learning which will meet the needs of all children and young people. (AfPE, 2008, p. 33)

The move away from activity specific PE, emphasised a move towards the development of 'physical education life skills', rather than the development of specific sporting or technical competencies:

> Physical education life skills (age range 14-19), supporting learners in choices between performance and participation, leadership, administration, officiating, academic achievement, vocational preparation. (ibid, p.33)

Clearly, a move away from activity-focussed PE, coupled with the inclusion of additional agendas, for instance a health agenda, invariably has implications for the type of knowledge that is needed to deliver these outcomes. This is true for aspiring, as well as established teachers of PE. The need for the development and prioritisation of such knowledge is, however, not necessarily accepted by the PE teaching community (Velija et al., 2009). Moreover, 'formative PE experiences' still require learning contexts in which they are to be achieved. If such learning contexts are to be redefined, then a significant task in curriculum re-organisation would need to be achieved to deliver these learning aspirations.

Any curriculum re-organisation has potentially far reaching implications for the teacher knowledge required to deliver such a curriculum. At the time of writing this thesis, another impending curriculum change is likely to favour a return to more traditional approaches to PE. This will affect the context in which pre-service teachers have to enact their situated knowledge, and could mean a return to PE teaching in which established sporting and physical activities play a significant role in providing some, if not most of the context and background to pupils' learning experiences in English schools (Kirk, 2010a).

This demonstrates that the discussion about teacher knowledge in PE cannot be divorced from the discussion about the nature and purpose of PE itself, though such a discussion is beyond the parameters of this review (for a more detailed discussion see: Bailey, 2006; Bailey et al., 2008; Kay, 2003, 2006; Kirk, 2006).

2.8 The role of content knowledge in teaching PE

The role and relative importance of content knowledge as part of the knowledge base for teaching PE has been subject to some discussion in the PETE literature (Ayvazo et al., 2010; Capel and Katene, 2000; Gower and Capel 2004; Hayes et. al., 2008). Much of this research has used Shulman's (1987) conceptualisation of subject knowledge, equating content knowledge to the predominantly technical knowledge about the nature of different activities in PE and sport (Curtner-Smith, 2007; Gower and Capel, 2004; Griggs and Wheeler, 2005, Siedentop, 2002; Stran and Curtner-Smith, 2010; Tinning, 2002). Most authors distinguish between content knowledge, i.e. that which encompasses the teacher's knowledge of skills, techniques, rules or tactics, and PCK, ie the transformative knowledge that is needed to teach such content to their pupils (Chen, 2002; Rovegno et al, 2003).

The role of content knowledge, and especially its significance for other categories of teacher knowledge, in particular PCK, however, remains, largely unresolved (Siedentop, 2002; Tinning, 2002). Whilst some argue that an over-emphasis on content knowledge may lead to activity-centred, rather than learner-centred PE (Capel, 2007; Hayes et al., 2008; Velija et al, 2009), others (Ayvazo et al., 2010; Kirk 2010b; Schempp et al., 1998; Siedentop, 2002; Sloan, 2007) maintain that the facilitative value of content knowledge is (nowadays) undervalued. In particular, Siedentop (2002) asserted that academic institutions had discarded practical subject matter content in favour of academic and theoretical content. He argued that without sufficient content knowledge, PE teachers would find it hard to make a meaningful impact in the teaching of PE, especially in advancing

pupils beyond the boundaries of basic learning. Siedentop (2002, p. 368) concluded that academic institutions have progressively undervalued the importance of content knowledge and, ‘in so doing, have virtually eliminated the possibility of developing a serious body of pedagogical content knowledge for teaching PE’.

This view would appear to be supported by some (Ayvazo et al., 2010; Schempp et al., 1998) who noted differences in teaching behaviours and teacher effectiveness, depending on the presence or absence of content knowledge. Schempp et al. (1998) noted that teachers were generally more at ease and enthusiastic about their teaching when they had firm content knowledge. Ayazzo et al. (2010) emphasised the facilitative nature of content knowledge for other processes of teaching and stated that the presence of such knowledge helped teachers to better recognise pupils’ problems with learning. It also assisted teachers to plan appropriate lesson content more easily and to a higher quality, and to select more appropriate instructional strategies.

Whilst the general notion of a necessary base level of content knowledge appears to be mostly accepted in the literature, there is little indication as to what constitutes adequacy of such knowledge. Tinning (2002) argues that content knowledge by itself is insufficient, and states that other aspects of knowledge, such as the teacher’s ability to connect with pupils, are just as important. Curtner-Smith (2007) emphasises that both technical knowledge as well as critical pedagogy have their place in PETE, observing that valuing technical knowledge in PE teaching does not necessarily suggest a lack of appreciation for other aspects of pedagogy. Whilst a peaceful co-existence between technical knowledge and critical pedagogy is thus advocated, the question about their relative importance and the effort that should be devoted to develop them through PETE remains unresolved.

What pre-service teachers perceive to be important knowledge also needs to be taken into consideration. Hayes et al. (2008) suggest that pre-service teachers frequently equate subject knowledge with content knowledge and that they prioritise the acquisition of content knowledge over other aspects of knowledge. Consequently, Hayes et al. (2008) note that

many pre-service teachers and their mentors maintain a status quo that favours content over critical pedagogy. This could be a potential barrier to focussing on what really counts, namely the development of pupil-centred, critical PE pedagogy (Capel, 2007; Tinning, 2002; also see Herold and Waring, 2009). Capel (2007) criticises teacher learning in PETE, highlighting how traditional beliefs about PE, in particular in schools, accord a disproportionate value to content knowledge, thus inhibiting the development of a pupil-centred pedagogy in PE.

> The social aspects of learning appear to be particularly strong in physical education. This has implications for the development of knowledge for teaching, with trainee teachers focusing on the development of subject, and particularly content, knowledge. Focusing on subject knowledge reinforces a traditional view of physical education as it is, not as it might be to meet the needs of young people today. It is argued that attention needs to be given not only to the knowledge, skills and competencies that trainee teachers ought to develop but also to the social aspects of their learning and development and the context in which they learn. Attention also needs to be given to how the ability to think critically can be developed so that trainee teachers can become reflective practitioners able to challenge and, where appropriate, change the teaching of the subject (Capel, 2007, p. 493).

A different view on the meaning of content knowledge and the development of 'content' is taken by some authors who emphasise situated aspects of learning. The focus here is on the co-construction of content knowledge between teachers and pupils as well as the recognition of the learning contexts in which the construction of such knowledge takes place. In order to successfully 'develop content', it is argued that the teacher needs to understand and respect cultural, social and gendered dimensions of learning (Amade-Escot and O'Sullivan, 2007; Rovegno and Gregg, 2007; Wallhead and O'Sullivan, 2007; Verscheure and Amade-Escot, 2007) as well as the importance of semiotics (Wright and Forrest, 2007; Wallian and Chang, 2007). In this research, links are made between the content knowledge of the teacher, the content knowledge of the pupils and the construction of new knowledge that arises from the interaction between teachers and pupils. Whilst this view provides a more holistic perspective on content knowledge, it inevitably blurs the boundaries between different

aspects of knowledge, especially content knowledge and PCK, echoing the concerns of those who argue for the need to apply tighter definitions of teacher knowledge and its constituent factors (Ellis, 2007; Loewenberg Ball, 2008; Van Driel, 2010).

In the author's thesis, reference to content knowledge is used in the narrower sense of Shulman (1987), unless explicitly stated otherwise.

With respect to PETE in England the debate on knowledge for teaching also has to be viewed in the specific national context. At the start of this study, researchers had raised concerns about pre-service teachers' lack of content knowledge and the ensuing effects on their teaching competence and confidence (Capel and Katene, 2000; Gower and Capel 2004; Griggs and Wheeler 2005; Hardy 1995, 1996; Laker and Jones, 1998, Morgan and Bourke 2008; Sloan 2007). For example, Laker and Jones (1998) noted that pre-service teachers in PE had significant concerns about their levels of subject knowledge and Hardy (1996) suggested that deficits in practical subject matter knowledge in key areas of the traditional PE curriculum constituted a major problem for English PETE students.

Capel and Katene (2000) noted the potentially adverse effects that changes in Undergraduate degree courses had on the content knowledge of those aspiring to become secondary PE teachers. Although Capel and Katene (2000) acknowledged that it may be argued that the development of content knowledge was in many ways the students' own responsibility, they recognised that in reality this was problematic. They maintained that the limited time available for the development of practical subject matter knowledge on PGCE courses made opportunities for such development difficult.

Griggs and Wheeler (2005) also identified lack of content knowledge to be an area of pre-service teachers' concern on PGCE programmes. In England the professional pathways into PE teaching have seen many changes in the recent past. However, the potential effects of these changes on the knowledge profiles of pre-service teachers had been only sparsely researched at the time of the commencement of this study, (for example by Capel and Katene, 2000; Gower and Capel, 2004; Griggs and Wheeler, 2005).

Capel and Katene (2000) explored pre-service teachers' perceptions of their subject knowledge in relation to activities that were included in the National Curriculum for Physical Education (DfEE/QCA, 1999) in England at the time of their research. They administered two questionnaires to 27 seven students during their 2nd and 3rd term of their PGCE year. The results of the study indicated that perceived knowledge in traditional games was good, but there was little perceived knowledge in Outdoor and Adventurous Activities (OAA) and dance. There were also significant differences between males and females in more gendered activities such as football, rounders and netball. Perceived knowledge increases were observed during the period of investigation in such activities as gymnastics, volleyball, dance and OAA. Capel and Katene (2000) concluded that PGCE courses needed to continue to develop 'subject knowledge' of pre-service teachers and inferred that there were implications for the design of Undergraduate degree courses that claimed to prepare students for a career in teaching. This study was of some significance since it was the first to explore through primary research how the changed pathways into teaching in English PETE had affected content knowledge profiles of pre-service teachers. However, due to its limitations in scope and methodology it afforded only limited opportunities to gauge the effects of knowledge limitations on pre-service teachers.

In a further study focussing on the development of 'subject knowledge' in NQTs, Gower and Capel (2004) investigated factors related to the development of such knowledge in a small sample (n=3) of teachers. Semi-structured interviews were conducted five months into the NQT year to explore issues related to their 'subject knowledge' development. Like Capel and Katene (2000), the authors concluded that due to the diverse nature of their Undergraduate degrees, pre-service teachers in England were likely to have varied 'subject knowledge' profiles when starting their school-based training and asserted that this continued to have an impact beyond their PGCE year. Gower and Capel's (2004) study provided some rich narrative about the effects that knowledge deficits had for their participants. It also provided some indication about the importance of the school-based experience in shaping the content knowledge, as well as

PCK. The authors acknowledged the low number of participants as a limitation to their study, but speculated that limited ‘subject knowledge’ deficits may have had an adverse effect in the actual presentation of subject matter (a dimension of PCK) as well as on teaching confidence.

In a later study, Sloan (2007) investigated the perceived levels of personal ‘subject knowledge’ and competence in a group of PGCE students in gymnastics. This investigation was motivated by the perception that teaching this activity was a particular concern for pre-service teachers. Two questionnaires were administered to 30 PGCE students (15 male, 15 female) at separate stages of the course. In addition, semi-structured interviews were conducted with 4 students (2 male, 2 female) and 2 mentors (1 male, 1 female). Sloan (2007) reported that at the beginning of the course 48% of the pre-service teachers felt confident in their own ability and enjoyed gymnastics, whilst 52% had reservations about their ability and did not enjoy the activity. Sloan (2007) also speculated that there was a link between personal competence and enjoyment of this activity. It was also asserted that earlier experiences (pre-dominantly in school) had shaped the attitude and competence of these pre-service teachers towards gymnastics. Following the completion of an educational gymnastics course, the perceptions of pre-service teachers were found to be improved, and 90% of participants stated that they had enjoyed their learning experiences.

However, the participants in Sloan’s (2007) study also remarked that they would have benefitted from opportunities to apply their knowledge by teaching ‘real’ pupils throughout the course. Some also indicated that they needed further guidance to be confident with more advanced techniques and apparatus and over half of the participants maintained that at the end of their second school-experience they still did not feel confident to teach more advanced gymnastic elements independently. Sloan (2007) concluded that there remained a need to further develop pre-service teachers’ competence in order to ensure that they would be able to teach these activities confidently and safely.

Whilst this research was limited to one specific activity, it provided some useful insight into the effects that context specific knowledge deficits can have on the confidence and competence of teachers. It also confirmed

how important pre-service teachers themselves considered such knowledge to be.

Hayes et al. (2008) interviewed a total of twelve pre-service teachers who were from PGCE PE courses from four different institutions, twice during the course of their study, once at the end of term one and once at the end of their course. Additionally, nine mentors were interviewed once towards the end of the study. The findings suggested a continued hegemony of content knowledge over other forms of knowledge:

> Within the prioritisation of content knowledge, the results suggest that student teachers and mentors identify content knowledge as being specific to each activity taught, e.g. the skills, rules and tactics of individual activities, such as gymnastics or swimming, but particularly of individual games such as football, rugby, netball. This has several implications. First, time limitations on an initial teacher education course, particularly a 1 year (36 week) PGCE course, mean that it is not possible to cover the range of possible content knowledge. …. Second, and perhaps more importantly, this view of content knowledge suggests that the subject is a collection of separate activities; rather than one subject with an overall set of aims and objectives. By prioritising content knowledge and therefore knowledge of the activities taught, it is likely that a product-based curriculum is prioritised above a process-based curriculum in which the child is placed at the centre of the learning process (Hayes et al., 2008, p. 339)

The authors concluded that such an emphasis on content knowledge, expressed by mentors and pre-service teachers, cemented the status quo of content-focused practices. Whilst this research indicated that a focus on content knowledge was particularly prevalent in pre-service teachers during the beginning of their course, it failed to detail how, if at all, any changes occurred during the latter stages of the training. It was therefore difficult to appreciate the specific impact of the PETE training experience.

It may be concluded that it is broadly accepted that subject specific content knowledge is required if teachers are to facilitate high-quality learning experiences (Amande-Escot 2000, 2005; Chen and Rovegno, 2000; Curtner-Smith, 2007; Hayes et al., 2008; Morgan and Bourke, 2008; Siedentop, 2002; Tinning, 2002). However, the exact nature and the extent to which such knowledge is required remains less well defined and there is no real clarity about the specific impact that variations in the range and

depth of such knowledge have on pre-service teachers and their development during PETE. Additionally, there continues to be limited research which explores this issue in relation to specific national frameworks of PETE.

A number of important questions arise from this particular review. What for instance is the impact of a lack of content knowledge upon the pre-service teacher and upon his or her teaching? What are the potential effects upon pupil learning? What type of content knowledge is required and how much depth of this knowledge do pre-service teachers, or indeed other teachers of PE need to be effective? What is the impact of having, or not having activity specific content knowledge?

The author therefore concluded that further evidence-based research, such as the research undertaken for this study, which addresses these key questions, was needed.

2.9 PCK research in PETE and PE

Learning to teach, in Amade-Escot's and Amans-Passanga's (2007) words, demands 'teaching specific content to specific students in specific situations' (p.6). The act of teaching such content to unique individuals within unique physical environments is therefore, by definition, a variable one. It demands from the teacher knowledge, intuition and skills to respond flexibly and appropriately to changing teaching and learning scenarios. In Armour's (2011) view, sport pedagogy is the bringing together of the learner, the teacher and the content, and at the heart of this lies the applied dimension of knowledge which Shulman (1987) termed PCK.

Turning to European education literature, Van Driel (2010, p.656) highlights this pedagogical dimension of PCK, translating its closest German counterpart, '*Fachdidaktik*', as the 'pedagogy of the subject matter'. PE literature in general has explored the significance of this knowledge base extensively over the last two decades (Ayvazo and Ward, 2011; Amade-Escot and Amans Passanga, 2007; Chen and Rovegno, 2000; Cochran, DeRuiter and King, 1993; Rovegno, 1993, 1995, 1998; Rovegno

et al., 2003; Tsangaridou and Siedentop, 1995; Tsangaridou, 2002, 2005). At the turn of the millennium, such was the prevalence of research into PCK that Tsangaridou (2002) noted that PCK was on the point of becoming a synonym for teachers' professional knowledge. Prusak et al. (2010) confirm its continued importance in PETE, noting that the development of PCK remains a central task in the preparation of pre-service teachers. Tsangaridou (2002) suggested that PCK:

a. is embedded in the practice of teaching
b. is composed of intimately linked and integrated knowledge, beliefs and experiences
c. has undergone long-term evolution in relation to professional competence
d. is dependent on contextual factors (Tsangaridou, 2002, p.22-23).

In line with others, Tsangaridou's (2002) conceptualisation highlights the contextual dimensions of PCK and draws attention to the fact that teaching PE, as well as learning to teach PE, is a situated experience, which requires skilful responses to ever varying contextual factors. It is this dynamic circumstance which adds to the complexity of research in this arena (Amade-Escot 2005; Amade-Escot and Amans-Passange, 2007; Curtner-Smith, 2001; 2002; Rovegno, 2003).

Amade-Escot and O'Sullivan (2007) advocate a holistic view of the interconnection between individuals, activities and socio-cultural backgrounds which underpin situations of situated cognition and learning. They observe that this complexity arises from the relationships that encompass knowledge or knowing, the learner, the teacher and the co-activity and interaction between these three. Research into the development of PCK must therefore take account of the complexities of situational variables, including an understanding of the environmental dynamics that may arise from the conceptions, misconceptions, attitudes and emotions that all parties involved, not least the pupils, might bring to the table. The need to make these connections between relevant players and the learning environment is emphasised in studies that recognise the context to be of high importance (Amade-Escot and O'Sullivan, 2007; Perlman and Karp, 2010; Wallhead and O'Sullivan, 2007).

The importance of recognising the relationship between content selection, pupil ability and teacher competence was made clear by McCaughtry and Rovegno (2003) who analysed the development of PCK in four pre-service teachers during a middle-school volleyball unit of work. During this unit, pre-service teachers were seen to start paying closer attention to the pupils' motor development and plan and match activities accordingly as they developed their teaching competence. McCaughtry and Rovegno (2003) observed an improvement in the pre-service teachers' ability to match tasks more accurately to the pupils' ability and an attitudinal shift from 'blaming pupils' to reflecting more skilfully on how their own practice contributed to the respective success or failure of learning. Pre-service teachers also improved their ability to read and act upon emotional dimensions that had an impact on individual and group learning processes. Whilst this study was framed in one specific activity setting, it provided a valuable insight as to how situated learning in combination with constant reflection and feedback can help to enhance pre-service teachers' PCK.

The importance of devising appropriate instructional tasks and using teaching approaches that are designed to suit the needs of the pupils was also underlined by Tsangaridou (2002), who used a case study approach to analyse how a teacher designed and used instructional tasks with a focus on pupil learning during PE lessons. Evaluating data from observation, interviews and document analysis, Tsangaridou (2002) observed that the teacher demonstrated a desire for pupils to work co-operatively and designed tasks to achieve these objectives. Tsangaridou's (2002) findings indicated that it may be teachers' thoughtful prioritisation of general pedagogical aims which determines subsequent courses of action in planning and teaching lessons that meet pupils' needs. The need not to limit conceptions of PCK to content and pedagogy-led discussions is noted by some authors, who underline the importance of understanding the emotional dimensions of student learning and PCK (McCaughtry, 2004; Klemola et al., 2013).

McCaughtry (2004) considers this to be essential if PCK is to be fully understood within the learner/teacher context. During an in-depth case study of one teacher's practice, McCaughtry (2004) used interviews and observations to elicit that the teacher's selection and representation of content as well as the teacher's interactions with pupils were strongly guided by her emotional

understanding of her pupils and her perceptions of the emotional climate during the lessons. The teacher's observation that: "What these kids feel like when they learn directly affects how much they will learn" (McCaughtry, 2004, p.37) provided a powerful reminder about the influence that individual's emotions and group dynamics can have on the learning process.

Other inquiries into knowledge for teaching include studies on expert teacher knowledge, which frequently attempt to discern specific aspects of expert teacher knowledge in order to make recommendations for the development of effective teachers (Chen and Rovegno, 2000; Manross and Templeton, 1997; Rovegno et al., 2003; Siedentop and Eldar, 1989; Schempp et al., 1998). In an attempt to discern the influence that subject expertise has on teacher knowledge, Schempp et al. (1998) conducted four sets of semi-structured interviews with 10 teachers ranging from novice to 26 years of teaching experience. The study revealed that subject experts identified student motivation as their greatest challenge. Non-experts were more concerned about finding appropriate activities and focussed on task selection as one of their major challenges. In their quest to make up for their knowledge deficits, non-experts were using a range of information seeking strategies, but often did not find the time to fully assimilate these (Schempp et al., 1998).

In contrast, subject experts were better able to recognise, focus on and resolve pupils' learning problems and had a greater variety of tools available to do so. This enabled them to respond more flexibly and to pupils' specific learning needs. Expert teachers had an extensive bank of activities for the progression of skills and were able to describe these in rich detail. They were also able to describe a wider range of instructional strategies and could outline how they would respond to varying environmental conditions. Experts demonstrated more confidence in their own knowledge and approaches to teaching than the non-experts.

Schempp et al. (1998) provided a good insight into the differences between expert teachers and non-expert teachers by analysing their ability to reflect on their potential enactment of PCK via cognitive processes. Schempp's (1998) findings suggested that context specific content

knowledge (and PCK) facilitated an increased focus on the needs of the learner.

A different approach to eliciting distinctions in PCK between novices and experts was taken by Tan (1996), who analysed video-taped lessons of five expert and five novice teachers with respect to augmented feedback and interactive teaching decisions. Three lessons per teacher were video-taped and audio-taped and feedback was coded from these transcripts. To elicit teachers' cue perceptions and subsequent teaching behaviours, teachers were shown 10 two minute video-recorded teaching episodes and recall interviews were used to analyse teachers' actions.

Experienced teachers in this study appeared to be more concerned with students' psychological needs than the novices. They also focussed more on relating to students' previous individual skill levels, rather than purely on skill performance. Experienced teachers showed a greater propensity to advance pupils' learning by providing augmented feedback that was based on pupils' individual circumstances (Tan, 1996). The findings of this study implied that expert teachers' knowledge enabled them to assess pupils' individual learning needs and implement potential courses of action to advance this. It indicated that novice teachers have to acquire perceptual skills and feedback strategies in their quest to facilitate differentiated learning. Due to its design, the study did not provide any indication how these strategies were acquired by expert teachers or what could be done to accelerate such a process of acquisition by novices.

In an attempt to measure improvements in enacted PCK through a PETE programme, Metzler et al. (2000) used video-taped lessons to analyse the occurrence of preferred pedagogical practices before and after the interventions of the PETE course. The research found that, following the course, the occurrences of preferred pedagogical practices had increased significantly. Metzler et al. (2000) deduced that the PETE course had had an impact on the development of PCK in the participating pre-service teachers, who demonstrated the use of desired pedagogical practices that were promoted by the course. As Metzler et al. (2000) were quite specific about the pedagogical practices they wanted the subjects in their study to develop they conceded that the reality of developing PCK in the multitude of situated teaching contexts is very complex and therefore also difficult to research.

Ayvazzo and Ward (2011) used functional analysis to explore the PCK of experienced elementary school teachers teaching PE. Using video analysis, they observed these teachers in one stronger and one weaker unit of work. Ayvazzo and Ward (2011) analysed teachers' ability to modify tasks in response to pupils' learning experiences as one measure of PCK. The authors found that, in their stronger units, teachers modified tasks more readily and more successfully than in their weaker instruction units. The authors also observed that the types of adaptations that were chosen reflected PCK differentials in these units, despite the substantial general teaching experience of the subjects in their study. Ayvazzo and Ward (2011, p.683) concluded that their findings strengthened 'the premise that PCK develops on a continuum from less to more mature forms'. Additionally, it can be observed that their findings suggested PCK to have a context specific component, as well as having a direct impact on the quality of pupils' learning experiences.

This was also observed by Stran and Curtner-Smith (2010), who explored the inter-play between different dimensions of knowledge in two novice teachers who, in the year that followed their PETE programme, were delivering a Sport Education (SE) unit in their new schools. Through interviews and observation, Stran and Curtner-Smiths (2010) attempted to elicit the relative importance of different dimensions of knowledge in the delivery of the SE unit. Whilst they accorded importance to content knowledge, PCK and knowledge of pupils, they found that curricular knowledge, i.e. the knowledge of how to deliver SE was the binding ingredient in the facilitation of the learning experiences. This research is an important reminder that pedagogical acting remains located in the wider curricular and pedagogical context.

With respect to the desired outcomes of PE, the academic literature has consistently championed critical pedagogies that promote student-centred learning (Capel et al., 2012; Cochran, DeRuiter and King, 1993; Kirk, 1986; 2010a; Kirk et al., 1997; Kirk and MacDonald, 2001; Morgan, 2003, Morgan et al., 2005; O'Sullivan, 2003; Stran and Curtner-Smith, 2010). If this is to be achieved, it is evident that the development of specific knowledge for teaching must reflect the way in which PE teachers are expected to teach. In other words, if pre-service teachers are to progress towards achieving pupil-centred learning, they need to know how to achieve this.

This also requires ‘curricular knowledge’ as defined by Shulman (1987) and interpreted in the wider sense by Stran and Curtner-Smith (2010). This includes the knowledge about instructional models and their suitability to achieve desired learning outcomes. It is such knowledge that provides the theoretical and conceptual framework that is needed to underpin the practical application of these pupil-centred approaches. The following section presents research that addresses issues of how pre-service teachers may be expected to teach and what they would need to know in order to do so.

2.10 Pre-service teachers in PE: How are they expected to teach and what do they need to know to be able to do so?

The PE literature offers an array of best practice guidance and recommended approaches to teaching PE. Most notably, the literature favours pupil-centred teaching approaches over teacher-led direct instruction.

Much research has focussed on the impact of different teaching styles on pupils’ learning (Sicilia-Camacho and Brown, 2008; Morgan, 2003; Morgan et al., 2005; Parker and Curtner-Smith, 2012a). This research interest was ignited by the work of Mosston (1966) on the spectrum of teaching styles. Its impact on the PE research community was so profound that only seven years after its original publication Nixon and Locke (1973) stated that it was ‘the most significant advance in the theory of physical education pedagogy in recent history (Nixon and Locke, 1973, p.1227, cited in Silicia-Camacho and Brown, 2008, p. 86) and it has continued to attract significant national and international interest in the scholarly community (Cothran et al., 2005; Curtner-Smith et al., 2001; Digelidis, 2006; Morgan 2003, Morgan et al., 2005; Parker and Curtner-Smith, 2012a; Salavara et al., 2006). According to Sicilia-Camacho and Brown (2008), the spectrum of teaching styles is widely accepted as the most influential explanatory framework of teaching styles in PE, and therefore also of importance to PETE programmes. Parker and Curtner-Smith (2012a) concur with this

judgement and observe that in some universities the spectrum of teaching styles ‘is one of the theoretical frameworks which drives most decisions about PETE curricular content, structure, and organization’ (p.128).

The original spectrum consisted of eight different teaching styles, with predominantly teacher-led processes on one end of the spectrum and pupil-led processes on the other. Subsequent revisions of the model have seen some additions and renaming of teaching styles with the latest version (Mosston and Ashworth, 2008) comprising of 11 teaching styles with Command style teaching on the one hand of the spectrum and Self-Teaching on the other. The critical reference point is the level of decision making afforded to the learner, with minimal independence for pupils on the one end of the spectrum and maximal independence on the other (Herold, 2011). From the point of view of critical pedagogy, it is the notion of superiority of pupil-led, productive teaching styles that has inspired studies into the effect of different teaching styles on the quality of pupils’ learning (Morgan, 2003, Morgan et al., 2005). Clearly, if such teaching styles are of importance in PE teaching, it must be concluded that PETE has a responsibility in developing pre-service teachers’ knowledge about these.

However, despite the appreciation of pupil-led teaching styles in the literature, teacher-led approaches have continued to persist stubbornly in English schools (Capel et al., 2011). Investigations by Curtner-Smith and Hastie (1997) and Curtner-Smith et al. (2001) captured the use of teaching styles through a systematic observation instrument, the Instrument for Identifying Teaching Styles (IFTIS). The findings of these studies suggested that, despite curriculum intentions inherent in the NCPE, prevalent teaching styles employed by Secondary PE teachers were teacher-led, direct instruction methods. Curtner-Smith et al. (2001) indicated that the teachers in their study employed pre-dominantly direct teaching styles (78.31% of the time), indicating that productive teaching styles were marginalised by the teachers in their study.

During a separate study Curtner-Smith (1999) had investigated attitudes towards different approaches to devise learning and teaching strategies to deliver the English NCPE. He noted that the PE teachers in his study had largely ignored the process dimensions of the curriculum and

continued to employ direct instruction techniques within a curriculum framework, dominated by traditional games. In his analysis Curtner-Smith (1999) inferred direct links between the 'sporting perspective' that the teachers held and the direct methods of instruction, which they favoured. Despite what academics consider to be the desirable teaching approaches to PE, this prevalence of skills-based instruction over other teaching approaches continues to be cited as a problem in English Secondary PE (Capel, 2007; Capel et al., 2011; Green, 2000; Kay, 2003). At the time when the author started his study, the gap between aspiration and reality was evident and the debate about what sort of teaching constituted 'high quality PE' had intensified in England (Kirk, 2004; Penny et al, 2003; Casborn, 2006; Kay, 2003, 2006). The discussion on *how to teach* inevitably raised important questions of the knowledge and skills that are needed by those aspiring to teach PE.

For some, there should be more emphasis on developing teachers whose knowledge has firmer underpinnings in psychology (Ntoumanis and Biddle, 1999; Ntoumanis, 2005). These authors advocate the importance of developing teaching methods that focus on the creation of positive motivational climates, commonly highlighting the advantages of a mastery climate over performance orientation (Ntoumanis, 2005; Morgan, 2003, Morgan et al., 2005; Salvara et al., 2008). For others, the question is not about the detail of the knowledge the teacher possesses, but the philosophy and commitment to a certain way or style of teaching (Cothran et al*.,* 2005; Dyson and Casey, 2012; Silicia-Camacho and Brown 2008; Stran and Curtner-Smith, 2010). Instructional models that are valued in the PE research community include for instance Teaching Games for Understanding (TGfU) and Sport Education (SE) models of teaching (McCaughtry et al., 2004; Kinchin, 2006; Stran and Curtner-Smith, 2010; Parker and Curtner-Smith, 2012b). More recently, the long standing notion that PE should foster co-operative learning has also been re-packaged under the banner of co-operative learning and formalised into a model-based teaching approach (Dyson and Casey, 2012). All of the above have implications for the desirable knowledge base of PE teachers, and therefore also for PETE.

Seemingly, the quest to determine the associated knowledge needed to teach PE remains a moving target. As Tinning (2002) poignantly observed, the knowledge required to teach PE is dynamic and has to take account of changing paradigms. The rise of the 'Health Education' agenda, new instructional models such as Co-operative learning or simply new activities such as in-line skating, ultimate frisbee, parcour, street-cheer, zumba and many others continue to enter the school curriculum in response to changes in youth sport culture. In this context, Tinning (2002) argued that adaptability and the ability to know how to engage learners critically with the subject matter are the key attributes needed to teach PE, concluding that "subject matter content knowledge of practical physical activity remains a necessary but insufficient ingredient in the improvement of school PE" (p.389). If one concludes, however, like Tinning (2002), that the value of content knowledge is overrated, it is important to consider what type of knowledge should take its place (Herold and Waring, 2009).

Whilst most authors agree that it would be beneficial to challenge the hegemony of direct teaching approaches in PE, the contribution that PETE could make to achieving this, remains under-researched and ill-understood (Kirk, 2010b). Any knowledge development has implications for the time that is needed to foster and cement it, but time is, as Capel (2007) points out, a scarce resource for many pre-service teachers in England. Teacher educators therefore need to prioritise which aspects of knowledge they intend to develop in the time they have available. This process needs to be under-pinned by a well-developed understanding of the principal aims of PE (Chroinin and Coulter, 2012) and clear vision of the pedagogies that should be promoted through PETE (Casey and Fletcher, 2012).

It would also be valuable to ascertain which other influences had an impact on the development of pre-service teachers' philosophies of teaching. Since individual teaching philosophies may have a profound impact on the future directions and development of these teachers, identifying the influences that lead to such developments constitutes valuable information for the future design of learning. The following section explores the literature related to this issue.

2.11 Pre-service teacher's development: who and what influences how they teach?

In line with the general teacher education literature, PE research notes the importance of situated experiences for learning and development in PETE. Much research accredits significant influence to the socialising role of school placements as a key influence on pre-service teachers (Chambers and Armour 2012; Velija et al, 2009; Sirna, Tinning and Rossi, 2010). In this context, many authors focus on the importance of the relationship between pre-service teachers and their mentors, during which both parties collaborate to achieve common goals (Chambers, et al., 2011, 2012; Hardy, 1999; Laker and Jones, 1998; Mawer, 1995; Smith, 2001). Additionally, others have highlighted the role of partnerships between schools and universities in the development of knowledge and values (Chambers and Armour, 2012; Chambers et al., 2011; Herold and Waring, 2009, 2011; Kinchin, 2009).

Social experiences within different CoP can be profound and have a significant impact on the identity of individual teachers (Kirk and Macdonald, 1998) and a wide range of factors can influence the dynamics within CoP and add to the complexity of the relationships within them. For instance, power relationships can have a significant impact on how these communities operate, and influence the learning within them (Smith, 2001). Pre-service teachers, due to their lowly position within respective school communities, are not only novices but also need to be concerned with 'passing their course' (Capel et al., 2011; Curtner-Smith, 2001). The dynamics within CoP are of vital importance if LPP is to emphasise 'Legitimacy', rather than 'Periphery'.

By definition, pre-service teachers become, willingly or unwillingly, members of CoP, which can vary significantly in character. Schools and school departments may be seen as the most immediate CoP for teachers (Keay, 2005) and the school context remains a powerful influence as pre-service teachers develop their 'practical theories' of teaching (Rovegno, 2003). In this context, Keay (2007) also highlights the influence of

significant colleagues, other than the mentor, on the development of knowledge and value orientations of pre-service teachers.

In PE and PETE research there has been no shortage of critical voices, highlighting a multitude of issues that can adversely affect the development of pre-service teachers' knowledge, values and personal philosophies of teaching (Chambers and Armour, 2012; Hardy, 1999; Green, 2002, 2006; Harris and Penny, 2002; Smith, 2001; Stidder and Hayes, 2006, Velija et al., 2009). In a survey of 62 pre-service teachers' perceptions of learning to teach on a PGCE programme, Hardy (1999) identified the importance of the school-based elements and noted deficiencies in these that were impacting adversely on the learning experiences of the pre-service teachers. Hardy's (1999) was also critical of the variability of the quality of experiences in different school partnerships. This variability was evident in the quality of mentors, the mentoring process and the practices in partner schools. Hardy (1999) observed that many schools favoured the practical over sound theoretical grounding and the immediate over the profound. In his analysis Hardy (1999, p.175) suggested that "the continual extension of school-based experiences is not only privileging the practical over the theory and emphasizing doing more than thinking, but is replacing complexity with simplicity".

Findings from a 10 year longitudinal study by Stidder and Hayes (2006) in the south-west of England also suggested variability in pre-service teachers' experiences. Additionally, the authors observed a persistence of gendered practices is many of the schools. Stidder and Hayes (2006) concluded that issues of gender as well as culture would need further attention, if rounded placement experiences are to be provided. In this they concurred with Harris and Penny (2002), who had been critical of gendered practices in PE which were evident in teaching practices, curricular decisions, as well as pupils' learning experiences.

Smith (2001) highlights the complexity of processes that are involved in the development of subject knowledge and identifies cultural and social capital to be of relevance to PETE, referring to the acquisition of social capital as "the ability of individuals or groups to use social relationships between tutors, mentors and student teachers to acquire subject knowledge" (p. 65). Smith (2001) argues that in curriculum areas which cover a wide range of activities, such as PE, the development of subject

knowledge poses specific challenges, finding that there was ‘no consistent perception between pre-service teachers, school-based mentors and university-based tutors as far as their specific role in the development of subject knowledge was concerned.’ Despite the fact that discrepancies between school and university added to the complexity of subject knowledge development, Simth (2001) suggested that the combination of both enriched the learning of pre-service teachers” (from Herold and Waring, 2009, p.344).

In Kinchin’s (2009) examination of Secondary PE pre-service teachers’ experiences, pre-service teachers valued immediately applicable, practical knowledge highly and identified the school-based mentor to be the most important influence on their learning. Feedback on their teaching by the mentor and the observation of experienced teachers were seen to be central to their learning. At the beginning of their course there was little appreciation for theoretical knowledge, a situation that changed, to some extent, towards the end of the course. University-based learning was, at times, perceived to be too didactic and divorced from practice, although more directly applicable university-based learning in sessions on teaching styles or differentiation were appreciated. The university tutor was perceived to be a mediator and moderator, who ensured that students were ‘on a level playing field’ (Kinchin, 2009, p. 7).

Others (Curtner-Smith and Meek 2000; Curtner-Smith, 2001; Green, 2002) question whether too much importance may be placed on the value of PETE in general and suggest that it has little effect on eventual teaching practices of PE teachers. In elaborating further, Green (2002) states that other, wider reaching factors have a more profound and longer lasting impact on the practices of PE teachers than the relatively short period of PETE. Applying the constructs of figurational sociology, Green (2002) asserts that if we want to understand PE teachers’ personal beliefs and ‘philosophies’, we need to understand their biographies as well as their existing social and professional networks, including the influence of significant others. Green (2002) characterises the effects of PETE to be of a transient nature, and argues for the need to take into account the belief

systems which underpin an individual's thinking, if their philosophy of teaching is to be understood.

Other researchers also acknowledge the influences of past experiences, citing personal biographies, including childhood and subsequent life experiences in sport and PE, to shape existing value orientations and personal beliefs of teachers (Armour, 1997; Cochran-Smith, 1991; Curtner-Smith, 2001; Ennis and Chen 1993; Ennis and Chen 1995; Kulinna et al., 2010). These authors do not fully deny any beneficial impact of PETE, however, they stress its limitations. Curtner-Smith (2001), for instance, concedes that influences during PETE might result in some change of attitudes, beliefs and practices, but his overall assessment is that PETE only has a very limited bearing on established beliefs, philosophies and eventual practices of pre-service teachers. Kullina et al. (2010) investigated the belief systems of pre-service teachers (n=486) and observed that there were significant differences in teachers' views about the principal goals and outcomes of PE. The authors suggested that addressing pre-service teachers' belief systems was a central task for PETE to undertake.

Several authors point out that some obstacles for PETE are inherent in the power differentials that pre-service teachers experience during their training (Curtner-Smith, 2001; Velija et al. 2009; Smith, 2001). Curtner-Smith (2001) and Capel et al. (2011) point out that one of pre-service teachers' main concerns in training is to pass the course, and that the pedagogies that they may use in order to do so may be opportunistic, rather than intrinsically adopted. Velija et al. (2009) express the nature of these power relations poignantly:

> Student teachers' position within the figuration is generally as the weaker player. University tutors and school-based mentors have something that the student teachers need and require, i.e. knowledge and the ability to fail student teachers who do not meet the necessary standards. Student teachers must fulfil the requirements of both the practical school-based setting and the university 'academic' elements of the course in order to gain qualified teacher status. Balancing this is difficult for student teachers and can cause conflict. (Velija et al., 2009, p. 400)

Velija et al. (2009) conclude that PETE courses do not fundamentally challenge deep seated beliefs that pre-service teachers hold about the essence of PE. They doubt that PETE had a real impact on their pre-service teachers' personal ideologies and practice. In their analysis, Velija et al. (2009) concurred with Green (2002; 2006), who cites more immediate figurations such as personal, social and institutional networks to have a further reaching and longer lasting impact on the practices of PE teachers. Significant others such as colleagues, senior colleagues, pupils and local institutional networks such as the PE department and school shape the PE teachers' long-term philosophy and practice. In many instances, these figurations merely confirm and perpetuate already existing beliefs and value orientations (Curtner-Smith, 2001).

Elaborating upon this view, Green (2006) questions the ability of PE research that is merely focussed on pedagogical issues to provide a sufficiently sophisticated explanatory framework to capture the complexities that lead to the development of PE teachers' personal philosophies of teaching. He argues for the need for a more rigorous sociological research approach in order to better understand how personal values and wider sociological figurations interact to inform PE teachers' practice and thinking.

Depending on value orientations and valued practices, some pre-service teachers thrive in innovative CoP adopting many recommended teaching practices. Others remain frustrated, ignored and perform to minimal compliance standards (Chen and Ennis, 1996; Curtner-Smith and Hasty, 1997; Curnter-Smith, 1999; Curtner-Smith and Meek, 2000; Curtner-Smith *et al,* 2001). As Sparkes (1991b), cited in Curtner-Smith and Meek, 2000, p. 30) puts it: "This resistance is 'part of intelligent action' (Sparkes, 1991b, p. 20) and can involve the use of 'strategic rhetoric' whereby teachers change what they say about their curricula but not what they do."

Invariably knowledge development during PETE constitutes only the first stage of teacher professionalization. Research into teacher education and professionalization takes account of the fact that learning to teach is a lifelong process which is ultimately rooted within specific environments and therefore also influenced by these (Amade-Escot, 2007; Armour, 2006, 2010; Keay 2006; Knight, 2002). Learning to teach is a sustained developmental process and learning to

teach on PETE courses only represents the first step on this long journey. Yet, it is important to consider what the actual outcomes at the end of PETE should be, since it constitutes the first step towards teacher learning and professionalization. In making a compelling case for the importance of continuous professional learning, Armour (2006) points out that “it is worth remembering, for example, that over a 35-year career, a single teacher could teach approximately 30,000 lessons to anything up to 100,000 pupils” (p.203), and it could well be argued that the teacher will be influenced through this process as much as any of his or her pupils. This not only represents a substantial amount of time for teaching, but also a lifetime for the teacher herself or himself in which to keep learning to teach.

3 Chapter Three: Research paradigms

3.1 Introduction

This chapter identifies the fundamental epistemological and methodological considerations that informed this study. It has been structured as follows: in its initial section, a general discussion on research paradigms provides a summary of theoretical considerations that relate to epistemological, methodological and ontological positions. In its second part, the chapter provides the justification for the particular paradigmatical location of this research.

3.2 Paradigm debates

The nature, value and purpose of distinct research paradigms continue to be vigorously contested amongst scholars from all disciplines within the natural as well as the social sciences (Denzin and Lincoln, 2005; Lichtman, 2009; Mason, 2002). Given the complexity of the physical, social, spiritual, meta-physical and virtual world that we live in, it is not surprising that many competing opinions about the way the world is viewed exist. In the social sciences, which in the broadest sense are dedicated to the study of human actions and interactions, multiple interpretations of reality about most aspects of human existence abound (Blaikie, 2007). This is matched by a rich variety of viewpoints held by researchers. Associated research paradigms detail how this complexity may be investigated (Lincoln and Guba, 2007).

Bryman (2004, p.542) defines ‘paradigm’ as a term that is “used to describe a cluster of beliefs. Paradigms influence how scientists research a particular discipline, what should be studied, and how results should be interpreted.” Whilst agreement about the detail of any given paradigm may vary, major principles of the paradigm are accepted and serve as a guiding framework for respective research communities (Cresswell, 2005; Gorard, 2005; Mason, 2002; Sparkes, 1992). Established practices within any given community of research practice may therefore socialise researchers into the

acceptance of the principles of prevailing paradigms (Cohen, Mannion and Morrison, 2011). Kuhn (1970, p. 176) cited in Bailey (2006) describes the function and essence of paradigms as ‘what the members of a scientific community share’, introducing the notion of the socialising and educative function of research paradigms. The potential interconnectedness of research paradigms and personal paradigms is pointed out by Bryman (2004), who observed that research paradigms can provide a set of beliefs and research strategies by which their particular research community will be guided during their investigations.

Critically, the adherence to the principles of any particular paradigm will influence the researcher in their adoption of any particular methodology/methodologies. It is important that related assumptions are clearly acknowledged. Otherwise, there is potential to undermine the trustworthiness of the research itself (Lincoln and Guba, 2000, 2007; Patton, 2002; Salmon, 2003). The need to explore and defend research positions is echoed in the discourse about the value and validity of distinct research paradigms. In order to achieve trustworthy research, the researcher should therefore have reflected upon major paradigm considerations and share these with their readers (Lincoln and Guba, 2007; Robson, 2002).

Polarised positions on research paradigms have often been articulated on an epistemological spectrum: positivist/quantitative/deductive/objective - interpretivist/qualitative/inductive/subjective (Blaikie, 2007; Denscoombe, 2003). Moreover, epistemological positions are aligned with methodological strategies. When in alignment with a positivist, or post-positivist epistemology, advocates of the quantitative paradigm contend that research in social sciences should be objective and that its methods and instruments should seek to eliminate bias from scientific inquiry. This is characterised by the belief that research into social phenomena can and should be conducted objectively and that observation of social entities should be established along the lines of the scientific principles established in the inquiry of physical phenomena (Johnson and Onwuegbuzie, 2004).

At the other end of the spectrum, qualitative researchers reject positivist and post-positivist notions and underpin their thinking through interpretivist, rather than positivist epistemologies (Blaikie, 2007; Densin and Lincoln, 2005, Lincoln and Guba, 2000). The differing positions of proponents located at either end of this spectrum reflect a conflict of fundamental ontological and epistemological assumptions. As Byrne (1998) points out, qualitative researchers challenge positivist assumptions about their ability to fully establish causes and effects of observed social phenomena. They maintain that knowledge itself cannot be value free and divorced from the knower's subjective reality (Lincoln and Guba, 2007). Hence, many qualitative researchers reject the notion of positivism as unsuitable to capture the complex and multi-layered realities that characterise social phenomena, (Blakie, 2007; Bryman, 2004; Cresswell, 2003). Whilst the stance on observer objectivity is softened by post-positivists (Robson, 2002), the distinction between positivists or post-positivist and interpretivist positions on this issue remains an important one. As Sparkes (1992) points out in his readings of the objectivity debate, there is a strong inference between the beliefs that individuals have formed about the world and the way they are likely to perceive events they observe within it.

Such accompanying beliefs are likely to have an impact on any research conducted, thereby rendering the notion of the researcher's objectivity and disconnectedness open to criticism. Sparkes' (1992) observations are also pertinent to this thesis, where managing the role of the researcher, who was also a teacher educator on the course that was investigated. On-going reflections by the researcher on his paradigmatical location helped him to explicitly interrogate and acknowledge his personal values and previous experiences and their influence on the research.

3.3 Locating the research in the qualitative-interpretive paradigm

Researchers with certain epistemological beliefs are not constrained to any particular methodology. They should be free to choose the methodology or methodologies that reflect their assumptions and the subsequent data required to answer the research question (Onwuegbuzie and Teddlie, 2003; Salmon, 2003; Guba and Lincoln 2005). Salmon (2003) emphasises that it is ultimately the quality of research rather than the declaration of allegiance to any specific paradigm that should be prioritised in the researcher's thinking. Additionally, Salmon (2003) points out that considerations about ontological and epistemological stance do not always constitute the starting point for the researcher. Initially, the researcher's thought processes will be centred on the research problem or question. The identification of suitable research methods will then be matched to this. This was also the case in this research, as paradigmatic considerations informed reflections on the design as the development of the research strategy evolved.

Initially, the researcher saw himself as a 'pragmatic real world researcher' guided by the principle of developing and using research methods that have a place in these real world settings (Cohen, Mannion and Morrison, 2011; Richie and Lewis, 2003; Robson, 2002; Seale et al., 2007). Real world research, which forms the context of this study, is frequently driven by the desire not to divorce theory from praxis. At first, the researcher did not fully appreciate the need for theoretical sensitivity in this process. As pragmatism strives to link theory with praxis, it acknowledges the role of experience in the construction of new knowledge and emphasises that such new knowledge emerges through the cycle of continual interaction of the social actor with others and their environment (Greenwood and Levin, 2005; Marshall and Rossman, 2011). Both of the above notions, pragmatism as well as constructivism, are relevant within the context of this thesis. This crucially extends to the author's personal reading and understanding of learning and the development of knowledge.

On reflection, the researcher felt that it was most appropriate to locate this study within the interpretive research paradigm. As is commonly the case within areas of education and learning (Berliner, 2002; Hitchcock and Hughes, 1995), the focus of this research was on individual and social learning processes, understandings and experiences. The desire to study the experiences of individual pre-service teachers, in-depth, meant that qualitative methods offered a viable approach to gather the data required to investigate the experiences of the target population (Allan and Skinner, 2002; Bell, 2005; Mason, 2002, Marshall and Rossman, 2011; Silverman 2005). The literature purveys it as a particular strength of qualitative research methods that it enables the researcher to engage in meaningful interactions. These allow for an intense look into the 'what', 'how' and 'why' of each context, developing a detailed and grounded understanding of the people and their interpretation of underlying processes (Arskey and Knight, 1999; Cohen, Mannion and Morrision, 2011; Patton, 2002; Flick, 2007; Willig, 2006). The selection of methods was heavily influenced by their alignment with those learning processes that were integral to the structure of the training programme and the researcher's intentions to inform pre-service teachers' professional practices on a sustainable basis.

From the start, the researcher was aware of a number of pre-conceptions he had, which informed the context and framed the research design. Consequently, he wanted to select a research methodology that made this explicit and interrogated it as part of the research agenda. His initial observation had been that limited content knowledge had an adverse influence on the development of pre-service teachers. He was concerned that his initial pre-conception might lead him to assumptions and findings that were compromised by a methodology that would insufficiently challenge these pre-conceptions. The researcher also knew that he favoured certain pedagogical approaches over others. The interpretation of the findings would be filtered through his knowledge, perceptions and beliefs about teaching (Sparkes, 1992). This included, for instance, a preference of pupil-centred teaching strategies over content and teacher-centred ones.

Additionally, his role as an insider in this study bestowed him with privileged knowledge about the research setting. This included the school-partnerships, the pre-service teachers as well as the mentors in the study. It was a concern of the author to minimise the impact that his own preconceptions might have on the outcomes of this investigation. He favoured the use qualitative research methods, but he wanted take a research approach that would be designed to challenge his preconceptions and expectations. This led to the search for a methodology that would be emergent and inductive rather than deductive. It was the researcher's intention to develop theory from the data that emerged from the study, rather than searching for data that would confirm a priory statement. Grounded theory was seen to be a relevant methodology in this respect.

4 Chapter Four: Methodology

Chapter three discussed the epistemological considerations and presented a rationale for the paradigmatic location of this study. This chapter provides an examination of the specific research methodology adopted for the investigation. The rationale and purpose for using these methods is explored in some detail. It is the purpose of this chapter to provide the reader with an insight into the design of the study and to depict the research procedures that were employed to collect and analyse the data for this study.

4.1 Grounded theory

As a methodology, grounded theory emerged in the late 1960s as a result of the sociological research on 'dying' in hospitals by Glaser and Strauss (1967). Challenged by their attempt to understand and research the difficult and intensely personal process of dying, the authors sought to develop a methodology that was suitable for this situation. Therefore, the methodology needed to be sufficiently devoid of pre-conceptions to ensure that Glaser and Strauss' (1967) study genuinely captured what they had found, rather than what they were expecting to find. Grounded theory in its

original conception represented an attempt to create a methodology that was capable of investigating complex research situations through a qualitative research approach. The generation of theory was explicitly emergent (Glaser and Strauss, 1967; Glaser, 1978; Glaser 1992; Strauss, 1987; Strauss et al., 1990; Strauss and Corbin, 1990, 1998).

Rather than attempting to test a hypothesis, grounded theory endeavours to find out what accounts for the research situation (Waring, 2012a). It then attempts to develop theory from this through a process of engagement with the research situation and systematic interpretation of the data that is generated in the process (Charmaz, 2000; 2006; Bryant and Charmaz, 2007, Corbin and Strauss, 2008; Glaser and Strauss, 1967; Strauss and Corbin, 1998). Grounded theory therefore begins with the research situation. It represents an inductive methodology, which is dedicated to the systematic generation of theory from systematic research (Charmaz, 2006; Dick, 2005; Morse et al. 2008; Pandit, 1996; Silverman, 2005; Waring, 2012a). Of particular importance to the original conception of grounded theory was the demand that theory would emerge from the data, rather than from existing theory (Glaser and Strauss, 1967, p.34). The generation and development of concepts, categories and propositions is a developmental process.

> Our approach to, allowing substantive concepts and hypothesis to emerge first, on their own, enables the analyst to ascertain which, if any, existing formal theory may help him to generate his substantive theories. He can then be more faithful to his data, rather than forcing it to fit theory. He can then be more objective and less theoretically biased.
>
> (Glaser and Strauss, 1967, p.34)

In their quest to remain open towards the meaning of emerging data, the authors of the original grounded theory framework suggested that it may be prudent for any researcher not to immerse themselves too deeply into the existing literature surrounding the field under investigation. The purpose of this was to guard against ‘contamination’ through the process of review. It was seen to be all important that theory was grounded in the data of the study (Glaser and Strauss, 1967). This recommendation was adhered to in this study. The author aimed to avoid to be pushed into any particular

direction of thinking or indeed to any premature conclusions by the reading of the directly related literature. The approach to designing the literature review was therefore also developmental. After some initial reading around the topic, the literature review was developed concurrently, rather than in advance to the study. Retrospectively, this had disadvantages as well as advantages. The author did, at times come across articles that he felt might have been of some use to him at an earlier stage of the inquiry. On balance, however, he felt that his approach allowed him to keep an open mind towards many of the issues he encountered as his investigation unfolded. It allowed him to let the direction of his research be influenced by the issues and concerns that arose from the encounters with his participants and from the concerns and issues that they prioritised.

One problem he encountered was that this emerging design had consequences for the definition of the principal research questions. These were, in alignment with grounded theory method, broad in their definition. This had subsequent effects on other aspects of the investigation. At times, the researcher felt that the juxtaposition between data analysis and data collection was a difficult process to facilitate. For instance, the design of the interview guides would have to provide some structure to the data collection process, whilst still allowing sufficient flexibility in the data collection and analysis process that would allow for pre-service teachers' perceptions and concerns not to be lost within the research.

Of particular importance in the conceptual design of any grounded theory method study is therefore the approach to examining, interpreting and the concurrent use of its data. It is the application of systematic data analysis procedures that should lead to the emergence of conceptual categories, in order to generate theoretical explanations of the actions and main concerns of the participants in a substantive area of study (Grounded Theory Institute, 2008). Instrumental to achieving this is the engagement with data through the process of coding in grounded theory. In Glaser's (1978, 1990) conception of grounded theory, it is the key intent of this research approach to generate theory that is grounded in the data of the research. This is achieved through applying the principles of constant

comparison method and a rigorously structured approach to coding the data.

Within grounded research, and in particular within the process of coding, Glaser (1978) also acknowledges the role of the researcher. Since coding represents a significant intervention of the researcher with the data, theoretical sensitivity on the researcher's behalf is needed if this process is to be a valid one. It is through theoretical sensitivity and recurrent engagement and re-engagement with the data that verification of results and findings in Glaser's grounded theory is achieved (Charmaz, 2000; Dey, 1999; Walker and Myrick, 2006). Whilst Glaser and Strauss' (1967) original constant comparison method remains the original blueprint for data analysis in grounded theory method research, it has over time been adapted by others, most notably, Strauss and Corbin's (1990, 1998), who developed variations of the original model.

The original claim by Glaser and Strauss (1967) that grounded theory represented a unique and, reading between the lines, potentially superior method to develop theory in qualitative research has not been without its qualifications and critics (Dey, 1999; Harry et al., 2005; Thomas and James, 2006). The essence of this criticism relates to the quasi-objectivist assertion by the original proponents of grounded theory method that, if the set of procedures is followed to instructions, theory would emerge from the data, rather than through the process of interpretation which is essential to qualitative research (Thomas and James, 2006). Later proponents of grounded theory also regarded this to be problematic and subsequently developed more constructivist notions of grounded theory method (Charmaz, 2000, 2006).

Understanding these distinctions and their relevance for qualitative inquiry was also of importance to this study. This was especially true for the aspects of grounded theory that dealt with the role of the investigator in grounded theory method. The author had originally been 'seduced' by the original tenets of grounded theory method. These appeared to promise a methodology that would allow him to address elements of subjectivity in his study. Wider reading, as well as his engagement with the data throughout the investigation, prompted the author to question his original position and

revisit the theoretical perspective that was underpinning his approach. It was in particular his heightened awareness of his own role as a 'research instrument' that made him question the 'quasi-objectivist' notions that were inherent in the original framework of grounded theory he had intended to follow. As his theoretical knowledge of research methods, as well as his confidence as a researcher grew, he started to be less concerned with acknowledging these elements of subjectivity. This was part of the research process. The research he conducted was still valid and valuable. But it needed to be clear about what it was and what it was not. The search for a more conciliatory approach to grounded theory constituted part of the personal learning and that took place throughout this study. As the author got more involved in the research process itself, he started to better appreciate these finer points about the process. Eventually, this led to the adoption of a more constructivist approach to grounded theory method. This had been championed by more recent followers of grounded theory method, and in particular Charmaz (2006), who advocated constructivist notions of grounded theory method for similar reasons. The following section outlines the key tenets of constructivist grounded theory, which has emerged as a more 'conciliatory' qualitative research method over the recent years. It also provides a rationale for the use of this approach in this study.

4.2 Constructivist notions of Grounded Theory

Questioning the objectivist notions inherent in the original conceptions ofgrounded theory method, constructivist notions of grounded theory emphasise the role of the researcher as an interpreter (Charmaz, 2000, 2005). Challenging the inherently objectivist and positivist notions of Glaser and Strauss (1967) as well as Strauss and Corbin (1990, 1998), Charmaz (2005) emphasises that new directions in grounded theory would have to take interpretive and constructivist epistemologies into account.

> In divergent ways Strauss and Corbins' works as well as Glaser's treatises draw on objectivist assumptions, founded in positivism. Since then a growing number of scholars have aimed

> to move grounded theory in new directions away from its positivist past. I share their goal to build on constructivist elements in grounded theory …. We challenge earlier assumptions about objectivity, the world as an external reality, relations between the viewer and the viewed, the nature of data and the authors' representations of research participants. (Charmaz, 2005, p.509).

Charmaz' (2005) apparent uneasiness with the underlying epistemologies of objectivism and positivism associated with grounded theory is shared by Dey (1999) and Thomas and James (2006). Additionally, these authors identify the emphasis on procedure to be a potential barrier to the achievement of research aims that relate to the realm of interpretative research. Commenting on the role of procedure in original grounded theory method research, Thomas and James (2006) question the assertion that rigid procedures are suitable to provide the explanatory framework for qualitative inquiry. They level strong criticism at the analysis framework, which they regard to be over-bearing and counter-intuitive to the art of naturalistic, interpretive research:

> To use grounded theory involves a rejection of simple understanding. It entails an explicit denial of what we know and our ways, as practitioners (and as human beings), of making sense. For grounded theory elevates a certain kind of thinking while it demotes and eschews other kinds of thinking and understanding. In its hankering after order—with its fracturing, its axial coding, its categories and subcategories—it seeks to impose a certain kind of patterning, shape, and even rationality. Via such procedures it thereby relegates the original voice—the narrative—of both the respondent and the discussant in the research exercise. By the superimposition of method, and the ultimate production, supposedly, of theory, it implies a dismissal of the direct validity and import of people's accounts (Thomas and James, 2006, p. 790).

Whilst Thomas and James (2006) take an un-compromising stance towards the analysis procedures of grounded theory, others appear to be able to reconcile these tensions at least to some extent. Harry et al. (2005) for instance acknowledge the role of the researcher, who in educational research frequently is not only an expert, but also an insider. They too emphasise that interpretive and constructivist processes involved in the creation of understanding are essential to the research process, but do not

see this to be irreconcilable with an evolved framework of constructivist grounded theory. They argue that the combination of prolonged engagement in the field in combination with the testing of emergent theory can lead to trustworthy research processes and outcomes. Charmaz (2000, 2005) identifies this to be one of the core postulates of constructivist grounded theory method research. The evolution of grounded theory from its objectivist origins towards a more modern, constructivist version is also accepted by Corbin (2008), who sees this as a natural development. In her analysis of the relevant changes that occurred over recent years, Corbin (2008) summarises the differences between the old and the new:

> In the old days it was not unusual to hear ideas such as:
>
> a. Theory is embedded in the data. The theory was that, if the researcher is sensitive and looks hard enough at the data, theory will emerge, the key word being “emergence”,
> b. A researcher should remain “objective”, at least to some degree, when collecting and analysing data.
> c. At all cost, a researcher should avoid “going native” (adopting the stance of or getting to close to participants). (Corbin, 2008, p. 36)

In her analysis, Corbin (2008) acknowledges that postmodernist views of qualitative research have also affected grounded theory, introducing more interpretivist and constructivist notions to grounded theory. These relate in particular to a softened stance on notions of objectivity and researcher involvement in the research process and ultimately in the generation of resulting theory.

Despite these acknowledgements, many authors maintain that some of the original principles of grounded theory hold true to date, especially those that emphasise the importance of structure in the process of data analysis (Corbin, 2008; Flick, 2007; Morse et al*.,* 2008). It is this aspect of structure in data analysis which has attracted many qualitative researchers to employ grounded theory methods for their studies, forcing Thomas and James (2006) to concede that grounded theory method studies continue to influence the research approaches to a significant number of qualitative research studies, including many in PE research. The following chapter sets out the principal considerations that underpinned the design of this study.

4.3 Constructivist notions of grounded theory and the role of the researcher

In its conception this study was more aligned with interpretive and constructivist notions of grounded theory, as advocated more recently by Charmaz (2005, 2006, 2008), in that he acknowledged the involvement of the researcher and his potential impact on the study. This impact could relate to data collection, as well as its analysis and interpretation (Charmaz, 2008; Morse et al*.,* 2008). The researcher had to remind himself that he was in the position of an insider on the course that he investigated. This position gave him privileged knowledge of the participants, as well as the mentors and the school partnerships that were part of this study. The researcher had existing professional experience in the field of study, and the personal values and perspectives he had developed over this time were likely to have some impact on how he made sense and evaluated aspects of the investigation. Such knowledge might prejudice the interpretation of certain aspects of this study. On the other hand, it could also be seen as helpful in the process of making meaning of the data by providing useful contextual background (Thomas and James, 2006). In agreement with Harry et al*.* (2005), it is important to reflect upon personal viewpoints and professional experiences and consider their potential influences on data gathering and analysis. It would also be important to consider the role of the researcher during the final stage of interpretation, the actual writing up of the findings. It would be during this stage when the researcher was likely to have a final impact on the study through the construction of the narrative that would represent the outcomes of this study (Sparkes, 2002).

The study intended to explore the experiences of pre-service teachers offering them a voice in so doing. Such an approach to data representation is often highlighted to be an asset of qualitative research in general, yet not always of grounded theory method studies in particular (Thomas and James, 2006). The following sections intend to give an

overview of how the considerations outlined above influenced the design and the choice of the methodological tools that were used to conduct it.

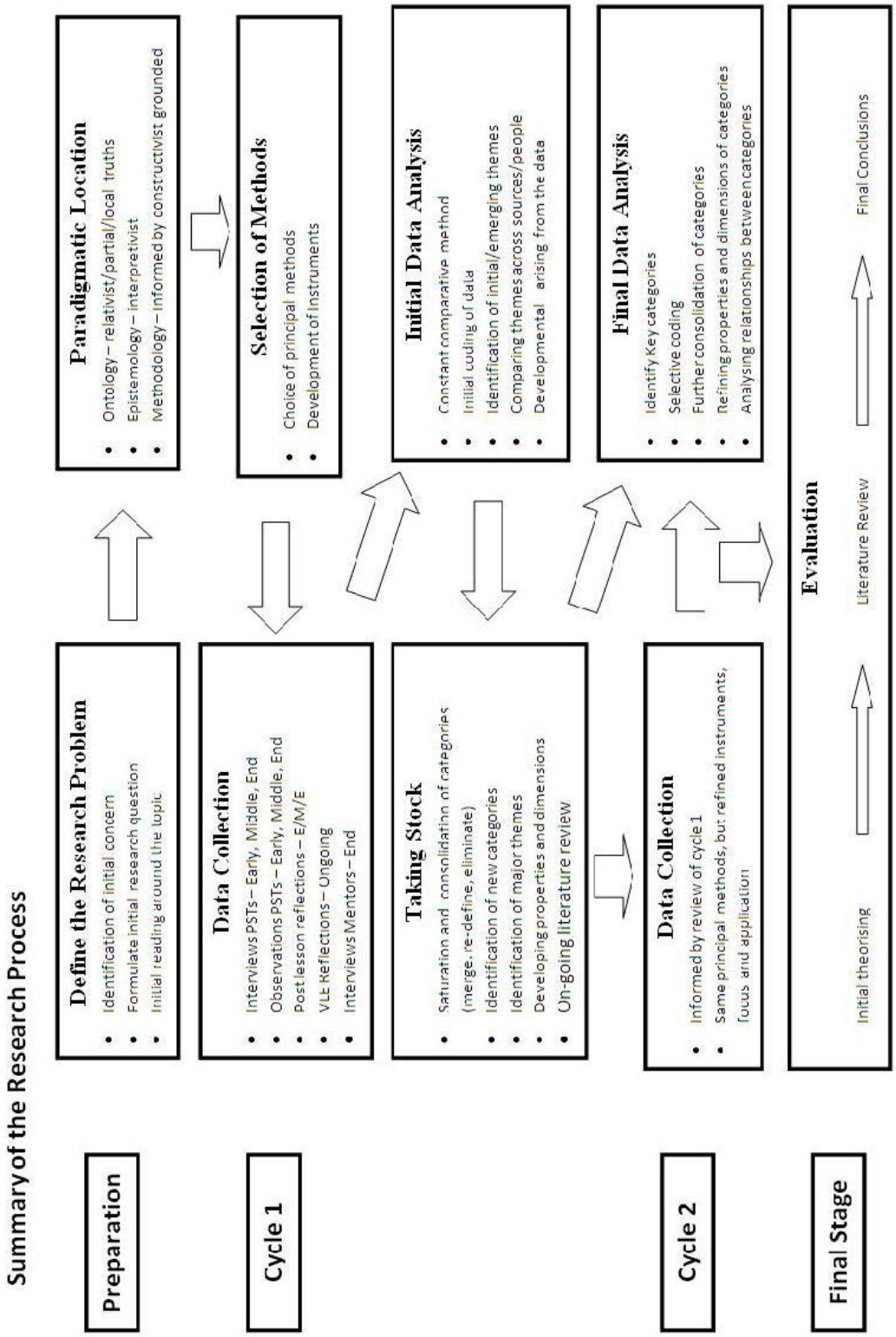
4.4 Design and principal methods

The desire to place pre-service teachers at the core of this study was reflected in its methods. In line with the research methodology literature, interviews were deemed to be one appropriate method to gather rich and personalised narrative from the participants (Flick, 2007). Figure 4.1 denotes a summary of the research process in this study.

In-depth interviews with pre-service teachers, which explored how significant experiences during their PETE course had affected their development of knowledge, formed a central part of this study. In addition to interviews, the study used lesson observations and post-lesson reflections with pre-service teachers as complementary methods of investigation. Supplementary evidence was derived from pre-service teachers' contributions and reflections on the University's Virtual Learning Environment (VLE).

To gain a more holistic picture of the pre-service teachers' development, additional interviews were conducted with pre-service teachers' school-based mentors. This allowed for the capture of mentors' perspectives on aspects of the pre-service teachers' construction of knowledge. Supplementary documentary evidence such as application documentation, and subject knowledge audits were collected and consulted to gain additional information, together with background information on individual pre-service teachers' skills profiles. This meant that the data gathered was from genuine activities that were naturally occurring throughout the duration of a PGCE course.

Figure 4.1 **Summary of the research process in this study**



This use of multiple methods to gather data, frequently referred to as ‘triangulation’, was deployed to widen the sources from which data was derived, strengthening confidence in the research findings (Bryman, 2004).

A relevant concern that needed to be addressed centred on the researcher’s position as a teacher educator on the PGCE course in this study. The potential implications of this are discussed in the following section.

4.5 The researcher-participant relationship: ethical considerations and potential impact on research findings

Any research raises ethical considerations and the nature of the researcher-participant relationship must be considered carefully to ensure that potentially adverse impact on persons is avoided (Allan and Skinner, 2002; Flick, 2007; Patton, 2002). In many qualitative research designs, the researcher-participant relationship can also have a bearing on the results of the study (Mitchell, 2010). Due to the sometimes closer and more personal relationship between researcher and participant, which can be inherent in some qualitative research studies, the researcher should be aware of the nature of this relationship and ensure that the impact on participants as well on the outcome of the study is minimised (Mitchell, 2010; Ritchie and Lewis. 2003, Smyth and Williamson, 2004).

Since the relationships between pre-service teachers, mentors and the researcher were inter-connected within the framework of the course, potential issues and consequences arising from these relationships had to be considered. Given his role as a teacher educator on the course, the researcher had an ‘insider/outsider’ status (Minichiello et al., 1995, p. 182), cited in Chambers and Armour, (2011b, p. 533). His knowledge of the participants outside the formal boundaries of the research activities afforded him an insight beyond the research activities that were designed specifically to collect data for this study. However, it also placed him in a position of

authority that would have potential repercussions during the process of data collection. As Chambers and Armour (2011b) point out, the inter-connectedness between researcher/university tutor, pre-service teachers and mentors also has an emotional dimension, which has to be acknowledged throughout all stages of the study. The formal relationship between the pre-service teachers and the researcher in his role as university tutor had potential ethical dimensions which also needed to be considered.

In their ‘Revised Ethical Guidelines for Ethical Research the British Educational Research Association (BERA, 2004) highlights a number of ethical considerations that need to be made in such circumstances. As a first step to address potential ethical problems within such study designs, BERA (2004) notes the importance of obtaining voluntary consent from participants prior to the study. They emphasise the need to inform the subjects fully about the research process and all aspects of their involvement.

The methodology of the study considered these issues and was approved in accordance with the ethics guidelines of Loughborough University. The researcher addressed the need to inform participants thoroughly about all aspects of this research, prior to the commencement of the study. The study and its purpose were introduced by the researcher to the whole PGCE cohort at the beginning of the academic year. Details of the potential involvement in the study were presented and safeguarding procedures were explained. The pre-service teachers were also made aware of the potential benefits that they could gain from opportunities to reflect on their teaching during the participation in the study. They were given the opportunity to consider their participation in the research and those interested were invited to return signed consent forms to the researcher. The researcher also offered the opportunity for further questioning about the involvement in the study on a one to one basis.

The majority of pre-service teachers in both years indicated their preparedness, in principle, to participate in the study and signed and returned a consent form to declare their willingness to take part in the investigation. From these pre-service teachers, six participants per year

were chosen. The final choice of participants was in part purposive and in part opportunistic, taking into account the pre-service teachers' individual knowledge and experience profiles, the allocation of school placements as well as their perceived motivation to participate.

Throughout this process the researcher was sensitive to the power relationships between the different parties, and the potential effects these might have. The potential for tensions and conflict in research involving teachers, their colleagues and students is highlighted by BERA (2004) guidelines:

> Researchers 'must consider the extent to which their own reflective research impinges on others for example in the case of the dual role of teacher and researcher and the impact on students and colleagues. Dual roles may also introduce explicit tensions in areas such as confidentiality and must be addressed accordingly' (BERA, 2004, para. 11).

The most sensitive aspect of this was the formal relationship between the researcher and the pre-service teachers in this investigation. Clearly, the pre-service teachers entered the course of study with the intention to pass the course and achieve QTS (Curtner-Smith, 2001) and the role of the researcher in this process had to be considered carefully. Since the researcher was in a position of formal authority with regards to the teaching and assessment of the course, pre-service teachers may have felt coerced into first consenting and then participating in the study. If pre-service teachers had felt that participation or lack of participation would lead to negative effects, and in particular regarding outcomes of assessment, this could have affected their participation. It could also adversely influence the results of the study.

In order to judge the potential impact of this relationship, the researcher carried out an initial assessment. An analysis of actual achievement statistics on the course was undertaken. This indicated that the likelihood of candidates failing to achieve QTS and not passing the PGCE course was effectively very small. During the three years preceding the study, achievement and employment statistics for the course had been 100%, possibly a consequence of rigorous selection processes and beneficial employment market circumstances. During these years only a

very small number of students (4) had been issued with letters of concern, highlighting that they needed to make improvements to pass the course. These letters had been based on borderline performances during teaching in SE2 where concerns had been raised by school-based mentors. These pre-service teachers had subsequently achieved their targets and passed the course.

These cases also highlighted the fact that it was the school, and especially school-based mentors, who were most influential in the aspects of assessment that could potentially lead to failing the course. Participation in this research was unlikely to lead to any significant detrimental assessment outcomes for the participants. It was also made clear that pre-service teachers' participation was voluntary and that participants could at any stage withdraw, without any consequences for their progress on the course.

Another potential impact concerned the trustworthiness of the research data. The dynamics between researcher and interviewee and the tensions that can result from this relationship have been recognised as a potentially significant influence, especially during qualitative interviewing (Hammersley, 2003; Holstein and Gubrium, 2004). Pre-service teachers' actions might, in some instances, have been influenced by the desire to please the researcher, resulting, for instance in a reluctance to criticise aspects of the course. The researcher tried to counteract this by re-assuring pre-service teachers (as well as school-based mentors) and encouraging them to enter into their reflections in a spirit of openness, constructive critical thought and confidentiality. Given that the majority of pre-service teachers' reflections centred on their own learning and learning experiences, though much of the interview content was not directly influenced by the formal relationship between the researcher and the participants. The design of the study made it probable that many of the pre-service teachers' reflections during the earlier interviews would be linked to the school-based learning context. This again reduced the likelihood of influence of the researcher-pre-service teacher relationship.

It was also decided that participants would be invited to reflect upon the University-based contributions to their learning during final interviews,

which occurred right at the end of the study, after they had passed the course. Pre-service teachers could, of course, relate to any University-based learning experiences during any stage of the research process, and frequently they chose to do so, but there would be no major emphasis on this until they had finished their course.

Despite the precautions above it was still possible that pre-service teachers' answers might have been influenced. The researcher did everything he could to facilitate an atmosphere in which open and critical reflection could be undertaken without anxiety or hesitation. It was not expected that the design of the study exposed the participants to significant psychological stress or risk.

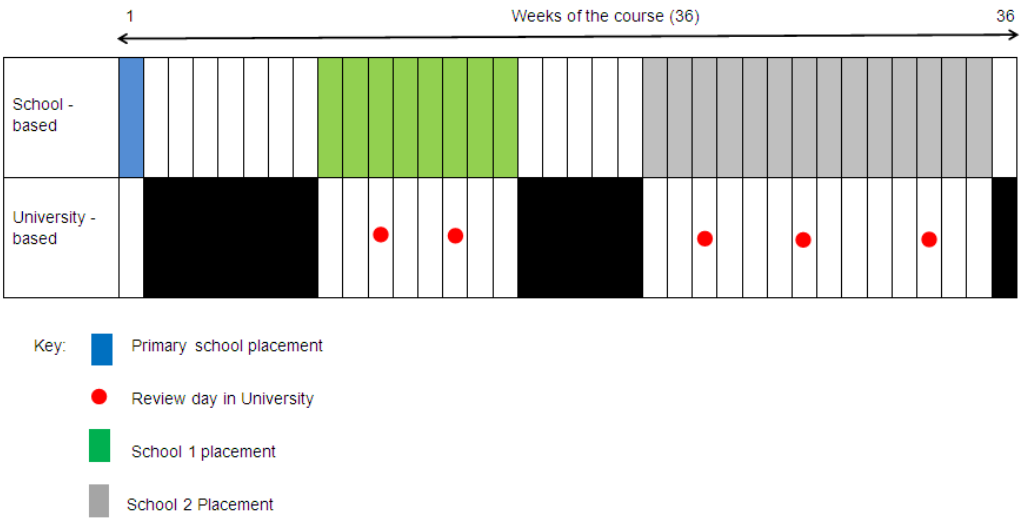
It was also acknowledged that, in some instances, the participants might offer information to the researcher during the course of the interview, which they might later regret (Ritchie and Lewis, 2003). Participants were therefore given the opportunity to check their contributions. This presented them with the opportunity to have any aspect of their contributions that may have made them feel uncomfortable, withdrawn. The researcher did not engage participants in any further reflections about their interviews. This was a conscious decision as the researcher wanted to capture pre-service teachers' unadulterated reflections at that instance in time. No objections to the interview transcripts were in fact raised and scripts were used verbatim, as originally transcribed.

Incidentally, the pre-service teachers who participated in this study also were prepared to participate in follow up research concerning their professional development as teachers. Six pre-service teachers subsequently participated in interviews relating to their progress during their NQT year (relating to a different research project). It was therefore concluded that pre-service teachers had been comfortable with the arrangements of the research process. Before discussing the actual involvement of the participants in this study, the next section aims to provide some background information on the course setting, in which this research took place.

4.6 Background to the structure of the PGCE course

The PGCE course in which the study was located was 36 weeks long and comprised a 24 week school-based and 12 week University-based learning experience, as illustrated in figure 4.2. Before the start of the programme, those candidates successful at interview were issued an individual action plan of development activities that were aimed at addressing areas of subject knowledge deficits that were deemed to be relevant to their progress on the learning programme. At the start of the course, an enhanced individual subject knowledge audit was conducted, during which candidates were asked to reflect on a wide range of experiences that were deemed to be relevant to the teaching of Secondary PE. Pre-service teachers were encouraged to produce individual action plans that were subsequently reviewed twice over the period of their course. This process was concluded with their personal action plan for the transition into NQT status.

Figure 4.2: PGCE PE Programme Structure



Initially, pre-service teachers engaged in a one week primary school placement, during which they undertook a range of designated observation and learning experiences that were to enhance this introductory part of the course. This was followed by a period of five weeks University-based

learning designed to primarily prepare pre-service teachers for the first teaching placement. It combined aspects of general pedagogical theory, and sport pedagogy with sport-practical workshops and seminars that were aimed at developing PCK and CK in a holistic manner. University-based lectures on whole school issues were conducted on Wednesdays and included the whole cohort of University PGCE students exploring relevant matters of pedagogy, education and learning. PE specific lectures, seminars and workshop focused on subject-specific development of knowledge and skills, related to such things as the NCPE, domains of learning and lesson planning, assessment for learning, the inclusion spectrum and the spectrum of teaching styles. Games-related workshops were designed along more holistic lines, exploring general concepts and strategies of teaching games, rather than focussing on the development of content knowledge in specific activities, such as basketball and hockey. However, opportunities to develop such knowledge were available throughout the course. More general concepts of games teaching included for instance teaching approaches to using various instructional models of teaching. The games element of the first placement also culminated in a Mini-festival, organised by the students. Alongside this, activity specific practical sessions in gymnastics, dance and swimming were also facilitated.

Following the first five weeks of University-based learning, an intensive week of micro-teaching and reflection (Serial Practice) in two different schools introduced pre-service teachers to school-based practices and policies, as well as intensive days of planning, teaching and reflection in two different schools, set in the context of games and gymnastics and dance respectively. Following one more week of University-based learning, pre-service teachers then participated in their first school-based placement. During this, it was stipulated that pre-service teachers would be observed and provided with feedback from teachers for every lesson, with one lesson designated for extended formal written feedback. Pre-service teachers were also required to formally plan and evaluate every lesson they taught. A formal meeting with their school-based mentor was convened each week at which targets for development were agreed for the next teaching week. Contact with the University tutors was facilitated via the University VLE, and

at least one formal visit during placement one and two formal visits during placement two was made by University tutors to support the school-based learning process. At the end of the placement, there was also a review that highlighted progress of pre-service teachers against QTS standards and specific areas for development. During a transition meeting, facilitated at the University, mentors from School 1 and School 2 also met with the pre-service teachers and University tutors to discuss pre-service teachers' progress and specific learning needs and targets for SE2.

During the second period at University additional pedagogical concepts and notions of curriculum organisation and design were explored. Alongside this were a series of practical workshops and seminars led by pre-service teachers. Pre-service teachers continued to develop context-specific aspects of CK and PCK, for instance in relation to those activities they were exposed to as part of their phase two teaching placement. Additionally, pre-service teachers were offered the opportunity of gaining several related teaching and officiating qualifications. These workshops had additional value by modelling best practice, for example, using ICT to enhance assessment for and of learning. In addition, an intensive course related to teaching Health and Fitness was facilitated by a leading specialist from another University.

Following the second period of University-based learning, the longer, 14 week placement adopted similar approaches to the development of target setting and review established in SE1. A mid-way progress review was also part of this placement, to provide pre-service teachers with a more formal record of their progress towards the course goals and QTS. Individual action planning, enhanced lesson planning and target setting were some of the processes used to ensure that pre-service teachers were able to progress in line with their individual capabilities and needs. Academic assignments analysing their school-based experience through reflection were part of this phase. Pre-service teachers' learning continued to be supported via the VLE throughout the second placement, allowing for a venue for pre-service teachers' experiences and best practice to be shared. The course concluded with a final week of University-based learning, incorporating elements of reflective learning, as well as

administrative, compulsory activities, such as action planning and target setting for pre-service teachers' transition into their NQT year.

4.7 The participants and their involvement in the study

The pre-service teachers who participated in this study were recruited from a range of Undergraduate course from Universities across England. All pre-service teachers had been academically successful on their courses, holding good Honours degrees with a classification of 2.1 and higher. All pre-service teachers had some school and coaching experience, as well as a range of additional coaching qualifications that had to be obtained as part of the conditional acceptance onto the course. The age range of pre-service teachers was between 22 and 26 years. The cohort were relatively inexperienced with respect to teaching PE in schools and the work place environment, beyond their academic study, with the exception of the eldest individual.

The participants studied on two PGCE courses in secondary PE during the academic years 2006-7 and 2007-8. In order to allow pre-service teachers to settle into the course and to get to know the researcher as a University tutor, as well as a person somewhat better, it was decided not to introduce the study right at the beginning of the course. It was hoped that, as pre-service teachers were settling into the course and into their learning, they would feel less obliged to please the University tutors, than might have been the case right at the beginning. Whilst pre-service teachers were made aware of the intentions of the University tutor to conduct some research during the course of their study, the actual introduction of the study to the group was undertaken only after the completion of week three on the course, during both years of the study. At this stage, pre-service teachers had been inducted into the organisational and philosophical underpinnings of the course.

The researcher introduced the project to the whole group in a seminar setting and explained the purpose of the study, as well as the involvement of the participants in detail. The researcher explained the potential commitment for those who would fully participate in the study, as well as the

potential benefits they might gain from their participation. The researcher also made it clear that participation in this study would not affect the pre-service teachers' entitlement on the course, and that all activities related to the study would be in addition to the learning activities that were designed to form the core of their programme. Pre-service teachers were also re-assured that participation in the study was not assessment sensitive and that any findings and observations related to the study would be treated in strictest confidence, both with respect to their school-based mentors and schools, as well as with respect to other University tutors. Furthermore, pre-service teachers were reassured that they would have the opportunity to member check all transcripts of their interviews and to raise any concerns that may relate to the content of these narratives. They were also told that there would be no publication of any findings until after they had completed the course of the study. Moreover, it was made clear that it would be possible to withdraw from the study at any stage. From the pool of volunteers, six participants per year were chosen. The final choice of participants was in part purposive and in part opportunistic, taking into account the pre-service teachers' gender, individual knowledge and experience profiles. It also relied on their placement allocation having a suitably experienced mentor, who was willing to participate in the study.

In this, pre-service teachers' learning needs were considered first and foremost, as allocations for school placements were made. Twelve pre-service teachers (six male, six female) and their school-based mentors (six male, six female) were finally selected. The mentors selected were those who supervised the pre-service teachers during SE2 (the longer, 14 week placement). The mentors in this study were all experienced PE teachers (7-24 years), as well as PGCE mentors (3-8 years) with the University. All mentors in this study had received University's mentor training and had also been part of regular partnership meetings and other activities that formed and integral part of the PGCE programme.

Pre-service teachers agreed to participate in three tape-recorded interviews during different stages of the course: early stage of the course (after SE1), mid-stage of the course (half-way stage of SE2) and at the end of the course. During these interviews themes relating to their experiences

of teaching and their development of knowledge for teaching, especially 'PCK' were explored. The interview schedule was flexible and the flow of the interview was intended to give the participants the opportunity to discuss their viewpoints, feelings and beliefs without being restricted by the interview framework (Richie and Lewis, 2003). Pre-service teachers also agreed to participate in three lesson observations (1/SE, 2/SE2) including post-lesson reflections. Interviews with mentors were conducted towards the end, or shortly after the end of the course.

In addition to this, weekly reflections on the University's Virtual Learning Environment were used as a supplementary source of information. These were part of the PGCE course and centred on pre-service teachers' experiences during school placements. On certain weeks a specific focus for reflection for all trainees was identified by the course tutor. The topic of this was informed by previous posts and analysis of research data.

All subjects participated in all research activities, thus providing full data sets as envisaged at the outset of the investigation. The sources of data used were consistent with the activities that naturally occurred throughout the duration of a PGCE course. The following section expands on the rationale for the key research instruments that were utilised and gives an overview of how they contributed to this study.

4.8 Interviews

The importance of interviews in qualitative research is well established (Silverman, 2005). Fontana and Frey (1998) suggest the interview to be a suitable and established method of data collection and describe it to be one of the most common and powerful ways to try to understand what human beings think and feel. Interviews can enable the researcher to collect relevant and rich data on specific topics, happenings, events, views or feelings (Rubin and Rubin, 2004). It is a key concern of the interpretive paradigm to understand the fundamental nature of the world at the level of individual and subjective experiences and interviews are a suitable way to achieve this end (Sparkes, 1992). It was for this reason that

interviewing was chosen as the principal method of the data collection for this study.

Interviews can vary significantly in style and structure and it is important to consider the impact that this may have on data collection. Interviews vary from very formalised and structured at one end, to informal and unstructured at the other (Bell, 2005; Bryman, 2004) with semi-structured interviews taking up the middle ground (Robson 2002). Semi-structured interviews were chosen for this investigation, since they offered a suitable compromise between structure and flexibility. On the one hand, a number of topics needed to be explored in order to gain relevant data relating to the two key research questions. On the other hand, the author also needed to allow for sufficient flexibility to give the participants the opportunity to express their views and to let themes emerge from their narratives.

Bryman (2004) associates a seeming lack of structure to be one of the distinguishing features of truly qualitative interviewing. This approach is seen to be of particular value where studies are concerned with interpreting processes and phenomena that are related to the participants and/or their communities (Rapley, 2007; Rubin and Rubin, 2004). This fitted with this study which explored both participants' reflections on their own learning, and which was also interested in exploring the potential impact of social networks, such as CoP.

The interviewing approach for this study was not directive. There was no pre-determined sequence for questions and individual responses influenced the direction of the interviews. In this type of interview, the researcher and the participant explore themes and topics in a more general and holistic way. Whilst the researcher may attempt to uncover the participant's views, feelings and perspectives, the participant is allowed to frame and structure the response in their own way, potentially taking charge of the direction the interview may take at various stages of the process (Bryman, 2004; Fontana and Frey, 1998; Mason, 2002).

The researcher therefore used more open-ended questions and invitations for reflections. Whilst the researcher had some issues that he wanted to explore, he was also prepared to let the conversation develop

freely. As Robson (2002) points out, less structured interviews frequently have a tendency to be more informal and sometimes completely informal in nature. The researcher aimed to establish an atmosphere that characterised a conversation, in which both parties could learn something about the subject matter in question. In pursuing this, he tried to be informal but professional, interested but also non-judgemental in his approach. It was hoped that important issues would emerge from the more unstructured reflections of participants. Pointed omissions in connection with topics would also have to be considered.

The researcher used flexible interview guides (see Appendices E-G) for this study (Bryman, 2004). These contained the principal areas for discussion that he intended to explore and he continued to check off particular areas as they were explored throughout the process. This was not necessarily achieved in any particular order. There was also no insistence as to which depth specific areas needed to be explored. The researcher tried to make educated guesses as to when a topic had been sufficiently discussed. At times, individual interviewees would expand in some detail on an area, when others had not so much to say about the same topic. This was interpreted to denote the difference in their individual perceptions of the importance attached to aspects of their learning experiences.

Methodological challenges during such interviews may arise from potential lack or loss of direction. This happened at times, when the interviewer allowed the conversations to transgress into areas that were not of primary concern to the study. Cleary, the skill of the interviewer is crucial in this type of approach, demanding high levels of flexibility and competence. Nevertheless, the adverse impact of ‘transgression’ is counterbalanced by the wealth of valuable data that these interview approaches can produce (Bell, 2005).

A further challenge of such a flexible approach lies, as Seale et al. (2007) observes in maintaining sufficient flexibility whilst not compromising the integrity of the interview. To this end, the interview guides provided the structure of the conversations.

In line with Rapley's (2007) suggestion, the researcher also consciously followed up the interviewee's responses or perceived gaps within these through additional questions. These provided a more detailed and informative narrative, which in turn facilitated a meaningful interpretation of the participant's point of view (Fontana and Frey, 1998; Rubin and Rubin, 2004). The researcher was aware that his selection of questions had an influence, as did a decision to follow up a specific point or to move the conversation on to the next topic. The researcher made a conscious effort to encourage extensive answers wherever this was possible (Bryman, 2004).

The analysis of interviews undertaken during the early stages of the study was used to identify further areas of interest for the investigation (Glaser, 1998). Ongoing analysis and evaluation continued to inform this process, leading to some adaptations of the interview structure, also informing the development of the interview guides for subsequent cycles of interviews. Introductory questions were, however, kept constant in order to achieve a reasonably uniform entry to the exploratory stages of the interviews. During Interview 1, for instance, the interviewer would invite the interviewees to start commenting on their motivation to become a PE teacher. This was intended to provide interviewees with an unthreatening opportunity to take control of the initial stage of the interview. Subsequent questioning would be derived from this response. The following section is an example of introductory exchanges during Interview 1:

Interview 1: George

> ***Researcher:*** *So you have gone through the first school placement now George and from what you've told me you are quite happy with how things have gone so far. That's good news, obviously. Now, before we start talking about your experiences on placement, I would be really interested in finding out a little bit more about the reasons why you have decided to become a PE teacher. Perhaps you could start talking about that a little bit to get us into the swing of things and then we will take it from there.*
>
> ***George:*** *I've always loved sport as a kid and still do, and I played loads of pretty much anything that I could get my hands on, and I was always very much encouraged by my parents. I*

really believe in the value of sport in terms of children's development. And how it has so many different things to give you, not just playing the sports but teamwork and all of those sorts of things as well and it gives you unique things that some other parts of education just don't offer and so I really believe in its place in every single person's life.

Researcher: *Can you still pin down, who or what has had the biggest influence on your decision to take up teaching, or is that perhaps not so easy?*

George: *Primarily I was inspired not until quite late really by my A-level sports studies teacher, who I thought was really good, I thought she was awesome. She taught me loads and even though it was a subject that was pretty easy because it was in its infancy then and she was just a really good teacher and she had a really good balance of being very firm but she was also very contactable and warm as well, and she just inspired me to go on. I had other good teachers but she was the one that mainly, certainly in the sporting area, really made me think that that was what I wanted to do.*

After the explorations of personal background, beliefs and motivation to go into teaching, 'Interview One' moved into an exploration of those factors that pre-service teachers thought to be important to be an effective teacher. This, in turn, frequently provided a springboard to explore their views about the importance of different aspects of subject knowledge for teaching. The phrasing of questions invited interviewees to comment on issues.

Care was taken not to use leading questions that might prompt interviewees to answer one way or another. During the early stages of the research, the interviewer had for instance a particular concern about the phrasing of questions relating to areas of knowledge for teaching. He was especially sensitive to the use of the term 'subject knowledge', being aware of the larger discussion surrounding the ambivalence of terminology in this field. For instance, when pre-service teachers and mentors used the term 'subject knowledge', they frequently referred to aspects of 'context specific content knowledge'. Most used the term 'subject knowledge' to describe aspects relating to the activity specific, practical content knowledge of major activities commonly found in the PE core curriculum, such as gymnastics, dance, rugby, netball or swimming. When using the term 'subject

knowledge' in relation to aspects of teaching 'theory', they would qualify this by using phraseology such as having 'subject knowledge' for teaching GCSE, A-level or BTEC courses. The analysis of the early interviews reduced concerns about the use of variable terminology. The opinions and meanings intended to be conveyed by interviewees became clear through the analysis of the narrative itself.

The opening question for Interview 2 invited interviewees to reflect on their experiences during SE2 and compare these to experiences from SE1. Particular care was taken to ensure that this would allow the interviewee to compare without bias, not feeling pressure to favour differences or commonalities.

The opening adopted for Interview 3 invited the interviewees to start with a general reflection on their progress throughout the year, before progressing to other major themes. This final interview was not only interested in establishing the progress that they had made to this point. It was its intention to explore in some depth, which factors, processes and people had influenced this learning. Throughout Interview 2, the influence of various CoP on pre-service teachers' development of knowledge had become particularly apparent and opportunities to reflect on this were therefore also provided consciously in Interview 3. Responses were of variable depth and scope and probes continued to be deployed in order to ensure that clarification and elaboration of meanings satisfied the requirements of the study (Denscombe 2010; Sands, 2002).

At the end of each interview, time was left for the respondents to make any further comments they felt appropriate about the topics discussed or to add any observations they perceived to be of interest. This part of the interview allowed the interviewees another opportunity to reflect on what was being discussed. One of the limitations of gathering data from pre-service teachers' interviews was that these only reflect the viewpoints and perceptions of the interviewees. To provide additional perspectives interviews with mentors were also conducted as part of this study.

The interviews with mentors had three main purposes. First, they were to establish mentors' perspectives of mentoring as well as of teaching in PE. The exploration of mentoring and teaching practices was to provide a

contextual background to the experiences that affected pre-service teachers in this study. Second, mentors' views about the established practices within their PE departments were explored. In the context of the data generated through Interview 2 with pre-service teachers, in particular, this was intended to shed further light on the legitimised practices within PE departments. Third, mentors' views on the development of the pre-service teachers' knowledge were also sought. The approach to interviewing the mentors was the same as already described above.

It was also felt that it would be useful to ascertain pre-service teachers' progress through the observation and analysis of their knowledge in action. To this end teaching observations and post-lesson reflections were deployed. Post-lesson reflections would also allow for an exploration of the thinking that underpinned the application of this knowledge. The following section describes how these lesson observations and post-lesson reflections were used to gain information on pre-service teachers' development of knowledge for teaching.

4.9 Lesson Observations and Post-Lesson Reflections

Lesson observations and post-lesson reflections were chosen to generate additional data and to provide triangulation for this investigation, thus strengthening the validity of its findings. Mulhall (2003) distinguishes between structured and unstructured observation and notes that unstructured observation is most commonly used for studies that are located in an interpretive or naturalistic paradigm. A further distinction in the research methodology literature is made between participant (frequently ethnographic) and non-participant observation (Robson, 2002; Richie and Lewis, 2003). Observation constitutes a useful tool in PE research, since it provides a means to investigate the tripartite relationship between teacher, pupil and content, which is at the core of situated learning (Armour, 2011; Hastie, 2000; Metzler, 2000; Perlman and Karp, 2010; Wallhead and O'Sullivan, 2007). These methods were included in order to gain a view of

pre-service teachers' development in addition to that revealed by their interviews.

Teaching observations and post-lesson reflections are an established learning tool within PETE. Lesson observations are habitually discussed with pre-service teachers, usually as soon as possible after the conclusion of the lesson. This allows for the pre-service teacher and mentor or University teacher educator to explore aspects of the observed teaching, and determine future actions for development. This study utilised the process of teaching observation and reflection for its research purposes.

Previous studies which have investigated teaching and learning in PE and PETE have pointed out the need to consider the impact of classroom ecology on the outcomes of observations (Hastie, 2000; Hastie and Siedentop, 1999; Silverman et al. 1998). Didactics research recognises that, even without any problems relating to teacher managerial systems or student social systems, there is frequently a disparity between teacher intentions for learning and the content that is actually learnt by the pupils (Amade-Escot, 2000; Wallhead and O'Sullivan, 2007). Some systems of analysis (Amade-Escot, 2000, 2005) are not interested in researching learning events which are distorted by dysfunctional classroom ecology (Wallhead and O'Sullivan, 2007).

The above considerations were also relevant to this study. Decisions about the observation procedure had to be made. One question that needed to be addressed was how to choose which lessons should be observed. A number of parameters could have had a potential influence on the nature of the lesson to be observed. These included for instance age group, field setting (outdoor/indoor/classroom), type of activity and not least the perceived relationship between the pre-service teacher and pupils. Selecting the lessons was also influenced by more opportunistic considerations, such as availability of the pre-service teacher to conduct the post-lesson conference. In order to ensure an element of consistency for the observations across the study, a number of parameters were set as follows.

It was decided to limit the field setting for observations to practical field settings, with no inclusion of classroom-based observations. There

was, however, no restriction on the type of activity that was to be included. A restriction to practical field settings in observations did not mean that theoretical concepts would be excluded. The pursuit of learning across different domains was explored during post-lesson reviews.

All first observations were conducted with Key Stage 3 (Year 7-9) pupils, which mirrored common observation practice on the PGCE course. It was expected that pre-service teachers' behaviour management skills would inevitably have some influence on the lessons to be observed. Lessons that might be very significantly influenced by behaviour issues were avoided. This was in line with the tenets of didactic analysis (Wallhead and O'Sullivan, 2007). All lessons to be observed were agreed prior between the researcher and the pre-service teacher.

The observation strategy was based on an open framework of non-participant observation (see Appendix H for schedule). During stage one of the observation, the researcher and pre-service teacher would have a brief and informal meeting, during which the key parameters for the lesson were discussed. This phase was also used to explore any key concerns or specific issues that the pre-service teacher might want to share with the researcher. The tone of this pre-lesson conversation was informal and the researcher sought to re-assure the pre-service teacher in order to minimise the potential tension that might arise through the process of being observed. In stage two, the researcher studied the planning documentation for the lesson and start taking down initial notes and potential questions arising from this. In stage three, the researcher observed the lesson and took concurrent, detailed descriptive notes in a free form format.

To facilitate this, an unstructured observation instrument was used. The researcher took detailed, hand written field notes, structuring these through sign posts in the narrative and periodic notes of the time line at pertinent parts of the lessons. He noted down any key incidents and observations. These notes also incorporated questions that related to incidents the researcher deemed to be significant, interesting, or that needed further clarification. These questions were then used during the post-lesson conference, to explore relevant issues that arose from specific aspects of the observation. In the period immediately following the

observation, the researcher completed a brief resume of the observed lesson, adding any relevant thoughts and reflections that had arisen.

During stage four, the post-lesson reflections were used to discuss the lesson and to further clarify observation outcomes. They gave the pre-service teachers the opportunity to elaborate on their actions. The pre-service teachers were invited to elaborate on the thinking that underpinned their teaching intentions. The data from this provided the researcher with valuable insights into pre-service teachers' rationales for decision making during lessons. It also yielded additional information on the reflective thinking processes that informed their planning, their in-lesson judgements and their post-lesson evaluations.

Bryman (2004) and Patton (2002) recognise the value of such an approach and confirm that this can strengthen the validity and trustworthiness of the outcomes of the research process. In line with the notions of grounded theory method that were outlined in the section above and as in McCaughtry et al.'s (2004) study, the observation and post-lesson reflection outcomes were analysed using the constant comparison method of data analysis. This method of data analysis was used throughout the study and is explained in the section below.

4.10 Analysing the data

The analysis process utilised in this study was influenced by grounded theory and in particular its approach to data analysis, involving the constant comparative method. Hutchinson et al. (2010, p. 283) characterise grounded theory to be "a systematic yet flexible methodology, designed to assist with the development of substantive, explanatory models grounded in relevant empirical data." Whilst they recognise many significant developments since its inception by Glaser and Strauss (1967), they also consider certain principles that are common to this method. These are outlined in the table below.

Table 4.1: Common Characteristics of Data Analysis and Theory Formation in Grounded Theory Method Studies (Hutchinson et al., 2010,

p.283)

Characteristics	Details
An iterative process	A process whereby early data collections and analyses inform subsequent sampling and analytical procedures (theoretical sampling) and the analysis always remains open to new emergent possibilities. This process necessitates concurrent involvement in data collection and analysis phases of the research.
Sampling aimed at theory generation	All sampling decisions made are a function of the research question and the ongoing theoretical development. As a result grounded theory research involves both purposive and theoretical sampling.
Creating analytical codes and categories from the data itself	The analytical process through which concepts are identified and their properties and dimensions are discovered in the data. These should be representative of the data itself and cover a wide range of observations.
Advancing theoretical development throughout	A range of techniques can be used to advance theory development during each step of data collection and analysis. The choice of techniques depends on the epistemological and theoretical stance of the researcher.
Making systematic comparisons	Making comparisons at every stage of the analysis (e.g. within and between cases or over time) helps to establish analytical distinctions by identifying variations in the patterns to be found in the data.
Theoretical density	It is commonly accepted that there must be evidence of theoretical density or depth to the observations presented, resulting in the presentation of a theory from which hypotheses can be generated. This should also include evidence of theoretical saturation (when new data reveals no new theoretical insights).

Despite many epistemological, theoretical and technical differences between proponents of grounded theory method, it is in particular the commitment to the principles of constant comparative method, which is considered to be a unifying aspect of different approaches to grounded theory method (Charmaz, 2006). In order to achieve trustworthiness and demonstrate transparency in the research, Bringer, Johnston and Brackenridge (2006) note the importance of clearly describing the process underpinning analysis. To provide this insight, the following sections give a detailed account of the analysis process that was employed during this study.

4.10.1 The analysis process

The original tenets of grounded theory method (Glaser and Strauss, 1967) note that the process of coding is designed to ensure rigorous engagement with the data and that any emergent themes and subsequent

theory are grounded within the data itself. At ‘the heart of the matter’, as Waring (2012b, 301) suggests, lies the process of coding’. There are a variety of interpretations with regards to the nature of such coding. Charmaz (2006), in relation to a constructivist interpretation of grounded theory, suggests a two stage procedure of coding, consisting of initial coding and focussed coding. Initial coding is performed during the early stages of data analysis. This detailed process of coding leads to a framework of initial codes which cover a wide range of topics and themes. This task is achieved initially by interrogating the narrative line by line, paragraph by paragraph, and section by section.

However, as Bryman (2004) suggests, this approach has inherent drawbacks. Line by line coding can generate an unwieldy number of codes, thus potentially fragmenting data and the meaning they represent. In order to avoid this, Bryman (2004) suggests that the researcher should look for commonalities in these codes, so that they can be combined into higher order and more abstract codes at an early stage of the investigation. Additionally, Richie and Lewis (2003) warn that researchers should avoid the danger of losing the context in which coded segments are located. They highlight the necessity of being able to retrace relevant segments back to its source documents and to the wider contexts in which they were placed.

To achieve more detailed conceptual and theoretical development, Charmaz (2006) advocates the use of analytical techniques, which entail the detailed examination of relationships between concepts, in order to unearth dimensions, contexts and conditions that correlate to the studied phenomenon. According to Strauss and Corbin (2008) the emergence of higher order concepts inevitably requires a process of synthesis during which the fractures of the earlier, detailed analysis process are repaired. Eventually, this process of synthesis allows for key themes of the investigation to arise with clarity (Descombe, 2010).

The researcher fully recognises the salience of Thomas and James’ (2006) critique of grounded theory method in that his role in the analysis and as well as the synthesis of data to some extent has an impact on the outcomes. It was therefore important to be transparent and diligent in demonstrating how this process was conducted. The data analysis

approach should allow for a systematic and efficient comparison of themes within documents as well as across documents and the use of data management software is recommended to facilitate this process. In this study, this was aided by the use of the data management tool NVIVO, which was used to facilitate various aspects of data management and organisation. As some authors point out, the researcher was aware that the software would not do the analysis for him (Bazeley, 2007; Willig 2006) and the most significant intellectual task would be undertaken in very similar ways to manual methods.

The principles of concurrent analysis and constant comparison continued to be applied throughout the process of data analysis (Harry et al*,.* 2005; Morse et al*.,* 2008, Strauss and Corbin, 1990, 1998). For example, data analysis during the early stages of the inquiry served two principle purposes. First, data relating to significant areas of interest for this study were gathered. These related to the initial concerns of the study. This data were generated, to some extent, through the outline framework of questions that had been prepared for the interview schedule. The researcher realised that herein lay one of the difficulties in achieving a research approach that is truly ‘grounded’, in the first instance.

Constant comparative method was used throughout this study to develop and verify emerging themes and categories. The recursive nature of data collection and analysis to inform subsequent data collection was a key feature of the study. For example, during the early stages of the investigation, the importance of content knowledge for pre-service teachers was identified through the initial coding of data from a range of sources, which included interviews, post-lesson reflections and contributions to the VLE.

Initial coding identified a range of negative consequences associated with the pre-service teachers’ perceived lack of depth and breadth of their content knowledge. Simultaneously, the effects of having acceptable or good content knowledge were identified by interrogating existing and new data around this theme. By comparing these different cases and conditions it was possible to saturate the categories and confirm the themes. With respect to the research questions of this study, it was important to explore,

if, and if so, how, different knowledge bases developed over the different phases of the course. For example, the theme of content knowledge was revisited at different times to capture any variations. Constant comparative method was used to establish if pre-service teachers' perceptions about the value of this knowledge base, and its effects on their ability to teach good lessons, had changed over time. Through this process it was established that content knowledge continued to be valued by pre-service teachers at the end of their course. However, the adverse effects of not having in-depth context specific content knowledge had been reduced by their progress in knowledge development over the course of their study. In this context, constant comparative method proved to be an effective way to establish the distance that was travelled by pre-service teachers over the period of the course.

Constant comparative method was also an integral part of the flexible methodology that was adopted throughout this study. For instance, it became particularly evident during the interviews at the mid-stage of the second teaching practice, how important the impact of respective legitimised practices within PE departments was on pre-service teachers' development. This informed the approach to the interview strategy that was adopted in the interview with mentors at the end of the course. Here the interviews explicitly explored the mentors' perceptions of the privileged teaching practices within the PE department. This data subsequently facilitated the cross-referencing of the themes that were evolving as part of the on-going pre-service teachers' narratives about this aspect of their learning.

Having established a number of themes, the themes were re-visited during a consolidation period prior to the second year of data collection and analysis. Significantly, continuing the process of constant comparison with another cohort of pre-service teachers in the same training context allowed for the genuine saturation of the themes. The following section provides a detailed description of this process.

4.11 Identifying Themes and Creating Categories

As the analysis progressed, the process of coding informed the saturation of existing codes, and also provided the opportunity for the creation of others. This existed within each phase and between phases of the investigation. As the investigation moved from Year 1 to Year 2, the initial data set was consolidated and focussed coding and some initial theorising were undertaken.

Creating meaningful and sufficiently saturated categories proved to be a complex and time consuming process. As in Schempp et al.'s (1998) study, question responses were analysed and summarized, building over time descriptive themes and categories. As recommended by Armour and Yelling (2007), data analysis was undertaken as soon as feasible after transcription, rather than at the end of the study. All transcripts were analysed and coded individually by the researcher, identifying themes, creating, deleting and merging categories as some meaning from the data started to emerge. Appendix J illustrates the way in which this process was managed during this project.

As part of the transition of the analysis to a more conceptual level, the properties and dimensions associated with concepts were identified. For example, Table 4.2 illustrates this in relation to the concept of 'valuing content knowledge'.

Table 4.2: Valuing content knowledge: Themes, properties, dimensions

Concept	Theme	Properties and dimensions
Valuing content knowledge	Content knowledge affects teaching confidence	Low content knowledge → Feeling insecure, afraid, incompetent Adequate → Feeling able to cope, 'measuring up', 'no panic' High content knowledge → Feeling assured, competent, 'being oneself'
	Content knowledge affects PCK	Low content knowledge → Limited plans, impedes ability to act flexibly and creatively, poor diagnostic skills, problems matching content to ability High content knowledge → Plan with more ease, assured about technical dimensions, selection and organisation of content, progressions, answering questions, facilitate differentiated learning content
	Content knowledge levels as a driver for development action	Low content knowledge → Prioritised for development action Significant time and effort invested in knowledge development Adequate → No longer prioritised over other development Developed incrementally alongside other areas of knowledge High content knowledge → Regarded as asset. Shared with others.

In conjunction with the host of other concepts generated from the analysis, the next level of abstraction is generated. This takes the form of a conceptual model as illustrated in Figure 5.9. This is presented and discussed in the findings and discussion section of this thesis.

Having outlined and discussed the methodology, principal methods, and process of analysis, the limitations of the study are now reviewed.

4.12 Limitations of this study

Many qualitative studies are unique, and due to their idiosyncratic nature, difficult to replicate (Bryman, 2004; Flick, 2009; Robson, 2002; Silverman, 2005). The specific nature of any study will have implications for its limitations. The main limitations in this study relate to three key areas:

- generalisability
- reliability and validity
- researcher positioning/the researcher as an instrument

Generalisability

Allan and Skinner (2002) highlight the issues of translating outcomes from research conducted with a small number of cases to wider populations. One such issue is the generalisability of findings. In his discussion of this concept, Hedges (2012) refers to Campbell and Stanley's (1963) notions of external validity stating that 'whilst external validity is often discussed in vague terms, the concept can be sharpened by specific explanation of the intended scope of explicability of the study results (p.29).' It is this notion of scope, which is of importance here.

The sample of participants in this study was not representative of the whole population of PETE pre-service teachers. However, the intention is not to generalise the findings. It is for those in other PETE contexts to determine the resonance of these findings within their own contexts and further research studies. Chambers and Armour (2012) identify this to be a particular strength of qualitative studies like this one. Any transferability of the findings of such studies arises not so much from the size and nature of its sample, but from the way in which experiences are likely to relate to

similar groups in similar circumstances and contexts. This study claims that its findings are transferable to other areas of PETE, as well as to other areas of ITE, and to other related learning situations that share significant commonalities in its settings and processes.

Research took place within one national PETE context (England) and this has limitations for the generalisability of some of the findings in this study - frameworks of PETE are internationally as well as nationally diverse in many aspects. The researcher has been careful throughout this study to draw sufficient attention to the impact that specific characteristics of the PETE framework studied had on the research outcomes.

Reliability and Validity

Cohen, Mannion and Morrison (2011) observe that it is difficult to fully eradicate threats to reliability and validity in any research design. Critics of qualitative research methodologies maintain that many conclusions deriving from qualitative studies are anecdotal, rather than empirically sound and founded on objective evidence (Denzin and Lincoln, 2005; Richie and Lewis, 2003; Silverman, 2005). In the absence of quality criteria such as ‘re-test reliability’, frequently used in objectivist and positivist research, Denzin and Lincoln (2005) suggest trustworthiness and authenticity as alternative quality measures. To achieve trustworthiness in this study, it was therefore important to be transparent about the research process, in order to ensure confidence in its outcomes (Cresswell, 2003; Salmon, 2003; Tashakkori and Teddie, 1998).

To achieve trustworthiness, the researcher has provided a detailed account of the study design, the development of its instruments, and its approach to data analysis. The design of the study and its choice and application of methods also needed to be sufficiently suited to the research questions, to ensure the validity of its findings (Denzin and Lincoln, 2005; Flick, 2009; Hammersley, 2004). The methods that were chosen for this research were closely aligned to the processes of knowledge development in the PETE course to ensure their contextual validity (Cohen, Mannion and Morrison, 2011). Recorded interviews were used to capture pre-service

teachers' perceptions about their learning and development, representing a standard research method in this type of research (Denscombe, 2010).

The lesson observations were dependent upon the researcher's capability to observe, analyse and record in real time. This introduced an additional variable into the research design, which could potentially have affected the reliability and validity of this study. The observation outcomes were expanded through summary reflections that were undertaken and recorded immediately after the observation. Additionally, the process was enhanced through the post-lesson reflections, which allowed for further clarification. The analysis of mentor comments is a recognised method, and has also been used by others in teacher education research (Soares and Lock, 2007; Metzler, 2000).

As Thomas and James (2006) observe, it is important for any study to be confident, but also realistic about the claims of its outcomes, which the researcher was aware of. He needed to ensure that any reported findings were robustly confirmed through the data he had collected and analysed. In some instances, this meant limiting the scope of certain areas of inquiry. For example, whilst there were some leads that suggested certain differences in males and females in this study, there was insufficient saturation of these categories in the data to make claims relating to this line of inquiry with confidence. At times, some of these observed differences are noted in the findings, but this is done with cautions and caveats. The researcher also delineated the ambitions for this study from the outset by declaring that it was not intended to create 'grand theory' but a relativist study looking for truths and meanings within the given context.

Researcher positioning/the researcher as an instrument

The researcher must understand the effect he/she may have upon many aspect of the research process and therefore has to be sensitive these (Hastie and Glotova, 2012). An important circumstance that needed to be acknowledged in this study related to the role of the researcher. The issues that arose from the researcher's insider/outsider positioning have already been discussed earlier in this chapter. The researcher was aware and acknowledged that, in his role as a teacher educator on the course, he

was also part of the process of knowledge creation that he investigated. Whilst this ruled out the option of taking up an ‘objectivist’ position, the researcher’s intimate knowledge of the setting, subject matter and the people in this study also brought an increased sensitivity to the investigation. This influence would be pervasive throughout the research process.

Hastie and Glotova (2012) point out the significance of researcher reflexivity throughout the research process. The researcher recognised that he himself was a significant instrument in this study and that this would inadvertently have some influence on its outcomes (Flick, 2007). The researcher was aware that he acted as the instigator of data collection and during interviews his actions would influence what might become evident and what might be omitted or go unnoticed. His perceptual filters would also play a role in the interpretation of significant data or events, such as for instance the lesson observations. Additionally, the editorial choices in the writing-up stage would shape the outcomes of this investigation (Sparkes, 1992). The researcher was aware that his own socialisation as a teacher and a teacher educator, and his personal philosophies of teaching, would have an influence on his perceptions of what he observed.

It was also true that limitations in the researcher’s own knowledge would have a bearing on his interpretation of these events. The researcher addressed these limitations in various ways. With respect to data analysis, the adherence to a structured procedural framework as recommended by Charmaz (2006) helped the researcher to develop confidence in the results. The researcher also used colleagues and in particular his PhD supervisor as a sounding board to discuss issues that were of concern. Whilst the final interpretation of the research outcomes was ultimately the researcher’s judgement, the professional support afforded through the opinions of an experienced research supervisor were found to be immensely helpful to inform the approach to this investigation. These findings are reported in the next section.

5 Chapter Five: Findings and Discussion

This chapter discusses the development of pre-service teachers' knowledge over the course of this study. In doing so, it analyses which different aspects of subject knowledge were developed and which factors were instrumental in the development of such knowledge. The way in which this section is structured reflects the two key research questions that were at the centre of this study, namely:

1. Which knowledge bases for teaching did pre-service teachers recognise, develop and prioritise during different stages of their training?
2. What were the key influences on the development of pre-service teachers' knowledge for teaching?

The first section explores significant findings related to research question one. Its reporting structure is aligned to Shulman's (1987) framework of subject knowledge, which was found to be the most suitable model for the purpose of analysing the development of knowledge in different knowledge bases. In doing so, section one explores which aspects of subject knowledge were developed over the period of the pre-service teachers' course. It also evaluates the inter-connections of different knowledge bases and how having, and not having, depth and range of specific aspects of subject knowledge affected pre-service teachers.

The second section focuses on the learning and development process itself and explores the main factors that have influenced pre-service teachers' learning and development. It was found throughout this study that pre-service teachers' learning was strongly affected by the CoP in which they were members, and that the process of learning and development was substantially influenced by the contexts, people and practices that related to these communities. At this point it is important to acknowledge that there were no preconceived theoretical frameworks employed to explore this aspect of the study. The major themes related to

the learning in CoP in particular emerged from the data analysis process. As part of the underpinning grounded theory method employed in this study, concurrent literature review was undertaken. This highlighted that social learning models provided the most suitable theoretical framework to analyse the influences on pre-service teachers' learning. Of these, Lave and Wenger's (1991) influential work on learning in CoP and Shulman and Shulman's (2004) more recent conceptualisation of teacher learning in CoP were found to be the most useful explanatory frameworks. However, both of these also had limitations with respect to explaining the socio-constructivist nature of learning that was found to be at the heart of this study. Therefore, as part of this study, a socio-constructivist conception of teacher learning is proposed (see figure 5.10). This model shares many characteristics with social models of learning. It has been devised as part of this study and reflects the specific context of ITE, in which it is located. In doing so, it represents the key influences that were evident in this study and provides a theoretical framework that can inform future investigations in this field.

Reporting the findings structurally in line with the key research questions has, however, also had its difficulties. Most significantly, reporting the development of different knowledge bases in a different section from the factors that influenced this development had advantages, as well as disadvantages. Indeed, pre-service teachers' narratives frequently demonstrated that valuing and developing certain aspects of knowledge cannot easily be divorced from the influences and processes that lead to such development. The difficulty here was to decide whether it was feasible or indeed sensible to distinguish between the 'what' and 'how' of learning. Such a quandary has also been acknowledged by Shulman and Shulman (2004) who recognised this limitation in Shulman's (1987) original model of subject knowledge. Cross-references between specific knowledge developments and influential factors that affected such development were therefore made, as appropriate. Another challenge inherent in this reporting structure was to reflect the chronology of the nature of knowledge development. This development was progressive over the duration of the course and this study. It was therefore important, to acknowledge the phases and the progressive nature of knowledge development sufficiently

within the reporting structure. This important dimension of the study was captured through presenting selected, illustrative narrative from the different stages of the course within the specific sections of the findings.

Given the two research questions, it was, however, important for this study to report on both of these aspects of learning in as focussed a way as possible. Therefore, it was ultimately decided to present these in line with the two key research questions. The findings and discussion that relate to research question one are thus principally presented in the first part of this chapter. The findings and discussion that relate to research question two are discussed in the latter part.

5.1 Valuing and developing knowledge bases for teaching

The following sections explore which dimensions of knowledge for teaching pre-service teachers valued, prioritised and developed over the course of their training. It also aims to make explicit the complexity and interrelationships that were seen to exist across and between different knowledge bases. Throughout the course of their training, pre-service teachers' perceptions of the value they accorded to different knowledge bases underwent significant changes. These demonstrated a shift from an early focus on content knowledge to a more balanced view of the value of different knowledge bases towards the later stage of the training. This was found to be the consequence of multiple factors that affected pre-service teachers' perceptions. These related to changes in relative levels of content knowledge, in relation to the perceived demands of teaching and were the results of progressive knowledge development. They also related to a change of perception about the relative value of content knowledge and other knowledge bases, within the actual context of teaching. The two diagrams highlight this shift in emphasis. In this, the decreased focus on content and content knowledge was also accompanied by a shift in preferred personal teaching approaches. These demonstrated a development from more content-focussed to more pupil and process focussed approaches to teaching.

Figure 5.1 **The relationship between valued knowledge bases during the early stages of the training**

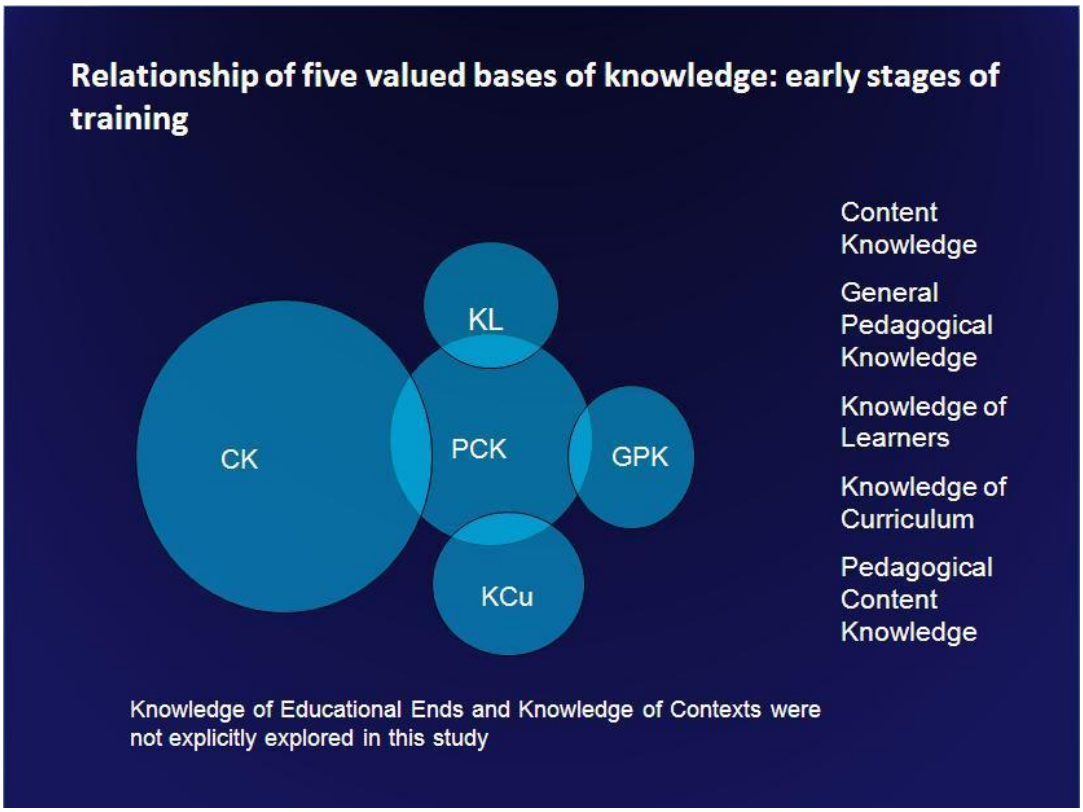
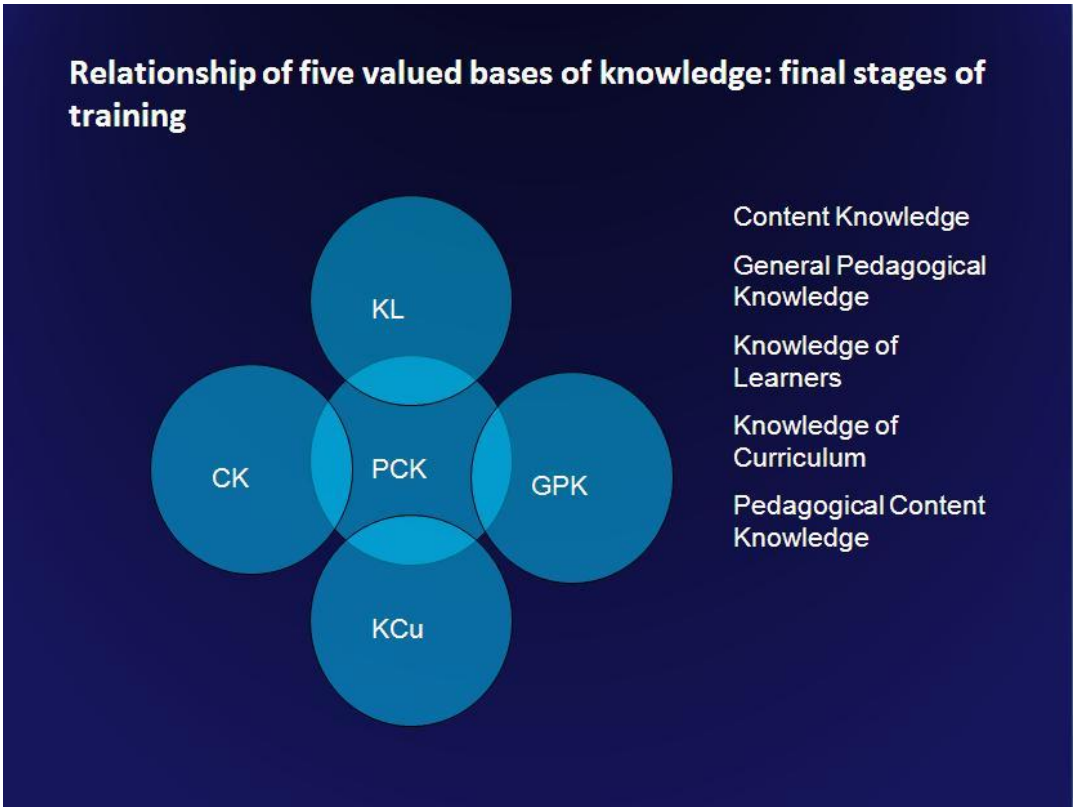


Figure 5.2 **The relationship between valued knowledge bases during the final stages of the training**



The extent and exact nature of these will be discussed in the following sections of this chapter.

5.2 The perceived value of content knowledge

The analysis of the development of different knowledge bases begins by considering the role of content knowledge. There are several reasons for this choice. Firstly, Shulman (1987) had identified content knowledge to be the foundation of other knowledge bases. Siedentop (2002) has affirmed the importance of this knowledge base for PE teachers. Moreover, concerns over the role of content knowledge continue to be expressed in the English PETE literature (Capel et al., 2011). The role of content knowledge and its significance for pre-service teachers in PETE had also

been central to the motivation for undertaking this study. Finally, and perhaps most importantly, concerns over content knowledge were very evident in pre-service teachers' narratives throughout this study, especially during the early stages of their training. From the perspective of the literature, as well as the specific intentions and findings of this study, considering the role of content knowledge therefore constituted a good starting point. In the following sections a range of aspects relating to the role, as well as to the development of content knowledge, are explored.

5.2.1 The importance of content knowledge as part of the knowledge base

Throughout this study, pre-service teachers considered content knowledge to be central to their ability to teach effective lessons. They perceived good content knowledge to have a positive, facilitative effect on many aspects of their practice. Conversely, pre-service teachers identified numerous negative effects and limitations for their teaching that arose from a lack of content knowledge. Although pre-service teachers' concerns relating to content knowledge were most evident during the early stages of their training, their desire to develop content knowledge continued throughout the course and beyond. Having sufficient content knowledge was part of what they considered to be the professional make-up of a proper PE teacher. Whilst pre-service teachers did not consider the development of content knowledge to be a sole aim in itself, they regarded it to be a vital and initially dominant component of their knowledge base. Since pre-service teachers valued content knowledge highly, but frequently felt that they lacked sufficient breadth and depth of it, they prioritised the acquisition of content knowledge over other knowledge bases. This was particularly evident in the early stages of the course, during which many pre-service teachers considered content knowledge to be of the highest importance. In this, pre-service teachers aligned content knowledge requirements consistently with the different activities they were expected to

teach in the school curriculum. They also accorded its future development a high level of priority.

> *I think that good knowledge in the different activities is probably the most vital thing. I think it's unrealistic maybe at this stage that I have a great knowledge of all the complexities of all the different games, of all the you know aspects of gymnastics or all the different aspects of dance and to be good as a performer in all. But that would certainly be an aim of mine…I think right okay I need to do more gymnastics and more dance so that when I go into a lesson, I'm not just teaching the basics and I am able to tailor my skills to the needs of the class. (William, Interview 1)*

During the early stages of their training, pre-service teachers explicitly acknowledged their limitations of content knowledge and also PCK in specific practical activities and activity areas. They also recognised the inter-play of content knowledge with other bases of knowledge. The need to develop content knowledge in specific practical activities was consistently noted and its facilitative effects on teaching good lessons were emphasised. Having a good breadth and depth of content knowledge was an integral part of their understanding of the make-up of a professional PE teacher.

> *For a PE teacher, my perception of it would be to have knowledge of different activities, different sports, different physical activity, and then you can think in terms of understanding pupils and how backgrounds differ and match up the right things for them. So at the minute my take on it is when I teach in my better subjects that side of it makes it easier for me to teach better lessons. (Nicole, Interview 1)*

During the early stages of the training pre-service teachers' worries about content knowledge were compounded through the multiple challenges of teaching, as well as through their varied content knowledge profiles. Whilst there were differences in these individual content knowledge profiles, most pre-service teachers acknowledged content knowledge deficits to be a significant issue.

It was in particular the lack of contextually specific content knowledge which was consistently identified to have a range of adverse effects on their early-stage teaching and learning experiences. Many pre-service teachers as well as some mentors equated the term 'subject knowledge' frequently

with the meaning of that aspect of knowledge termed by the literature as 'content knowledge'.

> *Subject knowledge definitely, so far I've done gymnastics and my subject knowledge of gymnastics is pretty low and that was why I originally struggled, so I can see how subject knowledge in that area is related to confidence. Confidence is another thing as a teacher, the way you come across to the pupils. Straight away I am having problems, sometimes I'm confident and sometimes I am not and that sinks through to the pupils, they can see that in me when I am not confident. (Ben, pre-service teacher, Interview 1)*

The impact of such knowledge deficits was a prominent theme during the early stages of the training. Pre-service teachers' individual knowledge profiles were shaped through earlier significant experiences that formed the basis of their knowledge at the start of the course. Individual content knowledge profiles were the consequence of multiple factors, such as personal sporting histories, school education and coaching experiences. Exploring these was considered useful to this study, as it provided a background to understanding and framing the impact of individual pre-service teachers' knowledge profiles. It gave some insight into the type of knowledge that pre-service teachers valued at this stage. A prominent theme in this was the limited value that many pre-service teachers ascribed to their Undergraduate degrees with respect to preparing them for the more practical, day to day requirements of their teaching experience.

5.2.2 Undergraduate degrees and content knowledge demands during school experience

Undergraduate degrees were found to provide limited preparation to address the content knowledge demands made during school experiences. Several of the pre-service teachers attributed content knowledge deficits, at least in part, to the academisation of their Undergraduate degree courses. The most critical observations were made by those pre-service teachers who had followed very theoretically oriented Undergraduate degree courses. These pre-service teachers saw little synergy between their

Undergraduate degree courses and the type of knowledge that was required for many practical core activities of their teaching.

> *I've got a lot of criticisms of the Sports Science course. It was mostly theory like the psychology and physiology modules. It was really at a high level. Nothing I learnt in the physiology at University I'd really be able to introduce into key stage three or four and I've not been teaching a lot of A-level or BTEC at this moment in time… from my science, things didn't help me out at all so far (Jenny, pre-service teacher, Interview 1)*

Considering Rovegno's (2008) concern over the need for Undergraduate courses to contribute to a wide knowledge base in PE, pre-service teachers' reflections revealed some concerns over the match of knowledge between their Undergraduate studies and the requirements of their PGCE studies. Some pre-service teachers felt in particular that much of the knowledge they had gained was only marginally useful in preparing them for the demands of teaching practical activities during SE1.

> *I don't think Sport Science courses prepare you for PE on the whole. I mean biomechanics might help me if I had to teach a physics lesson... It's great, I mean it is, but it doesn't prepare you for PE on the whole. I think there are skills that you can utilise, you know, there are certain skills and drills and things that are transferable but there is not a great deal of preparation. (William, Interview 1)*

Content knowledge deficits were, however, also evident in those who followed Undergraduate degrees other than in sports science. All students in this study reported issues with content knowledge limitations and indicated that their Undergraduate courses had not fully prepared them for the content knowledge demands of their teaching experiences. Given that the pre-service teachers in this study were highly successful students, recruited from a range of Universities and Undergraduate courses, it had to be concluded that the majority of Undergraduate degree courses that the pre-service teachers in this study had completed, had contributed only in a limited way to developing their context-specific content knowledge profiles and indeed to their PCK, prior to entry to the course. This indicated a trend that was not confined to any single programme or institution, but potentially a wider reaching phenomenon relating to Undergraduate course design.

In absence of a thorough content knowledge preparation through Undergraduate degrees, pre-service teachers' individual context specific, practical knowledge profiles were most significantly influenced by their individual sporting and schooling histories. These varied between activities and individuals. Frequently, pre-service teachers had in-depth content knowledge in one or two activities, with more superficial content knowledge in some other activities. In addition to variations in breadth and depth of content knowledge, individual content knowledge profiles at the start of the course were also frequently gendered in nature. The causes for this were mainly to be found in gendered school experiences and sporting experiences. In this female students frequently lacked exposition to more male oriented games, such as football and basketball, whilst most male students had knowledge deficits in activities such as dance and gymnastics.

> *Dance and gymnastics specifically because it wasn't covered when I was at school in great depth. I think we may have done it at year seven briefly, but it was kind of our school. The guys did games and the girls did that sort of thing. (Phil, pre-service teacher, Interview 1)*

Clearly, in their appreciation of important attributes they needed to become successful PE teachers, pre-service teachers also identified other skills and attributes that were of importance. Having enthusiasm for the vocation for instance was a recurring theme and the ability to connect and communicate with pupils was frequently mentioned alongside 'having good subject knowledge'. In their use of terminology, pre-service teachers mostly equated the term subject knowledge with activity specific content knowledge and to some extent aspects of PCK.

> *For me I would say the attribute that is most important is to enjoy school and be enthusiastic... because if you are a PE teacher and you don't enjoy school and you don't come across enjoying school no one is gonna be interested in it and you are not gonna inspire or influence many people at all. Other attributes obviously being a friendly personality quite bubbly and lively personality and obviously good at communicating and explaining aspects of things. (Nicole, pre-service teacher, Interview 1)*

Content knowledge, especially content knowledge deficits in practical activities, however, dominated much of pre-service teachers' thinking. This was especially evident during the early stages of their training, where content knowledge deficits had a significant impact on cognitive as well as psychological dimensions of their learning and development. The presence or absence of content knowledge had a significant influence on pre-service teachers. Pre-service teachers made many links between the importance of content knowledge, their teaching effectiveness and teaching confidence. These will be discussed in the following sections.

5.3 The relationship of content knowledge and teaching confidence

One of the most overt relationships that emerged from the data was that between content knowledge and teaching confidence. Whilst it could be reasonably expected that there might be some correlation between the two, it was the strength of pre-service teachers' openly expressed views and emotions, which was very striking. Pre-service teachers' narratives provided rich data to illuminate the relationship between content knowledge and teaching confidence. The most immediate consequence of insufficient content knowledge was its negative effect on pre-service teachers' confidence to teach good lessons.

> *When I taught my dance lessons it really affected my confidence. Because you are in front of a class and you haven't got that knowledge. You've got to fill a lesson with interesting stuff and you really need some good ideas and you need to be confident to show them stuff. I do feel less confident going into those lessons. I know that it did come across when I spoke to my mentor…Even if you are not as confident you have got to go in that lesson as confident to show the pupils that you are confident, no matter what. But it did affect my confidence. (Natalie, pre-service teacher, Interview 1)*

This was a strong and common theme with pre-service teachers during the early stages of this study. The strengths of views and feelings that were expressed, demonstrated that pre-service teachers were very concerned with this issue. The majority of these concerns were related to

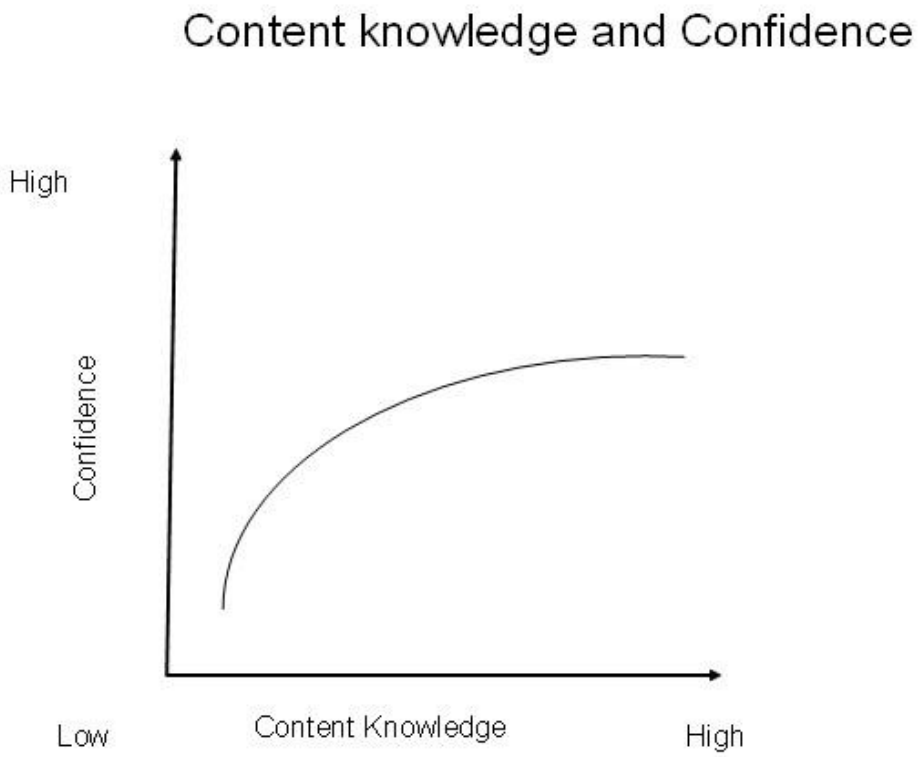
content knowledge deficits, i.e. those in specific practical activities, which formed the core of the respective PE curricula in their schools. All pre-service teachers identified that poor content knowledge in these activities had a detrimental effect on their teaching effectiveness and therefore their teaching confidence. They frequently emphasised the importance of the activity specific context which framed many narratives. As a consequence of this, the concept of context specific content knowledge emerged during the course of this study. With relation to their self-image and professional identity, most pre-service teachers stressed the need to come across as confident, even if deep down they were not. Having, or not having content knowledge in specific practical activities such as for instance netball, gymnastics, dance or hockey significantly influenced respective levels of teaching confidence. Most pre-service teachers' management strategies to deal with these insecurities highlighted that they felt the need to come across as competent and confident, even if deep down, they were not.
In this the apprehension was frequently associated with the fear of 'losing face' in front of pupils.

> *I feel if I don't have a complete understanding of the sport, I think it's harder to become confident teaching it. I think I'd be confident teaching anything, if I thought I'd know what I was talking about. With rugby I feel that I'd be scared of teaching something and the children being like 'Well that's not right miss!' (Angelina, pre-service teacher, Interview 1).*

In their own perception of their role as experts, pre-service teachers did not feel that it was acceptable to demonstrate lack of content knowledge to their pupils. Rather than admitting to not being the expert, some would resort to deception strategies that would allow them to maintain their professional standing in front of the class. Implicitly, this signified that the pre-service teachers in this study regarded content knowledge to be a core competence of the PE professional. Therefore, it was also identified to be a central teaching competence they needed to acquire. Insufficient confidence expressed itself in raised levels of anxiety, including reported changes in voice, body language and teaching behaviour.
This impact of low content knowledge on teaching confidence was consistent with all pre-service teachers, even if different individuals were

psychologically affected by it in different ways. Pre-service teachers gauged their existing knowledge within any given specific context. Figure 5.3 graphically represents the basic relationship between content knowledge and teaching confidence that was identified in this study.

Figure 5.3 The relationship between content knowledge and teaching confidence



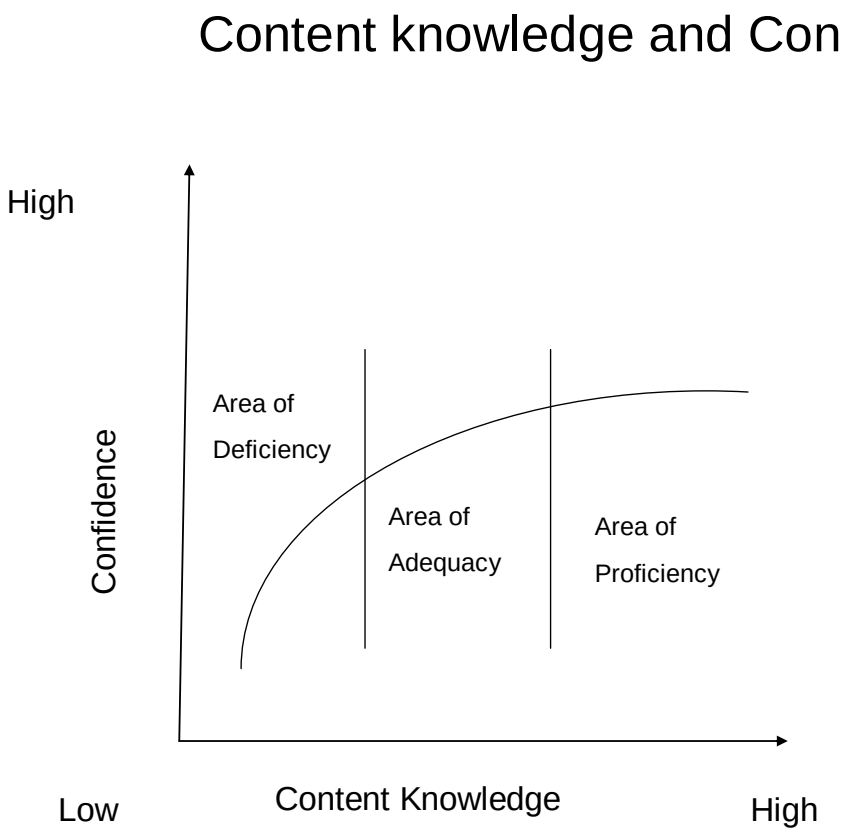
Confidence was very low, if individuals perceived their level of content knowledge to be inadequate in relation to the specific teaching context. In this, however, pre-service teachers made implicit distinctions between having adequate content knowledge and expert knowledge in specific activities. Pronounced negative effects on teaching confidence started to subside when pre-service teachers felt that they had acquired an adequate level of context specific content.

> *I mean, obviously I don't think everyone has to be an expert, but I think it is important for a teacher to develop their own knowledge in sports, or different areas in sports, just so you can pass on as much as possible as you can to the pupils and give them a bigger opportunity. I do think that is important. (Nicole, pre-service teacher, Interview 1)*

> *It's important to get the correct things across but I do not think that it is important to know everything about it. It is important that you know the key aspects for the level that you are going to teach and you know them well. (Phil, pre-service teacher, Interview 1)*

Concerns with teaching confidence were at their most pronounced when pre-service teachers perceived their knowledge to be low in relation to the demands of the specific teaching situation. As levels of content knowledge rose to the levels that pre-service teachers perceived to be adequate within the specific teaching context, the effects of content knowledge on teaching confidence started to level off. Whilst proficient knowledge had further benefits for confidence as well as a range of other factors, concerns relating to teaching confidence were significantly reduced when pre-service teachers reached a level of content knowledge that they considered to be adequate. Figure 5.4 gives an enhanced visual representation of the relationship between content knowledge and teaching confidence that was identified to exist in this study. It highlights the relative influence of content knowledge on teaching confidence in relation to the respective levels of knowledge described above.

Figure 5.4 **Relative levels of content knowledge and their impact on teaching confidence**



Anxieties about the perceived lack of adequate knowledge were heightened, when pre-service teachers experienced a significant gap between their perceived existing content knowledge and the content knowledge they felt would be required in any given specific context. This happened for instance when they were teaching in areas where their own knowledge was perceived to be, or identified by others as low. It could also be affected by teaching the older year groups, when pre-service teachers feared that a higher level of content knowledge would be required. This was based on the perception that older pupils had a potentially more advanced ability profile. In turn, these pupils were expected to have raised expectations of the level of the lesson content they would experience.

Basketball, I still struggle with the in-depth knowledge of that. I know the basics, and that just about works for my year 7s, but I'm feeling a lot less confident when I'm teaching the older ones… I'm planning more for these lessons, because I constantly worry that I don't know enough about it. It's the lot really, rules, umpiring, tactics… There are some really good players in my year 10 boys group and getting them to improve on what they do, I find that really hard (Ben, pre-service teacher, Interview 1)

Yeah. In subjects that I'm not that strong with I feel it's easier to teach the younger pupils than the older ones. Just because the older ones obviously if they're a specialist in the subject, will have a better knowledge of it than me and I feel that the Key Stage 3 are maybe a bit more naïve and a bit more understanding if you get it wrong. (Debbie, pre-service teacher, Interview 1)

Whilst all pre-service teachers felt the need to improve their content knowledge, there were differences between individuals in terms of the extent to which they experienced these pressures. In this, there was a tendency for those with the widest ranging content knowledge deficits to experience more significant negative effects. More limited profiles contributed to experiencing pressure and stress and these pre-service teachers reported more difficulties caused through lack of such knowledge. For example, this was for instance evident in the contrasting cases of George and Annabel. George, who entered the course with a wide ranging and also in-depth content knowledge profile, reported fewer concerns than most. His breadth of knowledge across a range of activities was built on his varied personal sporting and coaching history, as well as on his more practically oriented Undergraduate degree. Together, these covered a wide range of major activities, which were well aligned with the teaching demands on his school placements.

I have always played loads of sport and I played hockey and tennis to the highest level. In terms of net games and strike and field games, my knowledge is pretty good, I have coached a lot of tennis, I have played a lot of tennis and cricket and badminton and so on, I would say the same for invasion games, and then outdoor pursuits I have had a little bit of experience. I took a swimming course this summer, so my knowledge there has grown. (George, pre-service teacher, Interview 1)

Over the duration of the course, George reported relatively few concerns with content knowledge and he was able to direct his efforts towards developing other aspects of his teaching. His major content knowledge weakness was in the area of gymnastics. Through having the time to concentrate on this activity in a purposeful way, he felt that he achieved significant progress in this area throughout SP1.

> *Gym, ever growing from pretty much nothing at the beginning of the year to be brutally honest has grown massively, I have really enjoyed learning about it and seeing its value. (George, pre-service teacher, Interview 1)*

Annabel on the other hand had a much more limited content knowledge profile. Whilst she was a high performance hockey player and also had significant coaching experience in this activity, her content knowledge profile in many of the core PE activities she had to teach throughout the course was limited. In turn, she experienced many content knowledge related difficulties and addressing these occupied a significant amount of her time and energy. It also required enhanced support by her mentors. In describing the consequences of Annabel's limited knowledge of netball, her mentor Michelle also outlined some of the negative consequences of insufficient context specific content knowledge more generally.

> *The obvious one that stood out was Annabel. She had no netball background whatsoever. So she really struggled with the lack of knowledge and where to go after teaching the basic skills of footwork. She had a bit of a passing background through hockey, but she had no netball grounding at all. Now that had quite an impact because she needed to know every lesson where to go to next, she couldn't just naturally progress it through and it made it very difficult for her when the pupils came to go into games because she didn't know how to set up a tactical thing, situation because of just a lack of knowledge there. So that was quite difficult, and she needed a lot of direction. (Jill, Mentor)*

Pre-service teachers were thus confronted with different content knowledge development challenges. The specific challenges for individual pre-service teachers depended on the range and depth of pre-service teachers' content knowledge, as well as the specific teaching contexts in

which they had to operate. The value that they attached to attaining at least adequate content knowledge led many pre-service teachers to prioritise this knowledge on their list of immediate professional development needs. Pre-service teachers invested a great deal of time in measures to develop this knowledge, in order to counteract the negative effects of content knowledge deficits. This was despite the fact that they consistently considered time a scarce and valuable resource. Consequently, pre-service teachers saw the need to spend an increased amount of time on planning for those lessons where their activity specific knowledge was weak and the perceived situational demand for such knowledge was high. In conjunction with the other multiple demands and pressures of teaching, this added to the stress that was experienced, especially during the early stages of the training. Specific content knowledge challenges were dependent on the individuals' content knowledge profiles. Frequently there was a gender related component evident, as the narratives below and those of other pre-service teachers revealed.

> *I spent definitely more time in planning because I was always, always on the internet looking for coaching points. I had football coaching books. People had given me drills that they'd used in summer camps and things. . . I always went through loads of things before I planned and even then things still weren't quite right because I just wasn't aware of what was really needed. (Debbie, pre-service teacher, Interview 1)*

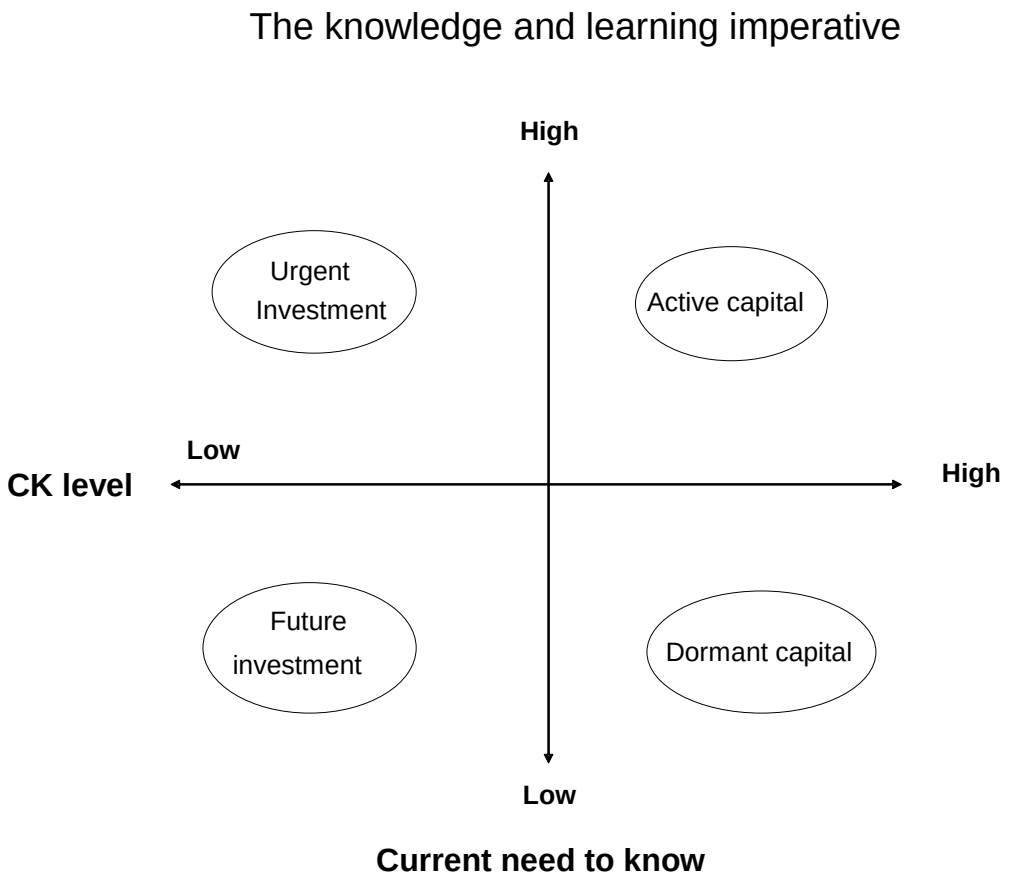
> *Quite a considerable amount you spend on the computer search engines, because you go to the library and you can pull out a couple of books, and I have got quite a few books on gymnastics and dance at home now because I need them. (William, pre-service teacher, Interview 1)*

The overt text, as well as its underlying messages, demonstrated that many pre-service teachers experienced considerable pressure in their attempts to fulfil the requirements of these activities. Content knowledge deficits were acutely found to add to these pressures. Frequently, this stress was a result of compounded pressures that arose from a variety of sources and demands. In this, pre-service teachers nevertheless gave content knowledge development a high priority. The strategies they applied to prioritising which aspects of content knowledge to tackle were

significantly influenced by the demands of their immediate teaching requirements. The highest priority was accorded to those aspects of content knowledge in which the gap between perceived immediate requirement and actual competence was greatest. Existing content knowledge was perceived to be a form of useful knowledge capital that could be employed within its specific contexts. Here, urgent investment in activities leading to knowledge acquisition needed to be undertaken. Some of this knowledge, such as knowledge in typical summer sports lay dormant (dormant capital) for a while during the early parts of the course. It would however be redeemable at a later stage.

Whilst pre-service teachers valued having such knowledge, it was however evident that the prioritisation of content knowledge development was influenced by personal survival strategies. In those areas where existing knowledge met current knowledge requirements, this knowledge constituted active capital, which could be utilised during teaching. Figure 5.4 represents the value ascribed to content knowledge in context and its relationship to these implicit development strategies in a graphical format.

Figure 5.5: The relationship between actual and required content knowledge and its impact on development prioritisation strategies



Especially during the early-stages of the course, lack of content knowledge had to be seen within the context of the multiple pressures that pre-service teachers experienced through the wide range of novel challenges they were exposed to. The activities in which the pre-service teachers had low content knowledge consistently posed a higher level of challenge. When pre-service teachers found themselves in situations where they had to teach classes in which their content knowledge was low, relative to the level of challenge presented by the teaching situation, they reacted to this by prioritising their time to make up for the shortfall in content knowledge. These adjustments included a range of activities that related to

teaching preparation and knowledge acquisition. Lack of content knowledge for instance complicated the process of lesson planning and evaluation, a core activity on the PGCE course. Pre-service teachers therefore decided to spend more time on planning for these lessons. Yet, even when they had spent significant time on planning for such lessons, the insecure nature of their knowledge meant that they were not certain that the result of their endeavours was of the desired quality.

> *Definitely more time in planning because I was always, always on the internet going in for coaching points. I had football coaching books. People had given me drills that they'd used in summer camps and things. The planning: I always went through loads of things before I planned and even then things still weren't quite right because I just wasn't aware what I really needed. (Debbie, pre-service teacher, Interview 1)*

The link between content knowledge and planning was also observed by mentors, who commented on the need for pre-service teachers to address content knowledge weaknesses through increased planning. Pre-service teachers did so by gathering information from a wide range of sources, including books, the internet, other pre-service teachers on their course, or their mentors. Through this process, pre-service teachers addressed weaknesses in context specific content knowledge and also context specific PCK.

> *Gymnastics he had very little knowledge… and dance. So in those areas he really needed far more input…he actually had to come to me for more information and I sent him to books and I sent him on the internet and those kind of things…so he had to go out and learn and he had to go and ask questions and he had to come and get data from me and information from me on what was expected and terminology and all of those kind of things. So I think his knowledge has grown significantly. (Craig, Mentor)*

In this process, pre-service teachers experienced challenges both with their lack of content knowledge, as well as with the complexity of the process of planning, teaching and evaluating itself. Whilst the researcher was aware that planning and evaluation constituted a time intensive activity on the PGCE course, he was struck by the intensity of many of the pre-service teachers' responses. Pressure on time to address these issues continued to be a strong theme in these narratives.

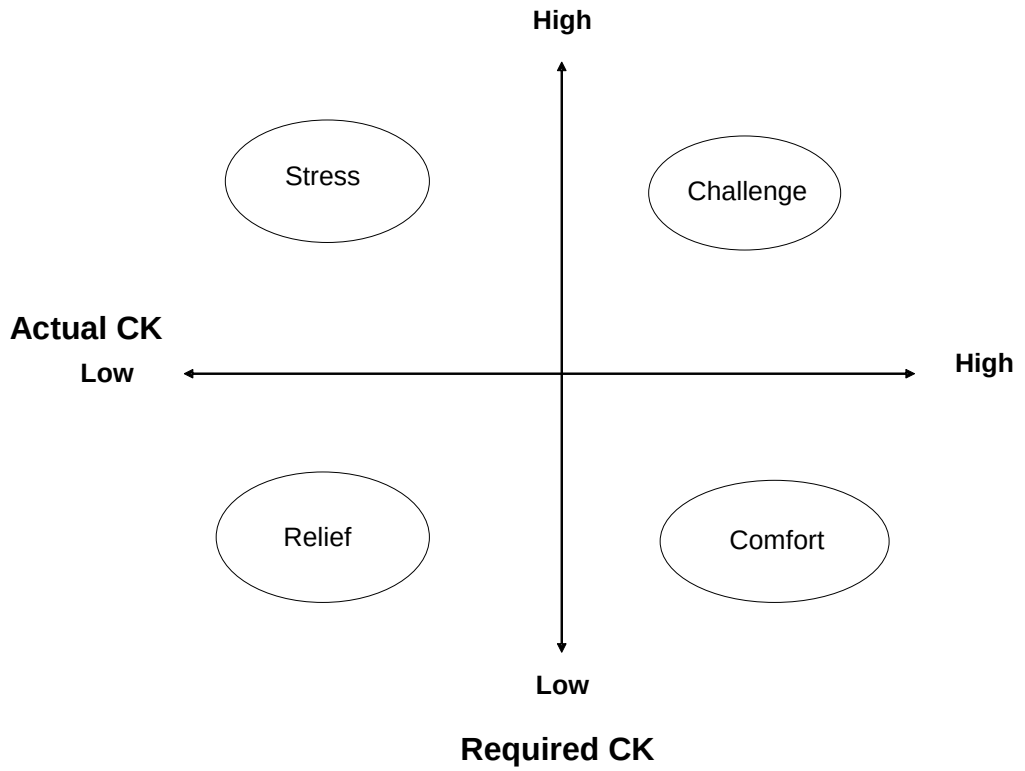
It's just like the outside time as well, like when you are on a school placement you have a great day at school like teaching lessons but then you have got to plan for next week's and look up new stuff. So you are constantly planning like there is always something to do. It's pretty stressful, there is a lot of workload but like I said to you, it seems like sometimes you are overloaded with information that you're trying to use but it's often hard to because there is so much of it. (Alexander, Interview 1)

This week has been a whole different story. From observer and passive teacher to leader I have been up all hours planning, planning and planning. It's just a shame about the actual delivery! During the lesson I'm so busy thinking about what I have to consider, assessment, non-participants, 4 strands etc. that struggling to find time to breathe and enjoy it. (Jenny, pre-service teacher, early-stages VLE reflection)

In these pressurised circumstances, it was understandable that pre-service teachers valued specific knowledge that was relevant to their immediate teaching needs very highly. By having this range of perceptions about the influence on their ability to act and express themselves as teachers, having, or not having, context specific content knowledge also impacted on the emotional states experienced during the teaching of different activities. Whilst these effects were felt to varying degrees by individuals, these relationships were confirmed by most cases in this study. Pre-service teachers' responses suggested that their emotional responses to teaching different activities, were influenced by the relationship between the perceived required content knowledge and their existing level of content knowledge. Figure 5.6 shows a visual representation of this relationship by designating descriptors to these emotional states in their four respective quadrants.

Figure *5.6* **The relationship between content knowledge challenge and content knowledge levels: resulting emotional responses**

Content knowledge levels, demands and emotional responses



Of highest concern to pre-service teachers were those situations which fell into the top left hand quadrant. The researcher noted the stress the lack of content knowledge induced. This added to the general pressures that pre-service teachers experienced, especially during the early stages of the course. Pre-service teachers experienced these pressures at different levels of intensity. This was likely to be also a consequence of their different personalities. The general tendency that lack of content knowledge had an adverse impact on pre-service teachers' teaching confidence was however clear. At least adequate content knowledge was considered to be necessary to facilitate other aspects of teaching effectively.

When pre-service teachers' focus was pre-dominantly content-centred this was reflected in their teaching. Thomas' self-centred reflection on aspects of his badminton lesson was a more explicit example of teacher-centred reflection, but highlighted this circumstance in principle.

> *I went through a few bits and pieces of what they'd been through from the previous weeks. I then got them warmed up and then sat them down again just to go through a few more key points of the smash. I then let them go away and practise themselves so they could find out how they thought it was going and what they thought they could do. I then brought them back in again and talked over a few more points to reinforce a few more points and sharpen up a few of the skills. (Thomas, pre-service teacher, early-stage post-lesson reflection)*

Much of pre-service teachers' thinking during the early stages of the course was concerned with themselves and how they would 'deliver' teaching content. They had only just started to consider how the pupils would access learning. Pre-service teachers also frequently related to pupils' individual differences with respect to physical skills and ability. There was, at this stage, limited evidence of process-focussed and pupil-focussed approaches to planning learning.

Pre-service teachers' comments illustrated that they valued practical, context specific content knowledge that related to established curricular activities very highly. Much of their thinking during the early stages revolved around the technical aspects of knowledge. When pre-service teachers discussed the weaknesses they perceived in their subject knowledge, their

initial reflections focused on aspects of context specific content knowledge. Lack of this context specific content knowledge had a negative impact on the velocity of their training. It was a key significant concern and stressor that commanded much of pre-service teachers' attention and time. Pre-service teachers invested significant time and effort into addressing content knowledge deficits, a circumstance which had emotionally and psychologically draining effects on some pre-service teachers. This is a likely cause for their appreciation of such development activities, which addressed their immediate teaching concerns, an observation that has been made by others in PETE research (Kinchin, 2009).

Content knowledge deficits were experienced within the context of multiple challenges during the early stages of the training, adding to the perception of overload, which many pre-service teachers identified explicitly and implicitly in their narratives. Varied content knowledge profiles and other individual differences had an influence on how these impacts were perceived by individual pre-service teachers.

The findings from these early interviews confirmed the assertions of some (Capel and Katene, 2000; Capel, 2007; Gower and Capel, 2004, Hayes et al., 2008; Velija et al., 2008) about the perceived importance of content knowledge for pre-service teachers. Whilst many narratives reflected a genuine desire to help all pupils enjoy their PE lessons, such desire to do good for the pupils was, has been highlighted by Green (2000), at this stage still representative of relatively naïve and one-dimensional conceptions of what should be achieved and how to achieve this.

It was evident that pre-service teachers at this stage still frequently allied successful PE teaching to the improvement of physical competences, rather than the accomplishment of wider aims of PE (Capel, 2007, Capel et al. 2011; Hayes et al., 2008; Velija et al. 2009). It was however noteworthy, that pre-service teachers' narratives showed little evidence of sporting elitist philosophies and values (Rovegno, 2008) and the researcher did not doubt pre-service teachers' sincerity to achieve success for the whole range of pupils. In their quest to achieve this, they did, however, frequently raise concerns about how their own lack of context specific content knowledge was a limiting factor. When pre-service teachers incorporated pupil-centred

concepts of teaching, such as for instance ‘differentiated learning’ into their narrative, much of this thinking during the early stages of learning was focussed on aspects of technical and physical ability. This conveyed notions of the ‘delivery’ of this content to classes, rather than placing an emphasis on the process of teaching itself.

These findings concur with Ho’s (2003) and Schempp et al.’s (1998) observation that inexperienced teachers frequently show a pre-occupation with content and task selection, rather than focussing on process. Such a pre-occupation with content in turn would inevitably have an adverse impact on the enactment of pupil-focussed teaching strategies. Lack of context specific content knowledge added to the multitude of anxieties pre-service teachers experienced, especially during the early stages of their training. Others (Hardy, 1995, 1996; Laker and Jones, 1998) had observed lack of content knowledge to be a key concern for pre-service teachers during this early stage of PETE. On the other hand, pre-service teachers perceived the presence of content knowledge to be a vital facilitator in ensuring the effectiveness of their teaching.

The notion of ‘not just teaching the basics’ to pupils also demonstrated their view that a certain depth of content knowledge was important, if pupils were to be progressed effectively through more advanced stages of skill learning. Pre-service teachers did recognise a connection between depth of content knowledge and the ability to cater for pupils’ differentiated learning needs. Such notions were consistent with those in the literature, who have drawn attention to the fact that limited content knowledge profiles have a detrimental effect on pupil learning (Siedentop, 2002). Content knowledge deficits were perceived to have multiple adverse effects on their practice.

The findings in this study differed, however, from recent UK-based studies (Hayes et al., 2008; Velija, 2008), in that neither pre-service teachers, nor mentors accorded content knowledge priority over other dimensions of subject knowledge. Pre-service teachers regarded content knowledge to be facilitative for other aspects of subject knowledge, in particular PCK and content knowledge continued to be valued highly throughout the study.

Most comments revealed how content knowledge was inter-related with other aspects of teaching that impacted on pre-service teachers. A lack of specific technical knowledge for instance could result in an inability to explain, represent and progress this content effectively. The inability to match up relevant content to pupils' ability and progress this in a meaningful way highlighted the relationship between content knowledge and PCK. How pre-service teachers viewed the relative importance of content knowledge did, however, change over the period of the course. This is discussed in some more detail in the following section.

5.4 The relationship between content knowledge and PCK

Pre-service teachers in this study recognised the interplay between content knowledge and other bases of knowledge. Most significantly, content knowledge was frequently linked to PCK. Whilst pre-service teachers attributed much importance to content knowledge, they appreciated that it was the interplay of various aspects of knowledge and personal competencies that was responsible for the sum of outcomes that represented their teaching. They increasingly realised over the course of their study that it was the relationship between teacher, content and pupils which influenced the outcomes of their teaching dynamically. In addition to content knowledge, they recognised especially aspects of PCK, but also elements of curricular knowledge and general pedagogical knowledge to be important for their teaching success. Although content knowledge continued to be an important part of their thinking, they recognised that content knowledge by itself was insufficient, if they wanted to teach consistently good lessons.

Throughout this investigation it was particularly evident that pre-service teachers experienced strong links between content knowledge and PCK. Both aspects of knowledge were frequently bound together by the activity specific context in which they occurred. The perception that good content knowledge would allow them to act more flexibly and creatively in response to pupils' needs, was seen to be one of it's key assets.

For me, if I am teaching something I feel quite confident in, I set an example. I can easily adapt what I'm doing. If it is not working with some people I can quickly change and I have got quite a few backup plans to what I am doing. And if what I put across, if it doesn't work, I can easily change it round. Whereas to me, if it was something like badminton for example, I probably have a few backup ideas but not as many so I wouldn't feel as confident and I probably might not come across as confident. (Thomas, pre-service teacher, Interview 1)

Whilst content knowledge would not guarantee good lessons, it would improve the chances of it happening. Good content knowledge could help to facilitate more flexible and creative approaches to teaching. It could help pre-service teachers to escape from the rigidity of the lesson plan and respond more effectively to pupils' needs.

When I was doing netball lessons I was a lot more creative and a bit more daring and willing to try a bit crazy things just because I knew if this went wrong I would be able to on the spot change it there and then just from the experience that I've got and the understanding of it whereas in football…when I was teaching football at SE1 I was a bit more reluctant to go off my lesson plan, do you know what I mean? (Angelina, pre-service teacher, Interview 1)

When pre-service teachers felt more confident in their content knowledge, they felt more empowered in their ability to teach good lessons. The facilitative effects of in-depth content knowledge allowed pre-service teachers to act more creatively in response to the requirements of teaching situations. This indicated a positive relationship between content knowledge and PCK. The close link between these two dimensions of knowledge was a permanent theme throughout this investigation. In the main, content knowledge was valued not as an aim in itself, but for its facilitative value. Frequently, pre-service teachers felt that it was easier to bring their personality into play and to enjoy their teaching more readily. This was also observed by the mentors, who cited uneven and frequently more games-based content knowledge profiles to cause difficulties for pre-service teachers. It was also evident that University-based content knowledge and PCK development in complex areas such as gymnastics and dance had been helpful to develop pre-service teachers' knowledge in these areas. Nevertheless, it did not sufficiently prepare those with significant context

specific knowledge deficits to be confident in their teaching of these subjects.

> *Games wise they seem stronger on overall. I'd say physical education as in gymnastics, dance, they themselves don't have the confidence. I think that's what it is. I think they know the stuff and I see what's been happening at University is there. But it's just their confidence in delivering it. I don't know how, I don't know what, unless they are a specialist in it, unfortunately I've not had any gymnastics or dance specialists, so it really has been, you can see from the lesson plan, the ideas are there but they're very unsure that it is right (Nick, Mentor)*

Throughout the investigation, lack of content knowledge was seen as a constraining factor in the enactment of PCK, even if the extent of this diminished throughout the investigation. A significant aspect of learning and teaching that highlighted the inter-relatedness between content knowledge and PCK consistently was that of differentiation. There is a principal agreement about the desirability of differentiated learning and teaching in the PE literature and its teaching community (Bailey, 2001). The ability to facilitate opportunities for differentiated learning formed part of the statutory assessment requirements as outlined in the National Frameworks for teacher education during the time of this study (DfES, 2002), as well as subsequent versions of these (TDA, 2007). It is, however, acknowledged that the formulation of strategies for successful differentiated and inclusive teaching strategies remains a difficult aspect of teaching and learning in PE, even for experienced teachers (Morley, et al. 2005; Woodhouse, 2001).

The development and implementation of differentiated learning approaches was also found to be challenging by the pre-service teachers in this study. This was particularly true in the early stages of the course, when pre-service teachers experienced multiple difficulties with implementing differentiated learning and teaching strategies in their teaching.

During these earlier stages, pre-service teachers were only just developing their conceptions of more general pedagogical concepts such as for instance differentiation, teaching styles or AfL. However, at this stage most had not as yet developed their thinking about these concepts in significant depth to translate them consistently and coherently into successful teaching strategies. In addition to the concerns about content

knowledge, pre-service teachers also had to develop their general organisation and class management, whilst trying to get to know their pupils over the course of the relatively short first placement (seven weeks).

Whilst pre-service teachers were aware of the desirability to devise strategies for differentiated learning, they frequently found this hard to put into practice. Limited content knowledge affected pre-service teachers' ability to plan for and deliver differentiated learning outcomes. Although they already recognised the need for differentiation in their teaching, their solutions for differentiation were, at this stage, still narrowly defined and content-focused. Pre-service teachers noted the significant challenges during the early stages of their training. For instance, the need to facilitate differentiated learning was seen to be difficult, particularly in activity areas where they deemed their practical subject matter content knowledge to be low.

> *Obviously, we all knew we'd have to do differentiation in our lessons. But in reality I found that quite often difficult to do, especially when I didn't know the sport I was teaching very well, like in football and badminton. It's easier, if you have them in something you know, like hockey for me. But even then, you need to plan for it…Then, sometimes some of them won't really like it if you give the stronger ones extra tasks, or the weaker ones easy tasks. Sometimes they feel picked on. And sometimes they think you prefer the stronger players. (Natalie, pre-service teacher, Interview 1)*

Limited content knowledge consistently affected pre-service teachers' ability to achieve the quality they were aiming for. Such problems could be mediated through good support at school, for example from an expert mentor. However, pre-service teachers were aware that ultimately they would have to deliver 'the goods' themselves. Whilst pre-service teachers had started to develop a general understanding of the theory (i.e. what is differentiation), they still lacked the strategies to apply these in practice. Nevertheless, even in the early stages of training, most pre-service teachers aspired to cater for individual pupil need through differentiated teaching. Initially, many of their attempts to do so were centred on differentiating technical content.

> *Definitely, with differentiation you need to have a lot of different drills for different outcomes. I think if you have got a lot more*

subject knowledge then you have got different ideas of how you can do that. (Ben, pre-service teacher, Interview 1)

Whilst notions of more advanced concepts of teaching PE, such as concepts associated with differentiation, pupil-centred teaching styles and assessment were starting to develop in the thinking of most pre-service teachers, a firmer knowledge of such concepts and more concrete strategies of how to realise these in practice were only just emerging. It also demonstrated how the multiple demands of teaching that pre-service teachers had to master, alongside other knowledge requirements at this stage, made it more difficult for pre-service teachers to achieve their intentions.

I suppose it just takes a lot longer because you have got to find the drills in the first place, and you have got to find whether they are applicable, knowing that you have got to try and apply it to the very lowest levels of ability, all the way up to the very highest levels of ability, so you have got to make sure that those drills are suitable for a class of twenty or thirty kids … and then you have got to plan them into a lesson that is only five-forty minutes after they have got changed. (Jenny, pre-service teacher, Interview 1)

Like Jenny, many other pre-service teachers recounted that additional obstacles added to their difficulties in trying to enact some of the more advanced pedagogical concepts. Teaching large classes with varied ability profiles and pupils they did not know well enough presented significant barriers as they tried to enact some of their University-based learning during the first school experience phase. Getting to grips with the more mundane instructional aspects of teaching such as time management, organisation and class management issues was also important, since it could ‘scupper’ the best-laid plans.

My first bad lesson was a gymnastics lesson and again organisation-wise, I wasn’t prepared for what happened. The group was using lots of apparatus and I had to try and make sure all of that was safe while everything else was going on around me as well… What happened was I just didn’t group the pupils properly so that is an organisation issue. I knew what I wanted them to do but they didn’t really know what I wanted them to do, and from this confusion that’s where things sort of go wrong, like when they do not know what to do, they just start messing about.

Although I knew what I wanted them to do, when I set the task, they didn't understand and they couldn't do it. (Ben. pre-service teacher, Interview 1)

The impact of multiple constraints was evident, when pre-service teachers reflected on the range of pupil needs and how they could meet them through their teaching. The combination of having limited knowledge of their pupils and having limited knowledge of the subject matter made it difficult to respond flexibly to pupil needs and to achieve differentiated learning outcomes. The lesson plan, whilst considered to be helpful, was not sufficient to cater for the situations when what was planned did not work out in the actual lesson. Being able to organise learning in an inspired way also required pre-service teachers to have a sufficiently extensive range of content to pick from. Stretching pupils over the course of a whole module emphasised this relationship between the range of subject specific content knowledge and the ability to keep pupils engaged over a period of time:

Yeah like with the dance I had to make a real conscious effort to go and find out ways to extend them, because the differentiation was there for the first couple of weeks, but as soon as they had achieved our extension activities then you have got another seven weeks that you have got to keep them, and of course more weeks the further on that they get in school, you have got to find more challenges in activities for them. You do have to work really hard in terms of trying to push your own subject knowledge in order to keep them achieving. Sometimes you just think, where am I going to get that from? (Alexander, pre-service teacher, Interview 2)

The fact that Alexander was experiencing these difficulties with dance was another example of how gendered content knowledge profiles affected pre-service teachers. Where the required breadth of knowledge about content was not at their disposal it was hard to organise and shape it in such a way that it was suitable to facilitate good pupil learning (PCK), especially when this had to be achieved flexibly and in response to occurrences in the lesson.

Content knowledge deficits, organisation and management of activities, pupils and time, lack of intimate knowledge of pupils were

frequently identified as challenges as pre-service teachers tried to plan and teach their lessons. Citing some or all of these constraints, pre-service teachers frequently planned for many of their early-stage lessons to be taught in predominantly teacher-led teaching styles. Although there was variability between individual pre-service teachers in this, content did often provide the initial focal point when they planned their lessons. The choice of teacher-led teaching styles in turn precluded many opportunities for differentiated learning in learning domains outside the physical domain.

Nevertheless, pre-service teachers had started the process of deliberating about differentiation, even if they found this difficult to achieve in their teaching. This was especially true during SE1, when, alongside the multitude of challenges that pre-service teachers faced, they also did not know their pupils that well as yet. This added to the problem of selecting appropriately differentiated content for their lessons.

> *I think differentiation for me was one of the hardest things to do …Like, at the beginning, I just didn't know where to start. There was so much stuff to think about, like you'd go to the lesson, and you'd have planned a lot of stuff, like for me hockey. And then you'd get to the lesson and you'd know in 10 minutes it all didn't fit. Too easy, too hard. Or they just didn't enjoy what you'd planned. And then you'd need to change things as best as you could. So if you don't know your stuff that well, it's hard to differentiate. (Angelina, pre-service teacher, Interview 1)*

As Angelina was starting to develop knowledge of the nature of differentiation and its general aims, she identified barriers and restrictions to its successful enactment due to her limitations of activity specific 'content knowledge'. Like others she had also recognised that insufficient content knowledge as well as insufficient knowledge of the pupils made it difficult to match content to the learning needs of individual pupils. Restrictions in content knowledge made it harder to recognise the conceptual and motor learning problems that the pupils experienced, a phenomenon that has been recognised by some (Rovegno, 1993; Rovegno et al, 2003). Lack of content knowledge affected pre-service teachers' ability to select inspiring content and

extension tasks, as well as a repertoire of suitable teaching progressions and strategies to address learning challenges flexibly as they arose. In particular, where the pre-service teachers found it hard to recognise pupils' core learning problems, misconceptions and abilities, strategies how to address these were hard to identify.

Pre-service teachers' problems with achieving the frequently illusive state of differentiated learning mirrored some of the difficulties that even experienced teachers encounter when trying to achieve equitable learning experiences for all pupils (Woodhouse, 2001). Nevertheless, their deliberations about differentiated learning and teaching were at this stage only emerging. Whilst there were some considerations for pupils' ability levels and the need to take these into account, reflections on a wider range of learning needs and a consideration of more general aims of PE was still largely absent in these early stage reflections.

During the later stages of the course, pre-service teachers developed a more sophisticated understanding of the concept of differentiation.

Nevertheless, pre-service teachers' narratives during their final interviews continued to identify effects that content knowledge limitations had on this aspect of enacted PCK. Natalie, for instance, had developed an enhanced understanding of differentiated learning and teaching at this point. She was clearly aware about the need to achieve differentiated learning outcomes and was sufficiently content that she frequently met these in her areas of content knowledge strengths. She also aimed to achieve these outcomes to the best of her ability in the areas of less developed content knowledge and addressed these through extended planning. This strategy worked well, as long as her plans hit the mark. However, whenever the selected tasks and activities were not as successful as she would have liked them to be, her restricted content knowledge reduced her ability to act flexibly in response to these circumstances.

> *Differentiation is better within my stronger subject areas just because I've got a greater knowledge of different activities and tasks and drills that I can do within that and a better understanding of the game so that helps. You see how you can make practices more game like, more realistic...but my*

differentiation is not as strong in the tasks that I settle for (in other lessons). Then, if within the lesson my more able pupils are achieving really well in the more difficult tasks that's when I struggle to further them more, to differentiate more than I'd already planned to do. It's OK if I've planned to do it within the lesson. If I've gotta think on my feet that's when it's harder. (Natalie, pre-service teacher, Interview 3)

Pre-service teachers' narratives also highlighted in many instances how content knowledge, knowledge of pupils and context specific PCK were inextricably linked in providing the necessary basis for pre-service teachers' capability to respond flexibly and effectively to specific teaching situations. Despite their improved knowledge profiles across the range of knowledge bases, pre-service teachers and mentors continued to report negative impacts of limited content knowledge on PCK. Although these were now less severe in nature, they were nevertheless still of importance to pre-service teachers. Debbie's narrative below is an example of how the lack of technical knowledge in racket games impeded her analytical skills and therefore her ability to provide good feedback to her pupils. This is in contrast to her strength in Netball, where she felt much more at ease in conducting her lessons flexibly and in response to pupils' performances. A fundamentally facilitative effect of content knowledge was the ability to define outcomes with more precision and also the ability to recognise when these outcomes were met.

With netball, I know what my outcome should be. However, if they're not achieving it, I'll modify it, and if they're achieving it first time I'll increase the difficulty. But with tennis, I find it hard to achieve that expected outcome, I don't always really know what they should be able to achieve, if that makes sense. (Debbie, pre-service teacher,
Interview 3)

In areas of more in-depth content knowledge, pre-service teachers felt enabled to recognise pupil difficulties with their learning and implement suitable interventions to respond to these needs. Conversely, lack of content knowledge created uncertainty all the way along this chain of events. Since pre-service teachers were not clear about the exact nature of the outcome, they were also not sure whether it had been achieved to an

acceptable extent. And, even if the pre-service teacher realised that effective learning was not taking place, they lacked the specific tools to take the appropriate action. Content knowledge deficits therefore impeded the transformative processes that were needed to enact PCK in the form of pedagogical sound and appropriate progressions. Pre-service teachers' observations of these interconnections between content knowledge and PCK were also shared by mentors. Michelle, Debbie's mentor in SE2, confirmed how her excellent content knowledge in Netball enabled her to recognise individual pupil needs and react to these through effective feedback and targeted interventions.

> *And then on the contrast of course we've got Debbie at the moment who's background is netball and she can see straight away where to progress tactics and that and give directions to individual players rather than having to direct it to the whole class. I think those that aren't comfortable with their knowledge have to direct to the whole class, they can't identify individual pupil's progression and what they need to do. Those who have got confidence in their subject knowledge are able to give very much individual feedback quickly because they know it comes to their minds straight away, they don't have to revise it, it's there. (Michelle, Mentor)*

Additionally, it was not always recognised by pre-service teachers when insufficient content knowledge acted as a barrier to the facilitation of learning. At times, pre-service teachers simply did not recognise that they were not facilitating successful learning experiences. In these instances, this was due to their lack of context specific content knowledge and PCK. Such difficulties were identified on some occasions during lesson observations and post-lesson reflections. For instance, during a tennis lesson Annabel was aiming to improve the backhand shots of her Year 8 Girls' group. It was evident that she had developed a good relationship with these girls, who willingly co-operated with her throughout the lesson.

However, throughout the lesson, the progress of key technical learning aspects of the lesson remained relatively poor. In the post-lesson review it was evident that this was due to her inability to recognise the fundamental problems the girls had with the selected content. Firstly, her choice of fully pressurised tennis balls was inappropriate for the type of

rackets used and the standard of play of most of the girls in the group. For the researcher, this also raised some questions about the established principles of teaching indoor tennis within the PE department. Additionally, the girls in this lesson were not taught explicitly how to feed the tennis balls to their partners. This continued to affect the core practices of the lesson, without being addressed. There was also a failure to detect other fundamental problems the girls had at various stages during the lesson and consequently these were not addressed in the lesson.

The post-lesson conference revealed that Annabel, an inexperienced racket player, had not been aware of these difficulties and the effects they had on the girls' progress. She had not fully recognised that the way the content was organised and presented to the pupils constituted a barrier to learning. Context-specific content knowledge and PCK therefore continued to have an influence on pre-service teachers' ability to facilitate the high quality learning experiences they wanted to provide for their pupils.

Another factor that was identified was the seasonable nature of pre-service teachers' timetables. The traditional change of seasonal activities within PE departments produced challenges as well as opportunities for pre-service teachers in this study. Since new activities frequently meant that new content knowledge deficits would be exposed, these seasonal curricular changes challenged many pre-service teachers. However, during these later stages, pre-service teachers felt better equipped to deal with these than they were at the beginning of the course.

> *I had to do a lot of reading for my lessons to make sure that I had the knowledge and stuff. And now it's come to the summer term, summer sports the same has happened again like there's stuff that I don't know, but I felt like I'd been able to like pick up things quicker and take them on board. (Jenny, pre-service teacher, Interview 3)*

Pre-service teachers' broader understanding of teaching and an increase of knowledge across a range of knowledge bases in general allowed them to cope with renewed content knowledge deficits more effectively. Despite the fact that content knowledge remained an issue for pre-service teachers, the adverse impact of these knowledge deficits decreased over the duration of the course. This was partly a consequence

of content knowledge improvements which resulted from content knowledge development itself. The growth in other significant areas of knowledge helped to reduce the perceived adverse impact of context-specific content knowledge. The beneficial effect of developing more general, transferrable aspects of PCK was also reported by other pre-service teachers to be of importance.

> *Sometimes I've found I don't differentiate enough or I differentiate too much…But I don't think it's too hard. I've not got as much of a problem with things. I'm not uncomfortable anymore, because now I think I can link thinks better. If, say for example football and basketball. If you've got good subject knowledge in basketball you can transfer some of your differentiation there to football just because it's a different sport, it's kind of a team game involving a ball, there's dribbling, there's passing. Just because you use a different body part you could say well, I don't know, if you were gonna do passing in a group you could get them moving around, whereas if you want to make it easy you could get them doing it stationary. You can kind of link things together so as long as you've got subject knowledge in a related area I don't think it's that difficult. (Nicole, pre-service teacher, Interview 3)*

Whilst it was still considered by most pre-service teachers that content knowledge was important, many felt by the end of their course that increased PCK and the ability to transfer teaching strategies from one activity area to another could help them to apply general principles of differentiation across a range of activities.

Such reflections demonstrated a reasonably firm understanding of how differentiation should work in principle, although the examples that were provided frequently came from the motor-learning and skills domain. Pre-service teachers understood how they could apply general principles, such as changing the speed during task execution to make things easier or harder and also appreciated how to extend these principles to different activities. Whilst they identified links to activity specific 'content knowledge' as a potential hindrance to facilitate differentiated learning, many expressed confidence about their ability to handle these situations through transferring instructional and organisational strategies between activity contexts. The relative ease and relaxed attitude with which Nicole reflected about her views on differentiation was however not universally shared amongst pre-

service teachers. For some it remained, together with the issue of assessment, an area that they found difficult until the end of the year.

> *I realized probably not towards SP2 that that was probably the area of teaching that I really had to pull my fingers out with. And just trying to organise different activities for the different pupils. I mean, I would consider to be very basic differentiation, if you've got a bowling lesson and you've got one group that's bowling from a slightly further distance or a rugby lesson and they're passing a slightly longer distance. I just, I see that as very basic and I am interested in finding better ways of doing it. (Alexander, pre-service teacher, Interview 3)*

Alexander's perception of differentiation for instance was more all-embracing and less technically or instructionally focussed than Nicole's. The differing views about the extent to which either pre-service teacher had achieved competence in integrating differentiated learning into their teaching tool box was a reminder of the fact that interview findings reflected pre-service teachers' progress from their own points of view. Alexander too had developed a general appreciation of basic principles of differentiation, but his narrative revealed that his growth of knowledge in this area had shifted his own expectations. He was no longer satisfied with "very basic" approaches to differentiation and expressed his curiosity for exploring better, more sophisticated ways of achieving this. His motivation to improve this aspect of his PCK also signalled an attitude that was open to learning and change.

This was demonstrated by most pre-service teachers' expanded notion and understanding of ability, most notably the recognition of cognitive abilities. The realisation that differentiation extended past the physical learning domain in turn led pre-service teachers to seek out teaching approaches and strategies that could realise these expanded learning outcomes. They also demonstrated examples of differentiation more consistently throughout their teaching. During the later stages of their course, pre-service teachers also made closer links between their choices of teaching approaches and their increased understanding and appreciation of the pupils they were teaching. They increasingly recognised the importance of knowledge of pupils and curricular links were also more explicitly considered when such choices were made. Evidence for

increased differentiation was seen in a variety of forms. Strategies for differentiation of physical content such as differentiation by task, outcome, equipment and grouping were frequent. More elaborate techniques like differentiation by formulated learning outcomes, higher order questioning, accordance of independent decision making, leadership and assessment were also evident with many pre-service teachers.

Whilst generalisations from the narrative presented here should be drawn with caution, the views expressed by the pre-service teachers in this study added weight to those scholars such as Siedentop (2002), who emphasised the facilitative effects of content knowledge. The assumption that lack of 'content knowledge' might affect pre-service teachers adversely had been made before, although based on varying levels of evidence (Hardy, 1995, 1997; Griggs and Wheeler, 2005; Laker and Jones, 1998; Mawer, 1995, Morgan and Bourke, 2008; Sloan, 2007). This study advances the discussion by identifying the nature of the relationship between content knowledge and PCK more specifically. The extent and intensity with which some pre-service teachers experienced the adverse impact of content knowledge deficits on enacted PCK also created a strong impression in this study.

Throughout this study, pre-service teachers continued to regard content knowledge be of high value, and sought to develop their content knowledge in main areas of their teaching. To them, it was important because it enabled them to facilitate higher quality learning experiences for their pupils (Herold and Waring, 2011). As a consequence, this aspect of knowledge was of high priority when pre-service teachers considered their requirements for learning development activities**.** The perceived gap of relevant knowledge for teaching was poignantly recognised by the pre-service teachers in this study. This acted as a powerful driver, which motivated them to address these knowledge deficiencies. Pre-service teachers also identified the need to further develop context specific content knowledge alongside PCK in their NQT year and possibly beyond this. Most significantly, pre-service teachers continued to develop their perception of teaching over the duration of the course. This resulted in a shift from content-focused to a more pupil- and process-focused philosophy of

teaching in most pre-service teachers. The following sections explore these developments of knowledge. They also discuss how the developments in PCK were inextricably linked with an increased awareness of pupil learning and process-centred teaching and learning approaches.

5.5 Developing PCK: The emergence of more pupil-centred teaching approaches.

Deciding how to teach specific subject matter to specific pupils is at the core of any purposeful pedagogical reflections. Exploring the thought processes that underpinned pre-service teachers' reflections with respect to teaching styles, was therefore of significant interest in this study. It held potential clues to unlocking pre-service teachers' thinking about the process of teaching PE. As pre-service teachers' knowledge grew over the period of the course, their appreciation for the importance of different aspects of knowledge continued to develop. Crucially, these developments demonstrated a shift away from emphasising content and content knowledge towards a more sophisticated understanding of the interplay between teacher, content and pupils as advocated by Armour (2011).

As the course progressed, pre-service teachers showed a better understanding of the need to consider the process of teaching, rather than focussing predominantly on technique and skill-based outcomes. For instance, as they considered the purpose of their lessons, they demonstrated an expanded understanding of the range of learning outcomes that can be achieved through physical education. Moreover, they made more explicit links to pupils' learning needs and how these could be met through a variety of teaching approaches. PCK development was also linked to the growth of other knowledge bases, such as curricular knowledge and knowledge of pupils. These knowledge developments contributed to pre-service teachers' views about *how to teach* and consequently their development of preferred teaching styles. Figures 5.7 and 5.8 are graphical representations of the shift in pre-service teachers' focus from delivering content during the early stages of their training to thinking more about the learning process and pupils' learning needs towards the end of their training.

Figure 5.7 Content focussed teaching (early stages of training)

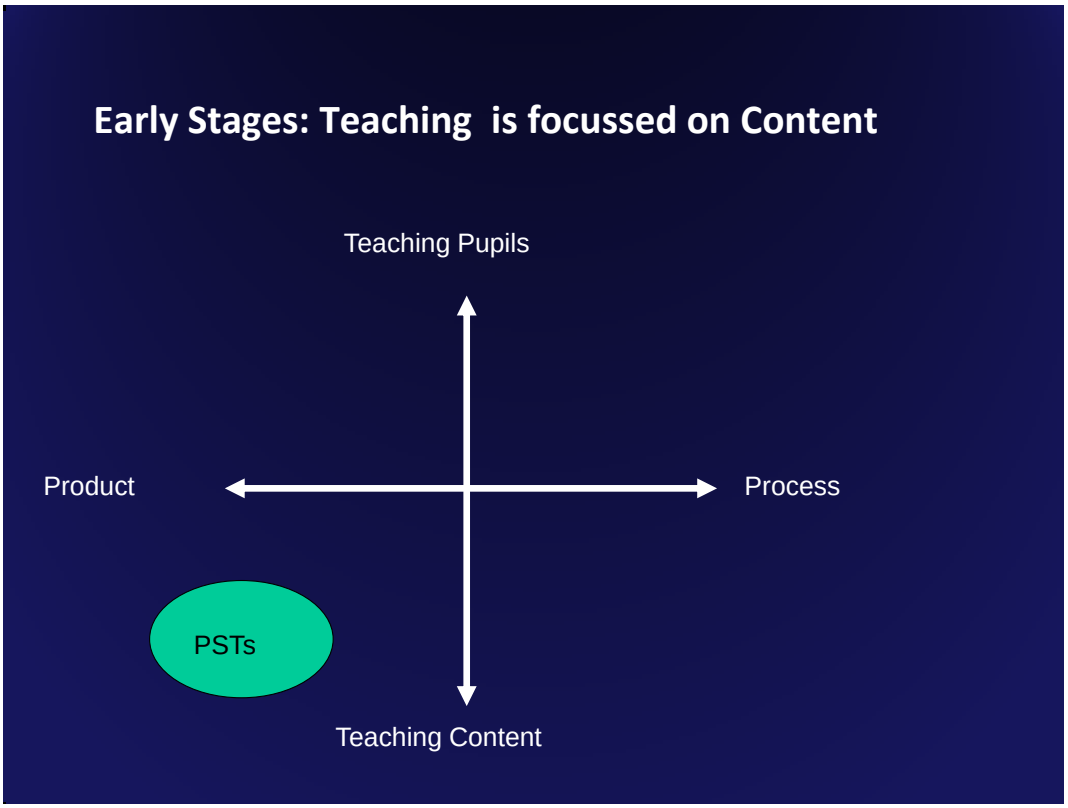
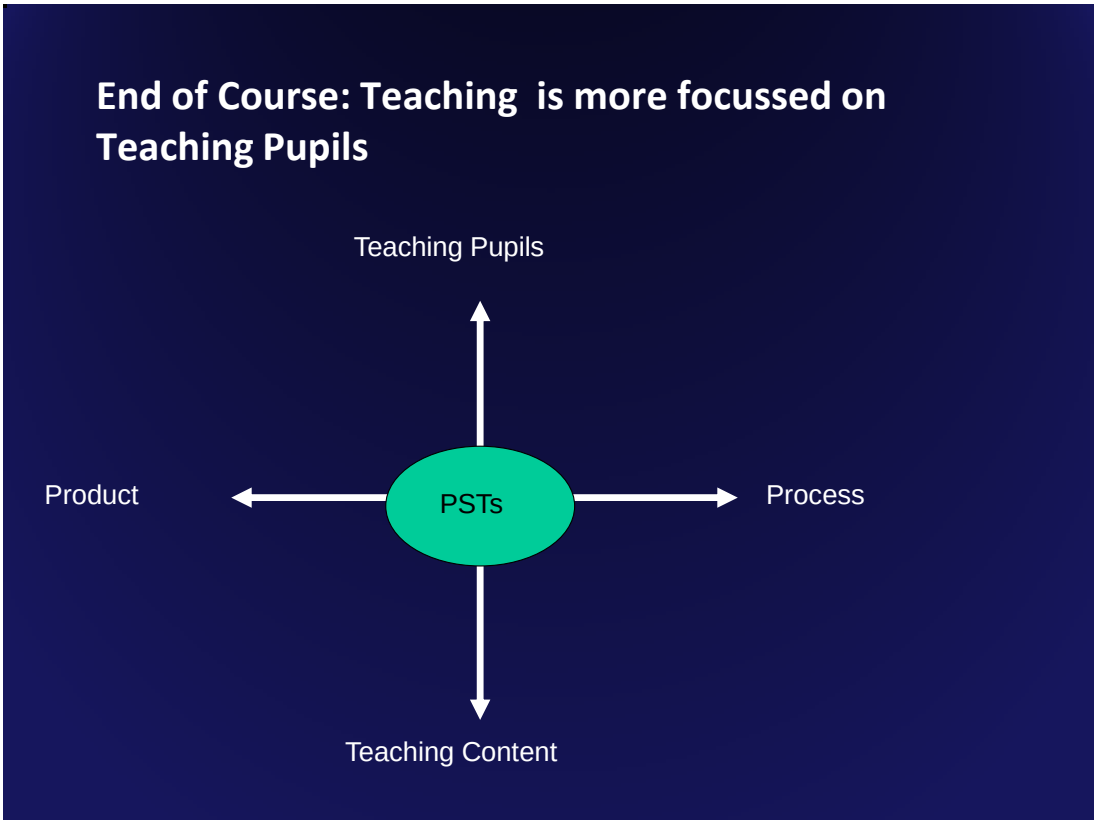


Figure 5.8 Pupil-focussed teaching (later stages of training)



As the course progressed, pre-service teachers increasingly considered the process of teaching alongside the content they had planned to deliver. Their thinking was no longer dominated by the product of learning, as they began to consider the importance of the learning process more fully. Figures 5.7 and 5.8 above depict this shift from focus on product towards focus on process in pre-service teachers' thinking. By developing a more pupil-centred outlook on teaching they started to evolve teaching strategies that allowed for pupils to have more responsibility for their own learning.

As discussed in previous sections, pre-service teachers' initial pre-occupation with content, organisation and class management was aligned with a limited ability to enact a wider range of teaching strategies, in other words a limitation in their PCK. On the conceptual level, most pre-service teachers initially had little vision as to how they may facilitate more pupil-led teaching approaches. This was also reflected by relative silences in the

early interviews on this issue. On the enacted level, this could also be seen in the relative dominance of teacher-led teaching approaches. The development and adoption of a wider range of pupil-centred teaching styles only became evident over the course of their training. This constituted a significant development in pre-service teachers' PCK. Pre-service teachers also developed their appreciation of the pedagogical rationale to use a range of teaching styles. The main teaching styles that they related to when they recounted their stories were reciprocal, and guided discovery teaching styles. A particularly noticeable feature was the wide-spread use of reciprocal teaching style. The emerging commitment to this teaching style was one of the most observable developments of pre-service teachers' PCK in this study. Pre-service teachers' narratives explicitly recognised the acquisition of this new knowledge.

> *I think reciprocal teaching styles I would have never thought of that before starting the course…I think it's important because you can stand there in front of the class and get across what you want the pupils to learn and go into the stages and phases, but I think sometimes children want to learn by themselves. They don't always want to be told this and this, so if you give the pupils the cards to go away and practice. The children can kind of go away and get a feel for it themselves. So that I think is something I wouldn't have done or spent too much time thinking about of using beforehand...I like them to go and try their own things for themselves. (Thomas, pre-service teacher, Interview 3)*

Reciprocal teaching was appreciated for its capacity to involve pupils more actively in their learning. It was frequently attempted in conjunction with fledgling intentions to incorporate 'AfL' into their teaching.

> *They'll assess each other, they'll teach each other and then from that I will then give them another task card with their success criteria, to see, if have they met the objectives basically. Have they learnt? If so how have they learnt? What have they done to make that a good performance? How can they make it better? So I find that really useful for that. (Phil, pre-service teacher, Interview 2)*

The development of knowledge about the purpose and value of such strategies was linked to University-based learning as well as school-based experiences. Pre-service teachers' convictions to experiment with different

teaching styles were reinforced when there was synergy between the messages that came from relevant people and CoP. Reciprocal teaching and the incorporation of 'AfL' strategies was supported by the majority of mentors in this study. Moreover, reciprocal teaching was well established in the PE departments of the schools involved in this study and constituted one of the legitimised departmental teaching practices.

> *Peer teaching and assessment I think we've used in PE for years, that was nothing new to us, I think that's pretty standard across the board really. Whereas in other departments of the school that was a really new thing, I think peer assessment is very important, you know passing on coaching skills, giving key points to pupils and enabling them to see it and then obviously trying to perform it themselves so I think peer assessment is perfectly valid and a good way of going really. It sort of moves you away from the more command style PE that was traditionally taught in but there's a time for that as well, you know. (Jill, Mentor)*

For many mentors there was a distinction between more 'traditional' (command) and a more 'modern' way of teaching PE. Peer assessment and reciprocal teaching were seen to be important tools to the teaching of PE the 'modern' way. The commitment towards incorporating reciprocal teaching styles and peer assessment was evident with these mentors. This exposed pre-service teachers to these messages during their school placements and they started to consider peer assessment and reciprocal teaching to be useful strategies to develop learning outside the physical domain. Mentors recognised pre-service teachers' progress with this.

> *I think the peer assessment is very good for that. As a technique to engage the pupils and get them learning even though they might not be physical. And they (pre-service teachers) do use that quite well actually to be fair. Here because we haven't got that much space, I think they develop that very well to be honest. Whereas, if they go to a school with a big sports hall where there are enough courts for everybody, enough rackets for everybody, enough space, I think they may struggle a bit more with that in certain schools. Certainly when they do come from schools like that they think "oh gosh, this is tear your hair out time" that's generally when I do say "Well look, we've got to develop all the areas of the curriculum so, you know bring it in here". So I think our school is quite good for that actually. (Andy, mentor)*

Like Jill and Andy, most mentors in this study valued peer teaching and peer assessment as a way to engage pupils in non-physical learning and pre-service teachers were seen to do this well by the end of their training. Reciprocal teaching and assessment activities were regarded to be an important tool to develop 'all areas' of the NCPE within school partnerships. It was also developed as part of the University-based teaching on the course, providing synergy with the messages from school-based mentors.

> *The lectures we did on different teaching styles and the examples we did in the practical sessions gave me ideas about how I could try and teach differently from just telling pupils what I wanted them to do, but to get them to do and try things for themselves. Take some leadership in lessons and things. And my mentor here is really supportive of me trying these things out. Like getting pupils to teach and assess each other and discovery learning. And they really enjoy that, they can have an input. (William, pre-service teacher, Interview 2)*

Most pre-service teachers had started to make stronger links between teaching styles and wider aspects of learning by the mid-stage of their training and they continued to develop a wider range of teaching styles throughout their course. They had begun to appreciate that pupil-centred teaching styles would afford opportunities to develop learning outcomes which were not purely physical or technical. The belief that the use of these teaching styles would benefit their pupils increasingly became evident in pre-service teachers' narratives.

In addition to reciprocal teaching styles, pre-service teachers incorporated aspects of guided discovery into their teaching. In games, this was frequently linked to teaching intentions that incorporated aspects of a TGFU approach to teaching. The attempts to integrate elements of discovery learning started to emerge more distinctly during SE2. Pre-service teachers also tried to apply elements of discovery teaching within other activity areas, although these were frequently limited to specific episodes within the lesson and still fell short of sustained approaches to discovery teaching. Some pre-service teachers found this easier in gymnastics and dance, where they encouraged pupils to be creative in devising their own sequences of work.

I think because it's the more creative side of the activities probably more than anything, where I use discovery learning quite a bit. It just lends itself more to it like in gym and dance. I do elements of it in games as well, but just not as much. For instance I get them to find out how to get away from a defender, or to beat a defender two on one, but it's often smaller things like that. There just isn't the time to do much more quite often as well to be honest. So I do quite a bit of teaching games for understanding bits with conditioned games and so on, but I wouldn't say it really is "full-on" discovery. (Ben, pre-service teacher, Interview 2)

Even if there were limitations to the application of these strategies, pre-service teachers were increasingly experimenting with more pupil-led teaching styles. Some pre-service teachers stated that they really saw the value in discovery-style learning, and tried to use this wherever they saw an opportunity to do so. Pre-service teachers increasingly discovered the value of letting pupils learn from their own experiences, thus showing a more constructivist attitude towards their teaching, although the motivations and rationales for this were not as yet fully reflected and sometimes also somewhat opportunistic.

I taught year nine Gaelic football which I don't know a lot about at all. So for that reason I've sort of adopted discovery based, guided discovery based learning. Just because I'm sort of, learning with them at the same time. And it's nice to see them come up with new ideas and I'm like 'oh yeah you can do that', and I'm learning at the same time. With things like Gaelic football we've got obviously some people here, it's a big strong sport, so some people in my class already do Gaelic football in clubs, and guided discovery is very good in that some of those pupils sort of take the lead a bit. (Angelina, pre-service teacher, Interview 2)

Angelina's strategy to explore unfamiliar subject matter together with some of her pupils underscored her confidence to relinquish some control. The confidence to use more experienced pupils as a resource, rather than see them as a threat, emphasised this point. The development of pupil-centred teaching was more attainable where this was supported by the respective PE department. The extent to which pre-service teachers progressed with this was closely linked to the teaching culture of the schools, and in particular the PE departments. Where PE departments had

cemented such practices with their pupils, pre-service teachers found these approaches to teaching more successful and rewarding.

> *They (the pupils) are just more used to doing things independently and that goes all the way through. They are used to taking leadership roles for all sorts of bits of the lesson. Well they really expect it. And all the teachers here expect you to do it as well. So, it makes that side of it really enjoyable, because you always have to think how you can involve them (the pupils) into the lesson. (George, pre-service teacher, Interview 2)*

This was quite consistently, although not universally, supported by the outcomes of the teaching observations carried out by the researcher. The summary of the teaching observation of Angelina's gymnastics lesson from the mid-stages of the training was one example of such an occurrence.

> *This was an enjoyable lesson to watch and in many ways exceeded the expectations of a lesson that would under normal circumstances be expected at this stage... The lesson was well planned and offered much scope for pupils to engage into self-directed learning. Pupils had the opportunity to assemble many elements of learning from the early part of the lesson into small group performances at the end and they devised these in an enthusiastic and creative way... In this lesson Angelina has allowed pupils to direct and evaluate their own learning skilfully and during the reflection also justified this with reference to NCPE learning processes...This was an excellent lesson and it would have been difficult to see how an experienced teacher would have improved on this significantly. (Angelina, teaching observation summary, mid-stages of the training)*

The above cited observed lesson was also an example of the multitude of factors that frequently combined when observed lessons had a very positive lesson outcome. Angelina was a very capable and motivated pre-service teacher, with an infectiously positive personality combined drive to develop her own practice to the best of her capability. Her progress, at this stage of the training, was exceptional and it underlined the differentials in trajectories and capabilities that existed between pre-service teachers in this study. This was also noted by her mentor.

> *Well, we were very lucky with Angelina, she was phenomenal. She was one of those students that came in and wanted to be the best teacher that she possibly could. Right from the start, she wanted to get involved, she wanted to see people*

teach, her planning was meticulous, the resources she made brought her lessons to life, and over time her confidence grew and so that she could use different teaching and learning styles... In front of the kids, she always had a smile on her face, she was very personable, ehm and very early on you could see evidence that the pupils were learning. She wanted to develop different teaching and learning styles, she wanted to develop her questioning, she wanted to use ICT in the lessons, and it made her placement hard work for her, but she reaped her rewards and she's obviously managed to get her NQT with us and she has learnt so much during her time here and at the University and she will be absolutely flying. (Suzy, Mentor)

In line with Angelina's ability to 'connect' with pupils, her co-operative and enthusiastic group of Year 7 girls had responded exceptionally well to her way of teaching, and her enthusiastic personality. There was no distraction through behaviour management issues and the pre-service teacher was fully able to concentrate on her teaching. The approach to incorporating pupil-centred teaching strategies was also well supported and encouraged by her mentor. As pre-service teachers developed their thinking beyond the boundaries of skills-oriented teaching, they recognised that the involvement of pupils in the learning process led to more in-depth learning experiences. The University-based VLE acted as a conduit, promoting this aspect of learning within the PGCE group.

I have used discovery based learning in quite a few lessons, because the pupils respond much better to this and to games. They don't respond very well to skills practice and command style. I have used DBL in my minor games lessons...the pupils came up with really good ideas and were thinking for themselves rather than me just telling them. In my unihoc lesson it worked really well to get pupils to play a game in which I put 3 rules on the game. Then I got the pupils to get into groups and think of another rule to add into the game to make it more successful for all the players. It is really surprising to see what the pupils actually come up with and makes you think twice about using command style so often.
See you all Monday.
x x

(Natalie, pre-service teacher, mid-stage VLE contribution)

Explicit recognition for the value of using guided discovery teaching styles was further evidence for pre-service teachers' development of PCK.

They increasingly recognised opportunities for learning, which they had previously not considered. They realised that discovery-led teaching styles that could engage pupils more effectively in self-directed learning. They also recognised that this way of teaching had implications for the time needed to use such approaches. As pre-service teachers progressed through their course, they continued to acquire a broader range of teaching strategies from which they were able to choose. They also acquired a greater certainty of the circumstances in which they would select one teaching style or another. Many had also started to state explicit preferences for pupil-led teaching styles, publicly, in the reflections they shared on the VLE:

> *I would have to say that I agree with the comments made already that I do not have one particular style but I use a variety depending on the groups. As I have grown in confidence over the year I have felt more comfortable experimenting with different teaching styles and now try to use guided discovery and reciprocal teaching styles as much as possible. I feel that these styles benefit the pupils the most and allow them to be actively engaged in their learning. I do however use command style with the more disruptive groups that wouldn't do any work unless I did!!*
>
> *I have also enjoyed getting to know my groups better in this longer second placement which has meant that I have built up a rapport with the groups and they have become accustomed to my teaching style and expectations in lessons. (Angelina, pre-service teacher, VLE reflection, final stage of course)*

Interviews, observations, discussion contribution on the VLE, as well as mentor interviews confirmed these developments of pre-service teachers' knowledge. Their expanded knowledge about teaching styles and their willingness to experiment with these afforded more flexibility in their teaching. They were more astute in matching teaching styles to their objectives, as well as to their groups. At the end of the course, they recognised more clearly how learning outcomes may be achieved through the selection of specific teaching approaches (Mosston and Ashworth, 2008; Salvara et al, 2006). Many stated a preference for using guided discovery and reciprocal styles over command styles. As outlined by Mosston and Ashworth's (2008) spectrum of teaching styles, more pupil-

centred teaching styles have the potential to give pupils more ownership and autonomy in the learning process. This was explicitly noted as a learning benefit by pre-service teachers. Their increased knowledge, as well as increased teaching confidence helped them to shift the emphasis of predominantly the teacher-led towards more pupil-led teaching (Herold, 2011; Sicilia-Camacho and Brown, 2008).

Whilst these developments did not negate command style teaching approaches in certain situations, for instance with “unruly” pupils, pre-service teachers valued their new knowledge and were committed to further developing this in the future. This also demonstrated their openness to learn and to develop their personal teaching philosophies. This important observation is interesting within the context of the literature which, at times, is somewhat pessimistic about the capability of PETE to affect change in pre-service teachers’ personal philosophies of teaching (Capel, 2007; Capel et al. 2011; Green, 2000).

The findings also highlighted the complexity and inter-relatedness between different aspects of pre-service teachers’ development. Growth of knowledge inspired confidence. This, in turn, encouraged the desire to experiment. In their application of teaching styles, pre-service teachers had also become more aware of pupils’ backgrounds. With better knowledge of pupils’ abilities, pre-service teachers felt better equipped to tailor their teaching more effectively to pupils’ needs. This needed time to get to know their pupils and time to develop the strategies and applied experiences with these teaching approaches. The experiences that were generated through their teaching and reflection, led pre-service teachers to confirm or reject specific approaches. Experiencing success with their pupils was a powerful point of reference as pre-service teachers’ confirmed, or rejected, specific practices. It validated the use of teaching approaches.

Whilst concerns with content featured more strongly during the earlier stages of their training, evidence from the middle, and even more so the final phases of their course, highlighted a gradual shift towards an appreciation of other dimensions of subject knowledge in general, and their PCK in particular. Positive support from the mentor as well as the PE department was conducive to harnessing such learning. Learner-teacher

relationships also needed to be sufficiently stable for pre-service teachers to have the confidence to try out such approaches. As pre-service teachers developed general pedagogical and instructional strategies, limitations in content knowledge were less of a barrier to attempting different teaching styles. Pre-service teachers who managed to engage their pupils in this way, furthermore found these experiences rewarding. Most had concluded that they valued pupil-led teaching styles highly, and that they intended to use these in the future. Employing different styles of teaching was also related to other dimensions of knowledge. One important aspect of this was the development of curricular knowledge. The way pre-service teachers linked understanding of curricular knowledge, and in particular their knowledge of the NCPE to their teaching constituted a key theme in this study. This is explored in the following section.

5.6 Curricular Knowledge and PCK

During the later stages of the course it was evident that pre-service teachers' curricular knowledge was augmented. It was particularly evident that their interpretation of the NCPE was becoming more important in framing their consideration about teaching. As pre-service teachers' knowledge of the curricular framework increased, so did its impact on their teaching. Pre-service teachers' thinking and decision making continually demonstrated how different aspects of the knowledge base were inter-woven. This was also reflected in the relationship between curricular knowledge and PCK.

This relationship was demonstrated by the way in which pre-service teachers justified their rationales for the selection of specific teaching strategies. One fruitful source for exploring their thinking about teaching intentions, were the narratives that related to lesson planning. These yielded rich information about how and why pre-service teachers framed their teaching in any particular way. They also provided an insight into their development of curricular knowledge, and demonstrated how this knowledge affected pedagogical acting and decision making. One key

theme was the influence of the key learning processes (often referred to as 'strands') that were outlined in the NCPE.

> *I think I base my lesson upon one of the strands, I would say. Like, some of my lessons have got lots of peer and self-evaluation in. For example, my dance unit of work, I specifically tailored lessons to strands. So in one lesson I would teach them a motif, and then they would select moves to change or modify the motif and come up with their own. So that would be their 'selecting and their applying'. And when they were learning the motif, that was their 'acquire and develop'. Then we had video recorders, and we'd video them and we'd self-assess, so that brought in their evaluation skills, and stuff like that. I push one lesson towards one strand, and so cover all four strands [key learning processes] across a scheme of work, rather than covering all four strands within one lesson. (Debbie, pre-service teacher, Interview 3)*

The exploration of pre-service teachers' narratives about their teaching intentions also provided some valuable insight into the personal teaching philosophies that started to underpin their thinking. The fact that pre-service teachers considered a significantly increased range of factors when planning for their approaches to teaching, gave an indication of the distance they had travelled. Later lesson planning strategies demonstrated more sophisticated curricular knowledge and a clearer understanding about how to use the learning processes of the NCPE to inform their teaching. This included making stronger links between curriculum learning processes and the selection of corresponding teaching styles.

The use of reciprocal teaching styles and peer assessment to facilitate the curriculum aspect of 'evaluating and improving learning' was one such strategy. To support this, many pre-service teachers produced a range of teaching materials, frequently consisting of teaching cards with visual cues and key teaching points. Additionally, the use of ICT was frequently identified as an additional tool to facilitate this. It was also used for self-assessment and evaluation.

Debbie's use of pupils' independent work to create new themes was also evident in the teaching of dance by most of her peers. Her 'short hand' reference to 'select and apply' in this instance expressing her planning intentions to satisfy requirements for pupils to develop their composition

skills. Whilst the acquisition and refinement of skills remained important for pre-service teachers, the need to give pupils opportunities to assess their own learning had become explicit in their narratives. The interpretation of the requirements of the NCPE and in particular the requirement for pupils to evaluate and improve their own and others learning was frequently identified to be important, as pre-service teachers experimented with corresponding teaching.

> *It's the evaluating and improving that is important. It's important for you to evaluate their performance but also for them to evaluate their performance themselves. It's a two way relationship really. The children don't want to be dictated to, especially the older they get. They want to develop learning skills themselves rather than having a figure telling them what they can and can't do or what they are doing right and what there are doing wrong. Most of the time children will know for themselves. (Thomas, pre-service teacher, Interview 2)*

Pre-service teachers at this stage had started to recognise the importance of involving the pupils in their own learning. They acknowledged the influence of the NCPE on their planning and demonstrated an emerging awareness for the need to let pupils discover aspects of learning for themselves. Whilst there was (physical) content to cover, it had also become important to take note of the other key learning processes that were outlined in the curriculum. It was the aspect of 'evaluating and improving learning' that made a particularly strong impact on pre-service teachers' thinking. It was also the one that was most closely linked to decisions about how to teach demonstrating the relationship between planning, the NCPE and the concomitant use of teaching styles. Pre-service teachers' later stage reflections about their approaches to planning provided evidence for this relationship.

> *When I plan my lesson I always go back to check I've met different strands. I always plan it first, then look back to ensure. I always try to include evaluate and improve. I think being part of guided discovery that's a major aspect. I always allowed time for guided discovery, I know if I'm saying hand pass, rather than just standing passing the ball back which would take two minutes, if I go tell them to discover ways and then ask them to reflect, right what did you find worked better? That's going to take at least five, seven minutes for them to have a go and be able to make*

errors and then correct them. (Thomas, pre-service teacher, Interview 3)

Reflections on the processes through which pupils could be enabled to evaluate and improve their own and others' learning demonstrated an enhanced understanding of the teacher/pupil/content relationship. It also highlighted how curricular knowledge was inter-woven with decision making about the selection of corresponding teaching styles, and therefore PCK. Most significantly, pre-service teachers increasingly appreciated the value of giving responsibility for learning to their pupils. This was supported by an increased trust in children's ability to actively participate in this process. Pre-service teachers also recognised some positive effects on motivation through more pupil-centred approaches to teaching and learning. Their end-of-course reflections confirmed these convictions.

The extent to which pre-service teachers achieved coverage of a variety of curriculum aims differed between pre-service teachers. For instance, Phil's reflection of his perceptions and practice was a good example of how this research revealed commonalities as well as diversity in pre-service teachers' perceptions and development. Whilst Phil attempted to achieve a range of curriculum aims, his narrative revealed uncertainty about how to do this.

> *I would say that in every lesson I have probably not met the four strands in most of my lessons. I don't know whether that is a target which I should be hitting or aiming to achieve in every lesson or whether we can just focus on a particular strand. Well the majority of the time it was acquiring and developing skills and evaluating skills. So every unit that I was planning would be acquiring and developing and some form of deeper evaluation going throughout... I tried most times to make reference to health and fitness, but I found that often I got lost in what I was trying to achieve in the lesson. (Phil, pre-service teacher, Interview 3).*

Whilst Phil had developed some understanding of the key processes of the NCPE, his conceptualisation of their application was not as yet well defined. He was unsure about the concrete approaches he could facilitate a range of learning processes in his teaching and admitted that his thoughts had been strongly focussed on the acquisition and refinement of skills. He also valued aspects of pupils' evaluation, but his strategies to integrate

health and fitness concepts were a statement of intent, rather than a clearly formulated concept.

Focussing on some aspects of the curriculum more than on others demonstrated how some pre-service teachers implicitly prioritised these. The limited recognition, which was given to the development of the knowledge and understanding of health and fitness was an example of this.

> *The kind of a common knowledge of health and fitness and things like that – less. I did less in terms of that one than the other three strands. I hadn't thought before that if they're all of equal weighting then I should really be doing as much on that one as the others...I very rarely had an objective that was health and fitness based and it's something I've not really thought about 'till recently. I possibly should have done a little bit more but it was quite often not in and I don't know whether I would have always done this. But it was definitely in the schemes of work, but not as much as other things...I suppose that's something I need to think about. (Alexander, pre-service teacher, Interview 3)*

Pre-service teachers' narratives consistently revealed a lack of strategies regarding how to integrate this in the course of general lessons. Whilst health and fitness was part of specific units of work and timetabled specifically in most PE departments, its integration across different units of work was patchy. Many pre-service teachers had planned for this part of the curriculum with less detail and conviction that for the other learning processes.

> *I think definitely strand four is left out a lot, or if it's not, the proportion I give to each strand is heavily, probably more between one and three, rather than two and four, like some lessons obviously will have elements of strand two because I will give like a rule, or a condition to hit strand two, but I would not gear a lesson ever towards strand four (Jenny, pre-service teacher, Interview 3)*

This limited vision of how to develop an understanding of health and fitness through their teaching was also evident in other pre-service teachers in this study, who accorded this aspect of learning a less explicit status during their planning of general PE lessons. Since this key process was not accorded sufficiently explicit status during these lessons, its inclusion in the lesson objectives was frequently marginalised as an after thought in the planning of more general PE lessons.

An insufficiently formulated knowledge base with view to Health-related Physical Education (HRPE) in pre-service teachers was also observed by Harris (2013) who is critical of PETE and its capacity to prepare future PE teachers to promote HRPE. In line with Harris (2013), who concluded that PETE in England would need to develop strategies to address issues related to health-related teaching and learning more effectively, it was observed that the pre-service teachers in this study had not yet developed a firm knowledge base and solid delivery strategies as to how to achieve high quality HRPE.

Additionally, pre-service teachers admitted to limitations in their planning for other, wider aims of the NCPE, and strategies to integrate these into their teaching remained fuzzy with most pre-service teachers.

> *It probably wasn't all there a lot of the time, citizenship stuff, I mean where possible I did try to make cross-curricular links when I could… I have done a couple of lessons with the main focus on leadership and reciprocal stuff like group leaders with the main focus being leadership, but as far, like citizenship stuff I have not really had a focus in my lesson and my objectives and that, I wouldn't say that. (Phil, pre-service teacher, Interview 3)*

When wider learning aims were considered, this process was implicit, rather than explicit. When pre-service teachers were asked about how they achieved the wider aims of the curriculum, they usually recounted examples of promoting teamwork or leadership qualities. These were, however, not consistently the focus of their formal teaching intentions.

> *I think some of that stuff is inherent in it. I've never focused on it but I know that it's kind of there like, it will just be in the lesson automatically like for example in SP2, gymnastics, when they had to work in groups, for example in one week they basically, the pupils they had to work on a sequence, but it wasn't going very well because they didn't work well as a team. The next lesson was right I'm assessing you, I'm looking for good team work, so it was using actually assessment of the class and how they acted to each other in the next lesson, but it wasn't, I didn't do it on purpose as I wasn't like right this lesson I'm going to work on key skills like teamwork, it's just because that's what I felt they needed at that time. (Jenny, pre-service teacher, Interview 3)*

Pre-service teachers were, however, aware of these NCPE intentions, even if their immediate teaching often focussed on the inner core

of the PE curriculum. For instance, there were many attempts to incorporate cross-curricular intentions into their teaching. Frequently, pre-service teachers took their cue for this from the formal lesson planning process, where the University planning documentation required them to consider this.

> *I've never put it in a main objective... However in my additional information box on the plan I would put in links with ICT use or maths. Say, I did a 400 metre lesson and they were working out estimate times and target times and they were using ICT-based sheets and then they were using maths skills because halving times and making predictions on times is quite difficult so you've got the maths... It would come in the plan so we talk about things like trajectory and aerodynamics and things like discuss but I would never put it in the objective, I would put it in the additional information and in the body of the plan. (Debbie, pre-service teacher, Interview 3)*

The above examples indicate a range of developments in relation to curricular knowledge. Most significantly, they highlight the importance of curricular knowledge with respect to pedagogical considerations about the value of different teaching styles and approaches. Crucially, it was evident that the framework of the NCPE had a significant impact on pre-service teachers' perception of how they should teach.

Of particular importance had been the influence of the aspect that related to evaluating and improving learning in the NCPE. This supported pre-service teachers' growing aspiration that pupils should be involved in their own and others' learning. Over the duration of the course, pre-service teachers learnt to adopt teaching styles to make this possible. The development of curricular knowledge enhanced pre-service teachers' appreciation of the need to develop domains of learning outside the physical and it was very evident that many pre-service teachers were taking important cues for the planning of lessons from the NCPE itself.

> *It's the National Curriculum strands which are really important to make sure they're flowing through your lesson. They're kind of your flavour the backbone to your lesson. You've got what you want to cover, but you make sure you're meeting your strands in each lesson… that helps. (William, pre-service teacher, Interview 3)*

The findings from an earlier study by Curtner-Smith (1999) had suggested that many teachers interpreted the NCPE conservatively, noting a continued emphasis on teacher-led teaching styles. The findings of the author's study suggested a different outcome. The reading of the NCPE by pre-service teachers in this study had been accepting of the major curriculum intentions. It was evident that its influences had contributed to the formation of value judgements about pupil-centred teaching styles. This would be welcomed by those who advocate the merits of such styles over exclusively teacher-centred styles (Morgan, 2003, Morgan et al., 2005; Salvara et al, 2006; Sicilia-Camacho and Brown, 2008).

It also, to some extent, varied from the findings of authors who have voiced their concern that English pre-service teachers and their mentors continue to prioritise practical content and practical content knowledge over other pedagogical considerations and also over other aspects of subject knowledge (Capel, 2007; Capel et al., 2012; Hayes et al, 2008; Velija et al., 2009). Given the importance that is attached to value orientations (Ennis and Chen, 1993, 1995; Curtner-Smith, 2001; Kulinna et al. 2010; Klemola, Heikinaro-Johansson and O'Sullivan, 2013) and the apparent inertia to shift teachers in their positions once these have been formed, the final positions taken up by pre-service teachers in this study were of some significance. It indicated that pre-service teachers in this study were open to adopt new teaching styles, if they were able to discern a positive impact of these on their practice.

This also related to their attempts to embrace AfL-oriented learning and teaching practices which, following the instrumental work of Black and William (1998), have gained increasing prominence in the education literature and also in the field of PE. Whilst AfL is now regarded to be a fundamental element of teacher knowledge (Black et al., 2003; Frapwell, 2010), little is so far known, as to how such knowledge is valued by pre-service teachers. The pre-service teachers in this study showed enthusiasm, as well as development of their knowledge in this. Contextual factors that favoured the development of such knowledge were further inherent in the curricular framework as well as its adoption and interpretation by PE departments.

The pre-disposition for reciprocal teaching and peer assessment in fulfilment of the curriculum aspect of evaluating learning, for instance, was supported through the teaching practices within the departments as well as the practices of mentors in this study. To a greater or lesser extent, all partnership schools had taken the lead in their curriculum organisation from the NCPE and reciprocal teaching in particular was a practice that had proliferated in most PE departments. It was the interpretation of such curricular policy and the subsequent embedding of related practices by the PE departments which amplified the impact on pre-service teachers.

Pre-service teachers had acquired strategies to promote key learning processes as outlined by the NCPE. They were also accepting of the framework as 'the way to do it', without substantially questioning its validity. There was evidence that they were prepared to change their practice on the basis of successful learning.

There was variability of responses that concerned the achievement of wider educational aims through PE. At times, pre-service teachers' ability to deliver these curriculum intentions was impeded by their lack of knowledge as to how to achieve this, as was demonstrated for instance by their lack of strategies to integrate HRPE effectively into their teaching. Similar barriers to teaching HRPE effectively were observed by Harris (2013) in her study of pre-service teachers' knowledge for teaching.

When asked during final interviews, if they frequently planned for these wider aims of PE, as outlined in the NCPE, as an explicit part of their lesson objectives, some pre-service teachers felt that this had not really been the case. This might accord some credence to Hardy's (1999) and Green's (2000) complaint that predominantly school-based teacher training fails to fully embed critical thinking and pedagogy, favouring the practical over the theoretical.

Some additional thoughts relating to the above findings and its significance to gauge pre-service teachers' preparedness to accept new practices might also warrant consideration. For instance, whilst there is no suggestion that Green's (2000, 2006) observations about the importance of personal biographies in influencing the 'everyday philosophies' of the PE teacher are invalid, questions may be raised about the actual persistence

factor of such personal biographies. Whilst all pre-service teachers in this study, had come to teaching through positive socialisation into PE and sport, this did not appear to result in ‘ossified’ or ‘elitist’ attitudes towards the teaching of PE as is sometimes implied by the PE literature (Curtner-Smith, 1999, Capel et al., 2011; Green, 2000, 2002, Hayes et al., 2008; Sirna, Tinning and Rossi, 2010; Velija et al., 2008).

Pre-service teachers in this study in the main were open and eager to try a range of learning and teaching strategies, which were not founded in notions of competitiveness or physical elitism. Their positive attitude towards more pupil-centred teaching styles provided some indication for the directions in which pre-service teachers might develop, if they were to spend their NQT year in PE departments that would be supportive of such approaches.

Whilst the question remained whether these values would persist over time, it was nevertheless evident that the cumulative influences over the course of the year had resulted in a change in pre-service teachers’ perception of teaching. In doing so, this indicated not only a more sophisticated interpretation of the NCPE, but also a shift in the perceptions of their role as teachers.

5.7 Knowledge of Pupils

Throughout the course of the training, many pre-service teachers’ concerns with content knowledge decreased as their attention began to focus more on the needs of the learners and the process of learning. They increasingly realised that getting to know their pupils was an essential ingredient for their teaching. This realisation was an indication that pre-service teachers’ concerns were shifting from the delivery of content towards recognising the need to consider their pupils’ abilities and needs more closely.

> *I think knowledge of the pupils is probably the key to everything. If you have knowledge of the pupils, not just their names but their motivating interests...that way you can tailor things towards their needs... You can see what needs they have, working together (with them) to be able to fill the gaps if you like, to be able to get them up to the next level. So yeah, knowing the pupils and*

highlighting their needs is probably one of the most important things. (George, pre-service teacher, Interview 3)

It was evident that, as their training progressed, pre-service teachers had started to appreciate that they were teaching pupils, rather than content. Many felt they needed to get to know their pupils better both in PE as well as outside PE. To achieve this, some pre-service teachers went to quite some lengths to engage their pupils in conversations, frequently outside normal lessons. This facilitated both a better understanding of their pupils, as well as more effective teacher-pupil relationships. Pre-service teachers also participated in extra-curricular activities.

Yeah, I didn't understand how important it was, especially with year nine pupils; I didn't realise how important it was to get a good relationship with pupils around the school. I mean, I always thought 'You go to your lesson, do your lesson and then you're done'. (Angelina, pre-service teacher, Interview 2)

I just think it's important that they realise that, they pick up upon the fact that you're taking the time to get to know them, to get to know their interests, their hobbies, what their life's like out of school, I think that impacts on the teaching sessions when you have them, from a positive point of view. (Phil, pre-service teacher, Interview 2)

Finding out about pupils and being informed about their specific needs was felt to be vital if pre-service teachers were to fulfil their role effectively. This was perceived to be particularly challenging if classes had a wide spectrum of abilities, especially when a significant number of children had been identified to have SEN. In several instances, pre-service teachers recounted that specific incidents with these children had made them appreciate to a fuller extent how important it was for them to know more about their pupils than just their physical abilities and motor skills.

I think it is really important because I remember one time, these two lads, they were doing something ridiculously stupid at trampolining. I think they were acting like monkeys or something and they were making stupid noises and hitting the trampoline and I told them to stop and I went up and I just stood next to them and watched them and they finally realised I was there. I didn't shout. I took them off and had a big chat to them and said look you are doing this it is very silly and then the teacher said to me that lad you just talked to is a massive special needs kid, he

has got this, this and this going on. And then I felt really bad. I thought well I didn't shout, I didn't feel bad in that sense but I felt bad that maybe I could have dealt with it in a different way. So, I think, knowing your groups for SEN is a really important thing. (Ben, pre-service teacher, Interview 2)

As pre-service teachers started to build up and factor in their knowledge of pupils, most developed a more flexible, tailor-made approach to their teaching. They contended that a predominantly autocratic approach, relying on the authority accorded to them by their status, frequently did not deliver the results they needed. Finding out more about the pupils and using this to build effective relationships as well as successful teaching and interaction strategies were deemed to be essential. When pre-service teachers experienced the positive results of their endeavours, these experiences also provided significant professional and personal satisfaction.

But certainly you know, across the board some of the groups I've taught that started off my second placement for the first couple of weeks, were difficult groups, low ability you know, quite a lot were statemented pupils that have got a lot of issues outside of school. So really I think it's getting to know, not necessarily what you're teaching, but also the class you teach, the pupils. Relating to them is really important and probably that group I'm talking about the last couple of weeks it's been the lesson I enjoyed the most when at the start of the placement it was the lesson I probably didn't like the most. I wouldn't say I didn't like teaching it but it was more a challenge because I really had to, it wasn't easy to just go in and teach, a lot of behind the scenes stuff had to go on to find out what made people tick. (Thomas, pre-service teacher, Interview 3)

In addition to the enhanced awareness of the need to know their pupils better, pre-service teachers also developed their ability to diagnose learning needs across a wider range of learning domains. Being more skilful in diagnosing individual pupils' levels of understanding helped pre-service teachers to select more effective strategies to cater for their pupils' learning needs. The narratives from the later stage interviews confirmed identifiable progress in this area of learning and some insight into the underlying thought processes that were linked to these developments. Pre-service teachers demonstrated how their improved understanding of pupils'

individual make ups as well as their cognitive abilities had helped them to frame various aspects of their teaching better. Having developed a keener understanding of pupils' cognitive abilities, for instance, pupils' ability to understand complex language (or not) had informed their selection of suitable strategies.

> *I think, obviously you improve how you can link the things together and how you can put them across to the pupils, which seems like obvious, but it's really important, the way you communicate them to pupils. I'm a lot better at getting down on people's level now and talking a bit in their kind of language and trying not to be too technical with them and too specific... You know, not give them too much to think about, not give them a big long sentence full of big words, just give them the basic things that they need to do and let them think about that for themselves. (Nicole, pre-service teacher, Interview 3)*

Over the course, pre-service teachers continued to develop a heightened awareness for using instructional strategies, what verbal instructional techniques were appropriate to the knowledge of their target audience. They recognised that unsuitable instructional techniques could create barriers to learning. Their attempts to find the right level could be observed in a range of contexts. In the selection of verbal instructional strategies, reducing verbal complexity as well as the amount of information that was to be shared with pupils was a teaching skill that pre-service teachers honed and reducing technical jargon led to a better understanding of their teaching intentions.

As pre-service teachers developed their knowledge, they progressively paid attention to techniques that would help pupils to engage with problems. If there were misunderstandings they would take responsibility for this, rather than blaming the pupils. Similar attitudinal developments in pre-service teachers were reported by Rovegno (1993), who identified the shift of accrediting blame as an important indicator of PCK development. Developing their diagnostic skills in order to recognise pupils' abilities was an essential step in the selection of more appropriate teaching and learning strategies. These advancements in diagnostic skills were also noted by mentors.

She is more than capable of assessing classes, both on the effort and the individual pupil's learning. She can move pupils on, she can recognise those that are achieving and therefore need to be stretched further and now she's confident in changing things within the lessons to stretch the more able she can then drop down the skill level and someone's not achieving, drop the skill down so that they do start to achieve so by the end of the lesson, that pupil has learnt something or they know what they need to do. She's confident in using progression sheets with pupils and directing them so that the pupils know what they have got to do and how to move up. She uses a lot of questions and answers with the pupils at the beginning of the lesson on what they covered in the previous lesson and then at the end of the lesson they look at questions and answers on what the pupils have learnt. (Jill, Mentor)

Enacting some of the more pedagogically challenging concepts of PCK, which involved teaching strategies that promoted elements of pupil-centred learning, was an indicator as to the extent to which pre-service teachers had started to reflect upon their pupils and the need to develop pupil-oriented teaching and learning strategies. Time was seen to be an essential ingredient in this. The need for sufficient time to get to know the pupils, as well as time and opportunity to develop these diagnostic skills was also highlighted by mentors to be an essential condition. Mentors felt that these developments could better take place during the longer of the two placements.

Because it is a longer placement they develop better relationships with pupils, they get to know the pupils better, so things for example their ongoing assessment, their knowledge of the children's ability allows them to put progressions better within their planning, allows them to differentiate better. Their assessment is more accurate and more thorough and because they teach them over two different activities as well or maybe even four, depending on the timetable, it allows them to transfer their knowledge across different activities and it allows them to also try different teaching styles as well, it allows them to do more reciprocal work, it allows the children to have more independent learning, more assessment for learning opportunities because they have got the confidence to do that with those groups because they have still got those relationships really. (Carla, Mentor)

Increased knowledge of pupils was seen to be essential to facilitate many core teaching activities more effectively. When such knowledge was

available, enacted PCK was no longer operating in relative isolation from its contextual settings. As pre-service teachers' confidence in their own abilities increased, their certainty about the selection of matching content, teaching strategies and progressions to pupils also increased. This did not only include awareness for physical and technical aspects, but increasingly also for the cultural background of pupils. Natalie's narrative demonstrated how she was aware that she had to prepare the ground first, if she wanted her uninitiated pupils to explore and experiment with Bhangra motifs in dancing.

> *Yeah, I think for me it depends on the activity that I'm doing. As I said, with dance, I do try and give them an initial motif which I've come up with, so that's obviously taught in, like, a command style, this is what we're gonna do. But then I really like to open it up to them then, so they can develop it. For example, a Bhangra dance. The last school I was in was, like, 100% white, middle class children with no experience of Bhangra. So I kind of came up with a motif for them to learn, just so they could get to grips with the style. And then once they felt comfortable, then it was a case of go off and explore. Whereas if I'd said, you know, "make up a Bhangra dance", you know, they wouldn't have known what to do. (Natalie, pre-service teacher, Interview 3)*

In summary, it was found that pre-service teachers had, over the period of their course, become more pupil-centred practitioners than they were at the beginning. Whilst the realisation of the importance of knowledge of pupils varied between individuals, all pre-service teachers had started to appreciate the dynamic between teacher, pupils and content more fully. They demonstrated a growing awareness of the fact that teaching was not a de-contextualised delivery of content.

Pre-service teachers actively worked on gaining a better knowledge and understanding of their pupils both within and outside class using a range of strategies to achieve this. For optimum development, a critical mass of contact with sets of pupils over time was needed, in order to gain sufficient information about the class, and the individuals within it.

Pre-service teachers found that, especially with some of their more challenging pupils, such as those with SEN, they needed to be informed well about their pupils' motivations, convictions, personalities and culture, in addition to their physical and cognitive abilities, and their propensity to react

to certain situations in certain ways. Their consideration of pupils' backgrounds and their learning needs was now more explicit and encompassed a broader spectrum than previously. They learnt to better utilise such information to support pupil learning and subsequent teaching and learning strategies started to take account of this.

Pre-service teachers over time gained enhanced diagnostic skills, used structured diagnostics activities, and started to better tailor their language to suit their pupils, looking to themselves to change if misunderstandings arose. This provided another measure of the distance pre-service teachers had travelled on their journey. The personal and professional satisfaction they felt as they saw the success of their endeavours was also noted.

5.8 General Pedagogical Knowledge: Effective pupil and class management facilitates better teaching

Development of general pedagogical knowledge continued to occur throughout the course. Pre-service teachers developed a range of instructional, organisational, class and pupil management skills, which were essential in facilitating pupil learning across the range of teaching contexts.

From pre-service teachers' narratives, it was evident that the development of class and pupil management skills in particular was an important facilitator to many other aspects of their teaching. When pre-service teachers experienced difficulties in managing pupil behaviour, this affected their confidence as well as their ability to pursue their teaching objectives effectively. Behaviour management strategies and how to implement these effectively were part of all pre-service teachers' reflections throughout their course of study. They constituted a core pedagogical competence against which pre-service teachers gauged their progress.

Although they progressed at differing rates, most pre-service teachers started to experience improvements in fundamental aspects of class organisation and behaviour management during their first placement, reporting more significant advancements by the mid-stage of the course.

Many pre-service teachers felt that an increased mastery of class and pupil management provided them with a foundation from which they could develop their teaching more successfully, and made it clear how much they valued these advances in knowledge. They regarded the development of this type of knowledge to be firmly situated within the school based setting.

> *My class control, my relationships with pupils and stuff like that, that's what developed the most, because you can't learn that in any other situation. The only way you can experience it is by being in school. And that was one of the hardest things to learn, really, how to control a whole class, how to get their attention, how to maintain their attention, how to refocus them, and stuff like that. (Debbie, pre-service teacher, Interview 2)*

As pre-service teachers developed more successful behaviour management strategies, they experienced personal growth. This expressed itself in confidence and belief in their ability to fulfil their role.

> *Well, for me I feel like my control's resolved now, I feel like I've got class management sorted whereas before that was an issue for me at my last school. I feel a lot more confident in different ways of teaching subjects. You know, how to even put them in teams, how to set up, you know I just feel a lot more confident than my first placement and I feel like more of a real teacher than a bit of a sham from the first placement. I feel like I'm, I've been here for seven weeks, I feel like I've been accepted into the staff, you know, the pupils know me as a teacher, you know, I just generally feel a lot happier than I did with my first placement. (Natalie, pre-service teacher, Interview 2)*

Throughout their placements pre-service teachers developed personal strategies which informed their approach to class and pupil management, as well as their own views as to what an effective pupil-teacher relationship should be. The rate at which improvements in skills was experienced was, however, also linked to the challenges that were inherent within the specific school context. A greater overall level of discipline in the school and within the PE department facilitated class and pupil management.

The general level of perceived 'respect' for teachers was remarked upon on several occasions as a distinguishing factor between different schools. Learning in those schools where significant challenges persisted

was perceived to be hard. This had a significant effect on what pre-service teachers felt they could achieve and how they would go about it.

Additionally, the effectiveness of behaviour and support systems in school played a major role in mitigating the level of challenge that pre-service teachers experienced.

> *The school's different as well. This school's like mainly white middle-class whereas my last school was very multi-ethnic, a lot of children in wheelchairs, disabilities, you know, a lot of different things to contend with. So this school's completely different to that and in a way I've found it easier to teach here and I find I get more out of the pupils and more out of my teaching just because the pupils generally are better; they're more on task, discipline's better here and I feel that if I did have any situation there's a better back-up structure to support me with discipline so I know who to refer to here, I know what I can and cannot do in terms of discipline whereas I did feel a bit isolated on my first placement so. Generally more confident and happier. (Natalie, pre-service teacher, Interview 2)*

In schools and PE departments where pupils were perceived to be more generally compliant with teachers' instructions, behaviour management challenges were perceived to be lower than in schools with more challenging pupils. As time went on, pre-service teachers increasingly focused on their own role in ensuring that pupils would meet high expectations. As they honed their approaches to managing pupils, they acknowledged that they continued to learn from mistakes they made in previous situations and they valued the support and feedback they received from mentors and other supporting teachers. In de-selecting one strategy and embracing another, pre-service teachers were building on their previous experiences.

> *Well I decided before I started this placement that I was gonna come in with a harder stance because although I got a lot of praise from my first placement for my rapport with the kids and the way my relationship is with my classes, when it came to discipline, because I went in a bit too 'softly, softly', I never really managed to get it, you know, get the discipline side right. So I decided to come in harder, still trying to be friendly and be myself but, you know straight away let them know I was a new teacher and not a student, you know. I set my standards which I didn't so much on my first placement, but the pupils knew my expectations straight away. That just made an instant difference, you know. Very first lesson I stamped out any, even such low-level*

disruption by showing them I wouldn't tolerate it and that just has made my life easier from day one. So, looking back, if I could go back to SE1 I'd completely change my first few days there and I think that would've helped me, really. (Natalie, pre-service teacher, Interview 2)

Natalie's new approach had led to results that made her feel positive about herself as a teacher. In this new placement, she felt that her work and actions had earned her acceptance and respect by both pupils and staff, something she clearly valued. It also demonstrated how progress in pre-service teachers' development was frequently multi-layered and linked to a combination of factors. Not only had Natalie started to develop a better understanding of the expectations she should have of pupils including with respect to behaviour, she had also developed the confidence and ability to communicate this effectively. This had helped her to develop her own style.

So that's one major thing that changed and also, I just think for me, just my confidence in terms of speaking in front of everybody, presenting myself, especially in subjects like dance or gymnastics. You know, we have a laugh; you know, there's times we learn but also I'm not afraid now to be myself and bring humour into the classroom. Now I just think instead of trying to copy another teacher I am trying to be myself and I find I am more comfortable with that and I generally think pupils respond better as well. It's been a few things really but, I've seen definitely a personal growth which I'm pleased with. (Natalie, pre-service teacher, Interview 2)

Similar experiences were reported by other pre-service teachers at this stage of training. It was noteworthy that they had started to recognize how their own actions had an influence on their lessons and they had begun to use this knowledge to influence pupil behaviour. Their own approach to lessons, especially the enthusiasm they brought, was one deliberate strategy to influence pupil perceptions, expectations and ultimately motivation to participate in the lessons. Angelina, who had a natural tendency to be bubbly and outgoing, had at this stage decided that her infectious enthusiasm was in most instances a personal strength on which she could build positively and deliberately, in order to enthuse her pupils.

I think I have to go in there with a happy attitude and to be able to adapt. I mean when I used to go to my netball lessons I used

to get so excited about it and, like genuinely got excited about teaching them and when we'd be in the changing rooms I'd be like 'Come on girls! Let's go; really like come on!' 'cos I wanted to get out there and teach it 'cos I'd be having fun while I was teaching it and so I used to race them all up to the netball pitches and then like race them in there and with football to begin with I didn't have that and so my attitude, I didn't realise how much it would rub off on the pupils. You know, if I just walked over to the fields they'd be just ten minutes behind me walking over and when I got there I'd be like 'Right, come on', they'd be like 'Mmmm. Don't really want to do this', but the difference from when I was teaching even the same girls netball and they were so excited 'cos I was so excited 'cos you know if I was very enthusiastic and quick-speaking they were 'Ooh, what's happening, why are we so excited?', you know. And I think that's a very important thing to have and something that I'm trying to transfer into different aspects of teaching. (Angelina, pre-service teacher, Interview 2)

For others, the process of building confidence in their ability to manage pupils and the general teaching context progressed at a slower rate. Annabel had initially shown a lack of confidence in her ability to manage challenging pupils during the early stages of her training. This was acknowledged by her and also observed by her mentor.

Annabel really had no confidence when she came here, first no confidence at all due to many factors and so the first couple of weeks it was just, not giving her any negative feedback, it was just looking purely at the positives and bigging her up really, giving her the confidence to get on and just to deliver a lesson. Now maybe that wasn't the best way but it was a professional decision I made because the confidence was just not there and she was slower to progress, but then at the end of the placement, she was doing fine. (Marie, Mentor)

Having the confidence to implement class and pupil management strategies was crucial. The need for mentors to understand individual differences was an important ingredient in the development of this confidence. Mentors were using different strategies and aimed to tailor their feedback to suit what they considered to be best for the pre-service teachers. Mentors used positive and supportive professional strategies to address pre-service teachers' development needs. Pre-service teachers, in turn,

acknowledged the supportive and effective environments which were, in the main, provided. These were again in turn instrumental in helping them to develop their knowledge of behaviour management tools and routines and their confidence to use these to manage pupils and situations.

Positive stories of success and personal growth were frequently contextualized within the setting of the immediate CoP within which such improved skills could flourish and be applied. However, whilst most were going forwards, others, like Alexander found themselves temporarily going backwards as they switched to more challenging school environments for their second school placement. It was evident to pre-service teachers that behaviour management strategies that were successful within one environment would not necessarily lead to success in another. Where there were concerns with behaviour management and class control these were overriding many other considerations related to learning.

> *On occasions, yes with some groups, with difficult pupils … that has had an impact on the learning environment for the whole group and I think as a consequence, my teaching has suffered. Whereas now I've perhaps become more inclined to focus more on managing the class rather than getting my objectives across that I'd set out in the first place. So, I've resorted to more, just maintaining control, and sometimes just getting through to the end of the lesson. Therefore as I say, the objectives are lost in that process, again, occasions have been few and far between but at the same time they have occurred whereas in my first placement school, I don't recall anything of that nature at all, throughout that whole seven week period. (Alexander, pre-service teacher, Interview 2)*

In the main, however, pre-service teachers continued to progress well with aspects of pupil and behaviour management. They started to appreciate the power of praise as well as the need to apply sanctions and learnt to apply departmental policies in this process. Above all, many had developed their ability to formulate and communicate their expectations with much more clarity and confidence to their pupils, thus avoiding many potential problems before they had a chance to arise. Mentor interviews as well as lesson observations confirmed that pre-service teachers had

developed their behaviour management by building effective working relationships with most of their teaching groups.

> *This was an amazingly competent session in which it was clear that William had established very effective working relationships with the group as a whole, as well as individual pupils in this. Despite the fact that this school, as well as this group can be challenging, this lesson was very productive throughout, with William demonstrating highly developed pupil management skills throughout. The content was fast moving and engaging and the inter-actions between William and the group as well as individual pupils were personal, but respectful. (Lesson observation, William, pre-service teacher, final stage)*

Evidence of established, effective teacher-pupil relationships was most explicit in the final stages of the training, as pre-service teachers had developed their personal approaches and their knowledge of groups and individual pupils. For many, this constituted a shift from remote controlling pupils to focussing more on individuals and the building of effective teacher-pupil relationships. When asked about her personal strengths, Debbie commented as follows.

> *Yeah. I think strengths, the ability to connect with the children and having some kind of rapport with them and getting them involved, sort of enthused in PE. That's my main strength. And I think if you can get that sorted and get them on board with you as a person then you have very few discipline problems. (Debbie, pre-service teacher, Interview 3)*

Even at the end of the training, pre-service teachers were, however, conscious that their newly developed knowledge remained a work in progress and needed honing in the future. Some also linked this to their status as pre-service teachers and expressed the hope that this would change in their NQT year, when they would have more meaningful responsibility for their own classes.

> *I think, in respect to like controlling discipline when I have my, obviously my class that I have for a whole year. I will need to like set expectations and rules at the start and definitely follow everything up to start with so that then gradually the whole year the pupils will know what is expected and you know that should keep everyone in line and they'll know how far they can push and everything so its all about starting off nice and clear so the pupils know. (Jenny, pre-service teacher, Interview 3)*

In the process of developing pupil and behaviour management strategies, most pre-service teachers saw links between the groups they were teaching and the teaching styles they deployed. A command style of teaching continued to be perceived as the safest option, if relationships with pupils were seen to be not yet consolidated. However, for most, it was not the way they wanted to teach, and at the stage when they felt that relationships were sufficiently well established, other forms of leadership and teaching styles were sought. Some pre-service teachers were aware of the dynamics and the ebb and flow in those relationships and acted accordingly.

> *My teaching style at times its very command style, certainly when I came here it was command style for the first week or two weeks, and now I've managed to relax that style but the children do know that I can revert back to that. Now, I think for my approach you know, every class is different and every activity you teach is different. The way you approach some classes can be a lot more relaxed if you've obviously got the rapport with the pupils. I think for me, certainly from a second placement it's finding the expectations the pupils have got for you and what you've got of the pupils. When I think both parties are aware of that you can relax slightly but then very quickly the children know how far to go with things if that makes sense. (Thomas, pre-service teacher, Interview 3)*

With a better knowledge of the pupils, as well as an increased tool kit of relevant pedagogical knowledge and strategies, pre-service teachers were dealing with many battles and challenges, as they progressed through their placements. Many of them narrated accounts with particularly problematic groups or individual students and solutions that were eventually found to these problems. Involving problematic pupils more actively in their learning and giving them responsibility was one frequently recurring strategy.

> *I had one girl who, in basketball she was a nightmare, she could do everything quite well. If you tried to challenge her a little bit she'd do it for a little bit and then just get bored and go off to kind of disrupt everybody else and the basketball would fly around everywhere. But if you said 'Oh, can you demonstrate this for me?' or 'can you go over there? They're struggling. Help them out', She'd go and she'd be brilliant just purely because they*

need something to do. They need to feel like they've been valued in the lesson. (Nicole, pre-service teacher, Interview 3)

The development of such strategies was not confined to getting pupils on board through positive engagement strategies. If needed, some pre-service teachers were also prepared to inject some steel in their actions and prove that they were not a 'pushover'. During later stages of the training they had also started to devise more sophisticated strategies in dealing with such issues. Explicitly putting the responsibility for their actions fairly and squarely on the pupils' shoulders was a behaviour management strategy recognised by all pre-service teachers, even if it was used to differing effects by different individuals.

Now it's like 'Well no. You've done this, this is the outcome. You were warned of the repercussions of your behaviour. End of' and I think the pupils respond to that a lot better. Obviously it's easier to try and get on with the pupils and probably the louder ones that say 'No I'm not doing a detention' and say, 'Oh, OK', and kind of slip away into the background; they respond a lot better if you say 'No you are doing this' and they realize that you're not gonna be a pushover and that what you say goes because that just reflects then on your whole lesson in terms of if they're being disruptive if you say to them 'Listen. Carry on and this will be the consequence' and they know you're gonna carry it through, it's not just like an empty threat then their behaviour is a lot better and I think then they respond to you better as a teacher, they respect your authority a bit more. (Nicole, pre-service teacher, Interview 3)

In summary, the development of successful class and pupil management skills was for many reasons key. Although some University-based learning on these subjects did take place, this development could to all intents and purposes only happen in school. These skills were perceived to be important to both confidence and personal growth. The types of challenges that were presented and the support systems available to assist pre-service teachers in dealing with them varied significantly between different school-based CoP. The general level of discipline in CoP and how well pupils responded to authority could be a particular concern. Where pre-service teachers experienced difficulties with the management of pupils, this also affected the pre-service teacher's confidence and

learning trajectory. More advanced pedagogical practices, such as attempts at discovery-based learning, were not attempted, if the pre-service teacher experienced difficulties with class and behaviour management.

The general level of perceived respect for teachers was remarked upon on several occasions as a distinguishing factor between different schools and learning in those contexts where persistent or significant challenges were perceived was seen to be hard.

As time went by, pre-service teachers developed deliberate strategies for class and pupil management, such as ensuring that pupils took responsibility for their own actions and experienced the consequences of their actions. Positive behaviour management strategies such as using praise and giving tasks and responsibilities to potentially disruptive pupils were also implemented.

Pre-service teachers continued to develop their own individual styles. Differences in pre-service teachers' personalities and individual make-up were perceived to have an influence on the extent to which effective relationships with pupils could be established – enthusiasm for the subject was perceived to be key. Over time, pre-service teachers developed a more sophisticated understanding of what constituted an effective teacher/pupil relationship.

5.9 The relative importance of subject knowledge and personal attributes: the mentors' perspective

A particular concern raised by some in the English PETE literature relates to the issue that not only pre-service teachers but also their mentors continue to privilege content knowledge over other forms of knowledge (Capel, 2007; Capel et al., 2011; Hayes et al., 2008; Velija et al., 2009). Consequently, this could 'impoverish the profession' through its narrow outlook on the ways the subject can be taught (Hayes et al., 2008, p. 341). Given the influential position of the mentor on the development of pre-service teachers (Capel, 2003; Smith, 2001; Chambers and Armour, 2012; Makopoulou et al., 2009), it was of interest to this study to investigate mentors' views on the importance of different aspects of knowledge for

teaching. It was also important to find out how much value they attached to developing specific aspects of knowledge and other skills and attributes in pre-service teachers.

This section explores mentors' narratives relating to the importance of various aspects of subject knowledge and in doing so, provides important background context that enhances the understanding of pre-service teachers' learning. As mentors reflected on aspects of knowledge in pre-service teachers, one interesting observation concerned their use of terminology. Similar to the mentors in Hayes et al.'s (2008) study, the mentors in this study also used the term 'subject knowledge' to signify in the main aspects of activity specific content knowledge and sometimes PCK. This was on the whole unproblematic, since the meanings they wanted to convey did become clear within the context of the narratives. However, different to the mentors in Hayes et al. (2008), was the fact that almost all mentors in this study valued personal attributes in pre-service teachers more highly than any aspect of subject knowledge. Like Tinning (2002), the mentors in this study valued for instance the ability to reflect, the willingness adapt, creativity and enthusiasm when interacting with children more than for instance content knowledge.

> *I think if I had a choice of someone with good subject knowledge and wasn't receptive to feedback and wasn't reflective to someone that didn't have good subject knowledge but wanted to learn and was reflective and was receptive I would rather have that person because they want to get better and they want to know what they can do to get better and they will get their subject knowledge whereas you can't necessarily become reflective and become receptive to feedback (Carla, Mentor)*

Mentors highlighted attributes that related to the ability of developing into a critical practitioner to be most important in their appreciation of what distinguished very good pre-service teachers from those who were good or merely 'average'. Their views were akin to those espoused by Shulman and Shulman (2004) in their revised conceptualisation of knowledge for teaching, who also accorded highest importance to these attributes. In this respect, mentors emphasised pre-service teachers' potential for learning in CoP over their specific knowledge profile, the focus of Shulman's (1987) original conception of the knowledge bases for teaching. The ability and

willingness to reflect and act on advice was seen to be essential in the mentoring process, namely a two-way process that needed the active involvement of pre-service teachers to construct new knowledge.

> *I think it is the reflectiveness more than anything. The better trainees are the ones that are more reflective. When they first come in, they might still make certain mistakes or things might not work so well but from early on they can identify, they start to have an idea of why it is going wrong and they try to put things into place and I think as a mentor then what we are trying to do is to say right now you have identified what's going wrong and you are going to try and put things in place, how about using these tools to try and improve even further rather than us saying right, your organisation wasn't very well, this is what you need to do next time. (Mark, Mentor)*

Content knowledge weaknesses habitually referred to as 'subject knowledge' weaknesses could be forgiven, especially during the early stages of the training. However, the ability to reflect and the motivation to improve were seen to be central to successful development. The development of content knowledge was important, but could be progressed alongside other areas of knowledge for teaching over time.

> *Evaluation and reflection, because even if you have got a rubbish subject knowledge, the first thing you will evaluate is that you haven't got the subject knowledge and then you will go and do something about it. And then I think you will become better in that subject area. I met very few people who are entirely comfortable teaching every single physical activity that you could now be assessed in at any level, so obviously everybody has got their weak areas…Because I think that is kind of a mind-set, that yeah you can develop it but it think some people find it much easier than others and subject knowledge… I think it is probably easier to develop subject knowledge than it is to develop somebody who really evaluates and reflects well. (Nick, Mentor)*

Whilst 'subject knowledge' was seen to be facilitative to teaching good lessons, time and again mentors referred to this as something that could be developed. Mentors were particularly interested in the presence of inter-personal skills and positive personal attributes, which were regarded to be important variables in the learning mix. Enthusiasm and the ability to connect with children were also two very significant themes in mentors' appraisal of what distinguishes the best from the rest.

Enthusiasm really, a genuine care for the kids, I think that's the main issue really, if they do like children, I think they need to like children. I mean we all have ones that we are not mad on but initially, if the thoughts are positive towards pupils, towards children and they are enthusiastic about sport and its role in school. I think that's the main issue to me, that's what I think is most important in the first instance. If they don't have that, I feel that you can't really go that far after that, if they're not genuinely interested in the job as such and what their role would be. I mean subject knowledge you can work on. (Jill, Mentor)

Whilst mentors held the view that 'subject knowledge' could be worked on, it was nevertheless deemed to be important if pre-service teachers were to facilitate pupil learning. All mentors cited significant facilitative benefits of what they termed 'subject knowledge', for pre-service teachers' development and their ability to teach good lessons. However, whilst mentors valued the facilitative nature of such knowledge, they always pointed out the complexities that impacted on the successful application of such knowledge. Content knowledge was seen as important and facilitative, but also to be related to aspects of PCK, the ability to make learning accessible to pupils, and also the ability to connect to and motivate pupils.

They've got to have some subject knowledge and different ways of teaching that knowledge and getting that knowledge over to the kids. Some of them have obviously done sport to quite a high level but it doesn't necessarily mean that they can then break the skills down for the pupils to be able to follow those progressions. (Andrea, Mentor)

Indeed, whilst content knowledge and PCK were seen to be facilitative, not being too content-focussed was at the same time identified by many mentors as one key distinguishing factor between weaker and better pre-service teachers. The ability to gauge specific knowledge in the light of pupil-need in particular was frequently emphasised to be the most transformative ability in successful pre-service teachers.

I think it comes from an underlying basic knowledge of sport and the knowledge of the actual topic itself, but being able to transfer that from your own experiences into children-speak, so that they can learn from you, the really good students I have had have had sound knowledge but what they are able to do is get the children involved and organise activities that are really interesting for the kids and get them really engaged in the lessons. The weaker

students have been those that have really tried to push themselves on the topic knowledge, so being this is what we are going to do and being really specific about a drill, but forgotten to teach the wider skills themselves, so that is the big difference I have seen. (Craig, Mentor)

As far as the level of content knowledge relating to particular activities was concerned, mentors' deliberations also implicitly highlighted the notion of 'adequacy' of activity specific content knowledge, frequently also expressing a preference of wider, more generalist knowledge profiles over high level, one activity specialism.

Obviously subject knowledge is important, but if we're talking core PE rather than GCSE or AS A2, if we just focus on core PE, at an establishment like this having immense subject knowledge is not necessarily key. Obviously the basics are essential, but the biggest challenge I think is making the skills or demands of the sport accessible to the students that they're teaching. Now if we talk about text book badminton and foot positions and racquet positions and grip and wrist and so on, a lot of that is going to go way over the top of the head of the vast majority of our students. (Tony, mentor)

Like pre-service teachers, mentors invariably identified a threshold, below which insufficient content knowledge affected their teaching, and in particular their teaching confidence. Therefore, this needed to be addressed by the pre-service teachers. Most mentors also identified sufficient content knowledge to be confidence boosting and facilitative to acquire other, more generic aspects of teaching more readily. Mentors' appreciation of the impact of content knowledge with respect to being able to act more confidently and flexibly within the actual context of teaching the lesson was congruent with the observations made by pre-service teachers.

Again I think it comes down to a bit of confidence. If you have got subject knowledge you have got confidence so that the pace of the lesson is higher … I think in a more confident subject area it is like bam, bam, bam, bam and the pace of the lesson is better, I think that was true of both of them, Ben and George that when they were confident the pace of the lesson was better and they facilitated learning rather than having to be in control, I think releasing control is quite difficult if you don't have the subject knowledge and that confidence isn't there, if you are confident and you know your stuff it is much easier to kind of go, right you lot I am going to set you the task to do and I am just going to

oversee what you are doing, so I am thinking not only does it affect how they teach, as well as the pace that they teach. (Nick, Mentor)

Having content knowledge profiles that matched a specific teaching timetable was also noted as a potential issue of equity by some. In this context, links to the pace of pre-service teachers' learning were made by some mentors, identifying the decelerating effect that lack of content knowledge had on pre-service teachers' acquisition of other areas of knowledge.

That is sometimes a little bit unfair on the trainees [pre-service teachers], because if they come across to a school where say this year the work we do in football and you have got a footballer then he immediately feels comfortable and he might start to develop his skills much quicker than somebody saying right my areas is, I don't know rugby and I am doing hockey at the moment and I am really concentrating on getting that subject knowledge up to speed, but in the meantime I am not really working on or developing the way I am getting the pupils to learn. I think it is lack of confidence within that subject area and not knowing how to get the knowledge they know or the teaching points they know across to the pupils. (Mark, Mentor)

Between mentors there were differences in the degree to which the facilitative nature of such knowledge was considered to be an advantage to pre-service teachers' ability to develop their teaching. At times mentors also questioned, if too much 'subject knowledge' was a disadvantage, especially as far as understanding pupil needs was concerned.

I don't know what I am trying to say really but you can break your practical elements down and you can research those and I think you actually, when you deliver a subject that you are not confident in, you research it more thoroughly and you actually pick off the teaching points in a more logical progressive way than if you deliver something that you are confident in because you don't always see the problems that the children have and you don't always break it down into the smaller steps but you need to when you are teaching. So I think subject knowledge sometimes, obviously it is very important but I think you can have too much subject knowledge. (Carla, Mentor)

Notwithstanding different views on the specific usefulness of content knowledge, mentors saw themselves and their departments as resources to

facilitate such knowledge developments. The PE department in its entirety, rather than just the mentor, was seen by most to be the resource to resolve such learning deficits. Pre-service teachers were then expected to take some initiative in addressing any such 'subject knowledge' weaknesses.

> *But then we do need that subject knowledge, as much knowledge as they can. I think I've found that the students who haven't got knowledge of a particular topic will struggle unless they are prepared then to go and actually find out for themselves. So it's a willingness to work, a willingness to take on advice. There are so many [teachers] to actually interact in the department, so when they are actually in the school, they should take advice from everybody because if they are struggling with one particular thing, we can look out for who they should be working with, to get the advice that they need. (Sabine, Mentor)*

Alongside this, personal organisation and management skills were also frequently mentioned to have a facilitative and accelerating effect on learning and development.

> *I think organisation is important. You can give a lot of information out, you can discuss a lot of things, if it doesn't get written down, it doesn't get used, that can be very frustrating and it can lead to other problems for the students themselves if they are not organised, they forget, like we all do when we're under pressure, you forget what you are meant to be doing and things tend to go wrong from there so, organisation and obviously subject knowledge is important and the willingness to look up what they don't know and you know a bit of sort of personal work, private work, preparation not necessarily expecting everything to be told to them, to actually be willing to go and research really and look things up. (Marie, Mentor)*

When considering the development of pre-service teachers, mentors frequently related to the temporal dimensions of this learning. Mentors were aware of the intensity of the demands of the PGCE course. They noted the length of the course and the timings of its different phases to have an impact on per-service teachers' learning. Of importance were the frequent references to the multiple demands that pre-service teachers faced during the early stages of their course, especially during SE1. Mentors accepted the fact that only partial progress could be achieved, if learning had to take place on a number of different fronts.

Really by the time they leave the first placement they may have dealt with some discipline issues they might have, you know improved their class management… but really it's the member of staff that's in there that's actually looking at the learning I'd say, on the whole, that makes the difference, definitely really …The plan is the thing I think for the students in their first placement and by the time they leave they are just about turning into more of a teacher rather than a leader if that makes sense but then they move somewhere else. (Jill, Mentor)

When explaining which characteristics of pre-service teachers and which aspects of knowledge were most important, mentors legitimised their preferences by linking them to what they considered to be good practice within their PE departments. Based on what they tried to achieve in his department, Mark for instance valued aspects of knowledge that would enable pre-service teachers to facilitate some wider aspects of learning through PE. Facilitating independent learning skills, leadership skills, communication and co-operation skills and strategies for pupils to evaluate and improve their own learning were very important to him.

We try and encourage a lot of responsibility and independent learning within the department in the tasks that we do, doing things like building learning power. We always say that when pupils come down and they do PE or they do extra-curricular PE there is certain areas which we always want them develop. Their organisational skills, which runs across into other levels, but they develop their communicational skills, but it is also I think PE lends itself to actually taking responsibility...they (the pre-service teachers) need to be able to facilitate that. (Mark, Mentor)

Like Mark, the majority of mentors in this study stressed that they were hoping to achieve wider learning through PE, often drawing on the NCPE for guidance. In this context, it was observed that departmental requirements and expectations were frequently observed by the pre-service teachers, who aligned their thinking with explicit practices. Mentors' preference to work with pre-service teachers, who were willing and able to do so, accorded content knowledge only a mediating role. Common themes in these narratives were frequently linked to aspects of the NCPE or to departmental curriculum development initiative such as for instance AfL, or as in Mark's case 'building learning power'. In the mentors' view, much of this learning would have to be a collaborative process, which necessitated

the need, ability and willingness of the pre-service teachers to learn with and from others within the PE department (Shulman and Shulman, 2004). This was, in the mentors' view, of vital significance for pre-service teachers' learning. The PE department provided a key resource for knowledge development, as well as, implicitly, a reference point to validate this knowledge.

> *Motivated, highly motivated and a willingness to learn from others … And I think this is why I quite like it, if the students work with all the different members within the department because all have different ways of delivering our subject and I think it's worth them seeing the different ways and picking out the good aspects from each member of staff. Definitely a willingness to learn from others and being prepared to research different ideas, planning lessons in pairs if need be which is what we've got going on in there at the moment so that they bounce ideas off of each other so that they don't work as an isolated unit, that they are part of a team, I think team work within the department is vital and they have got to learn to be part of a team and not be an individual. (Carla, Mentor)*

Carla's narrative emphasised her conviction for collective acting and learning. It also demonstrated how this translated into the organisation of the placement. In Carla's PE department this involved pre-service teachers working with a range of staff across a varied timetable, rather than spending a disproportionate time with her. She saw herself to be a lead learner, but she emphasised the role of the team over any individual. The legitimisation of this collective acting was through doing the best possible job for the pupils. This in turn was best achieved through teamwork and a focus on pupil learning. Mentors' preferences for reflective teachers of children, rather than teachers of content, principally characterised these narratives.

Hays et al. (2008) expressed fear that an over-emphasis on content knowledge by mentors and pre-service teachers could lead to the perpetuation of traditional, outdated and not child-centred, skills and content-oriented practices in PE, a viewpoint also shared by others in England (Capel, 2007; Velija et al., 2009). The findings from this study suggested some similarities, but also important differences. As pointed out by previous researchers (Capel and Katene, 2000; Gower and Capel, 2004; Griggs and Wheeler, 2005), the existing system of post-graduate teacher

training in England results in a wide range of individual content knowledge profiles (and often content knowledge deficits) as pre-service teachers are entering their PGCE year. The challenge to develop sufficient levels as well as a good breadth of such knowledge has also been identified as a major issue in other countries, such as the US (Rovegno, 2008).

The results from this study presented a more differentiated and also more optimistic picture than that reported by some other studies from others in the English PETE literature (Capel et al., 2011; Hays et al., 2008; Velija et al., 2009). Whilst mentors in this study valued the facilitative aspects of content knowledge, they did not appear to prioritise this over other aspects of knowledge. They recognised that pre-service teachers were personally committed to develop their content knowledge in specific activity areas, and in the main supported this because they regarded content knowledge as a facilitator to access and enact other aspects of knowledge, in particular PCK. Yet they did not emphasise the importance of content knowledge over other knowledge bases.

The term ‘subject knowledge’ was frequently used also as an umbrella term for a range of aspects relating to content knowledge and PCK, but distinctions between the two were made frequently. In general, mentors favoured PCK over content knowledge, but frequently softened such judgements by acknowledging that it was difficult to demonstrate good PCK without good knowledge of content. Managerial and organisational skills were also seen to be facilitative. Whilst the ethos of the programme was to develop from the start a holistic and integrated view of pedagogy, context specific content knowledge and PCK were nevertheless seen to be important.

However, none of these were regarded to be as central to pre-service teachers’ learning as their ability to learn and function within CoP. Viewed holistically, the mentor narratives provided quite a cohesive picture of the knowledge and teacher attributes that they valued. It also became clear, which personal qualities and attributes were deemed to be of vital importance if pre-service teachers were to make good progress in their development.

In line with Shulman and Shulman (2004), mentors in this study regarded personal qualities, such as reflectiveness, motivation, creativity and the ability to work and learn in teams to be essential. Significantly, mentors' expectations very much reflected the revised and extended views of teacher learning, as described by Shulman and Shulman (2004). These emphasised collective learning and acting, as well as the attributes needed to do so in an ever changing environment over the more individualistic conceptions of subject knowledge previously conceived by Shulman (1987).

The ability to adapt one's own practices in the light of feedback was regarded to be essential for effective learning. Some mentors also emphasised that the ability to go beyond this by being creative and innovative in their own rights distinguished the very best pre-service teachers. In this context, personal skills and attributes were regarded to be the mediator and accelerator for the acquisition of knowledge. Empathy and building relationships with children, the motivation and enthusiasm of wanting to be in the job were seen to be central attributes. Mentors appreciated pre-service teachers who were prepared to go 'the extra mile'. They frequently gave examples of the latter within the context of contributing to extra-curricular activities, a sign of engagement and also of wanting to be involved with the department's business. They expected pre-service teachers to be competent team players and as such to be prepared and capable to engage with their respective constituencies: the children, the staff in the PE departments, and the schools as a whole.

In other words, they valued those skills aptitudes and beliefs that would help pre-service teachers to function competently within their CoP. To use an analogy, mentors' responses indicated that they would rather work with a raw diamante, than with an already polished semi-precious stone. They were looking for the potential in pre-service teachers, rather than an already finished article, and they were also looking for pre-service teachers who were ready and able to 'fit' into their CoP.

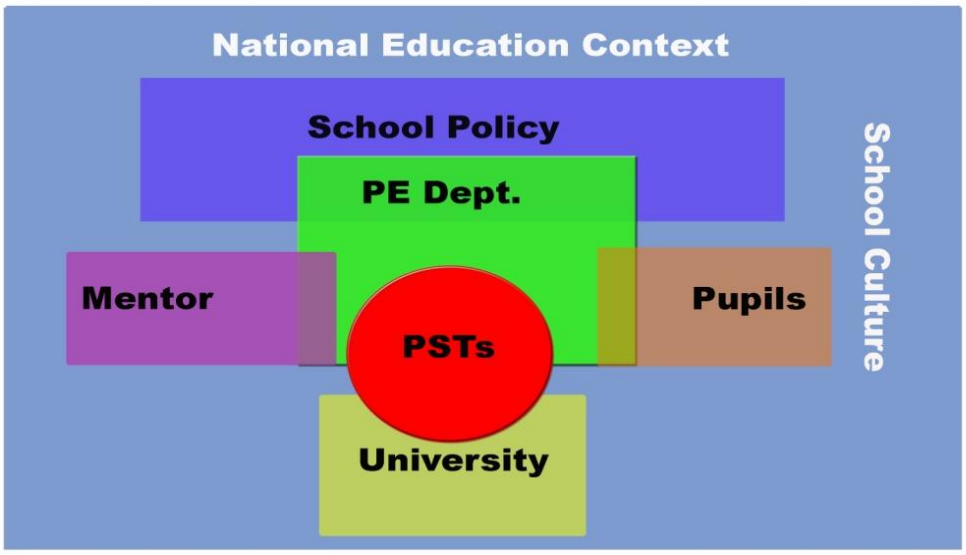
In return, these communities would provide the framework that would further pre-service teachers' learning and help them to develop their knowledge base. The following section explores how participation in

significant CoP affected pre-service teachers, as they were trying to advance their learning over the course of their training.

5.10 Knowledge Acquisition as Situated and Social Learning: The impact of Communities of Practice on Pre-service Teachers' acquisition of knowledge

Throughout this investigation it became evident that much of the development of pre-service teachers' knowledge, as well as their views about important aspects of teaching PE, were influenced by the CoP, in which they had a stake. Most influence was exerted through immediate school-based CoP, most notably the PE department and its constituent members. Furthermore, the University-based learning experiences were seen to be influential on various aspects of knowledge development. It was important to note that these communities were themselves located in the wider education context. Whilst the indirect impact of this context was not the focus of this study, much of pre-service teachers' learning could not be fully understood without this contextual background. The reason for this was that many of the legitimised practices within the immediate CoP originated, in one way or another, from this wider context. Figure 5.9 depicts the learning context of CoP, influential agents, and their location within the wider education context.

Figure 5.9 Pre-service teachers' learning in context



The relationships and processes that underpinned the learning and development within these contexts were complex. It must be re-iterated at this point that, in line with the notions of grounded theory that underpinned this study, no pre-conceived theoretical framework had been selected at the outset of the study. This approach was designed to ensure that the key findings of this study would emerge through the process of the investigation, rather than through forcing outcomes by framing the investigation in the light of existing research or theoretical models. At the outset of the study, the researcher had not decided which, if any, of the existing theoretical frameworks of knowledge development would be best suited to provide a comprehensive theoretical model for this study. It was through the process of analysis that situated learning theories, and in particular those theories influenced by Lave and Wenger's (1991) concepts of learning and development in professional CoP, offered most scope to provide a suitable theoretical framework for this study. Lave and Wenger (1991) emphasise the social nature of learning within CoP to be of importance, if any 'apprentice learning' is to be fully understood. In their more recent observations on teacher learning Shulman and Shulman

(2004) also emphasised the need to understand teacher learning within the context it is situated. Within the context of this study, a model of socio-constructivist learning evolved to encapsulate the complexity of the learning context. Figure 5.10 provides a visual representation of the communities, people, contexts, factors and processes that were identified throughout this investigation to have an impact on pre-service teachers' learning.

Figure 5.10 Conceptualising the learning process

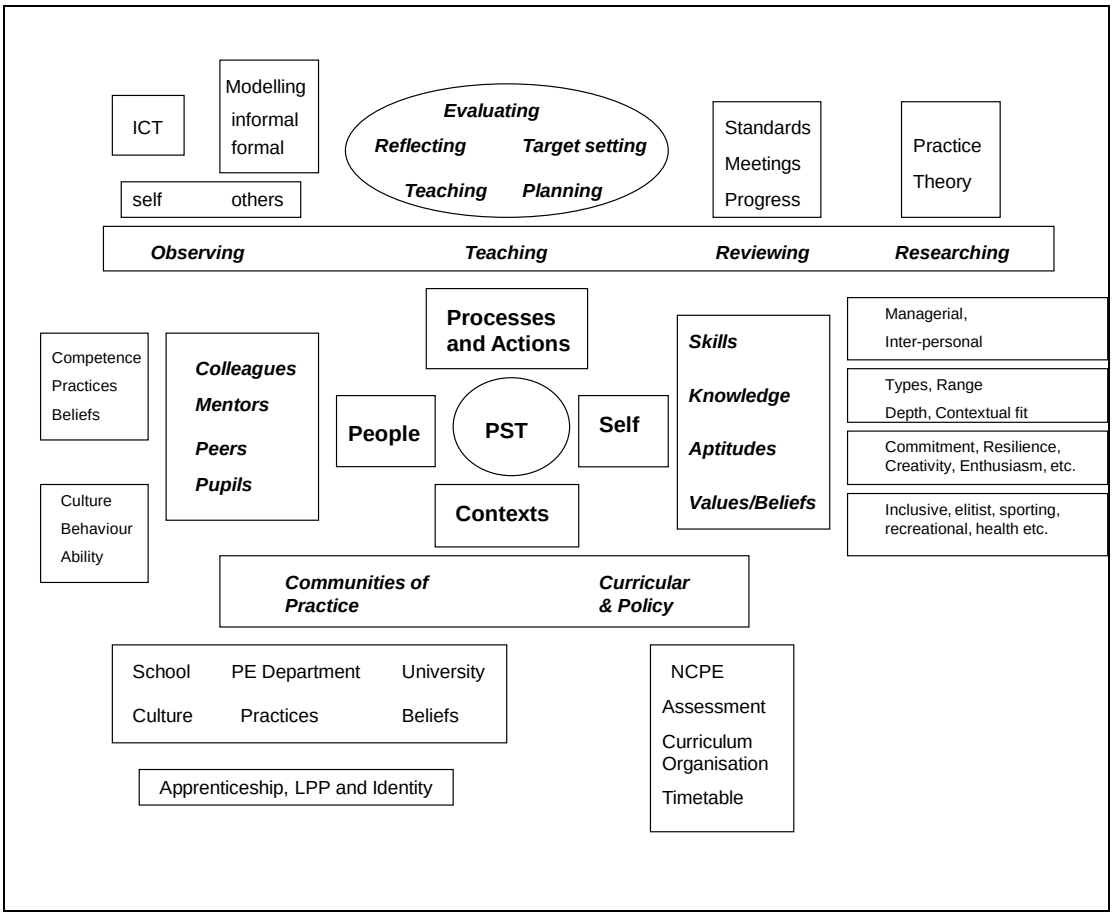


Figure 5.10 highlights the role of the fundamental people, contexts and processes that were found to interact in the process of pre-service teachers' development. It acknowledges the importance of the individual make-up of pre-service teachers (Self) and their engagement with the learning and development process (Processes and Actions). Moreover, it emphasises that such learning cannot be understood without considering the impact of others (People) and the context in which this learning takes place. Significant aspects of 'Self', and in particular the role of various aspects of knowledge, as well as their development have already been discussed in this chapter. The following sections focus on significant themes that highlighted the central role CoP played in the development of pre-service teachers. The first section explores how key factors such as the school's culture, its policies and its pupils impacted on pre-service teachers' learning experiences. This then progresses to a discussion over the impact of those CoP in close proximity to the pre-service teachers as part of their daily practice. These considerations focus firstly on the PE department and its practices in mentoring and teaching. The specific role of the school-based mentor as a crucial link person within the department also highlighted. In the final section, the role of the University-based CoP is considered.

5.11 The impact of school-based settings on pre-service teachers' learning

Pre-service teachers reflected on a range of school-based experiences that impacted on their learning. These reflections included comparisons of perceived commonalities or differences in their schools and how these influenced their own learning and teaching. The analysis and interpretation of this data demonstrated the importance of the school-settings and showed how these had influenced the pedagogical thinking of the pre-service teachers in this study. These influences operated at various levels. At the macro-level, it was clear that the school itself, its culture, its pupils, its people and its policies, influenced pre-service teachers' learning

experiences. Frequently, it was evident how the school's interpretation of the education environment, nuanced by the National Curriculum and OfSTED inspection requirements, impacted on the learning of the pre-service teachers. Occasionally this occurred through interactions with policies or people at the general school level, but more commonly it was part of the experiences located within the PE department. Since school placements provided the location for enacted experiencing of teaching, the school culture and its embedded practices provided an important frame of reference. Pre-service teachers appreciated the opportunity of having placements in two different schools and they clearly recognised the schools' influence on shaping their practice or as Phil put it, their power to 'institutionalise' those within them.

> *Yeah, I mean I think it is nice to see different schools, so I think… because I think you don't want to become too institutionalised or blinkered of one way that something needs to be done. (Phil, pre-service teacher, Interview 3)*

Experiencing different schools afforded pre-service teachers alternative perspectives on school culture and teaching practices. Through these, they recognised the potential variability of teaching in different schools and the impact this could have on teachers. These recognitions were furthered through the discussions within their PGCE peer groups. These highlighted differences between schools across many aspects of teaching. In recognition of their own roles, pre-service teachers generally accepted that they had to fit into the given contexts. They realised that their own power was limited and that their energy would be best used to work within the given frameworks and work within their parameters. In order to achieve their personal objectives, they would have to 'fit in' with the existing systems and cultures. In this, most pre-service teachers recognised the extensive experience of their teaching colleagues as a legitimising factor for the practices they encountered.

> *There's certain things I don't agree with there's certain things I think I'd do differently, but it's things that work for the school and again each school is different. I haven't got any real right to come in here and do it my way at all. I may have things that perhaps when I go into my school in my first post I'd do*

differently slightly but it works for this school. The teachers have been here a lot longer than I have and they know the children, they know the way it works. (Thomas, pre-service teacher, Interview 2)

Mostly, pre-service teachers were accepting of their peripheral role, as far as established teaching and management practices in the schools and PE departments were concerned, recognizing their limitations as 'apprentice learners' within these school-based settings. The process of finding their own views about teaching also had a temporal dimension and time was a consistent element that related to many aspects of pre-service teachers' development (Herold and Waring, 2011). At the mid-stage of their training, most did not see themselves as 'real teachers' yet. Consequently they were largely accepting of the school-based terms of their 'apprenticeship'. Further, they contrasted their own 'pre-service teacher status' with those of 'qualified teachers'. When they themselves would be qualified teachers they envisaged an increase in autonomy, coupled with more freedom to 'perhaps do things slightly differently'. Pre-service teachers considered this peripheral role as 'apprentices' within their schools and departments as a complication in their strife to develop their confidence and their identity as teachers. In a few instances this was keenly felt, leading these pre-service teachers to feel somewhat marginalised and isolated. In their effort to become part of the PE department and the wider school community, pre-service teachers valued those who embraced, supported and integrated them, professionally and socially. It is the pre-service teachers' perceptions here which are important. For example, Annabel's reflections on her experiences from SE1 and the differences between the two cultures of her different placement schools, highlighted the ways in which each affected her:

I have got more freedom to observe different things here and they are making more opportunities for it. It is like they seem mostly geared up for training teachers and things. I feel like I am a lot more supported, that is the main thing. I think I have gained as much being here in terms of teaching as I did from the whole of SE1. I feel like I am more involved with more of the school here, whereas before it was only the PE department that I knew and I still felt a bit like an outsider. (Annabel, pre-service teacher, Interview 2)

Very important factors that pre-service teachers perceived to influence their teaching were those of school culture and discipline. This was keenly felt, when pre-service teachers discussed differences between their two school placements. Having to teach within what they deemed to be more challenging school environment could have a profound impact on pre-service teachers. Their peripheral role as apprentices within the schools and departments complicated their efforts to manage more difficult pupils and classes. In addition to this, not knowing pupils and systems well further complicated their attempts to devise strategies for class, pupil and behaviour management. Again, time was a factor in this. By the time pre-service teachers started to get to know their pupils in SE1, this placement was almost over. Where school culture did not support pre-service teachers' attempts to establish high standards of discipline, this was felt keenly.

> *I've learnt very quickly that standards have to change within different schools. My standards on placement one, were very different to the standards that I had to have on placement two. Which was quite hard, because my standards on placement 1 were a lot higher, and so they were kind of set by the time I got to placement two, and I was told that the children just weren't gonna reach my standards in placement two, and I had to accept it. So I had to put up with speaking over mumbling children, and things like that, just because that's accepted within the school.*
>
> *Researcher: And how did you feel about… how did you feel about that?*
>
> *Debbie: Not very happy, I didn't like it. But because I wasn't a teacher as such there, I had to fit in with what was already there, I couldn't go in and change it, whereas I think next year, I'll go in and I'll have my standards, and whether they're higher than the rest of the school, I don't care. While they, while people are in my lesson, then they'll fit to my standards. But I think I had to fit my standards to the school while I was on placement. (Debbie. Pre-service teacher, Interview 3)*

Clearly, the nature of their apprenticeship status limited their power to change some of their circumstances. Differences in school placements, in particular in terms of pupil behaviour, were also experienced by other pre-service teachers. It was evident that perceived differences in school ethos,

procedures, pupil culture and discipline had a profound impact on them. When starting the second round of school experience (SE2), Alexander initially found it hard to come to terms with the more challenging environment presented by this placement school. His SE1 had been situated in the 'leafy suburbs', whilst SE2 had placed him in the 'inner-city'.

> *This placement is more different to my previous placement than I would have believed possible. It's like learning a new job, I think. I finished School one and thought "I'm doing alright here. I think I'm gonna be quite good. I'm quite confident teaching my lessons. And I think now they're good and they're getting better." And I've come here and I've had a shock to my system, I've found it very difficult. The pupils are a big challenge, behaviourally. This school is quite tough. (Alexander. Pre-service teacher, Interview 2)*

Pre-service teachers' experiences in different schools were a pertinent reminder about the significant impact that the settings of school-experience placements could have on their learning. Different environments presented them with unique learning challenges and thereby affected their progress. On account of his previous perceptions, Alexander felt that he was making good progress and teaching good lessons. This was also based on his observations of pupils' reactions to his teaching, with which he was quite satisfied towards the end of SE1. He assumed that progress with his teaching would transfer significantly to SE2. Instead, he found himself challenged with a new set of circumstances, pupil behaviours and departmental procedures at his SE2, which caused him to re-evaluate his situation. The multitude of behavioural procedures Alexander felt obliged to implement within this new environment had such a wearying effect on him that he indirectly questioned if this was the vocation he had been looking forward to pursue.

> *It's just like, it's a big long list of things to follow and it's hard really because the part of PE teaching that I enjoy is being out there and teaching and coaching and watching them play and things like that and it seems like the majority of my time here is spent lining kids up and shouting at them. Having been at School 1 where I didn't need to shout ever to the extent where my mentor at the school encouraged me to just do it once just to have a go at it. Here I find myself shouting all the time. Not really the part of PE teaching that I was looking forward to. (Alexander, pre-service teacher, Interview 2)*

Differences between school cultures forced pre-service teachers to re-examine the role of the teacher in the light of different contexts. Experiencing challenging pupil attitudes was stressful and sometimes it challenged their belief in their own ability to become effective teachers. In these circumstances, like the pre-service teachers in O'Sullivan's (2006) study, they had to show resilience to deal with these challenges. The nature of the cohorts of pupils with respect to diversity, ability, and behaviour were all important factors that affected pre-service teachers. The presence and implementation of discipline and support systems were important mediators in pre-service teachers' ability to teach pupils. Ben, for instance, found the pupils in his second school more behaviourally challenging. The established learning habits, as well as class management challenges, had an impact on his teaching and his choice of teaching styles.

> *Obviously, the make-up of the pupils is very different here… I think the pupils are more challenging here, and it does make some difference. The one thing that is different is the behaviour management was slightly tighter at SP1 than it is here. Like at School one they tended to just go straight in and if a pupil misbehaves then, straight away, trouble…I think at times so from that point of view I feel I am teaching differently here, but I think it's just a way, it's just meeting a different, pupil build up. I think I've become slightly more structured and perhaps a bit more command than I was before just because, to keep the pupils on task because at times they do stray off task and misbehave (Ben, pre-service teacher, Interview 2)*

As pre-service teachers experienced different learning cultures at their schools, they commented on how pupil behaviour influenced their teaching. A less well defined and therefore ambiguous behaviour framework for pre-service teachers made it harder to control classes and concentrate on other aspects of teaching. This affected how they interacted with pupils and it also had an influence on other aspects of teaching, such as their selection of teaching styles. Ben's choice of teaching style was now 'perhaps a bit more command'. Using more command style teaching was not his preferred choice, but he did so in response to the specific challenges that he felt were posed by the pupils, as well as the learning and

teaching culture. In this, the diversity of pupils' backgrounds and abilities was identified to increase the level of challenge. Having to deal with a wide range of abilities (and disability) increased the pressure on pre-service teachers. Relating to a wider ethnic diversity and its resultant cultural challenges compounded the problems for some. All pre-service teachers in this study were from a white Caucasian and British background and were not initially confident in their management of pupils from different ethnic backgrounds. Their limitations in knowledge of how to deal with cultural diversity caused some anxiety. The biggest anxiety was, however, caused by pupils challenging the teacher's authority. In these circumstances, pre-service teachers felt particularly ill at ease. They also felt less capable of successfully enacting their teaching knowledge and intentions. This was especially true if the behavioural support systems they could draw upon were not fully effective.

> *The schools are different as well. This school is mainly white middle-class, whereas my last school was very multi-ethnic, a lot of children in wheelchairs, disabilities, you know, a lot of different things to contend with. So this school's completely different to that and in a way I've found it easier to teach here and I find I get more out of the pupils and more out of my teaching. They're more on task, discipline's better here and I feel that if I did have any situation there's a better back-up structure to support me with discipline so I know who to refer to here. I know what I can and cannot do in terms of discipline whereas I did feel a bit isolated on my first placement. (Natalie, Interview 2)*

Whilst pre-service teachers considered behaviour management problems to be problematic, they also saw the opportunities for learning through working in more 'challenging' schools. Alexander, for instance, was seen to 'accept' the situation in which he found himself, recognising the benefits of contrasting experiences to him as a teacher in the longer term.

> *I think this school is perfect for me in that sense. If I'd have gone to another school in the area of School One and then my first job had been in a school in the area of School Two or somewhere I don't think I would have been ready for it at all. So I'm hoping to get better with my difficult groups. It's taken me a little bit of time just to shape myself up. I think at School 1 you could kind of get away with not really trying your hardest so in terms of planning*

and organisation. Here you need to be spot on. (Alexander, pre-service teacher, Interview 2)

In these challenging circumstances, he and others showed resilience as learners. This characteristic helped them to deal with challenges. Regarding challenges as opportunities was one way of expressing such resilience. Pre-service teachers acknowledged that higher expectations as well as the higher levels of challenge would prepare them more effectively for their early professional careers. In other words, it would make them better teachers. Pre-service teachers' practice and learning were clearly contextualised and the development of specific pedagogical practices could not be divorced from the environment in which such practices were situated, as highlighted in Figure 5.9.

The inter-connection of school and departmental practices and the resulting learning culture and expectations of pupils impacted on pre-service teachers. For instance, where school and departmental strategies supported pupils in taking responsibility for various aspects of their own learning, this assisted pre-service teachers' own attempts to devolve more responsibility to their pupils. George's explanation of how the school-wide 'buddy system' had made an impact on the PE department, its pupils and then on himself, was a good example for the inter-relationship of people, policies and practices and its effect on pre-service teachers. It also demonstrated in more general terms how 'whole school practices' affected pre-service teachers throughout their placements.

Yeah. At School Two they've got this massive push at the moment on having a buddy system and having that across every subject. You work with someone else and that person will continually tell you what you're good at, what you're bad at, how to improve, so it's assessment for learning all the time for our lesson and you're working with someone hopefully, buddy being someone you get on with that you can have a good relationship with. I've found it to be very valuable and I think that pupils like it because they know they know that they're getting really involved and you can almost just be giving them little hints here and there but get them, I often say to them 'My job's done here because you lot are teaching yourselves now'. (George, pre-service teacher, Interview 3)

The impact of school policies that had filtered down to the PE departments was frequently felt by pre-service teachers. The interpretation and implementation of such school policies by the PE departments were commonly reactions to wider reaching education initiatives, such as the incorporation of AfL into teaching, or a response to perceived expectations by influential agencies (e.g. OfSTED). Mostly, it would be a mixture of influences related to both policy as well as agency. The impact on pre-service teachers' learning, in turn, would be the last link in a chain of events. Nevertheless, the consequences for pre-service teachers' learning would be significant. The example of Nicole's adoption of specific practices relating to AfL demonstrate how privileged and legitimised practices had a potent impact on many pre-service teachers.

> *I would say in the second placement (I used AfL) a lot more than in the first, purely because of the way the school view assessment. They're quite good with it. They'll quite happily use it every lesson. Every PE lesson they want to have some kind of assessment included in that lesson so the pupils know what they're working towards and how they've achieved it and how they can improve just so they have a focus.*
> *(Nicole, pre-service teacher, Interview 3)*

Nicole's narrative revealed a number of issues relating to her learning and practice. Firstly, the influence of the second PE department and its established practices was evident. The significant differential between these two departments was captured in her observation that she now used assessment 'a lot more' than in her previous school. In fact, those around here were quite 'happily using it every lesson'. This observation was confirmed by her mentor, who explained that the departmental emphasis on AfL had been a consequence of the school's concerted push to integrate AfL into the teaching of every department. As a consequence of this, AfL had been adopted as a deliberate teaching strategy within this PE department. Figure 5.10 illustrates this relationship. In turn, and through the agency of the mentor and other teachers within the department, AfL became an integral part of the current mentoring strategy.

> *Well this year is different really because obviously our staff in the school have all been involved in assessment for learning, the*

concept of that. We've had training in it, we've been asked to follow this up so really, what I did with my students this year is I took them with me on that learning process so I was learning and I was passing that on to them. Obviously we all have certain beliefs in assessment for learning, some of it works, some of it doesn't… I've taught them to teach an assessment for learning way because I know that's what we all should be doing at the moment. I have always stressed that this will probably change in a couple of years and you know the government or whoever decides may decide that isn't the best way to do it so we're trying to do the basics but we have actually focused our students this year on that assessment for learning base really (Andrea, Mentor)

The researcher noted the commitment with which this PE department had adopted AfL as the way forward in their teaching and also their mentoring. This had clearly impacted on the pre-service teacher. The mentor's scepticism about the longevity of this approach is evident. To some extent, the adoption of this practice had arisen from external influences and the value of this teaching practice had not been fully internalised. The mentor's suspicion about future government's propensity to change education policy left her in doubt about the continuity of such policies. Regardless of the mentor's motivation for the adoption of AfL, it was a reminder of how external circumstances had, via the PE department, impacted on the pre-service teacher. Whilst individual pre-service teachers' experiences differed, the impact of the school and departmental context on learning and development was evident in all instances.

Conscious decisions were made by mentors to privilege those aspects of knowledge they felt important. Such knowledge was legitimized through official policy and discourse, and through personal conviction. School policy, especially if linked to training, resulted in initiative driven practices in the PE department, which impacted on the pre-service teachers' learning.

Where important school initiatives informed the departmental practices, pre-service teachers were expected to develop their capacity to contribute to these. As depicted in Figure 5.9, the PE department is located within a wider school context when influencing pre-service teachers' learning. Legitimised practices filter into PE departments through government interpreted school-wide policies as well as via people.

> *Obviously, we did some (peer teaching and assessment) at University. And it was stressed at School One, because Paul who was Head of Department but he's now Head of Sixth Form, he did his OfSTED training and he said they're looking for peer assessment. So we use it as much as possible, not every lesson but they use it a lot more than I think most other schools would use. And that was just the main influence. (Debbie, pre-service teacher, Interview 3)*

As pre-service teachers recounted their stories, much of their learning could only be understood fully within the context of the school within which it was located. Pedagogical acting was influenced by the global framework of school policies and the legitimised practices that derived from this. It was also in response to the expectations of others, who after all held the power to influence her progress and well-being on the school-based aspect of the programme of training (Smith, 2001; Capel et al., 2011). In this, pre-service teachers not only accepted their role as apprentices within the PE department, but they acknowledged the influences of the school as a whole.

Particularly poignant was the perceived impact of the schools' pupil population on pre-service teachers. High diversity in ability and also cultural background were reported to increase the level of challenge in teaching. Where challenging pupil behaviour was experienced in schools, this was reported to be a key concern for pre-service teachers' development, especially if departmental support with this was perceived to be insufficient.

Pre-service teachers acknowledged underlying power differentials between themselves and established members and the school and on the whole favoured compliant actions. In line with more generic social learning theory (Lave and Wenger, 1991), this supported the importance of legitimised practice for apprentice learners, who develop their professional knowledge and skills within established CoP.

These findings suggest that greater appreciation and explicit acknowledgement is required around the nature of relevant 'units of analysis' recognised as impacting on pre-service teachers' learning within the school-based context. This needs to go beyond the relatively narrow focus that exists within the PETE literature. Whilst the existing research acknowledges the role of the school-based element in PETE (Capel et al.,

2011; Darling-Hammond and Rothman, 2011), the extent to which this is considered beyond the mentor-pre-service teacher relationship remains limited (Keay, 2005; Sirna, Tinning and Rossi, 2010). The following section discusses how the dynamics of learning within such CoP influenced pre-service teachers' learning.

5.12 Learning within established Communities of Practice: The PE department, acceptance, compliance and critique of established practices

As the development of pre-service teachers' knowledge of teaching progressed, the process of learning was considerably influenced by the settings in which it was located. Pre-service teachers explicitly and implicitly acknowledged the significant influence that the PE department and its teachers had on them, in particular those competent PE teachers within the department who were seen to be good role models and from whom effective practice could be learnt and adopted.

> *I definitely think other PE teachers are people to learn from. I don't necessarily know if I've met anybody yet that I'd want to say I'd want to become like them, you know, but I am definitely learning from other people. (Natalie, pre-service teacher, Interview 2)*

The impact of the school-based mentor also varied in different departments. From the pre-service teachers' perspective, one of the most important roles of the mentors was to provide feedback on teaching. This was consistently regarded to be one of the most valuable aspects of school-based learning.

> *I think my mentor in this school, Mark helped tremendously. The feedback I got from him every, well nearly every lesson he watched was tremendous. Really, really helped a lot. Not so much at School 1, well not so much from my mentor but from another teacher there that I'd also got. So I think the main thing that helped me improve, the main sort of resource was the other teachers around me, in particular Mark and Mr Burnham at the other school. Their feedback was tremendous and really helped me focus. (William, pre-service teacher, Interview 3)*

It was also evident that the mentor was not the only source of learning which pre-service teachers acknowledged and depended upon, even if they frequently played an important role in the learning process. A consistent theme that emerged from pre-service teachers' narratives was the impact of other PE teachers on their learning. Much of this was built on respect for the experience of these colleagues, who they used as resources for their learning and development. Especially where PE departments saw mentoring as a collective responsibility, the personal mentor assumed the role as 'primus inter pares' within the mentoring framework.

> *I feel that I definitely use other teachers to get tips from and I definitely feel that I learn from them...if I see something that they do I get them to explain it all. I always ask for advice on things because I do respect their opinion and I feel that I am learning a lot through watching these guys...I do try and learn from everybody because it's the only way you can pick up things as well; you know through my own experience, watching people, talking to them, you know, has helped me learn and develop. (Natalie, pre-service teacher, Interview 2)*

Pre-service teachers recognised their own peripheral position in the departmental hierarchy. They demonstrated eagerness to learn from established people and willingness to comply with departmental practices. Pre-service teachers valued the competence of established teachers and were, on the whole, accepting of the collective, legitimised departmental practices in which they willingly participated. They realised that they themselves were not central to the decision making process in these communities. Mostly, they concluded that it would be important for them to accept the way of how things were done within departments. In Ben's case, both circumstances, respect for experience and competence as well as acceptance of the need for compliance, characterised his second placement and influenced his actions and experience.

> *I came into a strong PE department with some very strong teachers. You've got Heads of Year working in the department and the Head of Department is very strong….Young teachers, they don't have that same wealth of experience that maybe the older teachers do and in a very similar environment in a hospital or the police force in a way, those people that have been doing it twenty/thirty years are almost like people that us as young*

teachers should be looking up to and respecting in a lot of ways. (Ben, pre-service teacher, Interview 3)

Much of the respect that was accorded to others in the department was based on the perception of their effectiveness as PE teachers and pre-service teachers valued the usefulness of their advice. Nevertheless, they were also aware of the power differentials between established teachers and themselves and took these into account as they considered how to react in any given situation.

There is that hierarchy of a system and I certainly needed to come in at the bottom of the pile… I have to in a way I use the phrase kiss-arse, you have to kiss a certain amount of arse, you have to nod your head, you have to jump through hoops, you have to say yes, yeah definitely, definitely. (Ben, pre-service teacher, Interview 3)

When invited to reflect on the sort of things that had made the biggest difference in making progress with their teaching, it was the regular and constructive feedback they received from experienced teachers within their departments that pre-service teachers valued most highly. All pre-service teachers identified how the process of frequent, formal and informal, professional conversations with their mentors and other competent teachers had been of very high significance to their development. In this process mentors, as well as other teachers, were highly influential for pre-service teachers' development of knowledge.

I think I learnt a lot from talking to other teachers. My mentors were obviously quite important. They were both very good teachers and I got a lot out of talking to them after my lessons. They were both really good with giving me points how I could improve my teaching and that's helped me a lot. So I really wouldn't want to pick between them. The advice I got from Mentor B was probably what helped me most this year. (George, pre-service teacher, Interview 3)

Pre-service teachers reported positive experiences relating their interactions with different teachers and mentors, who provided support and feedback for them. Their narratives outlined departmental support and constructive feedback to be central in the facilitation of their learning. Frequency of feedback was seen to be helpful. Mutual trust and a

supportive environment, as well as time for learning to develop, were seen to be important factors that underpinned the effectiveness of this process.

> *But I think I was very lucky in both schools that I had a very supportive department and every teacher who was ever with you always made some time for you to chat about things. They always gave you feedback. A lot of the time you never even had to ask and they'd just start to give you feedback and so from that point of view I felt that I was very lucky and I worked with some really, really good people. (George, pre-service teacher, Interview 3)*

Supportive environments were accepting of pre-service teachers as members of the team and valued their contributions. Pre-service teachers valued the advice and feedback and in particular workable ideas that they could readily put into practice. They also appreciated the 'competence' of the supervising teachers and this was in some way a 'kite mark' for accepting advice. Pre-service teachers felt that any advice given, needed to be fit for purpose. In the main, this was constituted by subject-specific, teaching-related advice, which all pre-service teachers in this study valued highly. In this, the findings from this research supported those of Capel et al. (2011) who have recently drawn attention to the fact that pre-service teachers valued practical and directly usable advice for teaching very much.

Pre-service teachers also saw the value in more general pedagogical advice. Not all of this feedback was well co-ordinated and pre-service teachers had to navigate the dissonances that could arise between different people or different school placements. Although the school placements could be quite different, pre-service teachers elicited positive experiences from different situations. However, inconsistencies in practices and expectations did cause problems for some pre-service teachers, especially if they arose from inconsistencies within the same PE department. Debbie's narrative was representative for those pre-service teachers in the study who had a more mixed view about how effective others had been in helping develop their teaching.

> *I think one of my placements was more structured than the other in terms of feedback from the mentor and in terms of how detailed my feedback was. My mentor some weeks only observed two of my lessons and then would give me feedback based upon that. Well for the rest of the lessons I've been with*

other members of the department but if they're not feeding back to the mentor then the feedback that the mentor gives me, is pretty irrelevant really. So I think again it depends on the whole department and that was probably one of my main critiques of this placement that sometimes only one member of the department is aware of why you're actually there, what you're responsibilities are, how experienced you are, what your strengths are, what you're weaknesses are and the rest of the department see you as just another teacher, someone to make the numbers up, someone to take their lessons. (Debbie, pre-service teacher, Interview 3)

All pre-service teachers felt that feedback on their teaching performance was crucial to their development. Expectations were that feedback should meet their individual learning needs. Limited contact with the mentor was not very helpful to Debbie, but the main criticism appeared to be directed at the lack of co-ordination of other teachers by her mentor. The inconsistencies between her placement experiences highlighted how she valued the more "structured" placement more highly. This included an appreciation of more detailed feedback, not only from the mentor but also from other members of the department. In this department, this was not perceived to be sufficiently co-ordinated and the mentor's feedback itself was seen to be based on limited information. In Debbie's view, this represented a limited awareness about crucial individual circumstances relating to her learning and development. Ultimately, she felt that this constituted a poor response to her individual needs. Whilst more experienced practitioners might point out that differences of opinion about certain aspects of learning are unavoidable, pre-service teachers nevertheless found it more difficult to develop their practices when they had to deal with inconsistencies within their respective CoP. Rather than meeting these head on, they mostly tried to accommodate for the different teachers' views by adjusting their own practice to suit those of the members of staff in question.

At School Two there was quite a difference in opinions and I was sometimes told completely conflicting things about something, just like 'waiting for silence'. I've been trying to wait for silence before I talk because I've got into a habit of just carrying on because there's not much time in lessons and then my mentor's

like, 'No, you really need to wait, it'll benefit you in the long term, just do it'. So I made a proper effort for one week, really, really doing it but then another teacher who did an observational thing was like, 'You can't afford to waste time waiting for silence, you need to carry on with your lesson'. And I was getting direct conflict sometimes, so it was a bit confusing but at the same time it was nice having two view points and I can understand both of them. (Annabel, pre-service teacher, Interview 2)

Faced with such conflict, pre-service teachers mostly tried to please the supervising teachers and acted according to the guidance that was given by the specific individual concerned.

So, whenever my mentor was watching me I'd do what my mentor wanted me to do. Whereas in the other teacher's lessons I tended to move on faster and not really establish proper science, which I didn't really like, but I did get more done in the lesson. I think if I'd been there for a longer time using my mentor's method would have worked better because I could have established that at the beginning and carried on (with it). (Annabel, pre-service teacher, Interview 2)

This is an explicit reminder of the joint responsibility of CoP to create a shared vision and process to support the pre-service teachers in their development. In this case failure to co-ordinate and communicate both the pragmatic and principled dimensions of this within the department, constituted a gap between aspiration and reality for all concerned. Differentials in the approach to structured and co-ordinated support were experienced by a number of pre-service teachers. These reflected different work practices and departmental approaches to the supervision and mentoring of pre-service teachers. If differences were distinctly felt between the two school placements, pre-service teachers' narratives evidenced how different expectations in the respective departments led them to change their approaches to fall into line with these.

The workload as well is a lot more. I think School 1 were very content for me to get on with what I was doing, rarely kind of were asking to see lesson plans before I would teach and things like that and content…I think…well obviously they'd see me teaching a little bit and then they were content for me to go ahead with it whereas here it's a lot more strict: your lesson plans being handed in beforehand and planned in advance,

further in advance and so on. (Alexander, pre-service teacher, Interview 2)

The provision of structured support was consistently raised as a facilitator to learning within departmental settings. This was true for both male and female pre-service teachers in the study, although females appeared to have a tendency to be more demanding of it than males. Phil for instance also perceived a differential in the structure of support, but he had a slightly different take on this than Debbie.

> *They (the school placements) have been similar in some aspects, but, I will say with my first placement school, there was more structure, organisation and support within the department, in comparison to the second. That was obviously a huge benefit with the first placement because obviously, it was a new experience on a steep learning curve, so at the same time although at the second school maybe there has been a little bit less, maybe organisation and support, that's been good for me because its allowed me to work more independently within the department as a whole. (Phil, pre-service teacher, Interview 2)*

The differences between Phil and Debbie in their perception concerning the importance of structured support within PE departments, was one example that highlighted how individuals evaluated situations through their personal lenses. Their individual characteristics, personalities and belief systems played a role in the evaluation of their own positions. Like Debbie, who perceived structure and support to be essential, Phil also deemed it to be a good thing, but he was equally happy to explore the freedom that a less structured environment had to offer him. Whilst there was not sufficient evidence to make a distinction between the different genders in relation to this, the males in this study appeared to value this sort of freedom more than the females and conversely, the females appeared to have a tendency to appreciate structured support more. Principally however, pre-service teachers felt best supported where their departments had a firm grasp on their development needs, whilst offering a range of expertise that pre-service teachers could draw upon. Collegiate support was identified to be of great value to facilitate personal and professional development.

I think, the thing I've said since being here, I think I could be at any school anywhere, if I had this support with me, I' d be fine, I'd love it. And the fact that I'm in a brilliant school as well helps, but if I was in the worst school in the world, if I had this support around me I don't think it'd be that bad. So I think it's a lot dependent on the support you receive to your experience. And that's the sort of idea I've got from most of the other people on the course as well. Just if they're getting support then their loving it. (Angelina, pre-service teacher, Interview 2)

The message from Angelina's judgement relating to support is clear. She also feels that support is central to effective development and is certain that this view is shared by other pre-service teachers on the course. Interestingly, she had also observed that a previous pre-service teacher had not enjoyed the experience at this school as much as she had, confirming that the dynamics between individuals could add to the complexities of how school experiences were perceived by individual pre-service teachers. Like other pre-service teachers, she emphasised the impact of the overall school setting and its potential impact on the learning experience. The perception of the importance of collegiate support was, however, the overriding theme in this. Feeling supported by a whole department meant less reliance on the one-to-one mentorship situation and afforded the possibility to draw on multiple experiences. In such a collegiate setting, the effective mentor acted as a link person and was seen to facilitate and co-ordinate learning and development experiences. Nichole's narrative outlines how such an approach within a well organised departmental setting worked for her.

They could always give you some advice and they were always willing to give you advice and again all my targets and things were related back to all the people that would be observing me so they knew what I was working towards as well. So it wasn't a case of just my mentor knowing what I needed to do. You know, everyone else in the department that was observing my lessons whether they'd be theory or practical knew kind of what I was working towards so they knew what to look out for. So they communicated quite well. (Nicole, pre-service teacher, Interview 3)

Pre-service teachers valued PE departments that had a shared vision for their learning. Positive effects of clear communication within the departments were seen to have beneficial effects on their development. Competent advice that was given was valued highly, especially if this stood up to scrutiny when it was incorporated into their teaching. The close link of feedback to enacted teaching experiences was very significant. Through this process, colleagues and mentors in departments had considerable impact on pre-service teachers. In a small number of instances, however, pre-service teachers experienced some difficulties with this process. The most significant 'sticking points' for pre-service teachers were those that concerned the observation of teaching. Pre-service teachers' reactions to this process exposed the underlying power differentials between them and established teachers and mentors. If feedback was to be fully accepted by pre-service teachers, it was, from their point of view, also important that they felt accepted by those who were providing this feedback. Effective co-construction of knowledge was enhanced when pre-service teachers felt that they were taken seriously and also felt that they were part of the CoP, part of the team in which they tried to improve their practice.

> *The best ones are the ones where they talk to you like an adult, because here because it is separated into boys and girls departments, it is very much the boys in the department being friends, giving each other friendly advice and even when someone is telling you something you never feel like you have done something wrong, you feel like you can improve something and you are really grateful but you still feel like everyone is on, it is still the same team and you feel happy. (Ben, pre-service teacher, Interview 3)*

The process of post-lesson feedback was universally regarded to be a centrally important learning activity during school placements. Its direct link to the core activity of teaching gave this relevance and prominence. Wherever a lack of effective inter-personal relationships was evident, this process would be impeded and pre-service teachers had to find some form of conflict resolution. Compliant action was one such strategy. Pre-service teachers mostly tried to avoid negative feedback or potential conflict. In such instances pre-service teachers chose to adjust their practice to perceived departmental or individual expectations. Politely ignoring the

advice and instructions that they had been given, as seen in Ben's case, was another strategy option. At the later stage of training, pre-service teachers increasingly articulated claims of ownership for their lessons and with this demanded the right to make their own mistakes. In these constellations, the interaction with mentors and teachers who had very different ideas on the ways in which they wanted to see things done was not always a happy one. The process of learning though the integration of feedback was therefore not easily separable from the hierarchical structures within the PE departments and the way in which people operated within these.

> *Whereas, at the last school, this teacher was a little bit dominating really and if she wasn't happy, then it would be a bit of a bollocking and you suddenly thought hang on a minute I am not at school. I am supposed to be one of the team, one of the teachers, talk to me like an adult. And I told you before to do such and such and you think well it was my lesson I wanted to try something different and talk to me like an adult, so really I dismissed whatever she said and you just think I don't want to listen to that. (Ben, pre-service teacher, Interview 3)*

For Ben, it was evident that he had developed selective strategies as far as dealing with feedback was concerned. In order to accept criticism, he demanded a certain amount of respect for himself. In this he also formulated a preferred way in which he felt feedback should be conveyed. This was for it to be genuinely collegiate and incorporate recognition for positives as well as points of criticism. The preference for similar approaches was also highlighted by other pre-service teachers in the study. Whilst he, like others accepted his role as an apprentice teacher, the extent to which he was prepared to treat established teachers in a deferential way had its limitations. Respect had to work both ways, if the relationships were to work for both sides.

When reflecting upon the processes and people who had most significantly influenced the development of their knowledge during their school placements, pre-service teachers consistently valued a supportive, collegiate and co-ordinated approach by all members of staff within the PE department very highly. They criticised departments where such a collegiate approach and support was of a fragmented or ineffective nature.

Well managed and co-ordinated PE departments had very positive effects on those pre-service teachers, who experienced these, a finding that was also supported by the work of Armour and Yelling (2007). Where the PE departments shared common goals and also considered co-ordinating feedback and target setting for the pre-service teacher a joint goal, pre-service teachers felt well supported and considered that they made good progress in their placements. Unfortunately, variability in practice across different PE departments meant that not all pre-service teachers benefitted consistently from such experiences. Such difficulties have also been highlighted by Keay (2005). Within departmental settings, the role of feedback was consistently identified as being one of the most significant developmental tools and processes identified by pre-service teachers.

Pre-service teachers in this study also appreciated practice-oriented knowledge exchange as was observed by Capel et al. (2011), although this was not necessarily exclusive to the appreciation of other knowledge. There was also not such a strong focus on passing the course in this study, as was noted by others (Smith, 2001; Capel et al., 2011) in their research. This may be related to the assessment culture in this study and the fact that individual teaching observations in the school partnership were not graded. This was in line with the official partnership policy as set out by the University. According to this, feedback was designed to be developmental throughout the various stages of the course, specifically trying to avoid a fixation on grades throughout this process.

According to the literature in this field, the mentor is a key advisor in relation to the development of pre-service teachers (Chambers and Armour, 2012; Ennis and Chen 1993). The personal mentors' impact was identified by most pre-service teachers to have had a significant impact on their development. However, in most instances the mentor influence was only fully understood within the departmental context, which accounted for much of the learning. Mentors' value orientations are also reported to have some impact on their mentee's development of such values (Ennis and Chen 1995; Curtner-Smith, 2001), although, in the literature it is not always clear, how, or indeed if, such values ultimately influence the values of pre-service teachers and aspiring novice teachers.

The impact of PE departments on pre-service teachers was, however, not only linked to the individuals who worked within the departments. In line with other research in this field, the departmental influence on pre-service teachers was found to operate through a range of formal and informal processes (Capel, 2003; Capel, 2007; Hayes et al., 2008, Keay, 2005; Sirna, Tinning and Rossi, 2010). A major influence in this were the legitimised teaching practices that constituted frame of reference for the day to day field experiences through which pre-service teachers learnt to teach. These legitimised teaching practices substantially influenced many central aspects of pre-service teachers' development and the following section explores the interaction between these established departmental practices and pre-service teachers' learning.

5.13 The influence of established departmental teaching and assessment practices

The teaching and assessment practices that were legitimised within the PE departments provided an important source, from which pre-service teachers drew as they developed in their teaching. When pre-service teachers reflected on the pedagogical choices they made, this was often linked to the practices within their immediate environment. Since their situated teaching experiences took place in school, much of their inspiration for ideas and solutions was drawn from their PE departments. The PE departments' practices provided models of teaching that were observable in the field, and accessible to pre-service teachers. This affected many important aspects of pre-service teachers' learning, such as for instance: the adoption of specific teaching styles; the use of assessment; the use of AfL; behaviour management systems; instructional and managerial devices and many other practices and documents that related to the organisation of lessons and pupils.

One area of particular interest that emerged throughout the investigation was pre-service teachers' use of different teaching styles. The extent to which pre-service teachers progressed with these was found to be significantly influenced by departmental teaching practices. In those

departments where pupils were consistently encouraged to learn independently, it supported and facilitated pre-service teachers' attempts to emulate such approaches to teaching and learning. A consequence of this was that they would be more likely to develop and persevere with such pupil-centred teaching styles. As William's narrative explains, it was the fact that the pupils had already 'learnt to learn' in a more independent way that helped him most to devolve responsibility to them.

> *They (the pupils) are just more used to doing things independently and that goes all the way through. They are used to take leadership roles for all sorts of bits of the lesson. Well they really expect it. And all the teachers here expect you to do it as well. So, it makes that side of it really enjoyable, because you always have to think how you can involve them (the pupils) into the lesson. (William, pre-service teacher, Interview 2)*

Such established practices in the PE department had a significant impact on the development of pre-service teachers. Where PE departments had higher aspirations with respect to devolving responsibility to pupils, this extended pre-service teachers' perceptions of what they felt was 'doable' within these contexts. Therefore, PE departments played a very important role in influencing which pedagogical practices might develop and flourish, or wither away. The development of a range of teaching styles constituted a key aspect of the development of PCK. Pre-service teachers' narratives highlighted the role that the PE department and its established practices played in this development. Not only did these departmental practices provide a source of knowledge, they also provided a framework of reference in which all players knew how to act. Crucially, this included the pupils, who had become accustomed to participate in these practices.

> *The staff are a lot more organised in terms of structure of what they teach the pupils. They've got quite specific leads of work so you always know what leads on and you can prepare yourself a bit better, I find. And they make the pupils a lot more aware from a young age of things. Like warming up as well they know what muscles they use and how they stretch them, they're just a lot more organised than School One. I think they're quite sorted out and the pupils seem to enjoy the lessons a lot more. (Nichole, pre-service teacher, Interview 2)*

Nicole's reflections captured some of the conditions in which pre-service teachers could flourish. Effective PE departments designed pupil experiences that fostered independent learning and they enforced this consistently. Key messages about learning and teaching were consistently communicated by staff and well understood by pupils. This created shared expectations for staff and pupils alike. Good organisation and high expectations within PE departments manifested themselves in high expectations from pupils, as well as from the pre-service teachers. Where PE departments demonstrated co-ordinated teaching and management approaches that promoted independent pupil learning, pre-service teachers also found it easier to pursue such aims. It was the fostering by the department that led pupils to internalise such ways of learning, over time. In such departments it was easier, for instance, to encourage pupils to become actively involved in shaping their own learning, or to take leadership roles. The departments with the most coherent approaches to learning and teaching expected pre-service teachers, to 'buy in' into these practices as well as into the underlying departmental ethos. The pupils played an important role in this. They were not only the focus of PE department's efforts, but they were also active participants in these practices. From the pre-service teachers' point of view, the acceptance or rejection of specific teaching practices constituted a central measure to gauging their effectiveness.

For instance, if devolving responsibility to pupils led to a positive teaching experience, this encouraged pre-service teachers to use this strategy in future lessons. Many had recognised the benefits of fostering such practices. Where placements provided a setting in which positive, pupil-centred pedagogical practices were supported, pre-service teachers generally perceived this to be positive for their own development. It encouraged and then consolidated their beliefs in this way of teaching. Many narratives indicated pre-service teachers' propensity to base their own practice on what was modelled and advocated in their respective PE departments. Jenny's account of how she hesitantly had started to use more reciprocal teaching in her

lessons after observing others in her department doing so successfully, is a pertinent example of these transformative experiences. Her growing awareness for different teaching styles was linked to the specific practice in her PE department.

> *Well a lot of pupil-pupil reciprocal stuff is involved here (PE department, School 2) and although I don't use it as much as they do, I am trying to bring it in more… And I have started making some sheets, there's some netball stuff, just giving them criteria of what your partner is doing. Well my thinking comes instinctively. I want them to be able to actually physically perform by the end, but then that is just when I think about lessons first. When I actually plan them, I end up bringing in the understanding ones, so although I will be thinking about shooting technique, some of them at the end still will not be able to score or something. But they will understand how to and they can coach someone else to do it even if they can't do it themselves. (Jenny, Interview 2)*

Whilst Jenny's language, as well as her level of conviction towards this way of teaching was still hesitant, she had started to venture into different territory as far as her range of teaching styles were concerned. Like most other pre-service teachers, she had also started to resort to the production of supporting learning materials to facilitate this way of teaching. At this stage she was, however, not yet very explicit on her rationale for employing reciprocal teaching styles. Her impetus was the observation and acceptance of practice within her CoP. The starting point of her thinking, was still orientated on practical content. Once this was identified, she began to consider other aspects of learning. Although physical content was frequently used as a focal point of pre-service teachers' considerations when planning for a lesson, by the mid-stage of the training they increasingly considered cognitive aspects of learning.

Developing pupils' ability to recognise core aspects of a technique, and then to provide feedback and coach another pupil was now seen to be an important ingredient of the learning in PE. Using reciprocal teaching styles was the obvious way of achieving this. Developing this way of teaching was a significant theme of PCK development amongst pre-service teachers in this study. Being genuinely supported by the staff in the department was identified to be

a key facilitator to progress with this. Positive identification with the team characterised the most positive reflections on learning within departmental settings. Help provided included taking time out to invest into building pre-service teachers' knowledge-base. Using ICT was one popular strategy to support emerging reciprocal teaching styles.

> *They've got plenty of equipment if I need to use it and they'll more than willingly help me learn to use it. Like computer equipment they'll take an hour out of their free time to teach me how to set it up and how to use it. And they're quite happy to do that or to point me in the right direction, whereas, in the first placement, don't get me wrong, they were organised and they looked after me, but I just feel a bit more comfortable here in terms of asking my mentor or another teacher for a bit of help. (Nichole, pre-service teacher, Interview 2)*

Where specific experiences with teaching were positive, this encouraged the formation of value orientations that were congruent with those held in the PE department. Teamwork and shared values within departments were driving factors for this. Support that was given willingly and flexibly was valued highly. This included help with the use of resources that furthered the opportunities to extend their practice. Whilst the support at Nichole's first placement had been effective, it had been perceived to be more at a distance, whereas the support in her second placement appeared to have a more genuine quality, in the way she perceived it. Her observations also mirrored the thinking of her mentor who confirmed that Nicole's teaching practices were aligned with the department.

Nicole's observations about the links between the department and her own teaching were also confirmed by evidence from lesson observations, providing some triangulation for these claims. During a trampolining session with Year 9 girls, Nicole facilitated a very effective lesson, during which she skilfully used teaching materials and ICT to encourage pupils to self-assess and peer-assess their own and other pupils' progress. The pupils were at ease with this reciprocal teaching method and fulfilled their roles as 'coaches' willingly and effectively. Pupils were working towards a 10 bounce routine in which they were given five elements to incorporate and choices about the other five. The lesson focussed on characteristics that were related to the quality of movements

and performances. In her post-lesson reflection Nicole demonstrated that she had started to reflect upon the key learning processes of the NCPE and how to incorporate these into her teaching.

Departmental practices could be enabling and empowering as well as constraining. Over the course of their training, most pre-service teachers became more aware of the variety of existing practices in schools and they reported their effects on their own situation. Ben, for instance, felt that the expectations and preferred practices he had identified in some communities were not always fully realisable in others. And, in his position as a pre-service teacher, he also felt to some degree powerless to resolve the issues that arose from this. For example, his *School One* and the university-based-based learning had encouraged pre-service teachers to embrace discovery learning wherever this was possible, and he had bought into this philosophy. However, he found it harder to realise his aspirations in SE2, where in his view there was less of a teaching culture that promoted these practices across all activities. This, in turn, had some effects on how the pupils were used to being taught and how they responded to certain approaches to teaching.

> *The kids aren't really used to it (discovery-based learning) here that much. In gym and dance more, but in games it's not really done. I think the teachers use mainly command and reciprocal for games. And reciprocal always seems to work better for the girls than the boys. I just find it a bit harder to do some of that stuff here than I did at School One...I think it (discovery-based learning) affects the learning because it gives them ownership and so they'll hopefully be getting more involved in their own learning and in the end I hope that they actually remember it a little bit more so I think rather than if you're just telling someone to do something and they're doing it then they'll learn it to an extent but if they're making it up themselves and then putting it into practice, there hopefully is more learning and more retention. (Ben, pre-service teacher, Interview 2)*

It was clear from his narrative, that he was quite committed about more pupil-centred teaching styles, and whilst he persisted with this type of teaching as best as he could, he concluded that one of his problems was that pupils just were not used to this way of learning. His observations led him to believe that other staff used predominantly command and reciprocal

teaching styles and that this had an adverse effect on pupils' responses to his attempts at discovery learning. He was, however, committed to more pupil-centred learning, feeling that this provided an extra dimension to his teaching. The routines, customs and practices within departments were noted by a number of pre-service teachers to have created pupil expectations and habits that made them respond better to some teaching styles than others. Ben had also noticed that there was a potential gender preference for certain teaching styles. In his view, girls responded better to reciprocal learning than boys, an interesting observation that was also shared by other pre-service teachers.

Ben's challenges were, to some extent, also confirmed by the observation of a trampolining lesson during the mid-stage of training. Ben had planned for a substantial amount of reciprocal learning, during which boys were supposed to provide feedback on each others' performances. This was supported by the use of ICT, which Ben used for the modelling of a skilled performance. This was then supposed to provide the knowledge basis for pupils, enabling them to provide feedback on each others' performances. During this lesson it became clear that Ben spent a considerable amount of time and effort trying to manage a small number of pupils who did not respond as well to the content of the lesson and the style of teaching as he had hoped. Whilst, in the appraisal of the researcher, Ben had been well in control of his classes during his first placement, he was finding it harder to deal with the less compliant pupil behaviour in SE2. In his reflection on this lesson he also confirmed his perception that pupils in his second school placement were more challenging and also less used to independent learning, than they were in his first.

Despite the more challenging environment in SE2, Ben remained however convinced, in principle, of the wider benefits of discovery learning, cited the benefits of deeper learning with some personal commitment. Like other pre-service teachers in this study, he had implicitly recognised some of the principles of constructivist views of learning and seen these as beneficial. He demonstrated some resilience in the pursuit of these. The nature of the context, the school, department, teachers and pupils as well as established practices remained important for all pre-service teachers in

this study. It could support, hinder or impede the development of certain pedagogical practices. The impact of respective CoP on pre-service teachers' pedagogical practices was a strong theme that continued to be evident during all stages of the training. Respective CoP influenced pre-service teachers' individual choices of pedagogical practices, and affected their perception of their own progress. In line with Lave and Wengers' (1991) observations about the peripheral position the apprentice occupies in CoP, per-service teachers often felt powerless to influence the fundamental positions that provided the framework for their learning in PE departments. These could, as in Ben's case be restricting the ability to experiment, or as in Angelina's case encourage the appetite to try out new things without fear of failure.

> *Well, when I taught dance in my last school it was very much things that we'd done with Staff Member X. It wasn't much to do with the style or culture of dance, and it was very much sports dances, 'haka' dances, you know, very safe. And at this school I've done everything but that, I've done every style you can think of. And I'm not a dancer at all but I'm not afraid to go home, look on Google find out about it and then the next day go in and teach it, and I've loved doing that. And because the people here are so supportive and like, we'll just go in have a go at it see if it works, and if it doesn't then change it and that's what I've liked about being here and I feel comfortable and confident to do that and to try new things. (Angelina, pre-service teacher, Interview 2)*

Whilst Angelina's approach to seeking content for her dance lessons could be interpreted to be somewhat carefree, her confidence and empowerment, inspired by her perception of the supportive attitudes of those that surrounded her, gave the firm impression that she thrived in this environment. Like the pre-service teachers in Shoval, Erlich and Fejgin (2010) study, Angelina's perception that she was safe and even encouraged to take some risks enthused her. It also tallied with the perception of her mentor's view of their PE department and their approach to teaching, learning and development.

> *I wouldn't want the students to come in here and think that we are very regimented and we have to stick to a couple of teaching styles and the QCA schemes and stick to the schemes of work and the lesson plans that we have. I would very much encourage them to experiment also with ideas of their own. I don't know, it's*

very difficult to answer. I think as a department we are very open to ideas and when new things come along, as with ICT, we'll try them. Bringing in external expertise, team teaching, whatever. We see ourselves as an innovative school and an innovative department and students are coming in and submerse themselves in it and I have never really thought, are they getting the broadest experience? I take it for granted that they are. (Suzy, Mentor)

Pre-service teachers' narratives consistently demonstrated how established approaches within PE departments influenced their leanings towards specific pedagogical practices. Their development of knowledge was more likely to flourish when it was supported by practices within the departments. William's description of how he was buying into certain aspects of Sport Education was another example of this.

Well I think that the best thing that you can do as a teacher is be able to change your teaching styles and not have just a single teaching style, so not every lesson is going to be in the command style, I think there are times when the command style is going to work best, definitely. And I think that there are also a lot of times and a lot of groups where a command style isn't going to get the best out of other kids at all and I like using more discovery and more reciprocal styles where you can let the kids have a coach, well they do here they only do it with a couple of groups. They do Sport Education here, which I think is absolutely brilliant, I really like it, and I am going to do it when I get back to my next lesson… I am a big, big fan of that. (William, pre-service teacher, Interview 2)

In his appreciation of the departmental strengths and practices, William unwittingly echoed the words of his mentor Mark, who praised the same practices as one of the strengths of their department.

I think we do a lot of work on, we try and encourage a lot of responsibility and independent learning within the department... We have got quite a stable department and we have worked together now and done a lot of inset training together so we are pretty similar in the outcomes that we want... I think what they will hopefully see is there is a consistency in how we are trying to deliver things such as the assessment, we do a lot of moderation on assessment but also the way we give responsibility for the pupils, there is a lot of what we call 'sport education' within the lessons where we are getting the pupils to perhaps take warm-ups, getting pupils actually to coach other pupils within the lessons, leading different activities, different skills...We then go to teach each other and say I did this today, it was really good, and

we share a lot of good practices, there is a lot of communication between what we do within the lessons. (Mark, mentor)

Mark's reflections demonstrated his department's commitment towards developing their pupils, holistically, as learners. There was an assumption of commonality in the departmental approach to teaching and an assertion that a range teaching and learning styles were used within the department. The emphasis on teaching to a curriculum that was wider than its skills-based dimension was coupled with a declared aspiration for success of individual pupils. The use of aspects of the 'sport education model', with a view to devolving some decision making and choice to the pupils was identified to be a shared goal of the department. This was supported by common departmental training and the shared goals were also communicated to pre-service teachers. The emphasis was on providing a variety of experiences, focussing on an ethos of encouragement and learning to learn. PE was to support wider aspects of learning, not just focus on sporting ability.

The emphasis on pursuing a wider range of goals through PE was more explicit in some departmental practices than in others. In these departments, mentors were more confident about the role of PE in their schools. Some were convinced that their departments' pedagogical practices could serve as models to other subjects in the school. Where departments had developed more explicit strategies to achieve such goals, it had an effect on pre-service teachers.

I think again because of the way we deliver, because of the teaching and learning styles, I think they (the pre-service teachers) do get the opportunity to experiment and do that. I think the whole ethos of the department is that it is not about just acquiring and developing skills, it is about participation and it is about enjoyment and it is about every individual during the lesson finding a role and finding success. We do a lot of things that are related to the philosophy of the sport education model, where they all take on different roles or they work in teams and they coach each other...It is not just about being good at sport, we do a lot of all the citizenship stuff and we hit the every child matters things. It doesn't matter what we are doing and whether some of us are good at it. It is about encouragement. Learning to learn. I think in terms of pedagogy, what PE does, I think we have quite a lot to offer other subjects, because I think we do a lot of this stuff already. (Carla, Mentor)

Departments that had formulated explicit intentions to achieve the wider aims of the curriculum recognised the need to interpret the NCPE in a more comprehensive sense, not just in relation to 'acquiring and refining' skills. These strategies were often influenced by specific school development initiatives such as 'Building Learning Power', which could provide lead motives that informed the PE departments' philosophies of teaching. More unusual for this study, Carla explicitly referred to the term 'pedagogy' itself and compared the practice in PE favourably to that of other school subjects. Where the pedagogical intentions within departments were largely congruent this was noticed by pre-service teachers. Well aligned intentions and practices provided a comprehensive framework for their teaching. This provided pre-service teachers with models of how to organise more pupil-centred teaching and learning. Pre-service teachers valued such experiences highly and stated that they would like to explore these ways of teaching in their future practice.

Throughout this study, it was consistently observed how pre-service teachers' development of practices, as well as many value judgements, were influenced by the CoP within which this learning was situated. Pre-service teachers' perceptions of the role of AfL in teaching PE was a very good example of this. Nicole expressed her personal commitment towards letting pupils know how they could improve their work. Emphasising in particular the value of AfL for girls' PE, there was little doubt that she was sold on the concept and its benefits. It had started to become part of her personal vision of what successful PE teaching might look like.

> *I think it's more important with the girls, just because of their attainment and their general behaviour and enthusiasm towards PE. I've noticed they work a lot better if you say to them 'Oh you've achieved such and such today which put you at such and such a level or such and such a criteria. How can you improve?' And they're like, 'Ooh well'. They have their own ideas. So when they come to the next lesson if you just recap them and say 'Oh what level were you such and such and how did we say you could improve?' Then they say 'Oh well if I do this'. It's like 'Right, that's your focus for this lesson'. You make the girls a lot more focussed. (Nicole, pre-service teacher, Interview 2)*

Nicole's observations revealed a developing knowledge of how to integrate AfL into her teaching. Her belief in the viability of this teaching tool had crucially been informed by her observations that her pupils reacted to this in a positive way. Such positive pupil reactions acted as a powerful influence, as pre-service teachers were shaping their convictions about teaching. This reinforced her growing confidence in trusting pupils increasingly to be able to contribute more independently to aspects of lessons and learning. She also related all of this to criteria referenced improvements. This aspect had been strongly influenced by the practices of her PE department and she returned to acknowledging this influence in the final part of this reflection.

> *I've found that through the school here, not through my own, off my own back, but I've found it useful and I've used assessment an awful lot. It's not just I thought of it consciously purely because I knew that was expected of me during my placement but in terms of using it has helped me a lot...So now I obviously try to just use it all the time. (Nicole, pre-service teacher, Interview 3)*

Nicole's experience during SE2 was a good example of the complexities and inter-related factors that influenced the development of knowledge, in this particular instance the use of AfL. Nichole's narrative also provided an example of how pre-service teachers had to make choices between differing practices in respective CoP. Whilst there were many commonalities between the University's conception and her school's conception of the nature and purposes of AfL, there were also distinct differences. One commonality, for instance, was that both valued frequent feedback that should allow pupils to appreciate what they needed to do to improve their learning. However, whilst the PE department, in line with the rest of her school, practised constant 'levelling' as an accompanying feature of feedback to pupils, the University guidance on good assessment, explicitly, did not.

Choosing between the two practices, the affiliation to the PE department proved to be the stronger one. Here, the pre-service teacher's learning and teaching was situated. The day to day consequences, as well as the expectations of the pupils, would have made any other decision

difficult for Nichole. Nichole's choice to adopt the departmental practice was a significant indicator of the powerful influence of this CoP. Additionally, the validity of this practice was, apparently, confirmed by the success that she perceived to have with her pupils. The pupils also exerted a powerful influence on the development of PCK in pre-service teachers. It represented the acceptance and confirmation of practice through its intended audience. Their willing participation in any specific learning and teaching strategy was the ultimate reinforcement. Successful experiences with specific practices, consciously and sub-consciously shaped pre-service teachers' views about teaching and it was evident that the pupils were part of the socialisation process, which defined by the boundaries and the accepted practices within their learning community.

Being affiliated to a PE department did, however, not necessarily mean that pre-service teachers accepted existing practices without critical reflection. As pre-service teachers grew their knowledge base from different sources, they also became more able to evaluate the effectiveness and validity of such practices. The learning they drew upon to do so originated from a variety of sources, including observations from their other school placement and also their University-based learning. Whilst pre-service teachers, in the main, complied with departmental practices, their growing ability to evaluate these more critically led them to question the effectiveness of some departmental practices.

Critical thoughts about the assessment practices they observed in some schools were a recurrent theme of conflict. In these criticisms, pre-service teachers noted the limitations of assessment practices and thereby demonstrated their own, tacit understanding of the qualities of good and bad assessment. Critical reflections on the assessment practices in schools frequently reflected the critical positions on assessment that had been explored through their University-based learning. This related, in particular, to the practices of continuous 'levelling' of activities and to the focus of assessment on physical performance.

> *Well I think assessments (at this school) are always performance based. That's not assessment for learning, it's just a mark isn't it? It is just a number… I had a go at that, but it wasn't really feeding back to the kids at all. What mark did I get sir? Oh you*

got a (level) five, you got a five plus, I saw them do it and I just thought what does that mean? They don't know what that means they know what a five plus is but it doesn't tell them anything. And I saw someone moaning as well saying how come he got a five and I only got a four. (Ben, pre-service teacher, Interview 3)

Pre-service teachers also used their knowledge of the practices they had witnessed in their previous school experience, as they formulated their critical views of specific assessment practices.

I think for the pupils to know how to achieve is the most important. I thought it was good that at School 1. Pupils knew where they were and what they had to do to go up a level or part of a level and it was used quite a lot. But I don't think it dictated what was done. At School 2 they have one assessment lesson at the end of the block and I just feel that that was a waste of a lesson. Just what did the pupils learn? Nothing really, they just went and played football and I sat with the teacher on the bench and said 'Aah, level 4a, level 4c, 5a whatever'. I thought it was a waste of a lesson whereas if you do your on-going assessment throughout all of your lessons and involve the pupils they know what they've got to do to improve. (Debbie, pre-service teacher, Interview 3)

Over the period of the course, most pre-service teachers developed a much firmer understanding of the underpinning principles relating to assessment and AfL. This knowledge made them more critical of any practices they considered to be under-developed or poor. For instance, the above criticism of the reductionist departmental practices of using assessment without enhanced information for pupils demonstrated a principal understanding and commitment that assessment should be useful to pupils.

The practices focussed on 'levelling' that some pre-service teachers had observed did, in their opinion, not constitute valuable feedback for pupils. In this they reflected the position of their University-based learning and it may be argued that, from their perspective, the PE department had lost sight of what constituted good assessment. Their objections in many ways foreshadowed by quite some time much of the criticism that was subsequently levelled by the QCA (2009) at assessment practices in schools up to this point. This lead to attempts of reform in the guise of the

Assessing Pupils' Performance Initiative (APP), which suggested a more holistic, process oriented and periodic approach to assessment.

The significant progress pre-service teachers had made in their understanding of this topic over the course of the programme was also evident in data from other sources. VLE discussions and teaching observations also provided evidence of pre-service teachers' attempts to facilitate AfL through peer assessment. Lesson observations witnessed varying levels of effectiveness of peer assessment in lessons. Whilst AfL had already been mentioned by some pre-service teachers during the interviews from the early stages of the training, their discourse was much more knowledgeable at the end of the course. They also tried to incorporate this increasingly into their teaching. Where departments and school-based mentors were very explicit about the use of such practices, pre-service teachers were also more likely adopt these. For instance, some pre-service teachers frequently used ICT in pursuit of AfL objectives.

Again, it was noticeable that those who used ICT more frequently for such purposes were the pre-service teachers who were encouraged to do so by their departments. For instance, Nichole's PE department in SE2 was very keen on the use of ICT. This encouraged her to develop explicit practice and frequently use ICT to support her teaching. She had developed confidence and pride in her new knowledge and chose to demonstrate this to the researcher, when he observed during SE2. During a Basketball lesson with Year 8 Girls, which focussed on improving the lay-up shot, she facilitated self-assessment and peer-assessment through some quite sophisticated use of ICT. This included the modelling of relevant technique and the development of relevant teaching points as well as recording and providing feedback for individual pupils. This was further supported by the production of task cards that pupils could use as feedback cues.

Through the use of an organised approach to group work and the inclusion of non-participants most pupils managed to participate successfully in the process of analysis. The girls evidently enjoyed providing feedback in this manner. They also demonstrated improvements in their awareness of the key teaching points related to the lay-up shot. In addition to the qualitative feedback, and in line with departmental practice,

the pupils also gave themselves and their partners ‘levels’ on the basis of the descriptors and teaching points used. The girls were accustomed to such an approach, because both ‘assessment’ and the use of ‘ICT’ featured prominently in their regular PE experiences.

This observation constituted a powerful example of how the influence of the PE department permeated pre-service teachers’ learning, not only through providing models of practice, but also by shaping the pupils in the skilled and wilful participation in these. A similar observation was made by Wright et al. (2006) who studied the implementation of a TGFU style curriculum innovation (the tactical games approach) that pre-service teachers trialled in their placement schools. Wright et al. (2006) observed that one of the major difficulties encountered by the pre-service teachers was that the pupils were not accustomed to be taught in this way.

In line with Keay (2005), the analysis of the impact of the PE department suggested that these significantly influenced the development of the ‘apprentices’ who learnt within them. It was here, in the PE department, where their enacted knowledge took place. It was here, where they were *actually* teaching *real* pupils. The departmental setting provided the testing ground for their developing competence. Here, the effects of their own actions were felt most keenly through the reactions and feedback they had gained in their lessons. Dealing with these experiences was inextricably linked to the PE departments, the CoP, in which they were located as ‘apprentice’ learners. Not surprisingly, the nominated mentor had a central role in facilitating many aspects of pre-service learning.

However, learning within the departmental settings mediated the influence of individual mentors significantly. It provided an important framework against which much of the pre-service teachers’ development could be referenced. It was also evident that the practices in different PE departments were themselves influenced by institutional and curricular pressures. This resulted in strategies and practices that would be shared with pre-service teachers. For instance, official strategies for the incorporation of assessment and AfL into departmental learning and teaching and learning strategies were frequently mandated ‘from above’ and then connected tenuously to the NCPE. Some mentors, like Suzy, saw

some contradictions with best practice in this approach. Whilst she felt compelled to comply within the school setting, she at least tried to share her criticism of these practices with her pre-service teachers.

> *Assessment is one that I am very conscious and worried about. Because obviously there are so many things out there and all schools do it so differently. We are a very results driven school. We have to, every four weeks after a block, we will give the kids a level. I don't personally think that that is the best thing to do, but that's our directive from above and that's what we have to follow. And when I speak to the students, I'll be very honest with them and I will say, what is your personal opinion, do you think that within four weeks you can see that a student has gone up from a 4b to a 4a and nine times out of ten they won't really be able to see the difference between the two and hand on my heart, I can't say I will. So, I very much want them to see assessment for learning and make sure that in their lessons they are not as conscious about having to give them a level at the end of their four week block, but that in the lesson, if the pupils improves, do they know they've improved and if they have improved, what do they need to do to get to the next point? I think that's absolutely essential, and if students can learn to do that early on, that to me is what assessment is all about. (Suzy, Mentor)*

Despite the proliferation of guidance and exemplification materials as well as training, it was evident that delivery strategies on the ground remained varied. Not all PE departments in this study had captured the developmental essence of AfL, which formed the basis of the pivotal role of AfL in education, as is argued by Black et al. (2006). The local translation in departments of how to put such knowledge into practice varied. Formulating effective strategies for the use of AfL remained unresolved for some of the PE departments in this study. These findings were a reminder about the complexity of factors which influenced pre-service teachers' development of knowledge as well as their emerging personal philosophies of teaching PE.

It became increasingly clear throughout this study that social aspects of learning within school-based CoP accounted for many of the changes in pre-service teachers' knowledge and their adoption of specific teaching practices. Many of the features that characterise apprenticeship learning and LPP, as outlined by Lave and Wenger (1991), were recognisable.

The best experiences were had in supportive and effective learning communities. Pre-service teachers valued the collegiate support they received during their learning in schools very highly. By the same token, they were aware of their position in the school and departmental hierarchy. As they were trying to find their own style of teaching, they did so through legitimised peripheral participation within the respective PE departments. Legitimised, departmental practices were embraced, if these were perceived to be at the heart of effective PE departments. Some pre-service teachers also showed a general propensity towards compliance with legitimised practices, even if they were not fully convinced of their effectiveness. In doubt, they tended to show compliance with those who they perceived to have the most immediate or significant power.

Establishing the direct and significant impact of these settings on pre-service teachers' learning raised questions about the optimal nature of school-based experiences. It confirmed that the quality of PETE is crucially dependent on the development of partnerships that are capable of supporting pre-service teachers in the pursuit of a variety of pedagogical approaches. With respect to school-based learning, it emphasised the need to understand the impact of the PE departments' practices on the development of pre-service teachers' pedagogical practices. These influences of CoP on pre-service teachers' learning need to be accorded more attention within PETE research. Whilst the mentor-mentee relationship remains important, the findings of this study suggest that more attention in PETE research needs to be directed towards exploring how the PE department, as a wider unit, influences the outcomes of PETE.

Despite the PE departments' importance, it was also evident that pre-service teachers developed their own views of effective teaching, and with this their ability to criticise some of the practices that they witnessed. Whilst the PE departments were important, pre-service teachers did not follow the practices they encountered without critical evaluation of their effectiveness. This was supported by the opportunities to acquire learning from more than from one CoP. In addition to the opportunities to learn within two different PE departments, the pre-service teachers in this study were able to draw on their University-based learning to develop their knowledge of teaching.

Furthermore, the University requirements stipulated a structural approach to aspects of the school-based learning programme, which required a formal cycle of development, designed to enhance the actual experience of teaching classes during school placements. The following section explores the impact of this development cycle on pre-service teachers' development of knowledge.

5.14 The development cycle: Planning, teaching, feedback, reflection and evaluation.

Learning through the experience of teaching was at the core of the school-based elements of the PGCE programme. This process was enhanced by preparatory and reflective activities that supported pre-service teachers in their quest to develop their knowledge base.

Planning and evaluation of teaching constituted central activities on the PGCE Secondary PE programme. These activities required pre-service teachers to plan for and reflect upon each lesson they were teaching. Formal and informal feedback on lessons was regularly provided by mentors and accompanying teachers. Planning, teaching and evaluation were linked to learning targets, with the aim of providing a supportive and structured framework for development. These provided a valuable source of experiences that could be drawn upon during learning conversations between mentors, pre-service teachers and University tutors. Additionally, lesson plans and evaluations provided a formal record of pre-service teachers' activities to third parties, such as OfSTED and external examiners. Pre-service teachers' perceptions of the impact of these experiences on the development of their knowledge were an important source of information for this investigation. This section provides an analysis of how these experiences contributed to pre-service teachers' knowledge development.

Individual approaches to planning and information seeking were influenced by pre-service teachers' personal preferences as well as the requirement to plan for their specific development needs. As with Wilson,

Bloom and Harvey (2010), pre-service teachers were drawing on a wide range of sources of information, including IT based-resources, books and people to further develop their knowledge. In their people-based resource strategies pre-service teachers used their peers and mentors. Mentors played a vital role for all pre-service teachers who considered mentor knowledge to be valuable, and on the whole, validated knowledge.

> *Probably the first thing that I did was go and speak to my mentor about it and I made sure that lessons that I wasn't so confident in, I made sure that I planned them three or four days in advance, I went and checked with my tutor to see if what I had planned was right and then she would say yes, or suggest some improvements, and then theory work and stuff, I made sure that I had got all of the work sheets ready and then again I would go and check with my mentor, so I think the first port of call that I went to was my mentor, to check with her, but she was always quite willing to sit down and go through stuff with me. (Natalie, pre-service teacher, Interview 1)*

In the earlier phases of the course, a consistent theme was the need to spend more time and effort in planning for activities where context specific content knowledge and PCK was low. It was evident that pre-service teachers felt under pressure to be well prepared for their lessons. Their reflections on planning confirmed that much energy was directed towards making up for these knowledge deficits. These efforts frequently concentrated on accumulating technical knowledge as well hunting for ideas for suitable progressions to be used with their learners.

> *Lots of scouring the internet for coaching sites, picking up coaching points and asking people I know that have either been on coaching courses, like other people on our course. I got some of the coaching stuff off Mike, he has been on a badminton course, or people in the department. One lad was a very good badminton player so I had a chat with him about it. I think that helped a little bit. (Thomas, pre-service teacher, Interview 1)*

Globally, pre-service teachers' comments revealed the underlying pressure that many pre-service teachers felt keenly at this stage. They painted a picture of a group of inexperienced, but aspiring and hard-working individuals, some of whom were often pushed to their capacity during this stage of training. Time was consistently identified to be a scarce resource. Yet, mostly their attitude reflected steadfast commitment towards their need

to develop, and they were accepting of the need to shoulder significant workloads in order to make the improvements that they felt were required of them. In this regard, pre-service teachers demonstrated motivation and resilience in their efforts to prepare for their teaching.

> *The workload is a lot, it is a lot of work but the good thing with me I think was, I didn't have any misconceptions, I knew that coming onto the course it wasn't going to be a breeze and there was a lot of work involved. (George, pre-service teacher, Interview 1)*

Dealing with the multiple requirements that arose during SE1 became a major focus in many pre-service teachers' lives. The burden of having to address deficiencies in content knowledge added to the general challenges of the early teaching experiences. However, their narratives also demonstrated how lesson planning was a central instrument in addressing these knowledge deficits. They confirmed the value of planning not just in relation to preparing them for the lesson, but as a valuable knowledge development activity itself. In this, most recognised the correlation between their investment in planning and the resultant positive effects this had on the quality of their teaching. They also drew on other more general competencies, such as the ability to use observation and analysis, and identified performance advantages for their teaching through this. In doing so, they demonstrated emerging strategies which they could use in different teaching contexts.

> *To be fair I do not think my subject knowledge in most of the sports is up to standard. Football because I play football I have got a general idea of how things work but putting subject knowledge across through teaching and how to actually teach I find quite difficult….it's a learning curve… To be honest my best lessons have been my gymnastics lessons because I have planned them a lot more, I have thought about them a lot more, from a technical point of view. I know analysing performance so I think my observation skills are quite good, whereas maybe my practical side of gymnastics might be a bit different. (Phil, pre-service teacher, Interview 1)*

Particularly interesting is Phil's observation that some of his better lessons had been in his weakest area, gymnastics. He is clear about the

cause and effect relationship between planning and teaching quality. This realisation was shared, to varying degrees, by all pre-service teachers in this study. Although planning in itself was not sufficient to guarantee a good lesson outcome, the critical need for planning as a development activity was accepted by all. Phil's perception of the developmental effect of planning was also echoed by his mentor.

> *Okay. I think the main thing from placement one when he first came in he had knowledge of one or two areas of sport and certainly football is one of Phil's strengths. So he knew a lot about that but hadn't really managed to correlate the skills from one area to another. Gymnastics he had very little knowledge at all and dance, so in those areas he really needed far more input. Certainly, with Phil it was gymnastics. He actually had to come to me for more information and I sent him to books and I sent him on the internet and those kind of things, and I think because of that his teaching of gymnastics was far stronger. Because he didn't know as much, so he had to go out and learn and he had to go and ask questions and he had to come and get data from me and information from me on what was expected and terminology and all of those kind of things. I think his knowledge has grown significantly. (Craig, Mentor)*

The multitude of impacts that presence and absence of context specific content knowledge had on pre-service teachers was recognised generally by school-based mentors, and many narratives confirmed the adverse impact of content knowledge deficits. Prior content knowledge was seen to be facilitative to PCK.

Occasionally, previous experiences were considered to be 'baggage', constituting a barrier to teaching in a more pupil-centred way. In these instances the absence of knowledge was perceived by mentors to allow pre-service teachers to learn how to teach in the 'right way', right from the beginning.

Mentors and pre-service teachers continued to highlight the role of planning as a central process, affecting the knowledge growth of pre-service teachers. In this, they also shared an understanding about their roles in the co-construction of such knowledge. Whilst the role of the mentor was to support and facilitate, the primary responsibility for the development of knowledge was seen to rest squarely with the pre-service teachers. Pre-service teachers' willingness, motivation and ability to acquire such

knowledge independently were perceived to be very important assets by their mentors. Organisation and commitment were valued highly as aptitudes that supported this process.

> *I think they also need to be enthusiastic about their own professional development. There is so much to learn for them. They are good students that we get and that's one of the reasons we like to be involved. But as you know, there is a lot of new stuff for them to take in when they come into school. So, I think organisation is important. You know, you can give a lot of information out. You can discuss a lot of things. If they are not organised, they forget, like we all do when we're under pressure, you forget what you are meant to be doing and things tend to go wrong from there so, organisation and obviously subject knowledge is important. And the willingness to look up what they don't know and you know, personal work, private work, preparation, initiative. Not necessarily expecting everything to be told to them, to actually be willing to go and research really and look things up. (Jill, Mentor)*

Many of the earlier discussions around planning centred on aspects of context specific content knowledge and PCK. They were related to technical content organisation and progression. Later stage planning demonstrated a more rounded and informed understanding of the constituent elements and wider purposes of this activity. Rather than focussing on technical content and skills, many pre-service teachers now considered learning processes much more deliberately than they had during the early stages of their training. Planning and teaching intentions were for many now focussed on the learner and other outcomes that could be achieved.

> *So, I wanted to give them ownership and leadership and it's about them having choices and experiencing a different style of teaching. Rather than me presenting the task, they can take the task, and then take it where they want. I used it so that they had a chance to lead and take control of their learning, instead of me coming up with the drill. They can make that decision for themselves, because they are well enough informed to do this, so this was what is was all about, that they are actually informed learners and they can do it in that context of why am I doing that? (Phil, post-lesson reflection, Observation 3)*

Planning during the later stages was also more integrated within the cycle of reflection and evaluation. This in turn was linked to the learning

outcomes from previous lessons, which informed the setting of new objectives and continued more sophisticated attempts to cater for differentiated pupil learning.

> *So, I was always conscious of the fact in SP 2 to always relate the end of the lesson to the start of a lesson to make sure my objectives have been met. If my objectives hadn't been met by the majority then I would go back and use aspects of that lesson again in different ways. If it hadn't been met by the minority then I would have moved on but made sure the children that had missed out on the objectives or hadn't covered those things I wanted them to learn and be able to do, I would try and not hold them back, but kind of dip into the previous week's work slightly for the children that found it difficult (Thomas, pre-service teacher, Interview 3)*

Initially the focus of planning was on physical and technical aspects, but then the thought processes around planning in the later stages focused more explicitly on the achievement of wider objectives and more accurately defined outcomes. These were also more consistently aligned to the learning processes in the NCPE.

> *I think the area is almost given to you, so you know what you need to do. So batting was my area and then I made my objectives, so if it was knowledge and understanding of batting techniques, then application in small sided game would be my next step and then my outcomes from that objective. (Debbie, pre-service teacher, Interview 3)*

The planning process was also integrated within a wider cycle of learning. Mentors used weekly meetings as a tool to integrate planning, teaching and evaluation in the development cycle. In this fashion they provided a strategic steer for pre-service teachers' development.

> *If something important was identified in the meetings, then for that week for possibly half of the lessons I taught that would be the focus. Obviously the rest of the teaching would play a part but it would be 'Right. You need to concentrate on this'. Probably four out of eight lessons I taught would be my main focus whereas the others were just on my general teaching and other little areas so they would specifically say 'Right, you know. For half of the lessons this week we're gonna work on really pushing assessment this week or really working on ICT' just so like I didn't have to do it for all my lessons. Just so I did it for a significant number so they could see how I was progressing through the week and how I was probably changing it through*

each group and things like that. (Nicole, pre-service teacher, Interview 3)

Some mentors also used this process as a strategic tool to extend capable pre-service teachers' awareness of how a planning focus on specific learning processes can alter the nature of the teaching process itself.

> *I would say to Angelina, well how would you deliver a lesson on developing 'evaluating and improving' and then we would do some reciprocal work and then I would say, how can we develop a lesson with a focus on health and fitness, or on leadership? It's one thing I did with Angelina, I got her to do her gymnastics through 'evaluating', rather than through 'selecting and applying' so she had to switch what she was doing in that lesson, it was very much obvious from her teaching, getting pupils to watch each other, getting pupils to coach each other, and then also bringing the leadership strand as well, so that's one way how I used this was by actually getting her to deliver lessons through the different strands, other than those first two, that they're all more comfortable in. Again, it's something that is for a little bit later on in the placements, but it is something that is working very, very well. (Suzy, Mentor)*

In some instances the QTS standards were used as a tool for knowledge development in weekly meetings. However, the impact of this on development was limited and pre-service teachers' narratives demonstrated that the use of the standards had not been a primary driver in this process. There was only marginal reference to the use of these as a tool during the interactions between pre-service teachers and their mentors. Whilst these standards informed some of their development, they remained in the background throughout the course. Whilst formal reference to the QTS standards was made for a formal progress report at the end of placement, their presence during day to day learning conversations and development planning between pre-service teachers and mentors was less obvious.

> *I was aware of the standards, you know, I know all the different things I've got to achieve. And in a way it kind of turns out that after a few weeks at SP2, it's only then, me and my mentor looked through them, and she's like, "oh, you've done this, you've done this, you've done this". And that was without me being actually aware, not me kind of cognitively thinking "I've got to do this today", you know, or "meet this one this week". So, I realised that a lot of the standards, they are very relevant,*

because a lot of them you do, probably, without you, you know, realising whilst you're developing them (Natalie, pre-service teacher, Interview 3)

The way in which pre-service teachers' knowledge and practices developed within PE departments was more related to experiences and interactions about specific aspects of teaching, less by administrative drivers, such as the QTS standards. When pre-service teachers reflected about valuable development actions, their reflections were focussed on what they perceived to be features of good teaching. As these developed in their own practice, their satisfaction was increased. If the foundations of good teaching were in place, the standards would be taken care of.

Standards did not have a massive effect for me, I don't think. I don't think I needed to think about each standard week-in-week-out and focus on ticking the boxes. I was better off working on each lesson, thinking about making it good in every single way possible and then picking out what was wrong and going 'Right, for this class next time that's what I'm gonna look at' and that might be a differentiation thing, it might be the fact that I didn't quite push one pupil, it might be that I didn't quite control one bit or the introduction was too slow, too fast pacing, whatever. And that's worked for me but I don't know if that's the right way of going about it. I feel like I've done the best I can and I don't think another way would have changed my development particularly. (George, pre-service teacher, Interview 3)

From the pre-service teachers' perspective, the most valued interactions between them, their mentors, and other teachers were those that commented on the observed performances of their teaching. Verbal feedback was highlighted to be the most frequent and the most important intervention tool following teaching observations. In this process, pre-service teachers expressed preferences for constructive feedback and usable suggestions.

Their feedback was tremendous and really helped me focus on little things. If I had a really good lesson, instead of saying 'Yeah that's a really good lesson' they would give me a few things that I could have done differently like not necessarily made it better, but just a different idea and different ways of doing the things that I did. So then if I was doing the same lesson again it wouldn't be the same lesson, I could try something different. That's really helped and given me lots of different ideas. I think that's been the biggest helpful thing in terms of the course, the

feedback from the tutors that have seen me every lesson. (William, pre-service teacher, Interview 3)

Such feedback frequently would come from the pre-service teachers' mentors, but it would also be provided by other influential teachers within departments. These teachers were seen as a key resource, providing essential guidance for the improvement of what pre-service teachers perceived to be at the core of their learning: the act of teaching pupils. For this to be successful, a number of ingredients were necessary. Pre-service teachers' willingness to accept advice was positively influenced by having professional respect for their colleagues and for the quality of their advice. New ideas had to add value. Suggestions for alternative strategies were also welcome, when lessons had been already 'good'. Frequency, as well as immediacy of feedback was valued by pre-service teachers. In seeking advice to improve their teaching, pre-service teachers were eager to benefit from others' knowledge, most were willing to accept constructive criticism, most of the time. However, pre-service teachers also perceived differentials in quality during these vital processes.

Yeah I think definitely this placement (SE2) I got it fantastically from Mentor B. An amazing amount of feedback I got from him positively well not really negative, everything was phrased in a positive way which really helped as well. Whereas at the other school it seemed a bit more, I think it had a lot to do with the mentor just becoming head of year ten as well so he was very busy, but occasionally I got some good feedback I got from him but I got more feedback from other teachers at that school than I did from the mentor. (William, pre-service teacher, Interview 3)

The frequency of informal and immediate feedback following teaching, however, was in most instances high. Pre-service teachers reported that they valued such feedback greatly. The quality of feedback following teaching observation was also perceived to be central, if pre-service teachers were to accept the advice readily. If the feedback provided a good level of detail and related well to the observed teaching this was noted by pre-service teachers to be valuable. Where mentors and supervising teachers provided quality verbal narratives in addition to written lesson observations feedback, pre-service teachers felt that this was a very effective way to improve their teaching. In the main, pre-service teachers

were committed to implement such recommendations in subsequent teaching episodes as soon as they had the opportunity to do so.

> *For little tips maybe in the lesson a quiet word sometimes, not often and then straight after the lesson the feedback, when they've written an evaluation and they wouldn't sort of give to me they'd go through it with me and then I'd try and implement that in the following lesson and they'd give me suggestions about how I should go about it. (Jenny, pre-service teacher, Interview 3)*

The impact of such feedback was also amplified, if this was backed up by practices which the pre-service teacher could observe in the mentoring teacher. Consistently, they were more likely to engage in this process of co-construction with more commitment if they respected the competence of the other teacher.

> *My mentor would give me feedback and it would be really structured and show the good and the bad and there'll be ticks and crosses down the side of the observation sheet which was so good, and always at the bottom it would have developments for next lesson make sure you try and do this....If I was watching one of her lessons she would try and make sure it was always spot on, sort of not the standard but a very good lesson to watch. (Debbie, pre-service teacher, Interview 3)*

However, the quality of feedback was perceived to be of a lower standard if it was more general in nature and had few useable ideas. The feedback process could further be undermined if the supporting teacher was not seen to be 'walking the walk'. Thus the quality of this process was reliant on the quality and commitment of the people involved in it.

> *Whereas when teacher X did observations for me the observations were very vague, sort of four of five lines written quite big and not really very relevant. Sometimes you actually wondered if the lesson was watched! But the comments she would make she would say make sure you don't do that, but then when I watched her she would do that exact same thing. She would never practise what she preached. (Debbie, pre-service teacher, Interview 3)*

From the pre-service teachers' perspective, the acceptance of feedback was consistently dependent upon its quality and whether it facilitated new and improved teaching practices. They valued the commitment of others, who were prepared to invest their time in them, and

respected this as part of their professional and personal relationships with these teachers. As the course progressed, they also developed their confidence to act on this advice selectively.

> *I think that the feedback quality has been good, very good. I think all of the teachers at this and the last school have got a lot of time for people. You do get a couple of things now and again when you stand there and they will be saying you could do this, this and this and you are thinking not a chance, I wouldn't do that and I am not going to do that but most of the time, nine times out of ten you are just standing there and you think oh that's really good advice. (Ben, pre-service teacher, Interview 3)*

In engaging in professional discussions about their teaching, pre-service teachers also journeyed towards a better understanding of their own professional identity.

> *I think the best from my point of view is a discussion. So being able to have a good dialogue with someone that you have a good relationship with and they can pick holes in your lesson and you feel comfortable for them to do that but they can also bring out the good points and whenever they pick out the bad things you're very keen to make sure that 'How do I then move on and improve that?' and I think that I've had that with pretty much everyone I work with; that they've been able to be comfortable enough to have a go at me but still be able to have a discussion about it that's professional and moving forward as it were. (George, pre-service teacher, Interview 3)*

Whilst much of this enhanced understanding resulted as a consequence of professional dialogue about their teaching, most pre-service teachers and all mentors also considered more self-directed evaluation processes to be essential. The formal process of written lesson evaluation that was required as part of the University's stipulations for this course was considered to be critical to this process by school-based mentors, even if this was not always perfectly executed in its day to day practice.

> *I think it's very important, I think obviously we don't do it as much now at this stage in our career, but I think we sometimes forget how important it actually was. I think going in hand in hand with that is they plan the lesson, then they deliver it, then they reflect and evaluate on them. They need an initial discussion on this, but I think they need to go away and then ideally with the next half hour write their own evaluation of that lesson, so it's very fresh in their mind...I think the evaluation is absolutely essential,*

because that's where a lot of the reflection takes place, I mean not waffling, but I think the detail they put into the actual evaluation is essential. (Suzy, Mentor)

However, some pre-service teachers regarded the formal process of planning and evaluation as problematic. Alexander's commentary provided some interesting insight into his early perceptions of this process. It was also a reminder of how other demands on pre-service teachers' time had an impact. This also had an effect on the way in which the planning and evaluation process was discharged.

I know why you've got to do it, I know why it's beneficial, I know that it's necessary and why it's good to do it but it's just on occasions, I found it difficult really. I might have had a day where I've done four lessons and haven't had the chance to write the evaluations and then writing them all before the next lesson in one go… it probably takes something away from the actual use of the evaluation.…I found that evaluations written by teachers on my lessons were much more useful than me writing an evaluation on every one of my lessons. So, I would enjoy reading what they had to write rather than me sitting down and writing it. (Alexander, pre-service teacher, Interview 1)

Most pre-service teachers did, however, value the evaluation process immensely. This appreciation developed further over the course.

I think in terms of how I've been able to do that I think the evaluation of everything all the time has been paramount to that, in that you always need to reflect what's gone well and what's gone badly and how to then move on from there. You know it's absolutely crucial I think to be able to look forward and move on all the time. (Ben, pre-service teacher, Interview 3)

Mentor and teacher feedback continued to be a vital enhancement for many in this process. Most pre-service teachers demonstrated a remarkable zest for feedback that would enhance their knowledge.

Obviously, the fact that you get to evaluate every lesson that is invaluable. And on top of that making sure you always get feedback from your teachers however quick and informal it might be to, you know, a very formal, written-down piece to just having a couple of chats with whoever you've taught the lesson with and so on. And the fact that they'll always point out something you haven't realized yourself. I feel like I'm a fairly good self-evaluator but I still will always miss things. (George, pre-service teacher, Interview 3)

Some continued to seek mentor feedback to kite-mark their teaching. Even if they felt familiar with the process of self-evaluation, they sought assurance from their mentors that their own judgements about their performance had been accurate.

> *For me the evaluations were really important, just going back after each lesson and thinking what did they learn? What did I do to help them? What do I have to do next lesson to build on that all that stuff? Just doing it after each lesson it's really become a habit... but I still used to go back to Jill (her mentor) to get her feedback and check if what I was thinking about my teaching was what she was thinking was good or what else I needed to do to get better. (Jenny, pre-service teacher, Interview 3)*

Pre-service teachers also valued variety in this context and many saw value in the requirement for weekly reflection on their teaching on the University's VLE.

> *I think you need to make sure you've got different areas of evaluation and I think obviously I've found WebCT quite a useful task. Every week, to be logging in and thinking, making sure that your thinking about what's on, on that week, what's gone well, what's gone badly, sort of summarizing things at the end of the week rather than day-in-day-out so you can look back over five days. (Thomas, pre-service teacher, Interview 3)*

University directed tasks also stipulated additional enhancement activities that were designed to engage pre-service teachers in different modes of reflection and evaluation whilst they were on school placement. Amongst other tasks, these included three video evaluations of their own teaching over different stages of their course. Although some found this daunting, most pre-service teachers appreciated this alternative perspective from which to evaluate aspects of their teaching. For most, it also constituted a visible confirmation of their teaching progress over the course.

> *The tasks that we have had on WEBCT, have been again very useful, because when the task comes along, it actually gets you to think about what actually has been going in your teaching, and subconsciously, you regenerate reflective analysis in that way, so that was definitely very useful as well…The number of videos that we've done, it's actually strange to see yourself obviously on screen, but to see the difference from that first lesson right through to the final lesson. There's been just a significant difference from beginning to end in the lesson, the flow of the*

lesson, the progressions. Again, relating back to what I said earlier, it's reduced talking time and demonstration time. It's more about what the pupils are doing and their actively doing it. So that's been really useful. (Phil, pre-service teacher, Interview 3)

The process of feedback on and evaluation of teaching was identified as a key learning tool by all pre-service teachers. It was at the heart of the constructivist and situated learning process which characterised the school-based learning element of their course. Further enhancement was provided through opportunities to observe other teachers and mentors as models of practice, frequently providing practice examples that pre-service teachers might mimic and adopt. Conversely, the lack of observable practice was a potential barrier for learning. For instance, throughout this study reciprocal teaching and pupil peer assessment were frequently used by teachers in schools and therefore these techniques were accessible to and utilised by pre-service teachers. However, there was a dearth of showcasing discovery style teaching approaches in schools, so these approaches were less accessible to pre-service teachers.

Jenny: *I think that my reciprocal style possibly started from when I was here because my mentor does a lot of evaluating in pairs in her lessons and maybe that's how that started, and the other placement I think there is a more command style of approach and I think that's purely because thirty three pupils in a small hall, it has to be like that, a lot of the time, not all of the time. I mean maybe it's the type of person anyway, it's the teacher but that was more dominance in that school there.*

Interviewer: *Do you think that has had an influence on your practice or ...?*

Jenny: *Probably because I have tried to take on board what I've seen other teachers do when I have been observing them because obviously I've seen really good lessons and I want to do the same so I'd say probably it has an influence yes. If I'd seen a more discovery style being taught and I had to teach a similar lesson then I would have probably, I'd had a go myself more. (Jenny, pre-service teacher, Interview 3)*

The range of practices that pre-service teachers were able to observe impacted on how they developed their own teaching. Opportunities to observe a wide range of practices varied between placements. Pre-service

teachers attempted to rationalise certain differences they had witnessed in different schools and departments. The narrative below exemplifies how the observed practices acted as design templates from which the pre-service teachers could choose potential teaching approaches. The process of learning through observation of other teachers was frequently informal. Deliberate and explicit showcasing of practice was less frequent.

> ***Interviewer:*** *Have there been for instance situations where your mentors said 'I'll showcase some good practice for you. You're struggling with this. Come to my lesson and I'll show you how to do this, I'll set up a good session for you on differentiation in basketball and you can watch this'. Has that been the case or not?*
>
> ***Nicole:*** *Not in terms of saying to me 'Oh I'll do this lesson. You can watch'. It's more of in feedback at the end of the lesson that I've taught she'll pick up just a few little points and mention them. It's not like 'OK you're struggling with this. I'll show you how to do it'. It's a case of 'Oh well, you did struggle with this. Maybe try this next time.' it's not a case of me watching her do it. She will just tell me kind of what she thought and then ask me if I think, if that's the sort of person I am, whether I could put that across or maybe just discuss any way that I could do something she would do. (Nicole, pre-service teacher, Interview 3)*

Practices varied from PE department to PE department. Some emphasised the use of observation as a strategic tool more than others. This tended to occur more frequently in those PE departments where there was a stronger sense of shared commitment towards mentoring and more explicitly formulated communal strategies for teaching, as well as mentoring.

> *And one thing I have also learnt is to delegate, to send students of to the right sorts of people, so if I don't have the answers, so for instance if it is specifically about assessment I send them off to the member of staff in our department who is in charge of assessment, and it's using people within the department and their strengths. I don't like to say that I always have the best answers that the students need, but I know who has, and that is very much how I work. (Suzy, Mentor)*

In summary, pre-service teachers' narratives confirmed the importance of planning and evaluation of teaching as a key component in their

knowledge development, and the importance of observation to the development of their learning.

In so far as planning was concerned, pre-service teachers employed a variety of strategies for information seeking. Early planning focused on areas of subject knowledge weakness, in particular context specific content knowledge. It was evident that this was time consuming and contributed to the general pressure on time felt by pre-service teachers at this stage in their development. Later, planning practices became more sophisticated, considering pupils' learning needs.

Turning to evaluation, again a variety of methods of evaluation were employed. The importance of good quality and focused mentor and teacher feedback from people who practised what they preached was recognised. QTS standards were seen to be a tool of limited value, and which were attained anyway by a more general focus on the acquisition of teaching skills.

It was clear also that pre-service teachers employed in their own lessons the good practices of others which they had had the opportunity to observe. Teaching styles for reciprocal teaching practices were evident in most schools. This was also frequently linked to departmental interpretations of the requirement to comply with the NCPE. Only limited 'discovery style' teaching was evident in most PE departments, which had a limiting effect on many pre-service teachers who would have liked to have used this style, but often lacked the ideas as to how to do this.

The above section highlights the importance of the planning, teaching and evaluation cycle to the pre-service teachers' development. Weekly meetings provided an important forum for a regular and strategic review of these processes. The narratives also demonstrated the value of the inter-connection between University and school-based learning.

The following section explores the impact of University-led learning on the development of pre-service teachers' knowledge in some more detail.

5.15 University-based learning

As the previous sections have demonstrated, pre-service teachers valued learning in schools highly. The experiences they had of actually teaching pupils validated much of their newly acquired knowledge. This included knowledge they had derived from University-based learning. This learning was seen by pre-service teachers and their mentors to be critical to the quality of the PETE experience. This was further enhanced if the pre-service teachers experienced synergy between University-based learning and school based practice.

Which aspects of University-based learning were valued by pre-serviced teachers also depended, to some extent, on their stage of training. During the early stages, pre-service teachers assigned high value to University learning which was directly useful to their school practice, in particular context specific content knowledge and PCK, since this was directly applicable to the challenges they faced in practical teaching settings. However, the extent to which University-based sessions could develop such knowledge was limited, not least because of the time constraints inherent in the PGCE course.

> *I mean I was aware during volleyball for example, that I was being taught how to teach it but it perhaps didn't all sink in and I didn't really understand exactly why everything was done the way it was until I got to teach it. And then you actually do understand it a little bit better, that it has prepared you for it better than you thought. I mean, don't get me wrong, I did feel prepared for it but it actually it probably prepared me better than I thought it had. (Alexander, pre-service teacher, Interview 3).*

Individual pre-service teachers' knowledge profiles were frequently imbalanced as a result of their 'gendered' personal schooling and sporting experiences, which University-based learning recognised and aimed to address.

> *I've found a lot of the practical things very helpful. Obviously being there and taking part in them you are learning it and then you've got a course pack and notes, you can work from that. I just think, especially on the areas that I haven't done before. Dance, it definitely gave me some ideas. If you'd said previous to dance, go and take a dance lesson, I would not have had a clue what to have done. However that has definitely given me some good ideas. I'd say the practical side of things I do think has been really helpful, and that it is*

essential and to include as much practical stuff as possible. (Thomas, pre-service teacher, Interview 1).

In addition to shaping pre-service teachers' knowledge profiles gendered experiences also have the potential to influence pre-service teachers' outlook on such activities (Stidder and Hayes, 2006; Sloan, 2007). Gendered practices could be further perpetuated, if pre-service teachers were placed into teaching environments where such gendered practices are institutionalised and largely unchallenged (Harris and Penney, 2002). For many pre-service teachers the University-based learning therefore also represented an opportunity to address some of the imbalances in their own individual, gendered knowledge profiles.

> *My weaknesses must be dance and gymnastics specifically because it wasn't covered when I was at school in great depth. I think we may have done it in year seven briefly but it was kind of in our school, it was the more feminine side of school. The guys did games and the girls did that sort of thing... 'cos guys didn't want to be doing dance and gymnastics. But now that I'm in the position of teaching and had a bit of experience doing both I've actually enjoyed the dance sessions that we've had on this course. They have been great…really opened my eyes, you know and broadened my horizons within dance although it's still at the early stage. I think it's something that could've been enjoyed while I was at school. (Phil, Interview 1)*

University-based learning also challenged existing curriculum conceptions that were held by some pre-service teachers on the course. This included challenging the games dominated English PE curriculum, frequently criticised in the literature (Capel, 2007; Curtner-Smith and Meek, 2000, Velija et al., 2009). University-based learning, both theory and practice, was designed to challenge pre-service teachers' perceptions of the educational value of different activities, as well as different pedagogical approaches. This was noted by some pre-service teachers as they reflected on their learning during the early stages of their course. As a result, some pre-service teachers reported a shift in value judgements that favoured a more diverse curriculum.

> *I think that the University-based bit has had a big impact on how I value each sport and each activity. I wouldn't say that I was naive before but I wasn't fully aware of all of their values and I think now I have began to really value the role of gym and dance and outdoor pursuits, and not just games. Maybe I was being a classic stereotype. But to be a teacher who isn't aware of that, I think I have changed in that respect and become aware of how they can make a big difference. (George, pre-service teacher, Interview 1)*

Pre-service teachers also valued some theoretical content early on in the course. Specific theory aspects that were directly relevant to their teaching, for instance theory sessions on lesson planning, were considered to be very useful. University-based training was credited with providing an initial framework for teaching that could then be taken forward into the first placement. However, time continued to be identified as a constraining factor and 'taking it all in' was repeatedly identified to be a concern. At times, this made it hard for pre-service teachers to effectively integrate the theoretical aspects of University-based learning.

> *On the theory side of things again the lesson plans, the teaching techniques just how the theory lessons were, we've been given a lot of advice on how to teach, what we should include, how to differentiate and stuff. It's been very helpful. It's just a case of there's so much to learn and so little time, it's almost impractical to try and fit everything in and sometimes I feel that although it's all very useful, but we're getting crammed with information, that there's almost so much there. that it's very hard to take it all away and use it effectively. And that's I suppose the problem with it being a one year course. It's all helpful but it's almost too much at times. (Nicole, pre-service teacher, Interview 1)*

Consistently, pre-service teachers commented on the time pressures in their learning experience, especially during the early stages of the training. Time was identified to be a scarce resource that needed to be allocated to a substantial range of tasks. Pre-service teachers found it difficult to integrate theoretical concepts derived from university-based learning into their early teaching. Harris et al. (2012) have similarly underscored the need to provide sufficient time to meaningfully engage with learning in PETE and ITE, albeit in the context of primary school teaching.

The pressure of having to allocate time to the multitude of school-based and course-based requirements was compounded by pre-service teachers' perceived need to address content knowledge weaknesses. All of these need to be considered to fully understand the challenges faced by pre-service teachers. The researcher could not help but note that many of the pre-service teachers at this stage of their training felt besieged by the challenges they were facing. In this context it was understandable that pre-service teachers appreciated most those development activities that they considered to be immediately applicable to their core teaching activities during SE1. Similar observations were reported by Capel et al., (2011) and Kinchin (2009).

Particularly well received was 'serial practice', a series of three one day sessions that were University-led, but jointly devised and delivered by university staff and school-based mentors in two schools during the first school placement. These included episodes of micro teaching and team teaching, followed by small group and whole group reflections. Planning and reflection periods explicitly considered teaching and learning with respect to the learning processes that were outlined in the NCPE.

> *With the serial practice I thought that was great, because I did learn a lot from that. I thought teaching in little groups was good. We found it worked quite well and me and Mike, we accepted each others' teaching, and gave each other good constructive feedback. I think it gave me a lot of confidence to start off with that, and you did learn quite a lot of things. With the learning objectives that we set through the theory part of the day, I thought that was quite useful because when you are working in pairs it is nice to hear other people's opinions on the lesson plans and how well you achieved your objectives. So I did really get quite a lot out of that. (Debbie, pre-service teacher, Interview 1)*

There were a multitude of positive responses to the serial practice experiences which underlined the benefits of University and schools working in close partnership. These demonstrated the value of closely linking theory to practice and showed how close collaboration between University tutors, mentors and pre-service teachers can enhance the learning and development process.

University-based learning helped pre-service teachers to consider pedagogical aspects of pupil learning more holistically. This was frequently associated with the recognition that pupils' learning needed to focus on a wider range of learning intentions, and not just skill-based outcomes. Although pre-service teachers' starting point, particularly in the early stages, was the selection of practical content, consideration was also given to process, frequently with reference to the "four strands" of learning as outlined in the NCPE. The development of curricular knowledge through University-based learning was also considered to be valuable by school-based mentors.

> *As far as I am concerned you prepare them for their teaching placements and then support them whilst they are with us. And I can honestly say that, when they come to us, whether that's in October or for the second placement, they come very well prepared. They already have a grounding of knowledge about National Curriculum, about assessment, different initiatives, you've done some subject knowledge work with them, games, gymnastics, dance, athletics for the summer, etc. you give them the fundamental knowledge and when they come to us, then they put those into practice and develop them further. (Jill, Mentor)*

This progressive development in particular of curricular knowledge through their University-based work enabled pre-service teachers to reflect upon learning right from the very start of their training, often with reference to the NCPE. Lectures, workshops, as well as combined practical and theory sessions were appreciated for their impact upon the development of many theoretical aspects of knowledge. Discussions on a variety of topics such as lesson planning, differentiation, the NCPE, or the spectrum of teaching styles in PE (Mosston and Ashworth, 1986) were all considered to be beneficial.

Academic assignments, associated research and related workshop debates were also seen to be important learning activities. These made pre-service teachers aware of a range of concepts related to the teaching and assessment of PE. The combination of workshops, academic assignments, research and discussions had clearly made an early impact on the thinking and convictions of some pre-service teachers.

I think assessment for learning is paramount to what I do as a teacher. I think it was very important that we had that assignment right at the beginning on assessment for learning because I think it shapes how we all should be teaching and I still feel that at times I'm guilty of assessing right at the end of the unit...but I feel that you should always be assessing, should always be thinking about how we're gonna improve next and making sure that the kids know about where we are now and where we need to get to and you can do that obviously using various strategies. And I think, I mean I've got a lot of time for it. I think it's crucial. (George, pre-service teacher, Interview 1)

Whilst the practical application of knowledge took place within PE departments, pre-service teachers were clear that University-based learning gave them a deeper understanding of important aspects of teaching. One such aspect was the use of assessment and AfL. Pre-service teachers appreciated the wider education context provided by University-based learning. This also included pre-service teachers such as Thomas, who regarded himself as more practically than academically inclined.

I'm sure a lot of people would say assignments are pointless and what's the point of assignments because it's whether you can be a good teacher or not. I disagree certainly for say assessment. I'm not a reader, I never have been. I don't like reading books, but if you do an assignment you've got to go out, you have to go and read, you have to go and find, you've got to go and seek information. If I hadn't have done the first two assignments that we've done I wouldn't know half as much as what I know now on, for example, assessment. So I think the assignments do help you to go out and research information which, again, you can then use towards your teaching. That's my opinion. (Thomas, pre-service teacher, Interview 3)

One consistent theme which emerged was that these University-based, academic learning activities were found to be intellectually challenging and that they extended knowledge and thinking beyond the realm of pre-service teachers' initial perceptions of PE. This enriched their thinking over and above the learning within the school-based context. It made them do things they would otherwise not have done and consider things which they would otherwise not have thought about. It extended their knowledge beyond the applied and

practical perspectives they frequently focussed on during episodes of school based learning.

> *I think definitely some of the theory based sessions, particularly essays on assessment and curriculum and SEN... in particular helped an awful lot just with your understanding because you had to go away and read things whereas normally you perhaps wouldn't stop and think 'Oh, I'm gonna read this book on assessment today'. 'Cos you have to do it you understand a lot more and then when you come to doing it yourself you kind of can think back to it in your head'. (Nichole. pre-service teacher, Interview 3)*

By way of example, one of these assignments involved pre-service teachers researching curriculum design in the literature and subsequently designing their own ideal curriculum for a PE department. This had to be underpinned by an appropriate rationale and related to research and the literature. Other assignments and theory sessions that were frequently cited to have had an impact on pre-service teachers' thinking were those related to assessment and SEN. The value of these assignments was frequently cited.

> *Yeah I think like I mean doing assignments and everything, it obviously focuses you on different aspects and what you need to think about, for example the (curriculum) framework, even though that's the way you're not going to apply something now, it's a really interesting assignment actually and it's really made me think about in the future about how I would go about planning if I had that sort of job (Head of Department), how I would plan the year and what to teach and everything. Let's see what else I've done. I mean loads like the SEN assignment, because you have to research so much to put in your essays you're reading reports and it does make you think and makes you more aware of what you have to look out for. (Jenny, pre-service teacher, Interview 3)*

Whilst some of this knowledge did not find an instant application, some university-based learning had an immediate impact on the pre-service teachers' practice. At times, albeit rarely, the University-based workshops provided 'Eureka' moments for pre-service teachers, as they applied some of their theoretical knowledge into their practice. Ben's reflection on a piece of research on questioning strategies discussed in a University-based workshop was an example of this.

After considering, testing and evaluating his new knowledge, he decided to adopt this new questioning strategy.

> *We did that assessment for learning thing ... they say every question a teacher asks, 0.9 seconds later they answer it themselves or ask another one. I would have done that because it is awkward, but in my last school I just had a pen in my hand wrote it on the whiteboard and said so what can we do this time? And I just stand there, I lean against the wall and say think about it, and eventually hands do go up and you do get the answer, so I think that was an eye opener. (Ben, pre-service teacher, Interview 3)*

As pre-service teachers were trying out some of the ideas and concepts they developed through their University-based learning in schools, mentors also recounted how pre-service teachers brought new ideas into the departments. Frequently these involved more pupil-led teaching approaches, including discovery-based approaches to teaching. Especially during SE2, pre-service teachers were encouraged to try out a range of different teaching styles they had explored during their University-based learning and some of the examples that were given demonstrated the impact of this. The narrative below describes the implementation of a more experimental and constructivist approach to teaching PE theory content in a practical context. In this particular instance, pre-service teachers had been challenged to devise a session about oxygen transport during rest and exercise, in a creative way and using a practical teaching context. Thomas had subsequently used the first opportunity he had to try this out in his department. For him, this involved some risk taking. The result was judged to be a success with respect to both the lesson delivery and pupils' learning, as his mentor recounted.

> *Some of them are willing to take great risks, Thomas with the circulation of blood around the body. That was a big gamble for him. He had the idea from University. We talked about it in the department as to whether it could be taught that way, but he was prepared to give it a go and see what happened. At the end of the lesson he went away knowing that there was certain things that he would change in it, but he recognised that yes, that worked, it got them involved, yes they remembered when it came to a test three weeks later. So on that basis that session worked*

because they retained information, they learned something in that lesson. (Tony, Mentor)

Other mentors commented on incidents where pre-service teachers had introduced elements of innovation that derived from their University-based learning. They valued the two directional dimension of their relationship with the pre-service teachers and the presence of pre-service teachers kept them 'on their toes'.

Pre-service teachers espoused many values and practices that resulted from their University-based learning experiences. At times, pre-service teachers found it hard to reconcile some of these University-based values and practices with the values and practices of the school based communities. They always had to consider the practices of the influential PE departments alongside their University-based learning and messages from the University-based learning were sometimes in conflict with these practices. The author noted previously that pre-service teachers frequently experienced tensions between University-based conceptions of AfL and the school based practices in which they participated. Pre-service teachers frequently resolved to follow the PE department's practice and guidance.

Yes there's always different views, like at University we are told how things should be and then you get to this school and it's not necessarily like that. You know different schools have different policies and you've got to follow what's there and it's... sometimes conflicting with what you've been told, like for example, you know don't use levelling all the time and stuff like that which one of my placements, that's what they'd do. So even if you don't agree with that I guess you've got to really follow it haven't you? (Annabel, pre-service teacher, Interview 3)

The extent to which pre-service teachers conformed with school-based practices was linked to the perceived necessity and importance of compliance. Mostly, pre-service teachers decided to adhere to established practices within the PE departments. However, the knowledge they had acquired from University-based learning also enabled them to be critical of school's practices, as was evident for instance in Debbie's criticism of her school focussing too much on physical accomplishment in their assessment practices.

I don't agree with just looking at practical performance…She (female pupil) is so intelligent and her evaluating and improving and knowledge of health and fitness is amazing. It's better than the whole group's…. She's a big girl, massive girl, but her understanding of everything relating to evaluating and improving and how to improve and how to relate it to health and fitness was just amazing. And in my assessments she averaged out the same as the others but she had lower on practical, higher on the other two strands so I think that is so important for the pupils to understand that and to understand their assessment. And she was quite happy to be in that group being the lowest of the practically able in the group. She was quite happy to do that because she knew that when we did our assessment it wasn't just on practical. It was on the other bits. (Debbie, pre-service teacher, Interview 3)

The significance of the interplay between University-based learning and school-based learning was evident throughout the study, especially as the longer, more substantial school based learning experience during SE2 offered opportunities for pre-service teachers to experiment with different aspects of their knowledge. It also offered the opportunity to try out some of the more advanced concepts of learning that had been explored through their University-based learning.

This did not, however, always happen and University-based learning was not consistently reinforced across all teaching placements. For instance, the need to emphasise social and moral learning outcomes would be acknowledged as a valuable, theoretical concept by pre-service teachers, but during the actual teaching practices its support would be implicit, rather than explicit. In the hustle and bustle of the ordinary teaching day, the explicit pursuit of such wider aims would fall behind.

It's not that you (the University-based learning) didn't give us the information. I'm talking about wider issues like a lesson geared to social moral (learning) and all that, and so we had the knowledge, but then you go back into school and you don't... if you had to... maybe, then I would have been more likely to do it and have a go at it rather than being left to me to do it on my own. (Jenny, pre-service teacher, Interview 3)

On other occasions, pre-service teachers chose to put their University-based learning and personal convictions into practice even if these were different from the practice they observed at school.

When I marked theory work back at the last school as well, I don't mean to criticise, I really don't know the teacher, I said how do we mark this work? And it was a number for the quality and a number for the effort and he said oh just put a quick sentence on there, I didn't, I wrote a bloody big paragraph saying oh you know this is good and that's good but next time think about this, you know I told them in this paragraph, and it took ages but I think that's what they need, they need to know where they are going right and wrong, so I think that was another big part as well. (Ben, pre-service teacher, Interview 3)

Throughout the course, and in particular during the mid and later stages of their training, pre-service teachers were actively encouraged through their University-based learning to experiment with a range of teaching styles. From the University-based learning point of view, they were progressively encouraged to provide opportunities for pupils to engage in the learning process actively and independently. For many pre-service teachers, this University-based learning provided a significant source of new knowledge, ideas and support, in particular in the use of more pupil-centred teaching approaches.

I have also been using quite a bit of guided discovery style, like when I have been doing the swimming teaching I had some laminated cards with three different types of action on the backstroke, so for instance with their arm action, they had to try an S-shape, or they had to try it with a straight arm, or they had to do it with their fingers open, or with their fingers together and they decided which was the best way of back-crawl swimming. And they did all come up with the right sort of ideas, because they already had an idea how to swim back-crawl, but I wanted them to figure out for themselves how to do it. So, yeah, I do use practice style sometimes and command, but I have really, really tried to use my reciprocal and my guided discovery.

***Researcher**: And what gave you the impetus to do this? I mean, what made you decide you wanted to teach this way?*

That was the work we did on teaching styles, the Mosston and Ashworth and then going further and researching it and seeing how you could do this… and also the support from some of the other PGCE students, because I do think we have all started to see the benefits of moving away from the command style teaching and to share ideas of how to develop that. (Nicole, pre-service teacher, Interview 3)

More model-based teaching practices, such as for example TGFU and SE, were also seen to be largely inspired by the university-based learning. Many pre-service teachers were keen and motivated to attempt these approaches in their practice and often reported positive experiences.

Mentors were also supportive of pre-service teachers trying out such approaches in their lessons. This was unproblematic in games teaching, where TGFU style approaches were commonly supported well by mentors and fitted into the timetabling framework. Very similar observations were made by Wright et al. (2006), who found that the PETE course had been the most influential factor in inspiring pre-service teachers to implement an innovative teaching approach to games teaching during their school placements. Importantly, Wright et al. (2006) also noted that the pre-service teachers had indicated a desire to pursue this teaching approach after the end of their PETE course.

Implementing SE type teaching approaches was found to be more problematic for the pre-service teachers in this study, since most planning and timetabling frameworks in the participating schools were not set up to accommodate this. Pre-service teachers did, however, find opportunities to incorporate aspects of this instructional model into their teaching.

> *For me, some of the things we did in games, for instance the sport education sessions and all of that, that's been really one of the best things we've done. I learnt a lot about playing basketball myself there, so I could see it was a good way to do this with the competition in the end and that, but the best thing for me was to see that I could use that for my teaching, like teaching like through giving tasks and responsibilities to the kids. Especially with the older ones, I use a lot of it with the JSLA (Junior Sports Leader Award) group obviously, but I use it with the other kids as well, the younger groups. I mean, it is not the full thing we do, like not a full season of it, because of the time table, and they didn't do it like that at the school, but my mentor was very supportive of me giving different roles to kids and letting them lead stuff. (Angelina, pre-service teacher, Interview 3)*

In addition to drawing on formal learning from the course, the PGCE cohort itself provided significant learning support via a variety of

mechanisms. One of these was related to the VLE, which encouraged pre-service teachers reflect on their teaching, as well as to collaborate with each other, in order to provide peer support for each others' learning. One simple, but very valued aspect of this was the sharing of ideas and resources for teaching.

> *We've had people give us different resources, like Mason came back with the millionaire game for us and like Sarah's emailed a few things from her athletics knowledge and you know, Kier as well, about cricket. And the ideas for lessons we've shared. You know different people have put things on WebCT, so it's really helped us that people have done that. (Jenny, pre-service teacher, Interview 3)*

The VLE allowed for the development of collaborative thoughts and a sharing of ideas which could then be integrated into pre-service teachers practice in schools. The following example demonstrates how in the VLE ideas were put into practice, evaluated, shared and then re-used with the cycle starting again through evaluation by the next user.

Topic: Discovery based learning

> *Discovery based learning is extremely useful, especially when working with high ability pupils. Many pupils in my year 10 football group think they are the finished article and do not respond well to focus on the standard football skills. Last lesson I set them the task of getting into groups of 8 and then using DBL to create a minimum of 3 corner routines to use against other groups in a penalty shoot out of corners. Pupils came up with many signals and patterns of movement to outwit opponents and I was pleased with the contribution of all. They identified when ideas failed to work and also tweaked ideas through trial and error process.*

Topic: Re: Discovery based learning

> *I just wanted to thank Alex, really as I completely and utterly stole this idea for my Year 10s today. The idea is an obvious one but as football isn't my strongest forte I was running out of ideas and so today I recapped the 4 skills we have looked at so far then sent them away to devise their own practices for this, making sure they were including a way of making each practice more difficult.*
> *WHAT A LESSON! They taught me things I could never have*

thought of and all were so creative they put me to shame, not to mention the fact I wasn't having the best day and I love the group!
So thanks for the idea Alex! (Natalie, pre-service teacher, VLE contribution, mid-stage of the training)

The use of the VLE to facilitate collaboration whilst they were on school placements was valued by pre-service teachers. It facilitated both staying in touch, whilst at the same time allowing for learning conversations that enhanced the development of knowledge. It also provided an opportunity to bridge the gap between University-based and school based elements of the course, when pre-service teachers were out on placement.

As in the above interaction, discussions on the VLE demonstrated synergy between University-based learning and school-based learning. These discussions also provided another source of evidence to show how pre-service teachers were prepared to experiment and to innovate and the sharing of experiences enabled them to generate more good ideas to do so. The effects of this were also noted by school-based mentors.

Yeah, I think it's fantastic, because it's constant communication, and think that is something that they initially under-estimated how useful that actually is. It gives them another focus as well each week, and it's something that we can discuss in weekly meetings. It might be a discussion point for us in the meeting how we can support them in the task, whether it's different ways of assessing, or whether it's when they have to video themselves and discuss and evaluate that, whether it's looking at pupils, using different teaching styles, whatever, it is, whichever task they are doing, it is another good discussion point for us and it is also that constant communication, which makes the link for them between them at school and you at University. So, it's not you out there in the University and us out here, but it's you are having a constant interest in what they are doing and learning and there is constant communication. (Suzy, Mentor)

To summarise, literature accredits some influence on knowledge development to university-based learning, but this impact has been perceived to be limited (Capel, 2007). In the main, authors have pointed to the acquisition of content knowledge to be the major contribution of university-based learning (Capel et al., 2011; Hayes et

al., 2008; Velija et al., 2009). It is true to say that the acquisition of such knowledge via such learning was also found in this study to be valued by the pre-service teachers, particularly in their early stages. In addition, University-based learning regarding content knowledge was useful to address gender and experience related content knowledge deficits, and addressed perceptions as to the value and the contribution to be made by different activities to a balanced curriculum.

This study also found that, in addition to the development of content knowledge, University-based learning contributed significantly to the development of PCK, curricular knowledge and general pedagogical knowledge. Pre-service teachers in this study appreciated the wider theoretical dimensions of their University work, which challenged and stretched them and required them to engage in research and reflection on theoretical constructs that were underpinning their teaching. Mentors also valued the contribution of University-based learning which provided pre-service teachers with a viable springboard in preparation for school placement.

In the view of most pre-service teachers, University-based learning generated deeper reflections about concepts of teaching and learning than would otherwise have occurred in the school-based setting, leading to teaching approaches that presented alternatives to direct instruction models of teaching. The emerging realisation that using a variety of pupil-centred teaching styles was beneficial to their teaching was strongly linked to University-based learning. The development of knowledge about instructional models such as TGFU and SE was noted to be of importance in influencing how pre-service teachers wanted to teach PE. University-based concepts were tried and tested during school based practice and had to pass the test with pupils, in the same way as school based concepts did.

On occasions, pre-service teachers experienced conflicts between their University-based and their school-based learning which they resolved on a case by case basis, often adopting school practice.

The varied methods employed via university-based learning were appreciated by pre-service teachers. In addition to these methods the

facilitation of collaborative work through the VLE was highly valued. It also strengthened the link between university-based and school based learning.

University-based learning was taken by pre-service teachers into schools and shared with incumbent teachers and mentors, who valued the learning opportunities it afforded to them. The findings of this study illustrated the value of closely linking theory to practice, and confirmed that close collaboration between University tutors, mentors and pre-service teachers enhanced the learning and development process. It is, after all, the development of a joint vision that underpins effective CoP, both, in the wider world of work (Lave and Wenger, 1991; Wenger, 1998), as well as in the specific context of teacher education (Grossman and McDonald, 2008; Shulman and Shulman, 2004).

6 Chapter Six: Conclusions

In line with the research questions, the conclusions are presented in two parts. The first section summarises which knowledge bases for teaching pre-service teachers recognised, developed and prioritised during different stages of their training. The second part outlines the key influences on the development of pre-service teachers' knowledge.

A central aspect of this study was to investigate the knowledge pre-service teachers valued and developed throughout the PETE course. An intriguing part of this was the exploration of the role that content knowledge played in this process. An over-emphasis on valuing content knowledge had been noted frequently in the English PETE literature (Capel, et al., 2011, Hayes et al., 2008, Velija et al., 2009). Like these authors, this investigation also identified that pre-service teachers valued content knowledge highly, especially at the beginning of the course. However, some important differentiating observations relating to content knowledge emerged from this study. Firstly, per-service teachers in this study did not value content knowledge in isolation, but they appreciated it mostly for its facilitative qualities. In this, content knowledge was seen to have an integrative quality that interacted with other aspects of knowledge, especially PCK. Content knowledge deficits adversely affected important aspects of pre-service teachers' development.

One significant effect that was established was the detrimental effect of content knowledge deficits on teaching confidence. This lack of confidence was itself a consequence of pre-service teachers' perception that they found it much harder to teach good lessons when they lacked context specific content knowledge. It adversely affected their ability to select inspiring content and, as Rovegno et al. (2003) also found, limitations in content knowledge made it harder for them to recognise the conceptual and motor learning problems that the pupils experienced in their lessons. Subsequently, it impeded flexible responses to situations arising during lessons. The limited repertoire of suitable teaching progressions and

extension plans hampered pre-service teachers' ability to respond to learning challenges as they arose, resulting in lack of spontaneity and creativity as they felt 'shackled' to their lesson plan. This provided a constant source of professional frustration for pre-service teachers, who craved this knowledge not in its own right, but in order to be good teachers.

When content knowledge was below a certain threshold, this negative impact was felt acutely and content knowledge acquisition was prioritised over other development activities. Within the multitude of demands that pre-service teachers experienced during the early stages of their training, this inevitably had adverse effects on the speed of their progress in other areas of development. On a more abstract level, lack of content knowledge represented a threat to their professional identity, especially during the early stages of their training. The findings from this study suggested that content knowledge deficits constituted a significant concern for pre-service teachers and as such need to be taken seriously in PETE practice, as well as PETE research.

On the other hand, this study identified many facilitative effects of extensive content knowledge. It aided the construction of flexible teaching designs and the facilitation of lessons that were more responsive to pupil needs. Indeed, many observations made during this study highlighted the positive relationship between content knowledge and PCK. In other words, having more content knowledge meant having less concern about content. These findings supported Kirk's (2010b) cursory observation that limited 'practical subject matter knowledge' may lead to technique-centred methods of direct instruction. In this context the findings suggested the need for at least 'adequacy' of content knowledge, akin to notions advocated by Tinning (2002) which characterised such knowledge as a means to an end, rather than an end in its own right.

Adverse effects of content knowledge deficits were partially ameliorated as pre-service teachers developed a range of strategies to transfer learning across different teaching activities. The effects of content knowledge deficits could therefore be tempered through better mastery of general aspects of PCK, such as for instance instructional strategies or differentiation strategies. Strategies for facilitating differentiation, the use of AfL, and the application of specific teaching approaches, as well as the application of newly developed instructional and

organisational strategies were all evidence of the application of PCK across context specific boundaries. Limitations of such transfer of knowledge were, however, also reported. For example, content knowledge continued to be seen to be important for instance to support diagnostic skills or higher level tactical or compositional aspects of teaching. Sloan (2007) arrived at similar conclusions after evaluating the impact of a specific intervention that was aimed at improving pre-service teachers' content knowledge and PCK in gymnastics.

Content knowledge remained important to pre-service teachers until the end of the course and they felt the need to further develop content knowledge during their NQT year. It was, however, evident that the emphasis on this type of knowledge diminished as pre-service teachers developed these, as well as other knowledge bases.

School-based mentors also valued content knowledge, but mainly for its facilitative function for other aspects of knowledge. School-based mentors were predominantly focussed on moving pre-service teachers towards taking account of pupils and the learning process, rather than focusing on content. Importantly, like Shulman and Shulman (2004), school-based mentors in this study valued personal attributes, such as the ability to reflect, enthusiasm, motivation, initiative and personal skills such as communication and team working skills, higher than content knowledge. They regarded these to be central in determining pre-service teachers' place within the CoP and their rates and levels of progress. This gives some support to Shulman and Shulman's (2004) conceptualisation of teacher knowledge.

Whilst the findings of this study did not fully support the notion of content knowledge as the base of all knowledge bases (Shulman, 1987; Siedentop, 2002), it did, none the less, highlight its importance in the overall context of knowledge for teaching, affirming that it continues to have an important role to play in pedagogical acting.

As the course progressed, pre-service teachers spoke much more confidently and knowledgeably about a variety aspects of teaching. Despite many challenges during the course, their drive to develop their professional knowledge and skills was considerable. Apart from content knowledge, the findings of this study identified significant progress in PCK, curricular

knowledge and general pedagogical knowledge. They also demonstrated that pre-service teachers were increasingly aware that knowledge of their pupils was important if they were to teach effectively. Pre-service teachers' reflections were also a constant reminder that it is often difficult to delineate these aspects of knowledge and their impact on pedagogical acting.

The learning that occurred during the course emphasised that the increase in their knowledge base empowered pre-service teachers to attempt different approaches to teaching. During this process it became evident how theoretical knowledge was interwoven with practical application. It was, for instance, the development of new conceptual and curricular knowledge on teaching styles, instructional models of teaching, AfL and the NCPE, which underpinned pre-service teachers development of new enacted, practical approaches to teaching, therefore informing and impacting on PCK.

Not all pre-service teachers experienced progress at the same rate, but at the end of their PETE course pre-service teachers had expanded their awareness for many aspects of teaching, especially PCK. All pre-service teachers perceived that they were on the threshold of a significant transition from a more content-centred perspective of teaching PE, to a more process and pupil-centred one. This constituted an important development in PCK, which was credited to University-based learning, as well as learning within PE departments. University-based learning was frequently credited with seeding these ideas, but application in school-based settings was needed to expand and confirm this knowledge through application. Limitations in modelling of such more advanced concepts impeded a more comprehensive construction of such new knowledge. For example, the relative abundance of reciprocal teaching practices in PE departments supported the development of this teaching style. However, limited modelling of discovery style teaching was evident in most PE departments.

Nevertheless, most pre-service teachers persevered with discovery-style teaching approaches, sometimes encouraged and supported through ideas and peers from University via face to face and virtual context, thus further underscoring the value of collaborative learning in CoP. The use of

more pupil-centred approaches to teaching continued to be inextricably linked to the expansion of curricular knowledge, especially an increased knowledge of teaching styles in PE, the knowledge of instructional models such as TGFU and SE, as well as a heightened awareness how to integrate the learning processes emphasised in the NCPE into their teaching. As pre-service teachers were experimenting with alternative forms of learning and teaching, it was evident that, as Stran and Curtner-Smith (2010) have noted, this type of knowledge was facilitative, developing teaching approaches that devolve responsibility to pupils, regarding their learning.

Pre-service teachers also developed theoretical and practical dimensions of their general pedagogical knowledge. An increased understanding of pedagogical intentions, for instance, in the use of assessment, awareness of curriculum design, inclusion and SEN issues were all flanked by more applied dimensions such as the development of class and behaviour management strategies. These were indispensable if pre-service teachers were to realise any of their pedagogical intentions.

Some of these observations on knowledge development and its influence on personal preferences of how to teach PE warrant further consideration. For instance, Green (2002) observed the importance of personal biographies in influencing the ‘everyday philosophies’ of PE teachers and noted their persistence in professional practice. Capel et al. (2011) argue that ‘shallow’ PETE experiences cannot change long held, existing beliefs about teaching PE.

Whilst all pre-service teachers in this study had come to PE teaching through positive socialisation into PE and sport, they did not appear to cling to ossified or sporting elitist attitudes towards the teaching of PE, as is sometimes reported in the PE literature (Capel et al., 2011; Hayes et al., 2008; Rovegno, 2010; Sirna, Tinning and Rossi, 2010). Pre-service teachers in this study, in the main, were open and eager to try a range of learning and teaching strategies, which were not dominated by the notions of competitiveness, direct skills instruction, or other dimensions of traditionalist PE. Rather than being ‘captured’ within their existing sporting biographies, they appeared to ‘develop’ their biographies within the given contexts of learning.

Pre-service teachers' development was grounded within the framework of their training. The changes in their knowledge base enabled pre-service teachers to reflect upon how they wanted to teach PE. It was the expansion of their knowledge base which enabled them to make more informed decisions, about the type of practitioner they wanted to become.

Time' is an important contextualising factor in this process. Whilst many pre-service teachers in this study made significant progress over the 36 weeks of their course, the multiple demands of teaching that challenged the novices were exacerbated by limitations in context specific content knowledge and PCK. These were, at least in some part, the consequence of the academisation of the Undergraduate degrees pre-service teachers had studied prior to their PETE course. Their experiences and subsequently individual knowledge profiles were limited, inhibiting their progress on their one year postgraduate PETE programmes, as was also acknowledged by Griggs and Wheeler (2005). Despite the progress pre-service teachers had made over the course of their study, they would need continued support and development throughout their NQT year and beyond.

Context is vitally important for PETE. The specific experiences that framed pre-service teachers' acting had a significant influence on their knowledge and preferred teaching practices, as they started out in their professional careers. In this context, the CoP was of central importance to pre-service teachers' development.

Pre-service teachers perceived school to be the most influential site for learning. Within the school-based learning experiences, the PE department and its legitimised practices were of particular importance to pre-service teachers' development. It was here, where pre-service teachers´ knowledge was applied and enacted with *real* pupils. These experiences offered significant reference points against which they measured their relative successes or failures. Both the formal and informal cycle of planning, teaching, feedback, reflection and evaluation represented a powerful process in the construction of pre-service teachers' knowledge. Since much of this was contextualised within the PE departments, these constituted the most significant CoP, influencing many aspects of pre-service teachers' learning.

Much of pre-service teachers' development of knowledge fitted the notions of 'apprenticeship learning' (Lave and Wenger, 1991; also see literature review on CoP). The departmental teaching and mentoring practices provided an influential framework for pre-service teachers' actions. Legitimised departmental teaching practices served as 'models for practice', representing an important framework for reference, as well as source of knowledge for pre-service teachers. Pre-service teachers also found it easier to realise teaching practices that were more closely aligned with the existing departmental teaching practices and a certain amount of compliance with these practices was observed. Where pre-service teachers attempted to try out 'novel' teaching approaches, this was, nevertheless, also encouraged and viewed positively by collaborating teachers and mentors, many of whom regarded mentoring as a two way learning process.

Not all PE departments had the capacity to support the development of a wide variety of teaching practices. It was evident that limitations in modelling served to inhibit some pre-service teachers' progress. This included important aspects of knowledge that had been developed through University-based learning, but found limited application during the school placements.

All PE departments had developed strategies to incorporate reciprocal teaching in their curricula, but there was more limited modelling of discovery-based learning. TGFU-style approaches were, however, supported in most schools, albeit at differing levels. The SE model was less evident, although some schools were borrowing from this concept, implementing limited aspects of this instructional model. There was little evidence of support for more explicit health-based or health optimising instructional models of teaching in schools. 'Understanding health and fitness' was mostly taught as a separate unit of work or otherwise loosely integrated into the general PE curriculum. As a consequence, pre-service teachers' development of knowledge in this area remained limited.

Within the PE departments, the mentor was a focal point who, via a range of formal and informal development activities, had a significant impact on pre-service teachers' learning. Important mentoring

responsibilities included personal and professional support, the provision of feedback on teaching, and the co-ordination of development activities and people who formed part of the development process. It was feedback on teaching which pre-service teachers valued most during school-based learning.

As found in other studies (Chambers and Armour, 2012; Smith, 2001), the mentor played an important role in pre-service teachers' learning. However, it is important to understand that this is only part of the PE department's holistic contribution as a CoP (Keay, 2005, 2007). Some mentors in this study recognised this and strategically and explicitly used the other members of the PE department to support the mentoring of the pre-service teacher. Even in PE departments where this strategy was not made so explicit, the department provided an important conduit for the pre-service teachers' development of knowledge, as well as many of their perceptions about teaching.

This study demonstrated that learning in PETE can only be fully understood if it is seen within the context of CoP. Research into learning in PETE must therefore go beyond the mentor-pre-service teacher relationship, and involve the whole PE department, if the nature of learning is to be truly understood. The importance of learning as a social and communal process in PETE needs to be highlighted here. Shulman and Shulman (2004) have made this observation in the general context of teacher education.

PE departments themselves were located within the wider school and education context which informed many of their actions. As a consequence, pre-service teachers' learning was impacted upon by the legitimised practices that were devised in response to general education and school policies and also by the departments' implementation of the NCPE (DfES, 1999/QCA, 2007). Whilst earlier research by Curtner-Smith (1999) found little impact of such frameworks on PE teachers' practices, this study found curricular impacts to be very influential. For example, the framework of the NCPE acted as a significant point of reference for both the PE department and the pre-service teachers and was a principal influence on pre-service teachers' perceptions of 'how to teach' PE. The curricular influence reached

pre-service teachers through embedded practices in different schools, as well as via University-based learning.

The findings of this study demonstrate how the diversity of learning experiences can enhance the overall quality of the learning outcome. The fact that pre-service teachers in this study experienced learning within two different school-based settings, as well as extended their learning through University-based learning, was seen to enrich their experience. University-based learning enhanced pre-service teachers´ knowledge development by preparing them for the challenges of the school placements, as well as by providing opportunities for critical reflection on the practices they encountered in schools. Pre-service teachers credited University-based learning to have developed their theoretical knowledge base in areas of learning that were not addressed through school-based learning experiences, thus broadening their overall outlook on teaching PE, and also teaching in more general terms.

Research for academic assignments, debates in workshops, peer support, serial practice, reflections on teaching via a range of media and channels, including the VLE, were all seen to be valuable contributions that University-based learning made to pre-service teachers' development. Learning was also perceived to be more effective when the messages of University-led training and school-based learning were broadly aligned.

Finally, it is important to note that the pre-service teachers readily engaged with new teaching practices, showed resilience in the face of adversity, determination to learn, and willingness to change. Shulman and Shulman (2004) consider these conditions to be key pre-requisites for the dynamic knowledge development that is required of modern day teachers. On an academic and professional level, the author fully agrees with this observation. On a more personal level, he would observe that, through their actions, many of the pre-service teachers in this study gained his professional and personal respect. The final chapter presents the recommendations that are made as a result of this study.

7 Chapter Seven: Recommendations

It is time to re-vitalise the debate over the nature of the subject knowledge to be developed through PETE. This should involve all key partners, including researchers, HEIs, schools as well as influential government agencies and policy makers, all of whom act as gate keepers for the PE and PETE curriculum. It also has to take into consideration the evolving nature of ITE within a political context that privileges an entirely school-based model of ITE and PETE.

The key recommendations of this study revolve around three main interrelated aspects: progressive CPD opportunities prior to, during and after PETE; enhanced and stable partnerships, and the promotion of varied legitimised practices.

Numerous knowledge bases are recognised, developed and prioritised at different stages during PETE. We know the key influences on the development of pre-service teachers' knowledge for teaching. The key question that needs to be addressed now is how to purposefully support the development of each of these and those sophisticated interrelationships between them to optimise the learning of pre-service teachers? However, an answer to this question is made more difficult with the potential removal of the University-based element of PETE courses. Excluding Universities from teacher education will remove a significant mechanism to develop high quality pre-service teachers of the future. If the on-going professional development and engagement opportunities facilitated by HEIs in partnership with schools are abandoned, as they will be, as a consequence of government policy, then teachers' engagement with research-informed practice and critical reflection on learning and teaching will not be sustained.

Part of the future challenge has to be to design and evaluate explicit, progressive teacher learning pathways that are considered and start prior to, during and after PETE courses. These should take into consideration pre-service teachers' legitimate concerns about perceived knowledge

development needs and concerns during the PETE programme. It is recommended that future design of PETE learning experiences should provide variety and avoid those mono-culture contexts and approaches currently being privileged by government policy in relation to teacher education and school curricula. Enhanced and stable partnerships between Universities and schools need to be developed to offer shared visions about the purpose of PETE and PE. It is these that will facilitate the variety of approaches and cultures required to generate those CoP, whose legitimated practice promotes innovation as part of PETE.

Extensive collaborative reflection on and in practice between all partners is essential as part of this process. Associated with this, is the interpretation of learning processes within PE, framed by the National Curriculum. At the time of submission of this thesis, a new National Curriculum was presented for implementation in September 2014. This offers little guidance with respect to establishing expectations of holistic learning experiences in and through PE. How this is interpreted in light of the requirements for teaching PE will have implications for the knowledge bases for teaching that are recognised, developed and prioritised during different stages of PETE training. Due to its structure, and if in the absence of supporting guidance, the new PE curriculum will fail spectacularly to offer a suitable framework around which to implement process-based teaching practices in schools.

The complexity of the situation encompasses the relationship between current government policy regarding school curricula and ITE, which is championing pre-dominantly school-based routes into teaching at the expense of HEI-led provision. Both of these developments have significant implications for the nature of pre-service teachers' knowledge development. An entirely school-based PETE provision would undermine those positive influences on the development of pre-service teachers' knowledge for teaching identified in this thesis. It would also inhibit the role which PETE plays in re-interpreting the National Curriculum and in developing alternative and innovative ways of teaching PE in schools. It is therefore recommended that policy makers take note of this study's findings as they seek to develop future frameworks for ITE and the National Curriculum.

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9 Appendices

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Appendix A: Participant Information Sheet for Pre-service Teachers

The Development of Pedagogical Content Knowledge in Physical Education Teachers

This research is concerned with identifying the significance of factors, processes, practices, experiences and people that contribute to the development of Pedagogical Content Knowledge (PCK) in Trainee Teachers of Physical Education. It is hoped that the research will contribute to the body of knowledge in this field and lead to recommendations that will inform future practice in Teacher Training.
It is the intention to track the participants of this study during their Post-Graduate Certificate in Education (PGCE) course, in order to investigate their development of PCK during this stage of training and professional practice.
Participation in this study is entirely voluntary and has no implications whatsoever in terms of their assessment of the PGCE PE Programme. Participants can withdraw at any time during this study and will not be required to explain reasons for withdrawing.

It is expected that participants' involvement will require approximately three extended interviews during this year. In addition to this participants will also need to be prepared to be observed during three lessons over the course of this year and to participate in a post-lesson reflection relating to these lessons. In addition to this, reflective commentary from the course Virtual Environment and supporting evidence from course documentation such as for instance subject knowledge audits may be used to provide supplementary evidence for this study.
All steps to ensure the anonymity of participants for publication purposes will be taken, and all data relating to the study will be kept in accordance to the latest data protection legislation. All the information provided will be treated in strict confidence.
Agreement to participate in this study will be sought through the completion of the participant consent form.

Signature of investigator: Frank Herold,

Date: 02/09/2006

Appendix B: Participant Information Sheet for PGCE Mentors

The Development of Pedagogical Content Knowledge in Physical Education Teachers

The research is concerned with identifying the significance of factors, processes, practices, experiences and people that contribute to the development of Pedagogical Content Knowledge (PCK) in Trainee Teachers of Physical Education. It is hoped that the research will contribute to the body of knowledge in this field and lead to recommendations that will inform future practice in Teacher Training.
It is the intention to track the participants of this study during their PGCE year, in order to investigate their development of PCK during these subsequent stages of training and professional practice. In order to get a comprehensive view of the development of the participants, the views of school-based mentors are also sought as part of this study.
Participation in this study for trainee teachers is entirely voluntarily and has no implications whatsoever in terms of their assessment of the PGCE PE programme.

Participants will not be required to explain reasons for withdrawing.
Participation in this study for school-based mentors is equally entirely voluntarily and participants may choose to withdraw at any stage of the study.
It is expected that mentors' involvement will require one in-depth interview, discussing the role of the mentor and perceptions of factors relating to the development of trainee teachers. Names of participants will be anonymised for publication purposes, and all data relating to the study will be kept in accordance to the latest data protection legislation. All the information provided will be treated in strict confidence.
Agreement to participate in this study will be sought through the completion of the participant consent form.

Signature of investigator: Frank Herold

Date: 02/09/2006

Appendix C: Participant Informed Consent Form

The Development of Pedagogical Content Knowledge in Physical Education Teachers

INFORMED CONSENT FORM

(to be completed after Participant Information Sheet has been read)

The purpose and details of this study have been explained to me. I understand that this study is designed to further scientific knowledge and that all procedures have been approved by the Loughborough University Ethical Advisory Committee.

I have read and understood the information sheet and this consent form.

I have had an opportunity to ask questions about my participation.

I understand that I am under no obligation to take part in the study.

I understand that I have the right to withdraw from this study at any stage for any reason, and that I will not be required to explain my reasons for withdrawing.

I understand that all the information I provide will be treated in strict confidence.

I agree to participate in this study.

Your name _____

Your signature _____

Signature of investigator _____

Date _____

Appendix D: Interview Guide Pre-service Teachers Interview 1

Theme 1: Personal background and the motivation to become a physical education teacher

Lead:

Invitation to commence talking about personal reasons and motivation to become a physical education teacher.

Sub themes:

- Influential personal reasons/circumstances
- Influence of others: teachers, parents, peers
- Personal background and experiences in sport and physical education
- Views about physical education

Theme 2: The value of personal and professional background experiences in preparation for teaching physical education

Lead:

Invitation to discuss any relevant personal/professional/educational pre-course experiences in the light of the experiences gained in School Experience 1

Sub themes:

- Nature and value of experiences, knowledge/skills acquired during Undergraduate degree courses
- Value of coaching qualifications
- Value of coaching and teaching experiences/working with children
- Value of school-based experiences
- Value of conditions set at interview stage
- Relevant practical or theory knowledge from participation in sport or physical activity/physical education
- Any other relevant experiences relating to the ‘preparedness’ to teach

Theme 3: Pre-service teachers' views and perceptions of vital attributes, knowledge and skills for teaching physical education. Evaluation of own current knowledge profiles in the light of this.

Lead: *Invitation to talk about what is important for good physical education teachers.*

Sub themes:

- Knowledge for teaching physical education
- Desirable attributes of physical education teachers
- Desirable skills for teaching physical education
- Pre-service teachers personal knowledge profiles
    - Content knowledge
    - Pedagogical content knowledge
    - Activity-specific and general

Theme 4: The impact of personal knowledge profile on the effectiveness of teaching during the placement

Lead: *Invitation to elaborate on the experience of teaching during the placement.*

Sub themes:

- Overall impression of experiences
- Significant experiences
- Principal areas of successes and difficulties
- Perceived competence to teach across a range of common curricular activities and activity areas and key stages
- Perceived confidence to teach across a range of common curricular activities and activity areas and key stages
- Teaching styles: preferred, dominant
- Experiences/relationships with classes/pupils
- Impact of personal strengths and weaknesses on teaching common curricular activities in school
    - Quality of lessons
    - Factors facilitating good lessons
    - Flexibility to respond and act in lesson contexts
    - Successful and unsuccessful lessons
    - Differentiation
- Strategies to deal with these
    - Information seeking strategies
    - Networking strategies
    - Planning/Prioritisation of time

Theme 5: Learning and development during the first placement

Lead: *Invitation to elaborate on learning and development to this point*

Sub themes:

- Impact of people/department
  - Mentors
  - Colleagues/teachers
  - Others, e.g departmental procedures, structures, facilities
- Impact of processes/development activities
  - Lesson observations
  - Modelling of good practice
  - Feedback
  - Weekly meetings
  - Target setting
  - Lesson planning
  - Written self-evaluations of teaching
  - Value of Serial Practice
  - Any other formal or informal strategies/events/happenings
  - Accompanying Reflections/Discussions /Networking on VLE
  - Other learning strategies/reflection strategies
- Changes in personal outlook on teaching
- Key areas for development
- Any other points of interest

Appendix E: Interview Guide Pre-service Teachers: Interview 2

Theme 1: Being a pre-service teacher at School 2

Lead:

Invitation to reflect on any aspect of the teaching and learning experience at School 2 to this point.

Sub themes:

- Overall impression of the school and the school experience
- Similarities and differences to the experience at School 1
- School and pupil culture
- Departmental culture and teaching practices
- Effectiveness of mentoring support:
    - Impact of people: mentor, colleagues, significant others/role models
    - Impact of processes and structures

Theme 2: Experiencing and developing teaching: the initial, personal perspective

Lead:

Invitation to reflect on areas of progress make with teaching related knowledge and skills in School Experience 2

Themes:

- Consider significant areas of progress made to this point
- Consider current personal strengths and weaknesses in their own teaching
- Significant successes and difficulties experienced
- Consider facilitators to progress with development of teaching
- Consider constraints to making progress
- Perceived competence and confidence to teach across a range of common curricular activities and ability levels
- Perceived impact of different aspects of personal knowledge and skills profile on the quality/effectiveness of teaching
- Any other areas of concern

Theme 3: Exploring pre-service teachers' thought processes relating to planning for teaching.

Lead: Invitation to talk about the personal approach to planning lessons.

Sub themes:

- Outline the usual approach to planning for teaching
- Reflect on thought processes that underpin the personal planning approach
- Sequence of thought processes, prioritisation any given planning aspects
    - Setting of aims and objectives
    - Selection and progression of learning content
    - Considering learning processes and domains
    - Considering assessment for learning
    - Pupils' learning needs and preferences
    - Considering the National Curriculum in PE
    - Role of departmental planning guidance and schemes of work
    - Perceived value of planning as a process
- Any other significant influences/considerations related to planning

Theme 4: Developing your personal style of teaching

Lead: *Invitation to elaborate on the development of preferred emerging teaching styles or any other personal approaches to teaching.*

Sub themes:

- Exploration of emerging teaching styles: preferred/dominant
- Rationales behind selection of teaching styles
- Factors influencing the selection and development of preferred teaching styles and approaches
- Facilitating pupil learning (expansive exploration)
- Examples of successful and unsuccessful applications of specific teaching styles and approaches
- Development of behaviour, class and pupil management strategies
- Building relationships with classes and individual pupils
- Considering individual pupil needs

Theme 5: Impact of significant factors and processes affecting learning and development

Lead: *Invitation to elaborate on significant factors and processes learning and development to this point*

Sub themes:

- Learning from personal teaching experiences
- Value of being observed and receiving mentor and teacher feedback
- Observing others teach/modelling of practice
- Formal and informal reflection on teaching
- Written self-evaluations of teaching
- Weekly meetings with mentors: Feedback and Target setting
- Other learning strategies/reflection strategies
- Any other formal or informal strategies/events/happenings
- Accompanying Reflections/Discussions /Networking on VLE
- Changes in personal outlook on teaching
- Key areas for development
- Any other points of interest

Appendix F: Interview Guide Pre-service Teachers: Interview 3

Theme 1: Reflecting on significant areas of progress in knowledge for teaching/subject knowledge

Lead:

Invitation to reflect on the experience over the year and any aspects of progress that you have made with your development of knowledge for teaching

Sub themes:

- Personal progress in different aspects of subject knowledge
- Significant successes and difficulties experienced
- Consider current personal strengths and weaknesses in their own teaching
- Perceived competence and confidence to teach across a range of common curricular activities and ability levels
- Perceived impact of different aspects of personal knowledge and skills profile on the quality/effectiveness of teaching

Discuss progress in relation to following aspects of knowledge for teaching:

- Content knowledge
    - Progress in context-specific content knowledge
    - Consequences of context specific content knowledge
    - Valuing content knowledge
- PCK:
    - Differentiation,
    - Assessment for Learning
        - Use of ICT
        - Using feedback
        - Use of questioning
- Knowledge of Curriculum
    - Planning for teaching
    - Learning processes/domains and the NCPE
    - Wider aims of PE
- Knowledge of pupils
    - Considering ability (groups and individuals)
    - Considering individuals (pupil characteristics and learning)
- Development of behaviour, class and pupil management strategies
- Building relationships with classes and individual pupils
- Other general pedagogical knowledge

Theme 2: Exploring the developing of preferred teaching styles

Lead: *Invitation to elaborate on the development of preferred emerging teaching styles or any other personal approaches to teaching.*

Sub themes:

- Exploration of personal teaching styles: preferred/dominant
- Rationales behind selection of teaching styles
- Factors influencing the selection and development of preferred teaching styles and approaches
- Teaching styles and pupil learning
- Examples of successful and unsuccessful applications of specific teaching styles and approaches
- Considering individual pupil needs

Theme 3: Exploring pre-service teachers' thought processes relating to planning for teaching.

Lead: *Invitation to talk about the personal approach to planning lessons.*

Sub themes:

- Outline the usual approach to planning for teaching
- Reflect on thought processes that underpin the personal planning approach
- Sequence of thought processes, prioritisation any given planning aspects
    - Setting of aims and objectives
    - Selection and progression of learning content
    - Considering learning processes and domains
    - Considering assessment for learning
    - Pupils' learning needs and preferences
    - Considering the National Curriculum in PE
    - Role of departmental planning guidance and schemes of work
    - Perceived value of planning as a process
- Any other significant influences/considerations related to planning

Theme 4: Impact of significant factors and processes affecting learning and development

Lead: *Invitation to elaborate on significant factors and processes learning and development to this point*

Sub themes:

- Consider facilitators to progress with development of teaching
- Consider constraints to making progress
- Learning from personal teaching experiences
- Value of being observed and receiving mentor and teacher feedback
- Observing others teach/modelling of practice
- Formal and informal reflection on teaching
- Written self-evaluations of teaching
- Weekly meetings with mentors: Feedback and Target setting
- Other learning strategies/reflection strategies
- Any other formal or informal strategies/events/happenings
- Accompanying Reflections/Discussions /Networking on VLE
- Changes in personal outlook on teaching
- Key areas for development
- Any other points of interest

Theme 5: Impact of significant communities and people affecting learning and development

Lead: *Invitation to elaborate on impact of people and teaching/learning communities on development*

Sub themes:

- School and pupil culture
- Departmental culture and teaching practices
- Effectiveness of mentoring support:
    - Impact of people: mentor, colleagues, significant others/role models
    - Impact of processes and structures
- University-based learning

Appendix G: Interview Guide PGCE Mentors

Theme 1: Involvement with mentoring

Lead:

Invitation to reflect on personal motivation to be involved with mentoring

Sub themes:

- Personal involvement in mentoring
- Departmental involvement with mentoring
- Role of the mentor/Personal philosophy of mentoring
- Own teaching philosophy, preferred teaching styles, approaches
- School and pupil culture
- Departmental culture, teaching practices teaching philosophies
- Departmental modelling of teaching styles and approaches

Theme 2: Exploring pre-service teachers' development of knowledge

Lead:

Invitation to discuss characteristics and attributes of good pre-service teachers

Sub themes:

- Characteristics of good pre-service teachers
    - Attributes and Values
    - Knowledge
    - Skills
    - The nature and role of subject knowledge
    - Impact of trainee profiles on mentoring strategies

- The key challenges and knowledge development strategies during the earlier stages of the training
    - Challenges for trainee teachers at the start of school placements
    - Impact of knowledge profiles on pre-service teachers during early stages of the placement Strengths and weaknesses at the beginning of placement
    - Perceived impact of different aspects of personal knowledge and skills profile on the individual pre-service teachers
    - Important learning and mentoring strategies and to address these development needs

- The development of knowledge in pre-service teachers on placement (global)
    - Significant progress observed during placement
    - Significant successes and difficulties experienced
    - Perceived competence and confidence to teach across a range of common curricular activities and ability levels

    - Throughout, explore significant facilitators affecting this learning and development

- The development of knowledge in pre-service teachers on placement (specific)
    - Content knowledge
    - PCK
    - Instructional Strategies
    - Teaching Styles
    - Assessment for Learning
    - Differentiation and inclusion

- Knowledge of Curriculum
    - Planning for teaching
    - Learning processes/domains and the NCPE
    - Links to teaching styles and AfL
    - Pursuing wider aims of PE

- Knowledge of pupils
    - Considering ability (groups and individuals)
    - Considering individuals (pupil characteristics and learning)

- General Pedagogical Knowledge
    - Building effective relationships
    - Pupil and class management
    - Behaviour management

Theme 3: Explore significant facilitators affecting this learning and development

- mentoring strategies and learning support
- departmental teaching environment
- departmental teaching philosophies and modelling of practice
- pre-service teachers' learning strategies and responses to challenges

Summary of key areas of progress/knowledge development

- Areas for development needs during NQT year
- Perceived role of University-based learning
- Any other areas of concern or interest

Appendix H: Lesson Observation and Review Guide

Stage 1: Pre-lesson conversation

- informal/establish parameters/check any specific issues/re-assure

Stage 2: Scrutiny of lesson plan

- note any initial thoughts relevant to quality/structure of plan

Stage 3: Observe lesson

- produce concurrent, descriptive, free format lesson summary
- expand immediately after the finish of the lesson
- note any first reflective summary thoughts
- note any key incidents
- note specific questions for post-lesson review, arising from observation

Stage 4: Post lesson conference

- pre-service teacher's self-identified issues relating to lesson:
    - phases of learning/own actions/pupils/specific incidents
- questioning/probing:
    - intentions, outcomes, approach, justifications, pupil learning
    - reflection on personal learning/development issues from this experience

Stage 5: Produce final lesson observation report:

- Summary Report (considering observation checklist):
- Reflective Commentary

Lesson Observation Schedule: Specific items for observation

Planning:

- objectives/ learning outcomes/links to NCPE
- progression/differentiation/assessment/teaching styles/

Content Knowledge:

- level of technical knowledge
- selection of content (relevance/variety/interesting/motivating)
- ability to act flexibly
- accuracy of demonstration and instructions

PCK:

- Organisation and management (time/space/groups/safety)
- Instructions/demonstrations
- Choice of Teaching Styles
- Progression
- Differentiation strategies
- Assessment for learning (AfL activities, peer assessment, teacher assessment)
- Use of feedback (positive, constructive, specific)
- Use of questioning
- Use of resources (including ICT)
- Overall quality of pupil learning (outcomes)

Curricular Knowledge

- Links to NCPE learning processes
- Assessment and AfL

General Pedagogical Knowledge

- Effective pupil relationships established
- Effectiveness of Communication
- Pupil and Behaviour management (positive/use of sanctions/control/ discipline)
- Persona (enthusiasm/presence/projection)

Summary of key issues and key areas for development

Appendix I: The approach to coding: Identifying themes, creating categories and developing concepts

The following examples demonstrate key considerations that were underpinning the coding strategy and the subsequent development of key themes/concepts in this study. These examples outline how initial themes were identified during initial coding and how themes were further interrogated during the subsequent stages of the analysis (focussed coding). One challenge in this process was the constant tension between detailed, line by line coding and the need not to lose an oversight of the larger issues and themes that were at the heart of this study. This had implications for the coding strategy. The following example serves to highlight this dilemma and discusses some of the considerations that were underlying the coding approach taken in this study.

Nicole: Interview 3

> *I think now I can pick up things that are linked with other sports a bit more. In terms of my first placement I was very much 'Well that's football, that's basketball, that's athletics, that's gymnastics, whereas now teaching things like tennis I sometimes link it back to, I don't know, javelin in terms of 'You need to get your arm up over your head' and I just think a bit more naturally about how the pupils must think in terms of if they're really good at football you can get them to think about playing basketball in a similar way, obviously in terms of situations, tactics and dribbling and that kind of thing. I think a bit more naturally about it now instead of before I was a bit like 'Well how could you link athletics and tennis?' whereas now I can say 'Well, yeah, you can do this and this' and it just makes a bit more sense now to me. (Nicole, pre-service teacher, Interview 3).*

One interesting theme that had emerged from the analysis of numerous reflections by pre-service teachers during earlier interviews related to the transfer of PCK between the different activities that they were teaching. This transfer of knowledge appeared to help moderating some of the negative aspects of content knowledge deficits that pre-service teachers were experiencing. Fledgling attempts of this were captured during the process of initial coding during earlier interviews. The excerpt from Nicole's

final interview demonstrates the developmental nature of this, as she reflects on the differences between her early and later approaches to teaching. When considering the above narrative in its entirety, it fitted the overarching theme of 'Transfer of PCK'. This was deemed to be of interest for investigation. A similar category denoting this theme had already been created during earlier initial coding.

The assumption that transfer of PCK actually happened between distinct activities would have to be supported reliably and consistently by the data in the study. For instance, evidence for the transfer of PCK would be strengthened, if this occurrence extended to a significant number of respondents. Strength and clarity of emerging themes in the narratives would also go some way to support this observation. More detailed analysis would also have to establish the specific dimensions of such a transfer of knowledge. The following questions could for instance be asked of this data: Which aspects of PCK do transfer? Does transfer of PCK predominantly relate to instructional strategies or does it hold true for other aspects of teaching, such as for instance differentiation or AfL? Between which activities does transfer of PCK occur? At which stage of the training does it occur? Does it occur for all pre-service teachers, or only for some? Does it occur frequently, or only sometimes? What is the significance of this for pre-service teachers? Is it more significant for males than females? Which thought processes are involved in this? What, if any, is the significance of this for the study?

These potential questions highlight the challenge of capturing meaning through the detailed process of initial coding. When looking at the above narrative, a number of potential categories can be identified. Consider for instance the temporal dimensions in this brief section:

> *I think now I can pick up things that are linked with other sports a bit more. In terms of my first placement I was very much 'Well that's football, that's basketball, that's athletics, that's gymnastics.*

The narrative here would imply that positive transfer between activities had taken place at a later stage during the training. The pre-service teacher

was not experiencing this to be a significant factor during the early stages of the training. Since this investigation was interested in the development of knowledge over the course of the training, such a difference between the early stage of the training and the later stage was therefore also of interest to the study, since it denoted a knowledge development over time. In other words. *NOW* Nicole was able to see these opportunities for transfer, when *PREVIOUSLY* (eg during her first placement) she had not. Whilst the mini-section above does not by itself provide substantial evidence, it highlights avenues for further investigation. For instance, the narrative suggests that during the earlier stages, activities were seen to be more distinct and separate from each other. At the later stage a more 'linked' and joint up view had been constructed by the pre-service teacher. The detailed line by line coding of this narrative implied that the following categories could justifiably be created and investigated across data from other pre-service teachers for confirmation or rejection:

Category: Transfer of PCK

Sub-category 1: *Transfer of PCK at a later stage*
Sub-category 2: *Transfer of PCK at an earlier stage*

It was for the researcher to decide, if this constituted a desirable strategy for coding or not. The decision to create certain codes also depended on the research question and the importance that would be accorded to any given sub-theme. The challenges in making coding decisions during the detailed interrogation of the data are further demonstrated by the treatment of the next section of narrative, which again contained several distinct aspects of transfer of PCK that could be investigated.

Nicole: Interview 3

> *Whereas now teaching things like tennis I sometimes link it back to, I don't know, javelin in terms of 'You need to get your arm up over your head' and I just think a bit more naturally about how the pupils must think in terms of if they're really good at football you can get them to think about playing basketball in a similar way, obviously in terms of situations, tactics and dribbling and that kind*

of thing. I think a bit more naturally about it now instead of before I was a bit like 'Well how could you link athletics and tennis?' whereas now I can say 'Well, yeah, you can do this and this' and it just makes a bit more sense now to me.

The first part of the narrative indicates a perceived positive transfer between two activities: tennis and javelin. This was a more unusual combination of activities. However, viable links between many activities are possible, dependent on the creativity of the teacher, even if there may be potential questions about the accuracy and the usefulness of such links. In the middle section, links were made between two invasion games, basketball and football. This was less unusual than tennis and javelin. The possibility to make conceptual links for teaching strategies and tactical concepts of the game was more often highlighted by pre-service teachers. In its thinking, it reflected the conceptual essence of the TGFU approach to teaching games. The application of such concepts could aid with the facilitation of this instruction-based model of teaching. It also suggested the possibility to transfer more general concepts of teaching, such as for instance considering tactical issues.

An intriguing aspect of this piece of narrative was the comment which revealed that the pre-service teacher actively attempted to take her cues from possible conceptions of the pupils. Her comment of 'I just think a bit more natural about how the pupils think' was followed by her observation that she may be able to get her pupils to transfer knowledge from one activity to another. This suggested that her thinking was beginning to focus on her pupils. She now considered how she could connect to pupils' knowledge and experience in order to build on this in the further development of knowledge.

The principle of building new knowledge on existing knowledge was implicitly a constructivist way of conceptualising learning. This also constituted evidence for another key theme of this investigation, which considered data that related to 'knowledge of pupils'. From the analysis of this and other coding incidents and relating to 'Transfer of PCK' the following codes were created and investigated across other documents:

Category: Transfer of PCK
Sub-categories:

SC 1: *Transfer of instructional and organisational strategies*
SC 2: *Transfer of teaching tactical and compositional concepts*
SC 3: *Transfer linked to wider concepts of PCK (e.g. differentiation, assessment)*
SC 4: *Transfer linked to consideration about pupils' conceptions*

It was initially deemed to be important to create such detailed frameworks of categories and sub-categories. If needed, these could later be merged into higher level categories for synthesis. During this process, the researcher recognised the need to find the right balance between detailed analysis and the creation of meaningful categories, as he investigated the leads that arose from the process of initial coding. In the context of a smaller sample size study, the notion of saturation also required careful consideration and the researcher needed to take a considered view on the depth or strength of the data. Moreover, it was important to establish to which extent occurrences and views were similar or different for individual participants in the study.

As the researcher went through this process, he realised that the analysis of data at a micro-level with too many sub-categories was not only very time consuming, it could also fragment the larger meaning of some of the emerging themes. The sub-categories outlined above were helpful in establishing the nature of this transfer more clearly and aided in establishing its properties and dimensions. They were eventually re-merged into the more meaningful category 'Transfer of PCK'.

As Glaser (1978, 1998) observed, questioning these data needs to occur at different levels. As key issues were exposed through the processes of initial coding, the researcher attempted to be alert to individual incidents that were of significance, in order to develop an understanding of the concepts that were emerging. These then needed further considerations, in order to elicit higher order meanings. The excerpt from an early stage interview from Year 1 below gives an indication of the some of the thought processes that underpinned the analysis of emerging concepts.

Emerging concepts: Content knowledge

Natalie, Interview 1

Emerging concepts	**Narrative**
Lack of confidence is related to specific activity or contextual situation.	When I taught my dance lessons I didn't feel as confident, because it is a different situation as well.
Lack of activity specific CK creates anxiety in front of pupils.	Because you are in front of a class and you haven't got that knowledge.
Lack of CK leads to problems with content selection. Pre-service teachers feel pressured to please pupils?	You've got to fill a lesson with interesting stuff and you really need some good ideas and you need to be confident to show them stuff.
CK strength and teaching confidence are positively related	I do feel less confident going into those lessons whereas say like hockey lessons.
The mentor as a 'validator' of knowledge?	I know that it did come across when I spoke to my mentor.
CK via confidence affects observable behaviours (presence, voice)	She could tell when I was going into lessons where I was confident because straight from the 'off' I had got a more confident voice and more confident presence.
CK deficit is a driver for development Success in	I did try and work on that throughout my time and it did get better towards the end of the last week when I did my

development, but only partial to date.	last dance lessons.
Need to present "confident persona" to others (pupils) is experienced acutely at this stage. Perception of professional identity?	I probably wasn't as confident with them, and I think a lot of it is, even if you are not as confident you have got to go in that lesson as confident to show the pupils that you are confident, no matter what.
Effect of limited CK on confidence clearly affirmed.	But it did affect my confidence.

The above narrative highlighted a range of issues that pre-service teachers associated with content knowledge and teaching confidence. The process of initial coding had captured different aspects and dimensions of this relationship. The frequency of occurrences, as well as the strengths of feelings that were expressed by pre-service teachers, made this a topic that needed to be further pursued in the analysis. The researcher now needed to establish the connection between these two important concepts. The notion of content knowledge was for instance debated with respect to specific teaching contexts. Pre-service teachers were concerned about content knowledge deficits in specific activities their timetables required them to teach. From this analysis emerged the notion of 'activity specific, practical content knowledge'. This concept served useful purposes in the early analysis process, although it was subsequently replaced by the concept of 'context specific content knowledge'. This term captured the broader dimensions of this concept and it was capable of serving a broader purpose in the explanatory framework of this study. Such knowledge was largely a consequence of pre-service teachers (gendered) sporting histories. The detail that this knowledge was frequently gendered was notable, but ultimately not of very much consequence in the context of this study. The consequences of having or not having context specific content

knowledge were, however, significant and they were similar for males and females in this study.

The more detailed investigation of the relationship between content knowledge and teaching confidence revealed different dimensions of this relationship. For instance, as Natalie's narrative suggested, lower levels of activity specific content knowledge induced lower level of teaching confidence. Higher levels of confidence, as hinted in her observation about her hockey lessons appeared to suggest a higher level of teaching confidence. Since this was deemed to be of relevance to this investigation, this concept was taken into the next stage of coding, the stage that Charmaz (2006) denotes as 'focussed coding'.

During this stage, only data specifically associated with this concept was evaluated. The effects of relative levels of perceived content knowledge were investigated by revisiting corresponding categories during the process of focussed coding, with view to establishing the nature of these relationships at a more general level. The next step in the analysis was to establish the dimensions of significant concepts with more clarity. This involved re-visiting the data and interpreting its meanings on a more abstract level. It also involved an examination of the relationships between different concepts. The example below demonstrates how different dimensions and relationships were established for the concept of content knowledge.

Developing properties, dimensions and relationships: content knowledge

Nicole Interview 1

Properties/Dimensions/ Relationships	**Narrative**
CK is context specific CK is a consequence of sporting history CK has range	My knowledge prior to the start of the course was too specific to have been useful for a lot of things. I knew about the things I had done obviously and not really things like in the areas I had not participated in.
CK has depth CK facilitates instruction/teaching	I knew small bits about things but not technical aspects of badminton how to serve the correct way to hold a racket and all those things, little things that helped,
Lack of CK adversely affects quality of instruction/teaching CK facilitates instruction	cause obviously you can't explain to someone why they can't serve properly if you don't know yourself. So obviously things like that can help a lot just to help breaking things down and explaining what needs to be done and how it feels in relation to maybe relating it to other sports as well.
SK/CK is valued highly	So I think it is quite important to have good subject knowledge.
CK affects teaching confidence/self-image/professional identity?	For me if I am teaching something I feel quite confident in, I set an example.
CK affects teaching quality through ability to react/adapt flexibly to lesson demands Presence of context specific CK affects confidence positively	I can easily adapt what I'm doing if it is not working with some people I can quickly change and I have got quite a few backup plans to what I am doing because I feel quite confident in thinking if I put what I do across if it doesn't work easily change round,
Absence of context specific CK affects confidence adversely	whereas to me if it was something like badminton for example I probably have a few backup ideas but not as many so I wouldn't feel

	as confident and I probably might not come across as confident.
Low CK limits content selection and teaching confidence Confidence is a facilitator to good teaching/enacted PCK	So it probably wouldn't work so well. So if it wasn't working for a few people I would have a couple of ideas to change things, but I wouldn't be as confident trying to help them out if the backup idea didn't work. So confidence helps me a lot. Teaching things that I feel confident in or that I think that I will be good or think I would have a good idea about. So, probably in terms of what the pupils get out of it they probably get more out of it as well.
CK has relative levels of depth CK facilitates effectiveness of teaching and instruction/PCK	I would say because I have got more of a knowledge and it comes more naturally to me just to say ooh yeah do something like that do something like that instead of what I read from somewhere which might not or I might not fully understand myself trying to put it across to somebody they might not understand it either so it helps a lot as well so pupils do understand what you are trying to say to them.

The example above highlighted various dimensions and effects, that having or not having content knowledge had on pre-service teachers. Specific themes relating to the concept were then checked against different cases, as well as other dimensions, such as for instance the different stages of the training during which specific themes were prevalent. It demonstrated how having and not having content knowledge affects pre-service teachers' in various ways. Through this, it underpinned the concept of 'valuing content knowledge' and various associated themes and their properties and dimensions. This was then conceptualised at a more abstract level as represented in the table below.

Valuing content knowledge: Themes, properties, dimensions

Concept	Theme	Properties and dimensions	
Valuing content knowledge	Content knowledge affects teaching confidence	Low content knowledge →	Feeling insecure, afraid, incompetent
		Adequate →	Feeling able to cope, 'measuring up', 'no panic'
		High content knowledge →	Feeling assured, competent, 'being oneself'
	Content knowledge affects PCK	Low content knowledge →	Limited plans, impedes ability to act flexibly and creatively, poor diagnostic skills, problems matching content to ability
		High content knowledge →	Plan with more ease, assured about technical dimensions, selection and organisation of content, progressions, answering questions, facilitate differentiated learning content
	Content knowledge levels as a driver for development action	Low content knowledge →	Prioritised for development action Significant time and effort invested in knowledge development
		Adequate	No longer prioritised over other development Developed incrementally alongside other areas of knowledge
		High content knowledge →	Regarded as asset. Shared with others.

Appendix J: Content knowledge deficits – adverse impact on teaching confidence and the perceived ability to teach effectively

Rugby, that's one of my fears, ultimate fears! I've never had any experience of teaching rugby. I mean tag-rugby I'm ok with, 'cause that's easier. (Angelina, pre-service teacher, Interview 1)

I think in everything you still lack a little bit of confidence just to be one hundred percent sure in any situation that you know what you're doing is right and I think sometimes when you don't have the subject knowledge, and you're a student teacher, you don't know what you're doing is right. (Alexander, pre-service teacher, Interview 1)

I suppose, I am nervous for a different reason. I am dreading badminton because I know virtually nothing about it, and I played yesterday, we played like students versus teachers badminton match and I played in that… I just need a lot more practice and I have got a book, but I don't know anything and I have got to teach some year nine's. I don't know what I am going to do. (Natalie, pre-service teacher, post-lesson reflection 1)

Again, going back to netball and hockey, it is probably subject knowledge as well, because netball I always find that the lessons don't go well whether it is year seven or year nine, so I don't feel that there is a difference there it just seems to be downhill, even though it may not from somebody else's perspective, so it has got to be a bit of knowledge really I suppose…In netball even if I have got my plan I still do not feel confident and for some reason I feel that those sessions don't go as good as the other subjects, whereas in hockey I am just fine with it. (Annabel, pre-service teacher, Interview 1)

I think I have, and fortunately I have, an ability to put a bit an act on with the kids and be quite confident, be it in gym or whatever sport. Inwardly, I am probably a little bit nervous, like even for today's lesson inwardly I would be quite nervous about delivering it, because I don't have a massive knowledge, but outwardly I hope it doesn't show too much to the kids. And I think my confidence outwardly to the kids, which is probably most important, is okay. (George, pre-service teacher, post-lesson reflection, lesson 1)

With something that I am quite confident in say football, my planning, what I actually write down is a lot less because I have got a lot of ideas in my head what I want to do. With something like dance or maybe basketball, I really need to think what I am going to do, plan it and go for it. The knock on effect of that, if things aren't going so well, it is a lot more difficult for me to try and turn it around. With something that I am confident in I have got a lot of drills in my head where I can say that isn't working, I will do this, but with the ones that I am less confident with, I am like well this isn't working, where do I go from here? (Thomas, pre-service teacher, Interview 1)

Football, I had very little knowledge of it at all. And I was teaching year seven football so it was a good start because they didn't have any real subject knowledge either. And I just felt that I wasn't able to structure things the way I wanted to…in netball I'd know and I'd know exactly where your thirds are and I'd be able in my mind to say 'Right. One group on that third, one in that third, one in that third' and they'd be here. Whereas in football I had this massive astro-pitch. I didn't know

what to do with it, how to, where to put it. …I really struggled and didn't really know what I was doing. (Debbie, pre-service teacher, Interview 1)

Well basketball I don't know much about either. There are lots of resources that I have got but I think I won't be able relax…I think that is more the case in the subjects that I have just read about. That is when I am going to stick to something and teach it so that I know. (Jenny, pre-service teacher, Interview 1)

In rugby I'd have a hundred more ideas just 'cos I do have a bit more knowledge about it than in other things and so I'd always feel comfortable with what I was doing. You know I could even change things if things weren't going quite so well, how I thought they'd go, I'd be able to change it just by having more experience in it whereas with other sports that I wasn't quite so…it's harder to be flexible just because you're not feeling as confident with it. (Alexander, pre-service teacher, Interview 1)

From what I have had experience of, swimming is probably one of my areas of strength, so it is very clear of what you need in the lesson plan and how to teach it and I actually enjoy teaching swimming as well and then you come onto dance. I had no experience of it, I didn't do it at school all I have done is six afternoons with University and then when you come to applying that to your lesson, all you have really got to fall back on is that experience and what you have read. And if that experience wasn't relevant to the lesson that you teach, it does knock your confidence a little, your enthusiasm and your motivation in your lesson. You want to encourage them but you are almost not sure of what to encourage them about. (Phil, pre-service teacher, Interview 1)

I didn't observe anyone else teach netball. I would always take that myself, because I've got confidence in that. But in sports or activities that I wasn't as strong in then I went to observe those, Rather than factors within, so I didn't look at differentiation, or things like that. My observation, I would generally go and see activities which my subject knowledge was not as strong in. That's what my observations were based on, really and then that helped me develop my teaching and my confidence. (Debbie, pre-service teacher, Interview 2)

I would say things like tennis because I've not had much experience in tennis apart from what we've done on the (*University*) course. I don't play it myself and I've never actually been coached how to do things properly so when I try and tell pupils why they can't do a forehand shot and it's not going in a straight line my knowledge is limited in terms of 'Oh it's either because your body position or your racket'; my knowledge is not as technical whereas I could say for athletics 'You could do, this, this and this'. There's only one or two options I could pick for them in tennis, if it's still not going right, I struggle, purely because I've not had much experience in tennis. (Nicole, pre-service teacher, Interview 3)

Well you become a little bit unsure of yourself, and you'll be telling the pupils something and you'll think it's right… But you can't really do that. If you're teaching someone javelin; release, the right grip, little things like that and I think I know it I'm pretty sure it's right but I'm not one hundred percent certain I'm ninety five percent certain. But when you're teaching pupils to throw a javelin you've got to be one hundred percent, otherwise you're teaching them the wrong stuff. And it shows children aren't stupid, you need to be able to answer the questions they fire at you, there's nothing worse than, if a question's fired in and you aren't sure of the answer. But again I think that will come with time. (Thomas, pre-service teacher, Interview 3)

Appendix K: PCK – developing more pupil-led teaching approaches

The one I try to use the most now, whether it works all the time is debatable, is the more discovery style, it's one I've been using a lot in games things like football and basketball. I find the pupils here enjoy a bit of independence…and I know they enjoy doing things for themselves and for some things like dribbling I don't like to say oh to begin with you need to dribble with the inside your foot… so I like them to go off, find the best way of doing things… I prefer them to learn for themselves instead of being told oh you need you kick the ball like this and you need to dribble like that. I prefer them to go off and think oh I can do this and this works. So that's one I try to use, but then with some groups again it's got to be more of a command style, just purely because of their behaviour and they need more of a structure. If you sent them away dribbling round the balls would end up everywhere and they wouldn't get anything out of the lesson. So I have to give them more of a structure. (Nicole, pre-service teacher, Interview 2)

I mean gymnastics is a really good subject to teach, I think. You can really use the pupils to have a go at things, so I use discovery-based a lot in that and then if they're in pairs, peer assessment that goes on. And I felt that works quite well. I think that boys enjoy gymnastics more now, because they do forward rolls or shoulder stands or something; they enjoy that aspect of it. And then, if you give them a little bit of responsibility and you say 'Right, I want you to come up with your sequence. It's got to have two jumps, two rolls, two balances; off you go', I think that they enjoy the challenge of coming up with it themselves. And I think they really respond well that. (William, pre-service teacher, Interview 2)

I mean, I do like reciprocal and so I do like getting laminated cards and work of those, I think that's really good because I tried it with the year eight pupils with shot-putt and I just designed it myself and got the pictures in there that they could follow and see how they were each doing, especially because I had like an EAL child in there as well so I got pictures that they could see, and work from they worked really well from it. That sort of worked really well, but you have to keep changing it. I like changing the teaching styles with the children because otherwise you come in and just be very command all of the time, or just reciprocal and I think that gets a bit boring for them really (Ben, pre-service teacher, Interview 2)

I think I use discovery more than most people. Some people said they don't like discovery because they don't always get what they were hoping for, but I quite like it because I think that if pupils work something out for themselves, then they're more likely to remember it and learn from it. If you were to come up with some formula for something, you would remember it. If I told you the formula, you'd probably forget it. And I just think it's good for them to go through the motions and work it out for themselves. It helps them a lot more. Like, for example, in rounders, a lot of my lessons I'll go in there and start with a game, and then we'll stop after maybe 15 minutes, "Right, what's our weakness? Oh, batting." So we'll look at different batting drills then. And it's then that they've picked up that batting is their weakness, so they see the point of the lesson, they see it's relevant to work on their batting, and then we'll get back into a game and they'll see their improvement. So they see the point of doing it all. Rather than going in and saying "right, today we're looking at batting, just because we are". (Debbie, pre-service teacher, Interview 3)

With the older kids, I do kind of have a freer stance on certain things now…One lesson, it was actually in rounders, I asked them to come up with a practice. I asked a group of Year 9s to work in fives and come up with, like, a skill drill that's gonna help them practice their batting. And that kind of gave them a bit of freedom to decide what they wanted to do. And I just walked around afterwards and questioned, you know, whether it was effective, whether everybody got a go, whether it, you know, was the best drill that they could have come up with. So I do try and vary it now, but again you have some activities where, you know, I do prefer to be in control, and then I have activities where I don't mind them going off and exploring. The main thing is that, as long as I feel that they're on-task and achieving, then I do, I do vary it really, I don't have a set way of doing things. (Natalie, pre-service teacher, Interview 3)

I mean I think I've got a lot of time for a lot of giving the kids ownership of their learning and doing a lot of discovery and so last week, looking at the forward drive it was all discovery; like 'How am I gonna get this ball to travel on the floor?' not showing them what to do. 'How are we actually gonna do this?' and that you can do in any lesson to an extent. And we can do that in a gym lesson and a trampolining lesson within reason, obviously with safety. So that's definitely something that I feel works effectively across everything…I think discovery's a valuable tool to have, something that once I trust a group and once I feel that safety isn't a concern, I think that it's definitely something that I'd like to improve as often as possible. Granted, I think there are times that you need to be more command and more authoritarian but wherever possible if you can get the kids involved. I was just thinking back over the things we've done in the last year in terms of University sessions and anything that we got involved in, I can immediately remember straight away whereas if I was being talked to, I don't remember it half as much. I think it's about getting them really involved in their learning and really engaged in learning as much as possible. (George, pre-service teacher, Interview 3)

I think if they can teach each other, you telling somebody something, you learn it yourself. I know that's what this is all about but it is different for them as well, it is something different to motivate interest…Taking a turn of being a coach as well, it is something that they need to learn through life as well. If they do PE, they can learn how to be sport leaders and things like that so it helps them, in that way. (Ben, pre-service teacher, Interview 3)

So for example in my last placement, basketball year nine, quite a few of the lessons were more games-based, we had a couple of lessons in the beginning, which was going over techniques in each lesson , but in the rest, was more about how to use tactics in games. So yeah, so for example one lesson was on defensive skills, so we were teaching man on man and then we went over onto zone defence so and so I guess then the rest of the unit, when it was all games based, the next two lessons focused on attacking strategy. I did some of the stuff we did at Uni, like I had them play for a while and then stop the game and let them get into their teams and talk about strategy. What they did well and what they could do better. And then have some action points for how they would play next. So, yeah that was good. (Jenny, pre-service teacher, Interview 3)

Appendix L: Development of general pedagogical knowledge

I think another thing that I've found very effective and I've also found very effective with very able pupils that are often perhaps not as well behaved because they get frustrated easily, because they're not feeling pushed, just to get them leading, things like that. But I've had year sevens leading their warm ups and even leading little practices and some of the very badly behaved pupils, you give them a little bit of responsibility and they lap it up really. You know, you can almost lead the lesson for parts of it and so I found that a very useful differentiation tactic as well as a behavioural tactic. (George, pre-service teacher, Interview 3)

When I first started teaching, this is in like the second placement, they were quite disruptive. They were more than capable, it used to frustrate me, they were more than capable of doing the higher end of the stuff, the things you'd asked them to do, the more talented things, but they were just disruptive, they would do it for a little bit and then mess around and kind of be running around and talking. But I found obviously from talking to those pupils and teachers about those pupils, they are the ones that I now get to give things out and they go round in groups and coach everybody else because they love the responsibility (Nicole, pre-service teacher, Interview 3)

As long as they're having some kind of attention I think they are quite happy and obviously you can turn that into more. Them having some attention for a positive thing as opposed to having attention from you concentrating on you telling them off for disrupting everyone else is much better because they're getting something out of it as well. They realize they are valued and helping you but they're getting attention for that as opposed to just constantly being told off for being disruptive. I've found that really worked for some of the girls I teach. (Jenny, pre-service teacher, Interview 3)

Like I was saying, definitely certain issues, as I've said with behaviour and language, I am very strict, very authoritarian now. I'll not basically stand for it, but on the whole I try to be, not totally laid back, but I try to get the pupils involved with what they're doing in their actual learning, so it's actually democratic style whereas I'm there basically to get my point across, but at the same time, I'm not going to ignore the things that pupils say. (William, pre-service teacher, Interview 3)

This is basically to do with behaviour change and motivational techniques, so things like rolling with resistance and avoiding argumentation I've kind of adapted that to my teaching. So that basically, I take a step back and try and make it more positive! A positive approach rather than, I know some instances in the school that I'm at, teachers are inclined to shout, and then you get that confrontation between, teacher and pupil, which is a thing I've tried to not do now. I've tried to take a different angle on it. Try and praise those pupils who are doing what they're asked and that therefore makes those few individuals who aren't, makes them see that actually, these guys are getting praised, they've been told that's well done, excellent, that's what I want and on most occasions, it has worked. So again, that would be a huge strength for me. (Phil, pre-service teacher, Interview 2)

So that's one major thing that changed and also, I just think for me, just my confidence in terms of speaking in front of everybody, presenting myself, especially in subjects like dance or gymnastics. You know, we have a laugh; you

know, there's times we learn but also I'm not afraid now to be myself and bring humour into the classroom. Now I just think instead of trying to copy another teacher I am trying to be myself and I find I am more comfortable with that and I generally think pupils respond better as well. It's been a few things really but, I've seen definitely a personal growth which I'm pleased with. (Natalie, pre-service teacher, Interview 2)

I look up to a lot of teachers, to different aspects of them and I do look up to them. in terms of when I was having problems with the year eight class, I'd often stand back and watch one of the teachers who used to be their teacher before I came here, watched their relationship with them, and that's where I picked up ideas from and it was still a friendly relationship but it was very much I'm the teacher you're the pupil, which was what I adopted and it seemed to work. A lot of what I watch is not necessarily what they teach, it's their relationships with the pupils that I like to stand back and look at and see what works what doesn't work. (Angelina, pre-service teacher, Interview 2)

You know, I think I've just become more confident in myself, I'm less intimidated in situations, to be able to pick a child out that's misbehaving and discipline, and, you know, or discipline the whole group. I'm able to, kind of, use all the procedures at the school, be it detentions, or, you know, commendations at the other side of it. I just feel more confident to be able to, kind of, pick out the pupils that are causing trouble and sort them out, really, in the correct way. I suppose before I was a bit nervous about picking out individuals. If somebody was being naughty I'd normally address the whole group. But as I have got more confident I'm able to now kind of deal with it better, I think. (Natalie, pre-service teacher, Interview 3)

For me classroom management and behaviour's been a big thing. Just in terms of getting the pupils to understand that what you say is kind of, that is it. There's no confusion. You say what you expect them to do. You know that is what you tell them to do. You explain why they need to do it and then that's what they need to do. There's no way of them getting around it. There's no 'Oh but can I do this, can I do that?' It's kind of, it's, 'This is what you need to do. If you don't do it, then there'll be consequences'. When I very first started I was quite, not intimidated by pupils, but it's more of a, like you said earlier, you want to get on with them…but now you're like 'Ah, don't to this otherwise this'll happen' (Nicole, pre-service teacher, Interview 3)

I mean I've, it's been a childhood dream. I've wanted to be a teacher for a long time and there's only been about a week where that idea was challenged. Throughout the year I've loved it, I've enjoyed every bit. I've loved all the teaching and I feel that I'm definitely ready for next year. There was a week in my second placement where I was struggling with a couple of classes in terms of behaviour, nothing serious; just low-level stuff, of which you saw some, and I really thought 'Is this for me? Can I really control an unruly group? Could I ever teach in a school like this or am I gonna be limited in the fact that I'm gonna have to teach in very well behaved schools and for that week I was really worried and I was taking a lot of stuff home with me and I wasn't sure whether that was gonna be for me but that week passed. I had good lessons, I was fine and by the end of the placement I just felt brilliant about how I was coming on and really positive about everything and, yeah, apart from that little blip that's never changed my opinion of what I wanted to do. I've loved it and I can see myself teaching for a long time. (George, pre-service teacher, Interview 3)

Appendix M: Developing knowledge of pupils

It's like pitching it at the levels of understanding for the different pupils, pitching it at a different level subject wise. Knowledge-wise it is a difficult thing. I mean knowledge of the pupils beforehand that's a problem with this placement I have found, the fact that you have only really got five weeks to get to know the pupils. I observed for the first week, taught for the first time in my second week, so as far as my teaching experience goes and my lack of subject knowledge, how I relate to the pupils, how I pitch it at their level, it's a difficult thing I have found. (Ben, pre-service teacher, Interview 1)

Planning-wise as well I would say, like today I had like a plan in my head of what I wanted to do but because it went wrong, I think my lack of experience (in gymnastics) of being able to adapt to change in the situation so I suppose adaptability is another thing that has come out of today, definitely. I would like to think that I could adapt and I know that if I had more experience I would be able to adapt to different situations, but it's also actually knowing them (the pupils) and experiencing them, and that's what I have got to do at the moment. (Phil, pre-service teacher, post lesson reflection, early stage of training)

I would say it's definitely shifted from what I was doing. I don't know whether that's because I'm more relaxed and more confident in teaching, but I'm now definitely more focussed on what they're learning. Now I know, it's all gonna be pupil-focussed, on what they're doing, 'cos, I think I'm much more well equipped for that than what I was at first. I've become more confident in what I am doing, different approaches to actually teaching so rather than me saying 'Right, this is what I'm looking for and what you should be doing', I got to the stage where I am getting to know the pupils better and I am getting them to work with each other with reciprocal teaching; so identifying strengths and weaknesses and how to improve them. And I found that worked much better. It was much more beneficial than me just basically telling what they should be doing. (Phil, pre-service teacher, Interview 2)

It's the rapport I've managed to build with the children and toeing the line between being a friend and being a role model and a teacher. And I think I do that well a lot of the problem children the mentors said to me I've managed to win them over and they're really giving their all and being really productive in a lesson. So that's a strong point for me, and I think again being adaptable again, in the same class at times to each child, you've got children with anger management problems children with different learning needs it's just being able to adapt and pinpoint these children that have got these problems and tackle them the right way and your approach to them the right way, so I suppose those two things are my strong points. (Thomas, pre-service teacher, Interview 2)

I do try wherever possible to get that relationship. This is the part of PE teaching that I enjoy the most is getting to know the kids, the after-school clubs, things like that and kind of within lessons, a bit of humour, a bit of praise, yeah, finding out really what they respond to, what they don't. That's the bit that I love and do it wherever possible. I think that I see my year 7 Outdoor Education lesson and maybe my year 8 rugby lesson not so much as a group now rather than twenty-five individuals. (Alexander, pre-service teacher, post-lesson reflection, middle stage of training)

What I like to do is I like to do something with them like say we did sprint starts the other day and I will just let them go off without telling them things, okay we will do sprint starts, get ready, okay ready, go and they will just go, next ones go, I can see the faces they are a bit like, hmm. And some of the really intelligent ones, like there is one of the lads out there doing rounder's just now, he is a really intelligent lad, he will ask loads of questions and they will say how do you run? And you think carry on, I will let them do a few and then I will stop them, sit them down and say okay that's great but how can we start faster? And I will say how can we make that better, so they get the question to me, I love getting the questions and the answers from them that way and they will start contributing, especially year seven and eight and letting them find the answers, I know everyone knows this anyway but I can see it in their own eyes, letting them find the own answers just produces a lot better results. (Ben, pre-service teacher, Interview 2)

I think you have to try and get to know the kids. So, it's lesson-based, it's also extra-curricular. Any kids that I know play sport, 'how did they get on last night and what football team they support', things like that. But on top of that certainly within my tutor group, all the year sevens I'm with, you get to know them a bit better and you can learn about what they do in their spare time and so on, what they're up to at the weekend and so got a bit of a wider base rather than just being sport and PE all of the time. And on top of that when we collect the valuables, the pupils have various chains and so on and I've kind of made a bit of an effort to every time I see a chain 'Oh where's this from?' or 'What's that symbol?' and so on just to get a bit more of a knowledge of where they're from and what they're background is. Just to show a bit more of an interest because I think the kids will appreciate that but. So yeah, mainly sport and PE but with some other stuff in as well hopefully. (George, pre-service teacher, Interview 2)

With the things I don't know that well, a lot more thought goes into it. I think about the kids in the lesson and the sort of stuff they can do. And then I think about different alternatives of how I can do different skills and progressions and games for them. But with the stuff I don't know that well, I sometimes struggle and I stay on the same drill because I am not really sure where to go next and how to effect the change for those pupils. And that has an effect with the teaching because it is a lot slower in pace, rather than if I know what I am going for it is smoother, I can go round rather than having to go that way. It means that I can move how I need to from what I see, like deviate from that plan with more confidence. (Thomas, pre-service teacher, Interview 3)

I think that's what I base my teaching on, I base my success on their success of learning and I think I base my lessons upon their previous achievements or their previous needs. I think pretty much everything I do is based upon them often rather than what the scheme of work says I should do. I base my work upon what they've done, what they've achieved, what they need to improve on, what they've said to me they want to work on or they want to improve. I think that is the most important thing. And often my lesson plans are not stuck to because somebody will ask me 'I want to learn how to do this,' or 'can we just look at this' or I'll see a weakness there that's stopping them from progressing and so I'll just go onto that sort of thing and I'll work with them because they enjoy it more if they learn something that they want to learn as well. Very important. (Angelina, pre-service teacher, Interview 3)

Appendix N: Curriculum knowledge: the impact of the NCPE

They (the strands) are all equally important. … I think it's important not to just give them (the pupils) the answer to the question or the task. I let the children go and do it before giving them pointers. Or I'll give them possibly one or two and they can go and work out the rest for themselves. I think it's important not to assume the children don't know when some of them might know. And some of the children might think to themselves: "well I know this". Let them go do it and praise them for going to do it. If they show you that they can do, it's about taking them to the next level. (Thomas, pre-service teacher, Interview 2)

Yeah. The head of department watched me four times. Her line manager, she watched me three times. So they got a bit of an idea of how things changed…I felt like I was building on a lot of the knowledge and understanding that the kids had in with fitness and I think they were like 'Um. You need to get them more active more often'. It annoys me because this is one of the things with knowledge and understanding is the only way you can get knowledge and understanding across to the pupils is obviously, you can do lots in drills and stuff but you've got to spend a good amount of time questioning them at some stage and I see that as one of my strengths: my actual questioning skills with the kids. So I got a bit frustrated when they gave feedback and it made me think maybe they didn't actually know what quality PE is. I don't think a lot of them understand. When you got someone come in from…like an assistant head or whatever coming to watch if they're not familiar with the four strands – I know it's all changing and stuff but if they're not familiar with those four strands how can they really assess you on what quality PE is? How can they really say whether or not you've done a good job? (Annabel, pre-service teacher, Interview 3)

Yeah I think I have actually a whole new system planned out in my mind which was that I was going to start each lesson talking in the introductory phase, I am just going to talk about, right okay so rounder's today, we are going to do batting, what physically and fitness-wise would you need to be a good batter, just start to cover the health and fitness in the early stages and maybe saying that you need good hand-eye coordination and reaction times and you think right great okay. And then you go into your warm-up and sort of get the demands for warm-ups, start talking a little bit about muscle, you cover your knowledge about health and fitness, then I think the next part of my lesson would always be acquiring and developing, right okay let's say if it was batting it would be like right I just want the bowler to feed the batter, I want you to be looking to hit off the back foot or hit off the front foot and just practise those skills and kind of not get too involved with why at that stage but just I want you to do this and I want you to do that and let the kids practise a lot and then change the task a little bit to make it more selecting and applying, right okay so let's put some fielders in, right lets now think about keeping the ball away from the fielders or hitting it over the fielders, how can you change you batting for that or what stance would you take? So that puts the selecting and applying on it and a lot of the plenary work or the stopping it in a game situation and sort of saying why was that effective? Or how could you improve that? And then you get your evaluation. So I think four strands-wise I think that has affected my teaching because I think that if you do run a lesson that way you cover all bases and it is not difficult to do really. (William, pre-service teacher, Interview 3)

Appendix O: Mentors views about the importance of subject knowledge

The distinguishing thing is using their initiative not necessarily the subject knowledge…You would want them to adapt on what they have seen or try new things really and take risks in trying new things because an average student will deliver the same lesson all week, if they are doing javelin it will be the same all week rather than trying different things out within that lesson or concentrating on one thing, one lesson and something else the next, so using their initiative really, I think that is one of the main things. (Carla, Mentor)

So using what you might call technically correct terminology which might be something you associate with particularly good subject knowledge is not necessarily essential. However I do think that if students detect a weakness in subject knowledge there is a risk of the trainee [pre-service teacher] loosing face and losing credibility in front of the students. Having said that if I was looking to appoint somebody to my faculty, there are all sort of things I'm going to be looking at but one of the key things I'm really interested in is the ability to deliver in a wide range of areas. So if we had an international rugby player who could do rugby and nothing else I would be less interested in that player than somebody who could teach effectively across a wide range of activities. (Tony, Mentor)

They need to recognise their own importance within their learning. We give responsibility to the pupils. There is a lot of what we call sport education within the lessons where we are getting the pupils to perhaps take warm-ups, giving pupils actually the opportunity to coach other pupils within the lessons, different activities, different skills...We want everyone in the department to be able and committed to doing that. (Mark, Mentor)

Yeah I think, like I said when there is, sometimes when there is a bit of a hole in somebody's knowledge where they are not so comfortable, they haven't delivered it sometimes themselves before. You come into certain lessons and yes they may have gone away and got the planning, but they are so keen to get across the technical information, but the way they deliver it, but if the pupils are receptive towards it is not taken into consideration and I think that it is a lack of subject knowledge and a lack of being able to implement the right tasks to get the subject knowledge across and I think they find that difficult in areas that they haven't worked across so much. (Craig, Mentor)

Appendix P: The impact of school-based CoP on the development of pre-service teachers

The PE departments' practices are influenced by the school and the wider education context

Well, it is a constant awareness of the different aspects that we need to look at and also that we may be judged upon. Obviously, 'Every Child Matters' for the school, but obviously also for PE there are some elements of that policy that affect us, so obviously with 'Every Child Matters' it was our Head of Department' and he said, look, what this is about is that we look at every single pupil as an individual and it's not that we go back to that policy and we follow it necessarily because it is a government initiative, and because we have to do it, it is because it is directly relevant to the things we want to do as a department anyway and also as teachers. (Suzy, mentor)

We've now got to go with the (school's) policy guidance on assessment. After every module, every child has an assessment sheet, in there is a folder with National Curriculum guidelines of what's a level two, what is a level three. How do I get from a three to a four? What is a level four? How do I get from a four to a five? So that's in their folder and after every six week session or however long session we have an evaluation lesson and their assessment lesson and we tell them what we've given them and the students have had to do that, which they did find very tricky. That is one thing that I do feel that they find very, very difficult to do, to decide where a child is at, so we'd give them a grade and then the child would give themselves an effort grade and then would set themselves a target grade from the grade that we had given them and that continues from seven to eight so that they have got a target all the way through…so each child has to do a written target as well and be able to say why, and we discuss that with them when we are giving them a mark. (Mary, mentor)

Our department is going through a review at the moment and with me taking the lead for OfSTED… I've actually had to make that a focus, us being prepared as department. So, each lesson, that is one of my focuses, the subject knowledge of the children is paramount, really. We all have to take on board that we will have to focus on their knowledge more and not just their skills. Not that we have not done it before, we have, but it's just one of the things we do now even more, so we're ready for when OfSTED come in… but he (the pre-service teacher) does it with ease so that must have meant that he's done a lot of that at School One already. (Craig, mentor) Since September I've made particularly good progress with my lesson planning.

In my second placement they used TEEP at the school, that is teacher enhancement and effectiveness programme that has really enhanced my teaching, because it looked at different ways of developing information and presenting information, which I thought was particularly useful because it helped me when I was doing skills acquisition, I was teaching the theory actually in the practicals, so that helped me to present the information in a much more rounded way… and this year in the department they had to write some of that (TEEP) into their schemes of work and into their lesson planning. (Nicole, Pre-service teacher, Interview 3)

Legitimised departmental teaching practices influence pre-service teachers

I think that my reciprocal style possibly started from here at School Two, because they do a lot of evaluating in pairs in their lessons and maybe that's how that started and maybe I'm the type of person anyway, who enjoys that. They use it quite a lot in the PE department here, but I would say, even more in Girls. A lot of the time I use it with the pupils in the small hall, and there maybe it has to be like that, with thirty pupils in that small place. But there is more of a dominance of reciprocal in this school here than there was in the other. (Jenny, pre-service teacher, Interview 2)

What would be assumed to be fairly bog standard PE lessons, she was capable to teach those standing on her head quite early on. So then we were trying to put some icing sugar on the cake. We really wanted her to take a few more risks and in her lessons, she'd really got some nice groups of girls and then we got her to do quite a bit of reciprocal teaching, get them to teach each other. We do that a lot here anyway, so we could help her with resources and ideas. Yeah, so she was really taking it all in her stride and it never really went horribly wrong. Even, if it had done, she would have picked it up from there. (Jill, Jenny's mentor)

I think reciprocal works really well in this school because they like to feel that they're in charge and things like that but in terms of finding it out for themselves they're maybe not so great at that at the moment so I think it will work well but I think it's going to take a bit of time to sort of ease them into that for the discovery to work. I like to use BLP (building learning power) techniques and have one pupil maybe take a group and act like, so one pupil acting as a teacher to take a group, so it will be really like this in theory lessons as well so a few times I've split groups into three and each groups got to present to the rest of the class, being the teacher and that works really well in both the schools I've worked at, that's been really good. (William, pre-service teacher, Interview 3)

We try and encourage a lot of responsibility and independent learning within the department in the tasks that we do, doing things like building learning power. We always say that when pupils come down and they do PE or they do extra-curricular PE there is certain areas which we always want them develop. Their organisational skills, which runs across into other levels, but they develop their communicational skills, but it is also I think PE lends itself to actually taking responsibility...they (the pre-service teachers) need to be able to facilitate that. (Mark, William's Mentor)

This school is very big on levels – level descriptors. Every lesson they make sure every kid knows exactly what level they're working to. And the kids do respond very well to that so when, when I stop, show a demonstration, as soon as they've demonstrations I will say 'Right, what levels are you working at?' and they all chip in and say 'Well I think he's working to a 5B because…' and they'll give a reason why. And it just kind of, I think I put a lot more responsibility on them to get the lesson going. So I'll prompt them, try and facilitate a bit of discussion but I try and get them involved as much as possible.
(Alexander, pre-service teacher, Interview 2)

Throughout they are asked to by me continually obviously to question the pupil and what I like them to do is give a rank order and not every time have they done it on every single class but intermittently I'd say "Right okay, this lesson I would like you to get a rank order of the children and where you think they're at" and I'd do one as well and so it's not against any specific guidelines at first, just like a moderation type thing. And then we are looking how this fits in with the levels and the language that goes with them. I think as soon as they are given words and have got to fit children into certain levels, what words say they are, they find that difficult but it allows them to sort of slot it into the words and at the end into the levels. That then make it a bit easier for them and finding who would be probably the best who would probably be the weakest and then try and slot the others in between that, I think that helped them and also allowing the students to understand that it's not just their physical ability, that it's their subject knowledge that you have got to assess that as well, how they can progress to the next level with that. (Andy, Alexander's mentor)

I am undecided really. Assessment is something that interests me more than anything, probably. I'll use gymnastics again as my example, when I do it and I say '5C. You've got to put two rolls, two balances whatever, in there and you've got to be able to hold those movements'. For you in order for you to get a 5B there's got to be attention to detail so you need to make sure that your toes are pointed, you're arms straight, legs straight, things like that. 5A there's got to be fluency about it so you're thinking about linking movements and getting in and out of them, things like that. They do respond to it really well and, so when I say 'Right' after a demonstration, 'What level do we think he's working at?' They use it a lot in the department here and it really, really works. (Phil, pre-service teacher, Interview 2)

With Gaelic football it's such a big activity here, and there's so many pupils in my class that I know have already got such progress and such ability. I went and spoke to some the teachers that have previously taught some of them and said you know, how good is so and so and this, just so I know who I can use for demonstrations, who I can use to help teach. That's just so good here, because they do a lot of that here, like the sport education when you get them involved in leading stuff all the time. I know their ability and I think that's really important. I can use them to lead some of the games activities and I think it's nice to know and I do obviously plan around that as well. (Angelina, pre-service teacher, interview 2)

The school itself also provides good practices, like at Nicki's school the emphasis of pupil led warm ups with teacher supervision, is highly valued. From which pupils gain personal learning and responsibility. Pupils are also encouraged to gain the Junior Sports Leader Award (JSLA), and take up responsibility of going into Primary Schools and lead sports activities, encouraging leadership skills, confidence and self-esteem. (Angelina, VLE reflection)

Yeah, I suppose, a variety of teaching and learning styles that we use, for instance sport education for instance as an example from year seven we are giving all the way along individual pupils a range of responsibilities, it might not necessarily be in the formalised manner that sport education does this in the actual model, but with our pupils it starts off with pupils in almost every lesson we are giving pupils the opportunity to coach, an opportunity to analyse, an opportunity to motivate others, I mean they are all relevant roles and responsibilities that young people will take throughout their lives. (Suzy, Angelina's mentor)

The make-up of pupils within CoP influences pre-service teachers' learning and development

I had to differentiate a lot more on my first placement. As I said, my worst lesson was thirty-six children, three children in wheel-chairs, two with autism, a couple with ADHD. You know, it was a lot to contend with in your first couple of weeks of teaching. So, you know, differentiation was key there. You know, I used to do non-participants as well; extra sheets, you know like, to do tallies and to observe, but, whereas here I think pupils are able to engage better in all the tasks. Because although you can differentiate and I do, there's not the need to have extreme separate practices: say for the children in wheelchairs and the able-bodied, so here I find everyone can get together better. (Natalie, pre-service teacher, Interview 2)

I think that the overall level of discipline here is a little bit higher, except for a minority that seem to get away with everything, like people don't want to confront them so they leave them to do whatever, send them to senior management and I don't see them that much, so overall they have probably got a slightly higher standard of what is expected here, but at the same time at least there weren't the exceptions so much. The children before were maybe more outgoing or at least it seemed, towards teachers, whereas here they see teachers as older and they are more respecting. It just seems like the teachers-student dynamic is a bit different here, it is hard to explain. (Annabel, pre-service teacher, Interview 2)

I just love the characteristics and the personalities of the inner city students and I feel personally that I can get so much more out of teaching them and the achievements they can get rather than the –in inverted commas 'posh' school I feel that even if I teach them, I have experiences there that they're not that bothered. Whereas in an inner city school whatever you give to them it's appreciated a lot more. Even the small things you do to someone they really appreciate. And sometimes I feel that in schools like School A there are some pupils that wouldn't care if you put in an hour or work, ten or twenty hours of work they don't really care…It's like 'no I don't care if I pass, I've got my dad's company that I'm going to run when I leave school…Where as if I go to School B, if you give them the opportunity to use a video camera and video a football referee in the lesson or something, the actual being able to give them a video camera to use and something that is just to them something they'd never be able to do if it wasn't in school. It's just so much more rewarding when they, they're like 'oh wow', I get so much more out of it. I don't know, I think I'm being a bit stereotypical because I have loved some of the people at School A, but at the same time you've got the extreme, brilliant ones and absolute nightmares. (Debbie, pre-service teacher, Interview 3)

I haven't seen a lot of it (discovery style teaching) in this school. I've used it a bit in this school but I don't find it works that fantastically well with a lot of the groups. I think they are quite used to being spoon fed and it's just a case of getting them out of that. I think I definitely will use it a lot now that I've got a job here and over the next few years, but I think it's a case of bringing it in slowly (Ben, pre-service teacher, Interview 3)

Appendix Q: University-based learning

Valuing content knowledge and PCK – applicable to immediate teaching needs

The dance and gymnastics that we've done in university I've loved. I've enjoyed it, I really liked taking part in it, but then it's still different. I'm sure it'll hold me in good stead for when I do start teaching but it's still, you're still lacking that actual experience of doing it, teaching it and taking classes by yourself. So, and like I feel like when I've had the opportunity to do it I'll be able to do it but just before you have had the opportunity you still have a niggling doubt in your mind that you are aware that you haven't done it yet so. (Alexander, pre-service teacher, Interview 1)

I mean, I had so little basketball knowledge before. I can remember it at school and I used to enjoy it but that was like very little, but the (University) course has given me so many ideas together with teaching games: movement skills, attacking skills, defending skills, and we have gone through them and looked at how you can condition games to work for certain things, making it into a mini-game situation and I have just say that I wouldn't have thought of any of them, maybe some of them and it was just getting knowledge of other people who play basketball as well. I felt I am like hey I have got something to draw on for basketball, before I was just like what am I going to do? (Angelina, pre-service teacher, Interview 1)

Gymnastics I feel that I would be confident delivering gymnastics to a lower level, mainly because we have had the experience in the serial practice which I do think was the most invaluable part of the course so far. And also with the dance I need a little bit more time. I think especially those two activities were very well thought out, I thought, because I think that's probably the whole of the group have preferred to have done their first experiences (*during serial practice*) in something that they feel very weak in, in preparation for this first placement. So yeah dance and gymnastics in serial practice was very good, but I still think I'm nowhere near teaching key stage four I would say according to the curriculum. (William, pre-service teacher, Interview 1)

Then coming in, the dance that we did on the course I really enjoyed, and then I realised that I was actually, like, quite good at it. And then I started taking dance classes outside of school, and I've just realised now I really enjoy actually teaching it and being able to kind of choreograph, like, motifs for the pupils to learn, and then let them extend it. I, you know, really enjoy that side of things. So… yeah, I started going to these dance classes once a week as well, to try and extend my knowledge and, kinda… so that's how it's come on really, it's just been, like, my decision to go for it, cos that was my weakest area, so I wanted to try and boost that as much as I could. (Natalie, pre-service teacher, Interview 3)

I did think, when I got here there was a GTP student who was here all of the time and I thought how lucky he is to be here all of the time straight in. But after speaking with him, some of the things that I know about from lectures, subject knowledge in sports, lesson planning and stuff, he worries about a lot because he has been dropped in. I think maybe a bit more school-based I would have enjoyed but I think the balance is quite good to be honest. I think definitely I needed that Uni work, because, even we had quite a bit of Uni work I thought, for most people on our course it made us more confident about getting into a school. (Phil, pre-service teacher, Interview 3)

Developing teaching styles and affecting the view of how to teach PE

I think it was introduced a lot at university, I had seen it when I did a bit of work experience at a school I had seen various things used, but the most thing I could ever think of was the command styles and a little bit of discovery in gymnastics because that just seemed to be the done thing, and when we learned different styles in University, there's a big list of them and then we talked about different teaching styles and then we did some examples in the practicals and then I just thought some I could see myself doing some and some I thought probably not, But in the end I went for it. I just tried out different things and it really worked for me. It was mainly in university that I saw what these different teaching styles are and perhaps to be fair and I don't mean it in any disrespect to the school and its teachers but this school as far as I am concerned, there is not so much variety. I think some kids like to be told what to do, they find it easy, they like to be told but others can get on and do it themselves, they like responsibility so I think, it's a bit of trial and error, but I think you gotta try it. (Ben, pre-service teacher, Interview 3)

From the Uni work, I've really tried to use reciprocal style of learning, because I really want my students to go away and be independent learners and to develop that confidence, because when they leave the school gates I would really like them to be self-sufficient and have the confidence to find out things they want to do for themselves because, if you constantly go and tell them they may be listening and they may not be listening, but if they are having to use that information to give feedback, to their peers then they do need to understand it (Nicole, pre-service teacher, Interview 3)

Just when we've been in Uni really just the things we've spoken about, trying different teaching styles. You know I've talked to my mentor and it wasn't something that the school was doing too much of it was very much command style. And in some ways I mean don't get me wrong I've had some lessons where I've done reciprocal and I've had to scrap it because it wasn't working for the groups but that obviously comes with experience. I suppose you've got to… you're never going to deliver the perfect lesson all the time I think it's important to try new things out. Otherwise you just become, I don't want to spend the next thirty years of teaching in command style else you become a one dimensional teacher. I think it's nice to have variety for you as a teacher but also for the pupils so they don't know what to expect. (Phil, pre-service teacher, Interview 3)

We were all coming from more of a coaching background than a teaching background and trying to find the differences between the two that was a big aspect for us, and it was at first, some of us struggling at times to find the difference between the two, and it is important because when you are in school you can't just *coach* kids. They don't all want to do the same drills, what they do want is differentiation, they do want the attention from the teacher. Once we got to University, we got kind of a reality check. Then it was not just about the drills and the skills and the sports. It was about you teaching the *kids,* that you are teaching children, and not a sport. (William, pre-service teacher, Interview 3)

I'd never played volleyball before until we did it at Uni and I didn't really understand many of the rules, things like that before. And then at my school I was given the opportunity to have an extra-curricular team that was volleyball, so I took it. Took them to the tournament and like I say my subject knowledge in volleyball was not as good as many of the other subjects that I did but I just seemed to enjoy it after we did it at Uni. Seemed to enjoy teaching it, had a responsive group of pupils who I could get my message across to and I think it's far more important that I knew

how to teach in general, than actually knowing lots about volleyball. So I think yeah, just the knowledge of how to teach is very important. (Alexander, pre-service teacher, Interview 3)

I think we've mentioned before like teaching styles, types of teaching and getting a little bit more background. All the, Every Child Matters, high quality PE, all the things that we've covered there and it's the stuff you use to take into your interviews, its important things to know and it's the national curriculum strands which are really important to make sure you know how to use all of this in your lessons. (Debbie, pre-service teacher, Interview 3)

What we did on assessment (*at University*) was perfectly timed I think, just before we'd gone into school, because it does give you an eye-opener in terms of how ideally teaching and assessment should work together and how old-school some of the schools still are. They just sit back and let the kids get on with the skills because that is what they are learning and that is what is being assessed. And then you give them a level at the end of the block and away you go. Whereas, it does make sense that, if kids want to learn that you've got to give them those stepping stones, to say this is where you are at the moment, this is how you are going to improve, so it gives them an idea on where they are now and where they are supposed to be…Looking at assessment together with the concepts of PE teaching in terms of bringing them up through assessment and feedback, it's given us a better understanding of that. (Thomas, pre-service teacher, Interview 3)

I'm not sure really, the strongest message from the course, for me it would be the actual theory side, I think I'm not sure, there have been lots of key individual things, I think there is a message coming out as a whole, lots of small things… I think there are a few things that there is too much time spent on but I don't think that that is overshadowing anything. Maybe assessment for learning was one of them…lesson planning in terms of how we got shown examples lesson plans, my opinion of a lesson plan now is for me to know what I am doing and if somebody is watching me they'll know what I should be doing. I really came here without a clue as to how much to put in, what to put in, why we do a plan, so for me things like that's just balanced it up. (William, pre-service teacher, Interview 3)

I don't see the big pressure of being able to do that with those four strands, I think that is quite easy. I am not sure about that to be honest within schools. Every school has got its own interpretation of it, the programmes of study at some schools it just seems to be invasion games and we will do one tennis lesson at some point, personally I think that there needs to be a lot more choice within what a school does and I don't know how OFSTED see that …because my personal national curriculum that we did in the (University) assignments, which was good actually that was a very good side of it, was to say right kids get as much choice as possible, how can I incorporate that choice into it? Because personally I don't think that you should force the kids to play that one sport all the time. But on the whole the teachers would just rely on games all of the time, how beneficial is dance or gymnastics if they are just going to do one unit in the whole of key stage three? I think if a child is quite good as a gymnast, I would quite like them to do fifty percent gymnastics in a way, rather than having to do fifty percent games or sixty or seventy percent games? (Ben, pre-service teacher, Interview 3)

Appendix R: Improving teaching: feedback, reflection and evaluation

I think, your first observations you're anxious. The very first lesson I taught in my first placement you're anxious. But it think with that over time your confidence grows, it grows with the children, your rapport grows with the children so now I don't feel anxious at all, I go into a lesson quite confident and positive that they're going to have a good lesson and that the objectives are going to be met and the children are going to learn. And the, when you're discussing the lesson with your mentor you can tell them how the objectives have been met in your view and they can still give you their perspective on different parts of the lesson. For me, that was probably the most helpful part of the course. (William, pre-service teacher, Interview 3)

I was going to say I think observations are way better than evaluations because evaluations, I look at them and I think oh okay and I fill out the box and I find myself repeating things that I wrote in other evaluations, totally different lessons but I repeat things because you do so many evaluations then you just… I don't know it can be very repetitive…but when you get an observation sheet you read it and somebody who has been looking on said did you realise this has happened? Or could you have done this better? And you think oh yeah and you take those bits that they have written down, their observation and you think I am going to do that next time, and I think those observations give you a lot more ideas because if somebody talks to you after a lesson and says do you think about doing this? Sometimes it sticks but sometimes you forget, if it is written down in observation form then you remember. (Phil, pre-service teacher, Interview 3)

The lesson evaluations are good because it *makes* you reflect. You know sometimes you're like 'Ahh, I just want to forget that lesson', but whereas if you write it down it does make you think. Sometimes when you come out of a lesson I used to say 'Oh god, that was terrible' and then when you go through the lesson evaluations and you have to answer or read each section 'cos at the top you had a little to write in it; you'd go through and you'd actually go 'well actually that bit was pretty good, they weren't that badly behaved and I did do this strategy which worked well,' and it highlighted areas of the lesson that you may not recognize otherwise 'cos it's too easy to come out of a lesson sometimes and go 'Well that was terrible, that bit didn't work at all' so it sort of drew out the positives and negatives sometimes with different lessons that you maybe wouldn't have recognized beforehand. (Angelina, pre-service teacher, Interview 2)

Differentiation, definitely, because that's one of the things I find harder especially with more able - I find it quite easy to differentiate for low ability pupils but much harder for especially gifted and talented. And often I've come across pupils who know more about an activity than I do when I go to teach it and I find that really hard. What else do I evaluate? (Angelina, pre-service teacher, Interview 3)

I think about the answers I get from kids, blank faces or do I get answers? Have they learned something, so when I am doing my evaluations again the first bit, pupils learning's I always think do I think they have learned something? And I think I don't know eight or nine times out of ten I think they have, which is pretty good, that is mainly key stage three though in terms of practical-wise and I think they have learned something and I think that is really good because if they have learnt something then that to me has been a good purposeful lesson, like today with those guys before you turned up I had them doing some bowling and batting stuff and they worked really, doing what I asked them to, I'd stop them, do it again and

if they could do one well let's just try doing this bowling let's make it a bit faster and I don't feel that they came out of that lesson knowing as much as I wanted them to, so in the evaluation I would be thinking why is that? I am not going to say it is their fault, it must be something I can improve, so what can I do next time to make that a little bit better? (Ben, pre-service teacher, Interview 3)

Pupil learning. If, even with the low ability groups, if they've showed some sort of improvement, then I'm happy, really. And even if it's not been a particularly good lesson in terms of my teaching, as long as they have achieved something, or they come out of the lesson feeling like they've achieved something, they think that they've improved, then I'm happier with a bad lesson in terms of teaching, but lots of pupil learning, than me standing there and delivering the perfect lesson, and the pupils not actually understanding or learning anything. So, I base all of my evaluation upon what they've learnt, what they've done, rather than what I've done. (Debbie, pre-service teacher, Interview 3)

Well I always evaluate after every lesson because we have to. I generally just evaluate what sort of points you've put on the top of the evaluation sheet behaviour of pupils, tasks, questioning, and feedback…And especially when you've got this box where you have to tick good, very good all of that. I like that. I think it makes you look at certain aspects or think oh I need attention on that bit. The most important one I like is 'did pupils learn?' For me, evidence of pupils learning that one is most important, because then you really look at the lesson from the pupils' point of view and then you think, oh that wasn't such a bad lesson, yeah I think they are quite important even if they are a pain to do (Thomas, pre-service teacher, Interview 3)

If I get an evaluation back and there's 20 points on there and they're all bad I get a little bit of a feeling like I'm being overloaded and it means that next time I've got a lesson I'm trying to think 'Right. I've got to do this and I've got to do this and I've got to do this and I've got to make sure this happens, I've got to make sure non-participants are doing this and I've got to make sure…blah, blah, blah' and I just, I feel a little bit overloaded. I am consciously trying to remember a million and one things and so I find myself writing down lists all the time of things that I need to remember to do and they're the same things that keep cropping up on evaluations but it's just things that I didn't think about at *school one…* I'll probably improve a few things at a time and then a couple more and then a couple more and so maybe next week…. Every time I get a bit of advice I am trying to take it on board. (Alexander, pre-service teacher, Interview 2)

I think the fact they make me write them down which I wouldn't do otherwise, and think about it, is better. In some cases I would, sometimes when I haven't thought a lesson's been good, I would just forget and move on and just think oh that was terrible, but the fact that it makes me reflect and you've got points there to cover I can think alright then well that bit there was quite good, you know the tasks I set were quite good but maybe my motivating interest wasn't right there. So in that sense it helps me understand why a lesson wasn't going well or why a lesson did go well. (Phil, pre-service teacher, Interview 2)

I try and evaluate myself based on organisation as well: is it effective or is it bad? Obviously, trying to make it as flowing from one activity to the next as possible. I do evaluate myself on class management but I felt that I've let it slip in the past week or two, so I need to get back on top of that. Like assessment, but that's something I've only really just started on though, so I used question and answer before and I knew I was doing that so I was evaluating the use of that, but now I've

actually started with the levels and I'm actually trying to make a mental note of the most pupils that I can each lesson to see what level they're at and I've just been trying to keep a little record of that at the end of the day to see if it works. (Annabel, pre-service teacher, Interview 2)

I think Phil's evaluations have changed from when we first met with him, he was evaluating himself and he was quite down on himself, he was quite negative on himself saying oh I didn't really feel that that went well, because he was so concerned about the control or classroom management so he was really quite down. At the start of his placement his evaluations were all very, I did this it didn't work, I tried this it wasn't great or this worked well, … By the end of the placement he was really evaluating himself as a teacher rather than evaluate himself in the ability to control a class…his ability to go and watch someone else and transfer what they have done into his teaching, and I think he is also developing his own style, whereas before he was copying styles and he was trying out, trying to poach bits here and there and say well that doesn't work for me, that does. Now I feel he has got his own style he is evaluating himself as a teacher rather than as a coach. So I think yeah the evaluation has changed but I think it has become a more mature evaluation. (Craig, mentor)

I think she is (now) more able to pick up individual things that have happened in the lesson so she's just basically tweaking the lesson plan, something that they could have done better because such and such happened. Whereas, previously, I think it tended to be more general and she didn't target the actual learning as much. She was evaluating the things around the lesson but not the actual pupils learning whereas now she seems to target the individual pupils learning far more. That's more important to her and I think she's recognised now that the pupils' learning has got to come first, they have got to learn in that lesson. (Sabine, mentor)

I think we have changed quite a lot, the mentors lately because we always used to say right we would always give the feedback at the end of the lesson and even if it wasn't just a formal feedback just a very quick chat at the end of the lesson, a bit of a debrief and saying right that went well, that didn't go so well, like I said within that now it is more of asking the students how they think the lesson went and seeing to the areas that they think they need to work on and that's the same in a mentor meeting, kind of saying right what areas do you want to work on? And then trying to give them examples of where you think they're falling down a little bit. (Mark, mentor)

I would have employed Ben without the slightest hesitation, so I think for him he is at that level where he should be looking at whole school issues, he should be looking at citizenship, he should be looking at higher levels of physical education teaching of how can he almost become and advanced Physical education teacher rather than a standard physical education teacher. I think he has got the subject knowledge, he has got a personality, he has got confidence, he has got everything in place to do that, so I personally think that he just needs to make sure that he continues to reflect and evaluate and push himself and he continues to be supported to just learn, to be made aware of new things as they come in and I think then he will reflect as to whether they are useful in his lesson in the context that he is in…I think he needs to experiment with his own teaching style and linking what happens when I do this? So I think he is that bit further now, and I think whole school and I think every new initiative would not be beyond him now. (Nick, mentor)