

**A Mixed Methods Study: Evaluating the Impact of a
Bespoke Professional Development Based on an
Analysis of Existing Quality in One Local Authority.**

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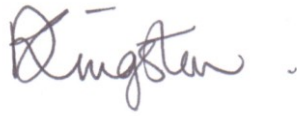
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I, Denise Jane Kingston, confirm that the work presented in this thesis is my own. Where information has been derived from other sources, I confirm that this has been indicated in the thesis.



Handwritten signature of Denise Jane Kingston in cursive script, positioned above a horizontal line.

12/2/2017

Abstract (300 words)

A four year quasi-experimental, repeated measures, mixed methods study was run in one Local Authority in England. Designed to improve early childhood quality and support policy development; it aimed to capture: first, the quality of all (279) pre-school settings within the county; second, the impact of a bespoke professional development (PD) on a sample of fifty private, voluntary and independent settings with matched controls.

A database of quality, pre- and post- intervention, was established using Early Childhood Environment Rating Scales (ERS) [ECERS-R and E, (Harms et al., 2005; Sylva et al., 2003)], interviews, focus groups and questionnaires provided additional information.

The PD was devised to support educators' implementing:

- collaborative, evidence-based practice,
- their role, including interpreting and using the Curriculum Guidance for the Foundation Stage (DfEE, 2000),
- effective practice and research on:
 - the early Home Learning Environment,
 - children's behaviour for learning,
 - engaging with sustained shared thinking and
 - quality improvement processes.

The PD data (ERS scores, focus groups, interviews and questionnaire responses) suggested that a short evidence-based PD can impact on practice predictably and consistently.

Overall, quality ERS scores suggested the need for additional support and investment. Initial quality ratings (at pre-test) were predictive of modest improvements following the PD (at post-test). Ensuring the PD was accessible to all educators was an important part of the process. Where quality was extremely low at the beginning of the PD, no real progress was found, suggesting that this group of settings was unique and required more than the PD could offer.

Bronfenbrenner's Bio-ecological Model of Human Development (2005) was applied to the educators' learning during the study. It supported: first, consideration of the inter-related multi-level systems that impacted on the educators' learning; and, second, the development of a new model considering the process of learning they underwent during the PD.

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1. INTRODUCTION, CONTEXT AND BRIEF OVERVIEW OF THE STUDY

This study was developed and authorised within the context of a Local Education Authority (LEA), now called Local Authority (LA). It was conducted as part of a strategic plan designed to inform future LA policy development and to drive quality improvement within the early years. During the life of this study (2004 – 2007, see chapter 8 for a discussion of possible limitations due to the timing of the study) I was working within the LA as a senior manager and leader of the Early Years and Child Care Inclusion Team. I was part of the countywide strategic planning group who developed the strategic plan in which the study sat. I was also the lead researcher for the study and, as such, I was responsible for the implementation, design, methodology and evaluations within it.

The study was long and complex and so a brief summary of the aims, design and a timeline are included in this introductory chapter. A list of acronyms can be found in Appendix A.

1.1. Organisation of the thesis

This thesis has 9 chapters. This first brief chapter is designed to give an overview of the study including the main aims, outline of the design and a timeline. The study is long and complex, it is divided into four phases and was part of a strategic plan for the improvement of the pre-school provision across the county.

Chapter 2 summarises the relevant literature on quality which underpinned the study and led to the development of research question one. It covers general understandings of quality, measures, models and research on the characteristics of effective settings.

Chapter 3 describes the content of the professional development (PD) within the study and the theoretical framework adopted during the study. The literature in chapter 2, together with the theoretical framework, supported the development of the PD and led to the formulation of research question two.

Chapter 4 considers relevant literature on evidence-based professional development and a summary of the elements of effective professional development. The summary supported the development of the PD, which formed the intervention in phase two, and led to the development of research question three. The PD literature has grown exponentially over the last few years and so recent research has been added to the summary and developed throughout and beyond the life of the study.

Chapter 5 considers the epistemology which underlies the development of the study. Further, it considers the methodology employed, and outlines the sequential mixed-methods design (Creswell, 1995) adopted, during the study.

Chapter 6 summarises the results of the study. This chapter includes both the quantitative and qualitative data. It is divided into sections, so that each of the research questions are considered in turn.

Chapter 7 discusses the main findings of the study, the impact of the PD, making links to the earlier literature, evidence-base and theoretical frameworks. It summarises what was learnt about the content, process of the delivering and emotional responses to the PD, identifying possible future directions. Finally, it introduces an extension to Bronfenbrenner's bio-ecological model of human development (2005), the theoretical framework used to support understandings of the educators' learning as they progressed through the professional development aspect of the study.

Chapter 8 outlines some of the limitations of the study and engages in discussions around the study's relevance today, despite the fact that the data was collected several years ago.

Chapter 9 draws conclusions about the findings from the study. It summarises the main findings and engages with some of the current debates around effective PD, including some of the challenges revealed in the extant literature. It describes the new understandings the data reveals and the contributions that the study may have to the current literature and to new directions effective PD research may take.

1.2. Philosophical orientation

Creswell (2014) urges all researchers to explain the 'worldview' that guided the actions taken within their research. Guba (1990) talked about 'a basic set of beliefs that guide action' (p17) while Crotty (1998) described these as epistemologies and ontologies and Lincoln, Lynham and Guba (2011) referred to them as paradigms. Worldviews arise due to discipline orientations, past research experiences and the researcher's (and others such as advisors' and supervisor's) inclinations. While many studies include descriptions of methodologies and designs, many do not clarify philosophical beliefs and orientations, despite the important role they play in the practice of research, and they remain largely hidden (Slife and Williams, 1995).

Having considered the various worldviews which Creswell (2014) describes (post-positivism, constructive, transformative and pragmatism), this study appears to fit within the pragmatic worldview. Pragmatism was derived from the work of Peirce, James, Mead and Dewey (Cherryholmes, 1992). It is a worldview that arises out of actions, situations and consequences. It is concerned with applications - what works - and solutions to problems (Patton, 1990). Pragmatism is not committed to any one system of philosophy and reality, it gives the researcher freedom of choice in terms of methods, techniques and approaches adopted during the research. As a philosophical underpinning, it allows the researcher to look at the what and how to research, based on the intended consequences of the research. In this study, it allowed for a mixed methods approach (see chapter 5 for the rationale for choosing the particular quantitative and qualitative data gathered here) so that the best understandings of the research problem could be established.

In terms of discipline, I am the lead researcher of this study, a teacher and psychologist. As such I am influenced by the social psychological and child development approaches with which I have worked in the past. These aspects undoubtedly influenced the theoretical framework adopted during the study, Bronfenbrenner's bio-ecological model of human development (2005), which sits within the child development domain of psychology. This framework was used primarily in relation to the educators' learning, to support the professional development, during the intervention phase, guide the research design and support the analysis of results. It was extended to form a model of learning

and development for the educators. However, it was also used, on occasion, to consider the children's learning and development, which is perhaps a more traditional use of the model. The framework is socio-cultural, and sits well with the pragmatists' worldview of research, as always occurring in social, historical, political and other contexts. My previous research has been post-positivist (e.g. replicating Piagetian tasks and considering perceptions of challenging behaviour in schools through factor analysis of questionnaire responses), however, adopting the pluralistic approaches in this study seemed very natural and right, given the research problem. The study was also designed and influenced by the EPPE project which adopted a mixed-methods research design (Sylva et al., 2004a), and by my supervisor who was a principal investigator on the EPPE project. Influences of other advisers (including the LA strategic planning group) are discussed in chapter 5. The pragmatic paradigm or worldview becomes self-evident when the research problem and all of these influences are taken into account.

1.3. Aims of the study

This study was designed:

- First, to capture existing levels of quality (including, the opportunities and experiences offered to the children, the interactions between educators and children, the professionalism of the staff and how they were led and supported, relationships with parents/carers, the educators' content/curricula knowledge and early years pedagogy as measured by ECERS-R and the ECERS-E) in all of the pre-schools, situated in the LA.
- Second, to determine whether a short, bespoke professional development (PD) package, consisting of 4 face-to-face sessions delivered over approximately 8 weeks, could successfully improve practice within 50 of those settings - the intervention group - that were randomly chosen and matched with 50 control group settings.
- Third, to add to existing understandings regarding effective professional development (PD) in Early Childhood Education and Care (ECEC). In particular, to capture the processes involved in any changes/enhancements in practice; that

is, to note what supported educators in creating higher quality environments that supported children's outcomes and to note any obstacles which mitigated against such improvements.

1.4. Research process and timeline

The study is comprised of four phases (one preparatory and three main phases) completed over four years (see Figure 1 below for a diagrammatic representation of the timeline for the study). Before the study itself began, an LA strategic planning group was gathered together. The lead researcher presented the design and process of the study to them for agreement. The Research Team (including the lead researcher) was trained on the use of the ERS in this preparatory phase.

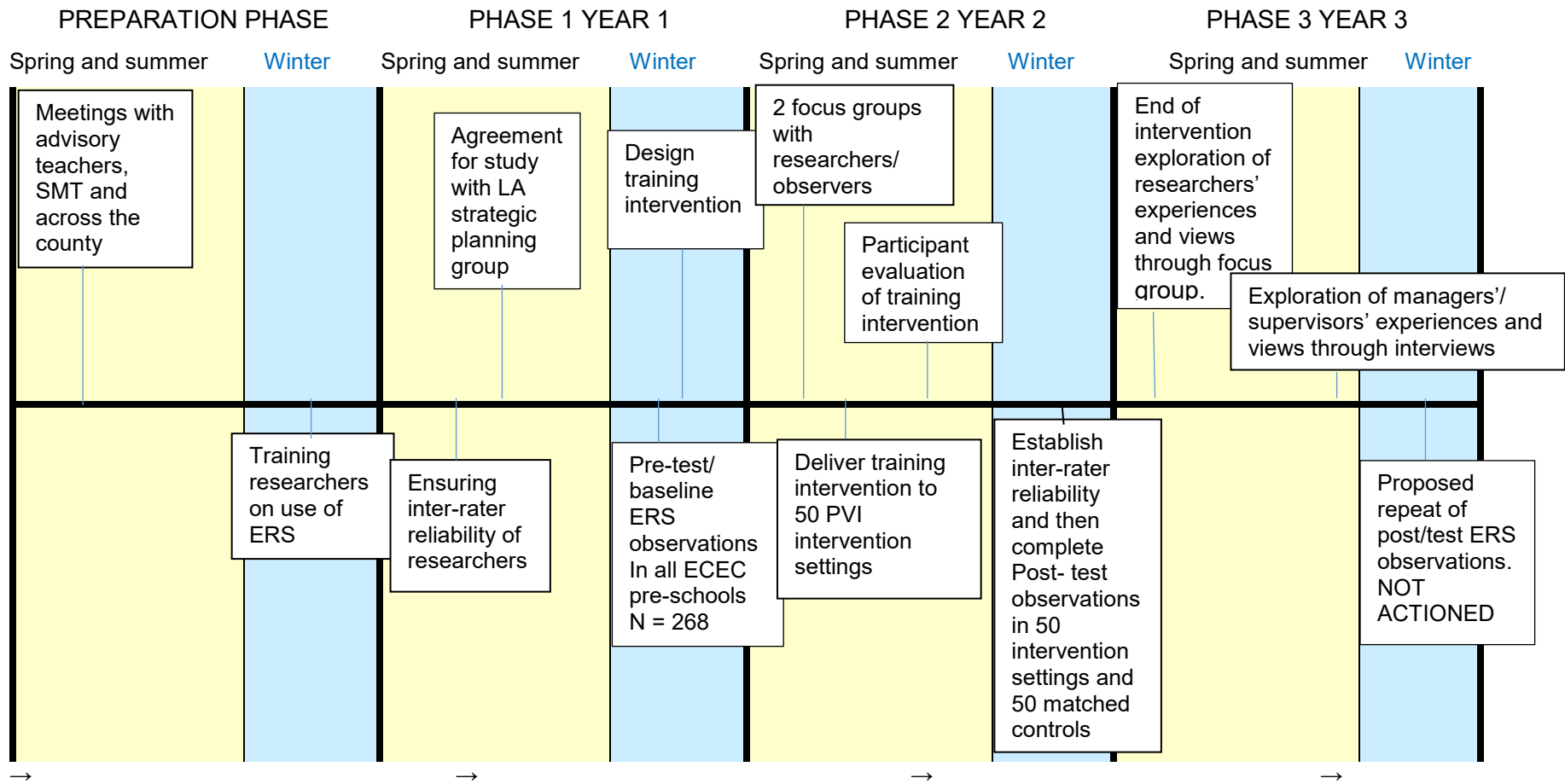
During phase one, the Research Team underwent an inter-rater reliability process to ensure that their ERS observations were consistent and reliable. The lead researcher acted as a 'standard' against which all researchers' scorings were compared. Observations were made to establish baseline data (pre-test) of quality, in the pre-school foundation stage settings across the LA (268 out of 279 settings agreed to take part in the study), using ERS.

During phase two, a training intervention/ PD (see section 3.2 p51 for a description) was implemented in 50 randomly chosen PVI settings which were matched with 50 controls (the baseline plus some structural aspects of quality informed the randomisation process. See chapter 5 for details of the process and the variables used in the randomization process). The Research Team reported on progress and discussed the PD, how it was being received and implemented, during two focus groups. The participants of the PD completed a short evaluative questionnaire. Finally, at the same time of year as the baseline data was collected in phase one, a second set of 'blinded' observations using ERS were repeated in the intervention and control settings.

In the final phase, phase three, a series of interviews with supervisors/managers and a final focus group for the Research Team were conducted. These were designed to explore possible reasons for changes and improvements. At the end of phase three, a further set of observations using ERS were planned to consider the sustainability of

improvements. However, these were not completed as the study was halted due to changes at strategic management level following a re-organisation across the county. Unfortunately, the baseline data and the obvious low level of quality, did not sit well with the new focus at management level. In addition, the re-structure resulted in the collapse of the Research Team, as job roles were removed, re-written and re-assigned.

Figure 1 Timeline for Study



2. LITERATURE REVIEW OF QUALITY

2.1. Introduction

This chapter is devoted to the consideration of quality in Early Childhood Education and Care (ECEC). First, the importance of quality in the early years is discussed. This is followed by an historical perspective to ECEC and discussion around the contested nature of quality. A summary of measures of quality, relevant models and research relating to the characteristics of effective settings that informed the study are outlined. This chapter concludes with a short summary of the literature covered which led to the development of research question 1: What is the quality like in current pre-school settings across the LA?

2.2. Why quality is important in the early years

The importance of the quality of early childhood education and care has become linked to two main perspectives in contemporary society. First, the developmental perspective and the impact that early years settings can have on children's cognitive and social-emotional development and second the human capital perspective and the impact of education on economic growth and prosperity (Ho et al., 2010).

Many researchers agree that early childhood experiences have a definite and pervasive effect on children's learning and development (see for example the Allen (2011) report *Early Intervention: the Next Steps*). Research evidence details the impact of positive early experiences and education and how they can lay the foundations for future development, learning and well-being of young children (e.g. National Research Council, 2001; Sylva et al., 2004b; Sylva et al., 2014). It describes how high-quality early education and care can positively influence language and cognitive development (Resnick and Snow, 2009) and children's holistic development and future growth, in particular with children who come from disadvantaged home backgrounds (Lamb, 1998; Woodhead, 2009). High quality early childhood education enhances children's social and intellectual development (Sylva et al., 2010) and can have a positive impact on

children's later school success and on the prevention of learning disabilities (Melhuish et al., 2015; NICHD early child care research network, 2003; Sylva et al., 2014).

Conversely, research details how low quality early childhood education and care can produce no benefit or even negative effects (Melhuish, 2004). Poor quality early childhood experiences can potentially harm the children, resulting in lower levels of language development and school readiness together with a lack of social-emotional development, an inability to forge positive relationships with others and disruptive behaviour (National Research Council, 2001; Sylva et al., 2004a). In addition, poor quality can negatively impact on parents and families by such things as altering parental employment opportunities and causing emotional distress. Over time this can affect the subsequent competency of children in the community leading to a lowering of academic progress of children in local schools, creating difficulties in those schools and the surrounding areas, which then increases the likelihood of higher rates of substance abuse and crime in later years (Zaslow and Martinez-Beck, 2006). Finally, poor quality, especially if it is recognised as such, will undoubtedly affect the wellbeing, enjoyment and staying power of the educators in a setting, which in turn will be detrimental to the quality and to the children. And although the research of particular interest here points to the effects on children's learning outcomes, it is worth mentioning that poor quality is also likely to impact on children's happiness and this is an attribute that many people (children, parents and practitioners alike) agree is an important indicator of quality (Penn, 2011).

The short and long term effects of the quality of ECEC on children's all round development has been demonstrated in numerous studies. The evidence makes a compelling argument for governments and advisors to invest in and support the ECEC sector. Although the majority of such studies have taken place in America there are some notable studies which have taken place in other countries. These include the Effective Provision of Pre-school Education/ Effective Pre-school, Primary and Secondary Education (EPPE/EPPSE) project in the UK (Sylva et al., 2004a; Sylva et al., 2014) and research cited in the independent report for Her Majesties Government, promoting the notion of early intervention, undertaken by Allen (2011). Such studies and reports suggest that the findings are not culture specific and so have led to changes in

legislation in England, which were typically enacted through the work of the LAs at the time of this study.

The second perspective considers the role and function of ECEC settings in expanding the human capital of a society. Internationally, knowledge is recognised as the key to productivity and economic growth and increasingly links are being made between investment in education and increased economic growth. Increasingly, governments are seen to stress the upgrading of human capital through investment in education to improve the competitiveness of their countries (Jalongo et al., 2004). As part of this movement, in many countries, such as the UK, USA, Canada and Australia, governments have and continue to have political and economic pressure to review their ECEC policies as their long-term impact on society at large are recognised. Melhuish (2004) in his international review of literature regarding the effects of ECEC concluded that

'for provision for three years onwards the evidence is consistent that pre-school provision is beneficial to educational and social development for the whole population ... Studies into adulthood indicate that this educational success is followed by increased success in employment, social integration and sometimes reduced criminality.'
(p4-5).

Field (2010) supported this notion in his review: *The Foundation Years: preventing poor children becoming poor adults*. He purported that children's life chances were most heavily predicated on their development in the first five years of life. Further that, early intervention in the earliest years of a child's life was *'...the most effective and cost effective way to help and support young families'* (p5)

While it is accepted that education and educators should not be held to account as the sole reasons for poverty and poor child academic and life outcomes, as some proponents of the Programme for International Student Assessment (PISA) data might have us believe (see Wilkinson, 2012). It is widely accepted internationally that high quality ECEC enhances children's cognitive and social-emotional development and supports economic and social growth within communities. Such evidence has driven policy makers to champion early intervention and re-locate their education funds to within the early years sector in order to gain *'better value'* for their money (OECD, 2012).

Unfortunately, it is also recognised that within the UK the quality of early years settings is variable with many being viewed as mediocre or even poor (Melhuish et al., 2010; Melhuish et al., 2015; Sylva, et al., 1999). This was the starting point for this study in 2004. Central government had begun to recognise the importance of early years, were developing policies to support this and were attempting to ensure that a universal offer of provision was available in all LAs.

2.3. Historical perspectives and the development of UK policy

Up until approximately twenty years ago LAs had little interest in the care and education of young children which was left primarily to their parents or carers. There was little government policy or guidance, particularly for the youngest children, and very little funding. So it is no wonder that the research at that time (for example Sylva et al., 2004a), detailing the importance of high quality early years experiences in laying foundations for the future, led to many changes both nationally and internationally. These understandings and the subsequent changes in national, centrally-controlled policy eventually filtered down to the LA in this research study.

Overseeing the quality of provision brought particular challenges and issues to the study LA. These included: first, the diverse and skewed nature of the early years settings within the county, its maintained provision was sparse and the majority of settings were from the private, voluntary and independent (PVI) sector; second, the early years sector was relatively unknown, with few existing LA staff possessing knowledge and experience within it; third, the lead department for early years at that time (Early Years Development and Childcare Partnership (EYDCP)) was new, it was central government controlled and funded and largely untested; fourth, there was some internal resistance to working in the early years sector within the LA as historically it had not been considered an educational priority. Factors which contributed to this resistance included its non-statutory nature and the notion that early years was primarily about childcare and not about education. Fifth, the PVI pre-school sector was seen as new and entrepreneurial in nature, it included growing numbers of local businesses across the county with the potential to contribute to the local economy, and, as such, were to be encouraged not interfered with. Finally, at

local county council committee and local Member of Parliament level there was generally very little interest in the education of young children, this appeared to be related to the low level of parental enquiries and complaints received about the sector. Early years provision rarely featured on county council committee meeting agendas and so neither the quality or quantity of provision had been subject to debate. The typical route for change with the LA, which was predominantly reactionary in nature and followed complaints and concerns from the public, had not been enacted for early childhood education and care (ECEC).

The middle of the 1990s heralded a previously unforeseen political interest in the lives of children under the age of five in the UK which led to major changes in policy, practice and attitudes towards early education and care. There was a plethora of research indicating the importance of early childhood experiences for themselves and for future economic development which influenced changes in England. In particular, the changes in England were targeted at: first, employment, including issues of gender equality, and the need for sufficient child care places to support working parents and; second, improved understanding of the benefits that high quality ECEC could have in reducing inequalities linked to parental background and socio-economic status (West et al., 2010). This initial economic emphasis, supporting parents back into work, which was designed to have an immediate rather than long term impact also had far reaching effects on the development of the quality of early years settings. It is interesting to note that many of these issues, challenges and responses are still relevant today. The majority of ECEC provision remains within the PVI sector, and is market driven. There is still a governmental reticence to become involved in supporting the quality of provision or interfere, apart from in relation to funding, hours and age of access, which support the agenda of parents' returning to work. In addition, despite ongoing national and international research showing its importance, the notion of early childhood education (as opposed to purely childcare) still appears to be met with scepticism, with minimum qualifications for setting leaders remaining low (see DfE, 2015a,b,c).

Throughout the 1990s maintained schools were encouraged to admit more and younger children into their reception classes and the idea of 'rising fives' in schools became prevalent. Unfortunately, this change was not accompanied by a real understanding of the impact of such a move either for the schools or the young four year olds and their

first experiences of school. This downward extension of the school system caused a deal of consternation at the time which is now being voiced in relation to the two years old agenda. In many instances the provision was thought to be unsuitable, as typically it was not designed with younger children in mind. In addition, the teaching was considered to be inappropriate with the over use of formal teaching methods including an over reliance on didactic approaches, together with rigid timetables, targets and testing (Katz, 2011). Interestingly this emphasis, on moving ever younger children into school, is still applicable today, with funded two year olds (DfE, 2013).

For those children who did not have a primary school place, in 1995, the conservative government piloted a nursery voucher scheme in four LAs, which subsequently led to the introduction of a voucher system for all four year olds in England (Her Majesty's Stationary Office (HMSO), 1996). In 1997, Early Years Development Partnerships were established across England to administer the vouchers and to support the coordination and development of the early years sector. However, the voucher system was criticized as it neither secured enough placements to meet needs nor considered the quality of the placements it funded (Randall, 2000). In 1998, the newly elected labour government vowed to continue to support early education and extended the role of the Early Years Development Partnerships to include childcare, and become the Early Years Development and Childcare Partnerships (EYDCP), with the introduction of the National Childcare Strategy (DfEE, 1998). The National Childcare Strategy had three main objectives: to make childcare more affordable, make it more accessible and to improve the quality of care. It also acknowledged that the UK was falling behind its European neighbours in providing good quality, accessible and affordable early education provision and pledged to improve this position through increased funding and policy development. The strategy was followed by the introduction of the Nursery Education Grant in 2001, the offer of free nursery education was extended to three year olds and the EYDCP were charged with addressing the availability and quality of early years education places.

Together with the expansion in number of early years settings [West et al (2010) reported that in 2005, 80% of three year olds and over 90% of four year olds were in educational settings in the UK] numerous frameworks and guidance to support practice and improve the quality and consistency of provision were also introduced at that time. The labour government's attempts to ensure that early education had a sound universal

basis of quality saw the regulation and monitoring of pre-school settings coming in to line with their mainstream colleagues as it was transferred to the Office for Standards in Education (Ofsted) in 2000 and away from the social care sector. In addition, the Early Learning Goals were introduced in 1999 (QCA, 1999) which were followed by the Curriculum Guidance for the Foundation Stage (DfEE, 2000).

During this period, (1998 to 2004), EYDCPs were charged with supporting the development of new and sustaining and extending existing early years provision. They administered start-up and other crisis management and development funds, specifically targeted at the private, voluntary and independent (PVI) sector. The target for this funding and expansion of services, the non-maintained pre-school sector, was driven by economic rather than educational considerations, as research at that time clearly showed that it was the maintained sector which showed the highest quality of pre-school provision within England (Sylva, et al., 1999). While the administration of the funds designed to open new and support existing settings was established quickly as the steady increase in early years provision and young children's attendance at them showed (West et al., 2010) the quality assurance of them was sadly neglected (Randall, 2000; Sylva and Pugh, 2005). This 'explosion' of early years provision led to some considerable concern both at a national and local level, as the continued revision of frameworks and legislation highlighted. Again, there are parallels which can be drawn to current government policies in relation to the new entitlements to 30 hours of provision for all three and four year olds (DfE, 2015c).

The government's misjudged focus on the quantity, over the quality, of pre-school provision (linked to their targets of reducing unemployment) was not the only issue at the time, there was also very little recognition of the diversity of number, types and forms of early years and childcare settings across England and within and between LAs (Randall and Fisher, 2001). Randall and Fisher (2001) found that in 1996 local authority day nursery places varied from 47.3 places per thousand children (in Manchester) to none. The reasons behind these differences were thought to be complex and partly historical; worryingly the differences did not correlate with areas of deprivation or need. Indeed, the correlation seemed to be a negative one with the most deprived areas having the least access to high quality pre-school education and care (ibid).

LAs who had a legacy of council day care, for example those who inherited war-time nurseries, tended to have a larger number of maintained nurseries in 2000. Local councils who had a strong party identity (both labour and conservative) and/or who had strong female leadership tended to value and support early years provision above those who did not (ibid). Provision varied from playgroups, day nurseries (both private and maintained), nursery classes (both private and maintained) and childminders with some LAs having well established centres of excellence and models of service delivery while others had very little experience and investment in early years. Some of these settings' pedagogy and practice was steeped in a history of care (for example, childminders and private day nurseries) while others stemmed from an education background (nursery classes, nursery and primary schools). The bringing together of care and education is currently well recognised as good practice (OECD, 2012), however there was an issue which was not fully recognized at the time which was that this distinction was important and that it impacted on quality (West et al., 2010).

The diversity in types of early years settings have been mapped and discussed by a number of notable researchers (Kohlberg and Mayer, 1972; Sylva, et al., 1999; Weikart, 1972, 2000) as an important aspect of quality. Differences found appeared to be linked to the history, beliefs, values, knowledge and experience of staff within them. Earwaker (1973), in the USA, described four types of settings, which had very different pedagogies and practices and which were mirrored in the UK (Siraj-Blatchford, 2009), with the first three prevalent in the study LA. He described the settings as 1) custodial care 2) child centred 3) programmed and 4) open-framework.

According to Earwaker (1973), the kind of practice found in custodial care was not educational and was of no educational value. Typically, the practitioners in this type of setting saw their roles as limited to taking care of or 'minding' the children, including toileting, feeding etc. (Weikart, 2000). Typically, this type of practice was seen in settings which had their roots in care and were likely to have been developed under the auspices of social care rather than education.

Child-centred pedagogy, Weikart (2000) reported, was where child initiated activities were the norm and the practitioners' role was mostly responding to these. However, this was rarely informed by the desire to support children's developing cognitive abilities, or

underpinned by theoretical knowledge of children's learning or development. Within this model the practitioners focused particularly on the children's social and emotional growth. The aims were generally vague, intuitive and very broad with many references to the whole child. Weikart (2000) pointed out that these aims reflected the positive values in society at that time including notions of developing children's independence, creativity, self-discipline and good peer relationships. The 'child-centred' pedagogy viewed children with respect and regarded them as unique individuals to be kept happy and interested. It was assumed, without being very explicit, that the child's stage of development entitled them to certain age appropriate treatment. As there were only vague aims it was difficult to evaluate improvements or outcomes resulting from this pedagogical approach (Athey, 2007). According to Stukat (1976) this approach was most widely seen in Europe and the UK at that time.

The programmed pedagogy was very different to this, it consisted of teacher-centred pedagogy where the 'teacher initiated and the child responded'. Weikart (1972) was particularly critical of this type of programme. The curricula tended to be rigidly structured, with the practitioner dominating the child and with heavy emphasis on convergent thinking. There were definite right and wrong answers which needed to be learnt and the curriculum was content led. The child was expected to learn through repetition and drill. This was referred to as a formal or top-down curriculum and often incorporated the use of worksheets, large group or whole group teaching and a rigid structure to the day with little room for flexibility even with very young children (Weikhart, 2000).

Finally, Weikhart (2000) described the open framework programmes. This was thought to correspond in implementation to Ypsilanti, i.e. High Scope, settings which were informed by cognitive developmental theory (typically that of Piaget) and constructivist views of children's learning. At the heart of their concept was intelligence as adaptation. The learning environment was developed by the practitioners following observations of the children and was designed to match the children's needs and interests. It was assumed that learning resulted from direct action and the personal experiences of the children. The practitioner's focus was on underlying processes of thinking or cognition rather than content or activities. Practitioners were tasked with helping the children to

develop their meta-cognitive abilities, and to identify which knowledge or form of knowledge would most immediately help in structuring the children's experiences.

Similar differences in types and variations of settings have also been described in England. Katz (2011) for example, while considering the Early Years Foundation Stage (DfE, 2012) described the 'push down' phenomenon where children were in settings (often associated with schools) which promoted formal education and were encouraged inappropriately to do things earlier and earlier. While others described alternative settings where care was prioritised to the detriment of children's learning needs, where the role of the practitioner was often passive and merely facilitative (DCSF, 2009). Both types of settings lacked the richness of adult-child and child-child interactions and the stimulating cognitive, social-emotional and physical environments which are known to be fundamental to young children's learning (Evangelou et al., 2009; Melhuish et al., 2010; Siraj-Blatchford et al., 2002; Siraj and Kingston, 2015).

Aspects of the first three of these types of setting with their variations in practice and pedagogy were apparent in the study LA at the beginning of the research. With the predominantly care orientated settings or Weikart's (2000) custodial care and child centred care being linked most strongly with the playgroups and private nurseries while the 'push down' or programmed type were more prevalent within the independent nursery schools and maintained nursery classes that constituted the early years provision at that time. Despite these settings offering very different experiences, the outcomes for children attending settings with unsuitable environments and pedagogies such as these are likely to be similar. They are likely to lose their natural predispositions to learn, to make sense of experience, to socialise and build relationships, to co-operate, to protect and defend themselves, leading later, if unchecked, to disinterest in education and disaffection (see for example Sylva et al., 2010; and Katz, 2011). So, while the outcomes may be similar, it is pertinent to note that the changes in pedagogy and practice such settings would need to undertake to improve quality are distinctly different.

While there was no real recognition of the complexity and diversity of early years provision by the government at that time, they did introduce the Curriculum Guidance for the Foundation Stage (DfEE, 2000). This guidance was designed for use with children aged three to five years. It brought together pre-school (initially three and four year olds)

and school (reception class) provision. However, placing all early years settings into one key stage appeared to be more about supporting transition to school and an attempt at ensuring comparability of summative assessment procedures across all key stages than understanding fundamental differences in teaching and learning approaches in these very different settings.

Further attempts at providing a universal offer of provision included the recognition of the importance of even younger children's needs. In 2003, Birth to Three Matters (DfES/Sure Start, 2003) was introduced and then finally the education and care of all children from birth to five was scrutinized and brought together with the introduction of the Early Years Foundation Stage (EYFS) in 2007 (DCSF, 2007, 2008) and then in later versions (DfE, 2012, 2016). The earlier EYFS gave curricular and pedagogical guidance as well as clearly stated statutory obligations for the care and education of children aged from birth to five.

The EYFS was revised by the coalition government in 2012, and more recently in 2016, who attempted to 'strengthen and simplify it' (DfE, 2012). While some of the simplifications have been welcomed, including the recognition of the prime and specific areas of learning and the characteristics of effective learning (Mohammed, 2013), generally there has been a reduction in the guidance and exemplification of effective practice in newer versions. Further, more recent initiatives including increasing funding and entitlements to 30 hours per week have highlighted the government's misunderstandings regarding the importance of quality and matching provision to children's needs (including considerations of their age). Their publication 'More Great Childcare' where they extolled the importance of school readiness and vowed to make it easier for schools to '*...offer early years provision for two-year-olds*' again showed their apparent lack of understanding of the adaptations that would be necessary to successfully accommodate these very young children (DfE, 2013 p40). In addition, they paid little heed to recent research suggesting that there were not sufficient places for two year olds in early years settings that could support their specific learning and development needs (Mathers et al., 2014).

The rapid expanse of the early years sector and the emphasis on the consideration of babies and young children together, at the time of the study, complicated the

government's vision of a universal offer of high quality foundation stage provision further, with the most controversy linked to the youngest children. The plethora of funding streams, policies and frameworks has done little to quell the increasing concern over quality and developing quality within the sector. As well as the issues of differing understandings of what constitutes high quality, Penn (2011) pointed to the substantial increase in the number of for profit settings run as small businesses as particularly problematic. She suggested that such businesses have skewed understandings of quality, so quality has become closely linked with the ideas of choice and value for money. According to her, in some private settings the lead of profit, accumulating income, can be more important than considerations of child learning and parent well-being (Penn, 2011). It is important to note here that at the start of this study the overwhelming majority of early years settings in the LA were private, voluntary or independent (PVI) with over 95% of all pre-school foundation stage provision being non-maintained.

2.4. The contested nature of the term quality

Farquhar (1990) noted that when the word quality is used it can refer to either the character or the excellence of an early years setting, and while both are important and are interlinked, the focus of this study was excellence. This section introduces this view of quality and, while recognising that 'quality' is a contested term, suggests that it is useful and necessary.

The concept of quality in ECEC continues to be at the centre of an ongoing debate. Quality is a complex concept which embodies a number of interrelated factors such as the values and beliefs of the time, what education and care is understood to be and what has been inherited from past practices and beliefs. At its most basic level quality can be seen as either objective and static or subjective and dynamic within this debate (Sylva, et al., 1999). The objective approach regards quality as something that can be defined and measured similarly across time and place because of children's shared developmental needs. It is prevalent in many UK policies where policies have developed in order to support quality practice for children aged birth to five. By contrast, the subjective and dynamic approach suggests quality should be defined differently across time and place because of the diversity of ideas about early childhood. Tobin (2005)

expressed his concern about externally applied measures of quality. He argued that quality standards are cultural constructs that should be negotiated within the local context. He suggested that '*Attempts to come up with universal, decontextualised, external standards of quality are conceptually flawed, politically dangerous and counterproductive.*' (p 425)

The term quality first appeared and was developed as a concept during the seventeenth and moving into the eighteenth centuries, it remained much unchanged until it was challenged in the middle of the twentieth century. According to Dahlberg et al. (1999) the original term was constructed to have particular meaning and relevance to that time and was influenced by the modernist thinking and philosophy which was around then. Modernists believed that the world was knowable and ordered and that individuals were rational. They believed it was possible, through scientific study, to establish reliable, value-neutral truths and make consistent predictions about the world.

a) The Objectivist view

This objectivist (or sometimes referred to as modernist) view sees quality as a useful concept that can be impartially judged and then quantified according to a set of rules. In other words, quality consists of measurable characteristics that can be observed in an early years setting and these characteristics can be linked directly to the children's outcomes, typically outcomes relating to socio-emotional and cognitive development. Furthermore, that the quality of a setting will contribute to the different rates at which children who attend them learn, develop and advance in those specified outcomes.

There are a number of noteworthy objections to this approach which rest on contesting the assumption of universal measures and truths about quality. The first relates to the outcomes valued by the settings and whether what is considered to be high quality in one context and culture could be equally applied to a different setting. In the UK, both social emotional and cognitive development in young children are valued as important outcomes for children attending early years settings (see DfE, 2012). In other countries, the emphasis is different and the social emotional element takes priority. This was evident in the Effective Provision of Pre-school Education (EPPE) project where new quality characteristics were developed in the Early Childhood Environment Rating Scales – Extension (ECERS-E) to reflect the English early years context and the cognitive

aspects of the curriculum prevalent at the time (Sylva et al., 2004b; Sylva et al., 2003). Interestingly, this notion of the importance of academic outcomes has now become more of a feature in the USA too, where the original Early Childhood Environment Rating Scales – R (Harms et al., 2005) has recently been revised to incorporate more indicators designed to capture elements of practice that support cognitive development (see ECERS-3, Harms et al., 2015).

In addition, a second objection, within the UK, relates to the pedagogy and practice valued at the individual setting level which appears to be linked to the history or type of setting (see earlier and Weikhart's (2000) types of early years settings) and the theoretical viewpoints or understandings of the staff. In many UK settings, where the practitioners have early childhood qualifications, practice has its roots in the work of child development and theory (Nutbrown, 2012). This is worth consideration as one of the major objections regarding the objectivist approach is couched in a dismissal of the use of child development theory in early childhood contexts. Dahlberg et al. (1999) talked in particular about the writings of Piaget (1958): they were concerned about the view of the child as '*... a natural rather than a social phenomenon, abstracted and decontextualized, essentialized and normalized, defined... through ...stages of development*' (Dahlberg et al., 1999, p46). They see child development theories (especially Piaget's) as exclusive and limiting practice - the very antithesis of quality.

However, this appears to be a rather narrow and perhaps uninformed view of what constitutes child development and understandings thereof within many UK early childhood contexts (see Daniels and Clarkson, 2010; Nutbrown, 2012). Child development studies are likely to include much broader perspectives than Dahlberg et al. (1999) feared and often cover various approaches to learning including the behaviourist, constructivist and social constructivist perspectives (see for example Edmond and Evans, 2012; Kingston and Price, 2012). Where child development is taught well, students would be expected to see both the strengths and contradictions amongst the theories they learn (e.g. those of Bandura, Piaget, Vygotsky and Bronfenbrenner) and engage in debate about the very issues that Dahlberg et al. (1999) cited as concerns. For example, they would be encouraged to see the child holistically and draw upon the aspects of the research and theory which support the learning and development of their child at that time and in that context. In addition, many early years courses, in particular

those at graduate and postgraduate level introduce postmodernist perspectives, such as the feminist post-structuralist discourse, to students as well. Presenting contrasting views and ideas such as these would naturally support critical engagement with and reflections on child development theories. Daniels and Clarkson (2010) described this more sophisticated understanding of child development and children's learning as a 'contemporary' as opposed to 'traditional' view of child development. Where understanding child development is seen as a fundamental part of teaching and learning in the early years, making it possible to assess what a child already knows so that this can be planned for and built upon. It is not about labelling or comparing children against norms.

The third objection, relates to differences in some of the characteristics considered important to quality and their consistency and application on a universal basis. If quality is in the 'eye of the beholder' then it is likely that different stakeholders will have different views about what constitutes quality (Kingston and Melvin, 2012). Within the UK, parents, for example, have been found to place a greater value on subjective characteristics such as ambience and travel distance (from home to the setting) while early years experts and monitoring bodies focus on objective attributes such as staff qualifications, written planning and staff-child interactions (Plantenga, 2011). The universal basis of quality is further questioned if the comparison looks beyond the UK. For instance, consider the characteristic relating to staff-child ratios; the statutory requirements for Early Years Foundation Stage (DCSF, 2007, 2008) suggested it was an important element of quality and set rigid limits for this. However, Reggio Emilia nurseries, while they have never been officially evaluated, have an international reputation for providing high quality provision for children in their early years, and typically have staff-child ratios which would not be allowed in the UK. Indeed, this was a characteristic under much debate more recently when the government suggested that the number of children per adult should increase (DfE, 2013) which led to many in the ECEC sector pointing out that this would be detrimental to the quality of care and education (Nutbrown, 2013). Interestingly, The Effective Provision of Pre-school Education (EPPE) project (Sylva et al., 2004) suggested that, for three to five year olds, other characteristics such as the qualification level of the practitioners were far more important indicators of quality. Perhaps the missing discussion here is an understanding of how various characteristics interact with one another (so for example the age of the

children and the adult-child ratio) and the recognition that characteristics do not act in isolation – that quality is more complex than that (Eisenstadt et al., 2013). Other characteristics which are equally disputed include perceptions of the nature of risk, risk assessment and risk management in relation to adventurous activities. This is defined very differently throughout the European Union (EU), for example. It is sometimes said that the UK context is that of a very risk adverse culture (Kingston and Melvin, 2012).

The main thrust of these objections have been levelled by the post modernity movement (which began around the middle of the twentieth century) as they challenged the objectivists' view of quality. They saw uncertainty, complexity, individual opinion, multiple perspectives and the influences of time and place as important. According to post modernists there is no absolute truth, knowledge or reality waiting to be discovered. There is no certainty or universal understanding that exists outside history or society; instead all of us, including the children with whom we work, influence our world and our understanding of it (Pence and Moss, 1994). This opposing view is often referred to as the relativist view (Siraj-Blatchford and Wong 1999).

b) The Relativist view

The relativists' view, which is supported by post-modernist philosophy, would suggest that quality is a dynamic and individualised concept and that comparisons between settings would be impossible. That it is not possible to have a general view of what constitutes quality as it is dependent on the context, culture, values and beliefs of stakeholders in the setting. It is subjective and complex and will depend on whose views are included and what measures are used (Mooney et al., 2003). Relativists would say that there cannot be a universal set of characteristics to determine quality. So, the existing quality improvement tools, the targets and goals set by various government organisations (e.g. Ofsted), the quality assurance processes that currently exist are inappropriate and worthless. They would insist that if quality is to be considered at all, it should involve a process of negotiation between all of the stakeholders in the setting.

Extending this argument further to consider the child development outcomes associated with quality in early years. Relativists would tell us that the setting is only one of many influences here. Such a relativist approach may be underpinned by the work of theorists such as Bronfenbrenner (2005). According to Bronfenbrenner a child's development can

only be understood as embedded within and influenced by the totality of their context. He used an ecological framework to explain child development (see chapter 3). He suggested children develop as a result of interactions and experiences within microsystems (such as family, early years setting, school, friendship group), mesosystems which are the linkages and processes taking place between two or more microsystems (such as the early years setting and parent partnerships) and macrosystems (economic and social/political systems) and that in order to understand child development all of these must be considered. Looking at just one system, which is typically what happens when the quality of a setting is reviewed would be too narrow and, in order to consider what impacts on children's social emotional and cognitive development properly, all of their surrounding systems would need to be considered. Bronfenbrenner's model is an interesting and useful framework for considering child development, it does not suggest, however, that aspects of quality cannot be measured. Further, it recognises the impact of the microsystem of the pre-school setting and the mesosystem of the relationship between the pre-school and family/carers, both of which are typically seen as important indicators of quality by those who adopt an objectivist approach. Bronfenbrenner's work also supports thinking beyond these factors, and is the main framework adopted for the educators' development in this study (see section 3.3).

Relativists would argue that to consider all of the systems that surround the child the views of all of the stakeholders would need to be incorporated. Pence and Moss (1994, p 173) called for an '*inclusionary paradigm*' that defines quality by engaging with the views of all stakeholders. So, at the setting level, in order to 'measure' quality, the views of the practitioners, parents/carers, any committees and management, the surrounding communities and, of course, the children would need to be sought. Although considering everyone's views does appear to be quality practice there have been a number of issues with such an approach. Kingston and Melvin (2012) discuss a number of these issues. First, unfortunately the process of consultation does not advise what to do when views differ or how such differences are reconciled. Second, where such practices have been followed they have been found to be very complex and time consuming. Third, Mitchell et al. (1997) talked about the necessity of analysing whether stakeholders have 'power' in relation to being able to influence practice, procedures and the concept of quality. Some stakeholders, for example parents, might have a lot of power in relation to some aspects of quality but not others. They may, for example, successfully challenge a local

authority decision to close a facility but might be powerless in relation to government policy stating how services are to be delivered. Government rhetoric often talks about children being able to influence decisions about quality, and their opinions are increasingly sought when organisations like Ofsted come to inspect the effectiveness and quality of work. However, it seems unlikely that the voices of children would count towards judgements about quality, when factors such as funding, staffing and health and safety are under consideration.

Mitchell et al. (1997) discussed other stakeholder factors such as their perceived 'legitimacy' and 'urgency' and whether they are seen as having a right to influence the quality of the work. It seems that, even within research, not all stakeholders have an equal voice and a truly democratic process might be difficult to achieve. Consider the *Study of Pedagogical Effectiveness in Early Learning (SPEEL)* (Moyle et al., 2002) where parents' comments appeared to be disregarded, as they were considered to be inappropriate. Parents were deemed unable to understand the true meaning of the questions they were asked as they appeared to have a different interpretation of the word 'equality'. The views of experts were substituted instead. With regards to urgency it is likely that decisions regarding quality may be given different weighting by different stakeholders and they may have different views about how quickly they would expect their views to impact on practice. Finally, it seems likely that for any one setting not all of the stakeholders would be willing and/or able to give their views on the quality of the setting.

The major disadvantage of the relativist view is its impracticality as it suggests that quality has a subjectivity and dynamism which means that it will change over time as well as between settings. In addition, there are a number of equalitarian issues which need resolving. Further though, and perhaps most concerning, defining quality in such an individual and idiosyncratic way could lead to unacceptable social change and may leave some settings with unacceptable standards and inappropriate and ineffective practice (see Penn, 2011). With this view of quality, no local or national standards could ever be developed and no comparisons could ever be made. Indeed, it has been the absence of quality standards in many of the areas of work with children which has been thought to lead to inappropriate and ineffective practice being tolerated (Education Review Office, 2010). So, while the relativist criticism is useful and suggests caution in

the application of simple numerical universally applied quality measures it does not provide an easy solution. It invites discussion around the appropriateness of reliance on a 'one approach suits all', and suggests that adopting different and varied ways of capturing quality and including the judgments of all stakeholders is important.

Siraj-Blatchford and Wong (1999) recognised this criticism but argued that, while some aspects of quality may be viewed as subjective, quality is definitely not arbitrary. Landers (1991) agreed that quality is complex, stating that it is culturally defined and a relative concept, despite this he suggested that setting managers, monitoring bodies and policy makers should begin to generate standard categories and components against which settings could be measured. While Sheridan (2007) suggested that '*standardized methods can be used for national as well as cross-national studies if its values are explicit and the evaluation of quality are understood and interpreted from the perspective of society*'(p119).

So while subjectivist criticisms are often acknowledged, the post-modernist approach is more often interpreted as a critique of the objectivist approach rather than a fully developed alternative (Farquhar, 1999). Many policy makers and researchers advocate a more practical view and believe that considerations of ensuring the safety and wellbeing of the children should take precedence. This more objectivist view includes the idea that many aspects of quality can be agreed upon by all of the stakeholders of early years settings and do not constantly change - they can be identified and used to inform research and practice (Siraj-Blatchford et al., 2006).

c) The Pluralist's view

Tanner et al. (2006) while considering the two sides of this debate suggested a model of quality that took both the objectivist and relativist views into account. Instead of seeing them as opposites and exclusive to each other, they viewed them as sitting at either ends of a continuum of the quality process. They suggested that the two approaches could be usefully combined together. They saw the objectivist approach as providing minimum standards of quality while the relativists' consultation processes potentially added to these understandings. Below is a figure of different facets according to Tanner et al. (2006) which inform quality. The official approach is the one most often seen in legislation and most closely follows the objectivist view. At the other end of each of the

continuums the pluralist approach is developed by engaging with the quality facet there, the one that is most commonly associated with relativist view.

Figure 2: The pluralist’s view: Quality-defining continuum

Dimensions	Official approach.	Pluralistic approach
Actors responsible for defining quality	Experts -----	Stakeholders
How viewpoints are presented	Agreed -----	Contested
Method of defining quality	Written documents -----	Discussion
Evolutionary nature of the concept	Static -----	Dynamic
Philosophical approach	Objective -----	Subjective
Extent of applicability	Universal -----	Context-specific
Arena in which quality is defined	Government -----	Early years services (p7)

More recently other researchers have recognised the importance of considering quality in a number of different ways and taking more of a pluralistic approach rather than an oppositional and competitive, one way and only one way is right view. Mathers et al. (2012) compared different methods of measuring quality [Ofsted inspections, Local Authority quality assurance schemes and Early Childhood Environment Rating Scales (Harms et al., 2005)] and found that they measured different aspects of quality and that together they gave a better picture of overall quality than they did individually. Viewing the quality, and people’s views of it, as sitting along a continuum rather than being oppositional, mutually exclusive positions was also mooted by Campbell-Barr, Mathers and Kingston at a Nursery World Conference in 2015 (Campbell-Barr et al., 2015).

This pluralistic view sits well with the pragmatic worldview adopted in this study. It ensures that the research problem can be addressed, ensuring entitlements of the children and families to high quality provision, while also recognising contextual and socio-cultural perspectives.

2.5. Measures of quality

Within the ECEC context, defining and therefore measuring quality has been expressed both in objectivist and relativist terms. Many researchers such as the EPPE project team used ERS - universally applicable indicators, based on expert knowledge (e.g. Harms et al., 1998) while others such as (Moss and Dahlberg, 2008; Moyles et al., 2002; Penn,

1996; Woodhead, 1998) relied on more subjective, value-based and culture-bound phenomena.

Measures of quality vary from those involving tests and rating scales that purport to provide objective, standardised judgements of a situation to self-reflection, documentation and judgements that professionals and others make for themselves. Some quality judgements are formal (e.g. inspections) while others are informal (e.g. snap judgements made by colleagues, parents etc). Some judgements are internal and made by the staff within the setting while others are external and made by people from outside the setting.

Mathers et al. (2012) identified three different formal quality measures which were developed to objectively judge setting quality within the early years sector. The external inspection regime of the regulatory body Ofsted, the internal quality assurance schemes used by LAs and the settings themselves and the Environment Rating Scales (ERS) (for example, Early Childhood Environment Rating Scales – Revised (ECERS-R), Early Childhood Environment Rating Scales – Extension (ECERS-E) and Infant/Toddler Environment Rating Scales – Revised (ITERS-R) which can be used by external agencies such as inspectors, for research or by staff for self-assessment within the setting.

Ofsted inspections assess whether the setting is meeting the nationally defined standards set by the government, currently this is the EYFS (DfE, 2016). Ofsted inspections are designed to be broad and include observation of practice, assessment of policies and procedures and consideration of leadership and management. They also look at how well the children achieve the key outcomes as set out in the EYFS (DfE, 2016). However, the evidence on the relationship between Ofsted grades and children's learning and development outcomes in the early years is mixed. Hopkin et al. (2010) did not find that Ofsted grades were predictive of Foundation Stage Profile Scores at the end of the foundation stage. Mathers et al. (2012) found that especially for the youngest children (under 30 months) Ofsted scores did not appear to correlate with any other measure of quality or children's learning outcomes.

Quality assurance schemes are accredited quality improvement tools. Typically, the setting will self-assess their provision comparing it to descriptions of best practice and

then provide a portfolio of evidence of the improvements they have undertaken. There are many schemes available as often LAs develop and run their own. There are also a few national schemes including those run by the National Day Nurseries Association and by the Pre-school Learning Alliance. Schemes vary on what they cover but most include aspects of leadership, management, setting organisation, assessment, planning and evaluation. The problem with self-evaluation is that it can be inconsistent and relies on people being willing to see and admit to poor practice and conversely also to recognise and celebrate good practice. Penn (2011) described a setting where there was high staff absenteeism, inconsistent and often harsh behaviour management, with children herded in large groups to a hall with long waiting periods so that all of the toys could be routinely disinfected and shelved. While she obviously judged this to be poor quality she noted that in their weekly evaluation meetings, the staff appeared unaware of the effect of such practices on the children.

Within the domain of objectively measuring the quality of settings Melhuish (2004) and Melhuish et al. (2015) argued that the attributes that determine the quality of a setting can be classified as either structural or process aspects. Structural quality referred to the more stable characteristics of the environment for example ratios, staff qualifications, physical accommodation, space and staff turnover. Process quality referred to the direct experiences of the children in the settings for example the way in which educational activities were implemented, the characteristics of interactions between the children and educators and among the children themselves. The difficulties inherent in making judgements about the quality of process aspects, as they are more complex and often require some professional judgements, has led to a concentration on the more measurable structural attributes of a setting (Cassidy et al., 2005; Melhuish, 2004). Developers of such measurement tools and the researchers who used them mistakenly assumed that where structural quality existed, process quality followed. However, Cassidy et al. (2005) argued that research into the application of quality standards had not sufficiently defined the structural and process attributes and so did not have evidence to support this assumption. While newer research (OECD, 2012; Snow and Van Hemel, 2008; Snow, 2014) and quality measurement tools (e.g. CLASS, Paro et al. (2012); the SSTEWS Scale, Siraj et al. (2015)) have pointed to the importance of process quality, over structural quality, and dismissed this assumption as inaccurate.

The Environment Rating Scales (ERS) are standardised quality assessment tools. The older original ERS can be criticised for their overly strong focus on structural aspects of quality, especially those that were developed in the 1980s and 1990s in North America (e.g. ECERS (Harms et al., 1998), ITERS (Clifford et al., 1989), FCCERS (Harms and Clifford, 1989)). However, the ERS have undergone a number of revisions, and been shown to provide useful information and measurements. They have been rigorously scrutinised in terms of reliability and validity with consistently good results (Mathers et al., 2012) showing clear links to children's socio-emotional and cognitive development. The ECERS-R, used in this study, covered the physical environment and to a lesser extent the pedagogical, social and emotional environment for children aged two and a half to five years. It considered very similar aspects of practice to the EYFS and previously to the Curriculum Guidance (DfEE, 2000) including basic welfare requirements such as health, safety and appropriate supervision; the extent to which children have independent access and choice of stimulating activities and resources, the quality of social interactions and support available for learning, the extent to which children's individual needs are met, partnership with parents and elements of staff management and supervision. Researchers familiar with the ERS and more recent developments and thoughts around quality refer to ECERS-R as measuring global aspects of quality (e.g. Siraj and Kingston, 2015).

The EPPE project (Sylva et al., 2004) used the ECERS (Harms et al., 1998) and an extension to the scale that they developed to collect environmental data focussed on the English Early Learning Goals (ECERS-extension or ECERS-E (Sylva et al., 2003)). ECERS-E extended the aspects of quality measured in ECERS-R to include important domains of learning such as emergent literacy, mathematics, science and development and planning for and supporting diversity together with aspects of pedagogy associated with these. ECERS-E measures the quality of the curricula, environment and pedagogy in language and literacy, mathematics and number, science and environment and diversity and includes more process quality aspects.

ECERS-R and ECERS-E were probably the most well-known quality measurement tools available at the time the study was developed and despite the complexity of measuring quality received mostly positive reviews. The scales are scored through extensive observations with accompanying but short interviews to clarify observations. *'The*

advantage of the specific nature of the scales is that practitioners have a steer on how to improve' (Lindon, 2010 p 177).

In guidance for Ofsted inspectors, the use of ERS were later recognised: '*Local authorities are increasingly using Early Childhood Environmental Rating Scales (ECERS) with providers to judge the quality of provision. Inspectors should be familiar with this means of assessment.'* (Ofsted, 2010 p31).

As already mentioned they were used by the influential EPPE project (Sylva et al., 2004a). They are still considered to be excellent measures of quality for research, audit and self-assessment (see Kingston and Siraj, 2017).

Barnes (2001) pointed out that increasingly settings are encouraged to engage with quality assurance schemes, typically run by local authorities, and/or engage in self-assessment and improvement processes themselves. Previous to the study attempts to support the PVI settings across the LA, in reviewing their progress in relation to inclusive practice (using an earlier version of the *Index for Inclusion* to support the process (Booth et al., 2006)) had not been successful. The use of the quality improvement process promoted within the *Index for Inclusion* was often used in simplistic and inconsistent ways. This led to a dilemma, and concern that the settings may not be ready for such approaches. Subsequently, it has been well documented that settings offering poor or inadequate quality of provision are typically unaware of their poor quality, and, if informed about their poor quality scoring, do not know how to improve and/or do not wish to change (Education Review Office, 2010). Concerns such as these led the study away from introducing further tools for self-assessment, as a first priority, and supported the notion of the benefits of outside observers (consider Katz's model in section 2.6). However, the knowledge that the ERS could be used for self-evaluation in the future was seen as an advantage. Introducing self-evaluation processes to the settings was a long-term goal and supported the pluralistic view of quality presented in section 2.4.

Melhuish (2004) and Pence and Moss (1994) raised independently an important question: What do early years education leaders use to inform the development of quality practice? The ERS were seen as possible measurement tools that could be used across the county to establish, first, a baseline for all pre-school settings, then, repeated

at various times to show change/improvement and, eventually, introduced to settings (perhaps on a gradual basis dependent upon existing setting quality and understandings) as a self-evaluation tool.

2.6. Models of quality which are particularly pertinent to the study

There are numerous models of quality in the literature, many with overlapping ideas and concepts. They contribute to thinking about quality and build on earlier discussions regarding quality, including whether aspects of quality can be agreed upon and if quality is to be measured who should be involved and consulted. While this study considers the quality of practice that the educators provide, the models vary in what they consider: the children's learning, different views of quality according to whose views are taken and the activities, experiences that support children's learning and development.

One model which considered children's learning was the evidence-based model developed by Melhuish (1991). His model demonstrated how the quality in one setting could counterbalance the quality in another (home and early years setting i.e. Bronfenbrenner's micro- and meso-systems inter-relating). Important to the study as it supported notions of child development being impacted by the combination of experiences and interactions (systems) that surround them.

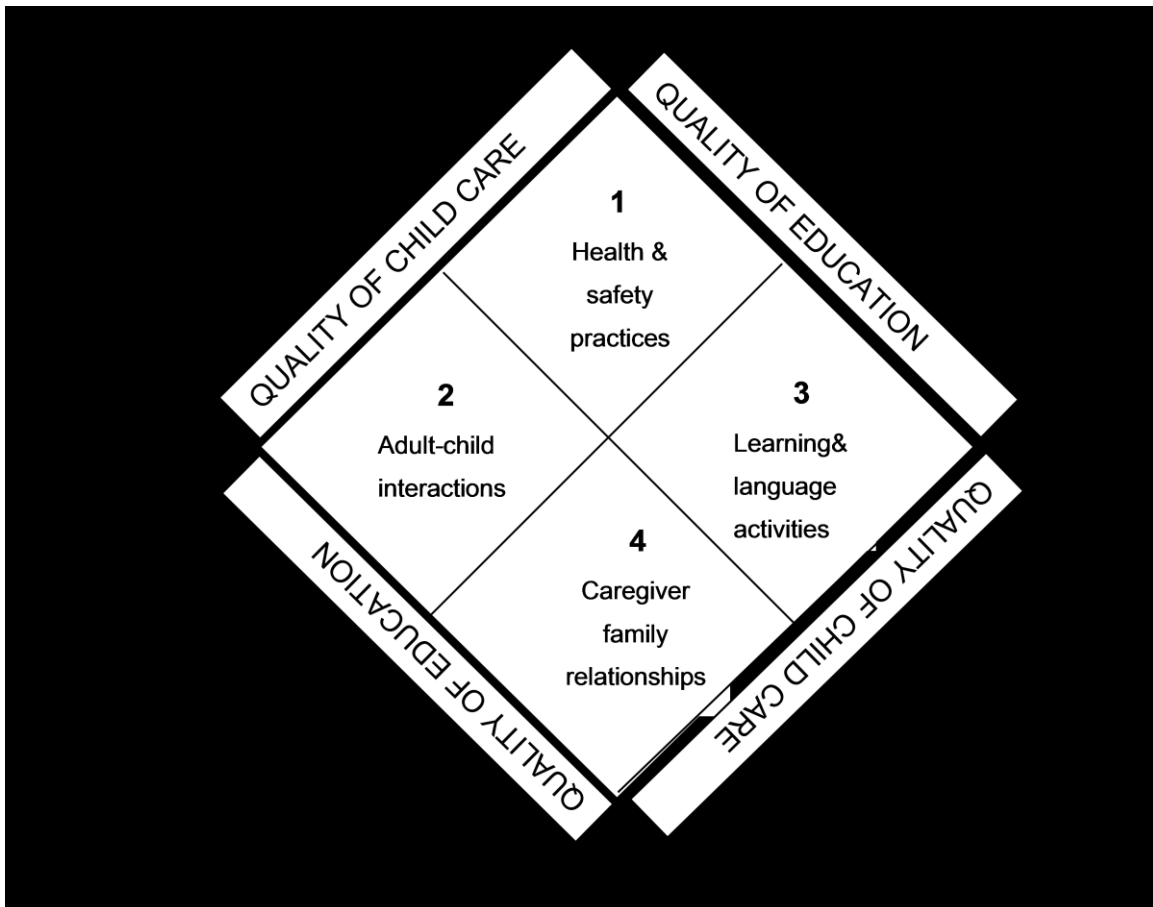
While, a second model by Katz's (1993), although not developed through effectiveness research, was noteworthy as she suggested that all stakeholders (managers, staff, children, families/carers and those outside the setting itself) could potentially provide different perspectives on quality. An outsider approach (teams of teachers who typically supported the settings) was chosen to measure quality in this study. Growing evidence, at that time, suggested that if aspects of practice which support children's outcomes are considered and there is a desire to reduce inequalities due to disadvantage, outsider judgements were often more reliable, further such views continue to be current (e.g. Education Review Office, 2010; Moyles et al., 2002; Sylva et al., 2004a).

Third, consideration was given to a model which outlined the characteristics of the curriculum and practice which linked to children's outcomes. Ramey and Ramey (2005)

developed a model from research on effective practice in North America, interestingly similar findings were emerging in England at the same time. Findings such as these supported understandings of quality measures, early years frameworks, policy and practice. Further, they served to illustrate how quality aspects of the curriculum, pedagogy and practice resonated with the summary of effective professional development outlined in section 4.5.

This third model of quality, was more objectivist in approach and moved towards a description of what constituted universal quality for birth to five year olds. Ramey and Ramey (2005) suggested that quality in the early years rested with practice in four major areas (see Figure 3).

Figure 3: Ramey and Ramey's four diamond model



They promoted this 'Four Diamond' model as a practical definition of quality that they suggested was equally appropriate within any of the diverse ECEC settings that children

from birth to 5 found themselves (p358). Each of the four parts of the diamond are considered below:

First, health and safety practices; by this Ramey and Ramey (2005) meant practices which promoted physical, social and emotional safety and prevented any major problems here, and which were consistently applied. Second, adult-child interactions; they described high quality adult-child interactions as frequent, responsive and caring. Third, learning and language activities; they expected the activities to be adapted for the child's age level and style of learning and that they should be frequent and enjoyable. Fourth, caregiver-family relationships; positive relationships which were respectful, supportive and informative and included frequent communication between the caregivers and family members with a focus on the children's learning.

These four elements have been identified as important both nationally and internationally and can be found across many ECEC frameworks, measures and policies (e.g. see OECD, 2012). Health and safety practices have often been described as fundamental for ECEC settings Harms et al., (2015). Settings that implement proper hand washing, for example, spread fewer illnesses to children and those that have safety devices attached to doors, windows and medicine cupboards etc have fewer child injuries (NICHD and early child care research network, 2005). While the importance of adult-child interactions which are contingent and responsive are well known and essential if enhanced child outcomes is desired (OECD, 2012; Shonkoff and Phillips, 2000; Sylva et al., 2004a; Wells, 1981). With respect to the learning and language activities, settings which provide frequent and stimulating support for language tend to have children with larger vocabularies and higher levels of language competencies than those who provide a low level of such activities (Siraj-Blatchford et al., 2003). Finally, working in partnership with parents/carers has been shown to support all areas of development, it links to important work on the early Home Learning Environment (HLE) completed in *Researching Effective Pedagogy in the Early Years* (REPEY) project (Siraj-Blatchford et al., 2003). These elements also resonate well with *Bronfenbrenner's Bio-ecological Model of Human Development* (Bronfenbrenner, 1997; 2005).

Finally, the four elements of the diamond model can be found in many ECEC frameworks (e.g. Early Education, 2012; Scottish Government, 2008), within some of the

most extensively used quality measurement tools - for example, in the family of Early Childhood Environment Rating Scales (ERS) (e.g. Harms et al., 2005). They have also been consistently found to be important elements of practice in effectiveness research across the world (OECD, 2012). These are key areas which when adequately supported have been found to give measurable benefits for young children (see, for example, Sylva et al., 2010). The four-diamond model was used to support discussions around the choice of measurement tools used at pre- and post- tests, as well as support the development of the PD.

2.7. Relevant national research on quality and effectiveness

At the time of this study there were two high-profile ECEC research studies in the UK designed to look at the impact of pre-school education and determine what made a difference to children's learning and development. The first was the *Study of Pedagogical Effectiveness in Early Learning (SPEEL)* (Moyles et al., 2002), a year-long ethnographic study which sought to identify effective pedagogy with children aged three to five years. The second was the *EPPE* project, a longitudinal study following young children's experiences and development between the ages of three to seven years (Sylva et al., 2004a), which was later extended to sixteen years. While both were developed with similar research questions in mind, which included the search for and identification of the characteristics of effective practitioners and effective practice in order to inform future policy development, their chosen methodologies and underlying philosophies were very different. While *SPEEL* took a relativist approach and sought to include the views of all stakeholders in developing the notion of quality, the *EPPE* project followed a more pluralist approach adopting a mixed methods design. They used nationally and internationally recognised environment rating scales (ERS) amongst other tools to measure quality, as well as in-depth qualitative case studies.

Moyles et al. (2002) set out to devise a framework of key statements that characterised effective pedagogy against which practitioners could reflect on their own practice. An interesting and challenging piece of work that was much more complex than the authors had, at first, thought. They reported the need to make a series of adaptations to their research design throughout and time became a considerable constraint. They

considered the views of practitioners, parents and early childhood advisors/experts and videoed short clips of children and practitioners engaging in activities.

However, there were a number of possible criticisms regarding the design and methodology of the study, including: the inclusion of only good and outstanding settings, suggesting that ineffective settings were merely those devoid of effective practice – a huge assumption; the limited times during the day that the videoing was completed, omitting times such as arrivals, departures and transitions; the removal of the parents views from their data when they appeared ‘compromised’ due to their different interpretations of the questions/concepts being considered; the lack of links made between the pedagogy and practice they captured and how this impacted on the children and their learning, development and progression within the settings. However, possibly the most concerning criticism related to the resulting framework. The authors themselves recognised that many educators would not be able to reflect on the findings in the way they had anticipated due to its complexity. In the short term, they suggested that the removal of the term pedagogy from the framework might be helpful. However, simplifying the framework was not the real issue, the establishment of the framework as sound, with clear links to individual children’s learning and development, should have been their priority. Then once, and if, the framework was found to be reliable, further work to make it accessible for practitioners may have been useful. For these reasons, the *SPEEL* study was not considered in great detail during the development of this study.

The *EPPE* project was a longitudinal research study which began in 1997 (Sylva et al., 2004a). Both quantitative and qualitative methods were used to explore the effects of pre-school education on children’s attainment and social/behavioural development at entry to school and at the end of Key Stage 1. The project was subsequently extended a number of times and followed the children throughout their schooling and into their teens, noting the effects their pre-school experiences had on their subsequent behaviour and attainments.

The study followed the progress of approximately 3000 children in 141 pre-schools across England. In addition, a home sample of children who had not attended a pre-school centre was included for comparison. As well as identifying setting effects, the

study investigated the impact of individual child and family characteristics including the early HLE.

While the *EPPE* project (Sylva et al., 2004a) has been criticised for the use of standardised and universal measures of quality - an objectivist approach – it also included the more relativist approach of in-depth observations and interviews with a sample of those settings. Twelve effective pre-school settings (selection was based on child development outcomes and other measures of quality including ERS) were targeted for intensive, in-depth qualitative case studies in the *Researching Effective Pedagogy in the Early Years (REPEY)* study (Siraj-Blatchford et al., 2002). The *EPPE* project employed mixed methods to ensure that the outcomes were not only rigorous but also deep enough to give a real picture of quality within early years settings.

Sylva et al. (2004a) looked at the quality of the environment including aspects of structural quality such as the physical environment, adult-child ratios and the staff's qualifications, and process quality such as the role of the practitioner and adult-child interactions (see section 2.5. for more details on structural and process aspects of quality). They linked these aspects to the children's learning and development within the settings through a series of individual socio-emotional and cognitive assessments while controlling for other variables such as socio-economic status, maternal education, birth weight and so on. This child development aspect of the study, which included the use of standardised tests, was also criticised by those concerned that such testing and measuring of child development can be exclusionary. However, the tests were not used to exclude individuals or even to compare individual progress. They were used to look for patterns of progress between groups of children, make comparisons across time and links to children's different experiences and attendance at different types of setting. Using such instruments for research, where the data is gathered for statistical analysis, is very different to using such tests to decide on a child's educational future.

The *EPPE* project provided strong evidence that pre-schools have a significant effect on children's development (both cognitive and social/behavioural), can help to alleviate the effects of social disadvantage, and can give children a better start to school (Sylva et al., 2004a). It was these findings that had a considerable impact on government policy in England and initiated and prompted the changes described in section 2.3., as it was

recognised that investment in good quality pre-school provision supported the reduction of social exclusion and enhanced the possibility of breaking cycles of disadvantage.

The *EPPE* project with its mixed methods design, the environment rating scales used to measure quality and its outline of the characteristics of effective ECEC settings informed this study throughout: see sections outlining the design, implementation (chapter 5) and development of PD (chapter 3).

2.8. Influential national studies outlining the characteristics of effective settings

At the time of the study, the *REPEY* study (Siraj-Blatchford et al., 2003) which provided the opportunity to consider the *EPPE* project findings further and provide a deeper insight into the characteristics of effective practice (which impacted on children's socio-emotional and cognitive development), was available. It suggested that the most effective settings (in terms of intellectual, social and dispositional outcomes):

- Viewed cognitive development and social development of the children as complementary and did not prioritise one over the other
- Had strong leadership and long –serving staff (three years plus, this applied even in the private daycare settings where turnover of staff is normally highest)
- Provided a strong educational focus with trained teachers working alongside and supporting less qualified staff
- Provided children with a mixture of practitioner initiated group work and learning through freely chosen play, scaffolding their learning in both
- Provided adult-led interactions that involved 'sustained shared thinking' and open-ended questioning to extend children's thinking.
- Had practitioners with good curriculum knowledge and knowledge and understanding of how young children learn
- Had strong parental involvement, especially in terms of shared educational aims with parents
- Provided formative feedback to children during activities and provided regular reporting and discussion with parents about their child's progress

- Had behaviour policies in which staff supported children in rationalising and talking through their conflicts
- Provided differentiated learning opportunities that met the needs of particular individuals and groups of children e.g. bilingual, special educational needs, girls/boys etc

(adapted from Siraj-Blatchford et al., 2003 p i)

This research was seen as fundamental to this study and this list of characteristics was used to inform and develop the PD. It was returned to on numerous occasions in order to ensure that the study was moving in the right direction and to support analysis of the results.

The *EPPE/REPEY* findings were robust as Melhuish (2004) showed when he conducted a review of much of the research looking at quality in early years settings at that time. He concluded that the following aspects of pre-school quality were most important for enhancing children's development:

- Adult-child interaction that is responsive, affectionate and readily available
- Well-trained staff who are committed to their work with children
- Facilities that are safe and sanitary and accessible to parents
- Ratios and group sizes that allow staff to interact appropriately with children
- Supervision that maintains consistency
- Staff development that ensures continuity, stability and improving quality
- A developmentally appropriate curriculum with educational content

Later research and reviews of the literature, including Evangelou et al. (2009) and Melhuish et al. (2015), have confirmed these findings. These studies together with other more recent research on effective ECEC, for example UNESCO (2014), support the notion that the adults' role is fundamental to the quality of ECEC. It is the educators' knowledge, skills, abilities and dispositions, and how these are translated into the pedagogies and practices within the classroom, that have the greatest impact on children's learning outcomes. It follows that ensuring qualifications and professional development for ECEC educators are fit for purpose is critical. UNESCO (2015) reported: to achieve the provision of equitable and high quality education for all,

governments would need to attend to and focus on quality. They endorsed strong investment in the educators:

to enhance the status, morale and professionalism of teachers ... policy-makers need to improve teacher education, deploy teachers more fairly, provide incentives in the form of appropriate salaries, and create attractive career paths
(UNESCO, 2015, p196).

2.9. Conclusion and links to research question one

This chapter supports understandings of quality within ECEC and in particular why it is so important, for the short and also for the longer terms. Its impact is multi-levelled and profound, not only does the quality of ECEC impact on the individual children and families who attend the pre-schools, particularly if those children and families are from areas of disadvantage, but it may also impact on economic growth and prosperity generally (Melhuish et al., 2015). The literature strongly suggests that knowledge of and support for the quality of pre-school provision, within the LA, should be an imperative.

The literature on quality is growing, diverse and on occasion discordant. There are many different views about what constitutes quality and indeed even the term quality itself is contested. Despite this, there are strong arguments for supporting quality in ECEC settings, notably to ensure equality of entitlements for the children and families using them and in order to prevent the negative effects of poor or low quality. There are also strong arguments for outsiders being involved in the judgement of ECEC quality and for the use of standardised measures of quality. Research suggests that quality, should not just be left to the practitioners working in or the children and families using the settings, although their voices are of course important (Education Review Office, 2010; Penn, 2011).

This study was conceived using a pragmatic paradigm or worldview, taking a pluralistic approach, with the intention of including both qualitative and quantitative data gathering techniques. However, the first question Research Question 1: What is the quality like in current pre-school settings across the LA? was designed to be answered mainly in phase one of the study (see the Timeline p15) through the analysis of the quantitative data, gathered during observations in the settings using ERS.

As were the sub-questions:

- a) What is the practice and pedagogy like within the pre-schools in the LA? Are the children and families within the county receiving high quality care and education?
- b) How does the quality of the pre-school settings in the LA compare to settings nationally?
- c) Are differences in quality linked to type of setting, areas of deprivation, and/or qualifications of staff?
- d) How do the measures used in this study and the resulting scores compare to existing Ofsted ratings?
- e) What does this research, together with the international and national literature, tell us about the pre-schools strengths and areas for development? (This information was needed to inform future professional development including the short training intervention in this study).

Section 6.3. summarises the results in relation to research question one and its accompanying sub-questions.

3. PROFESSIONAL DEVELOPMENT AND EDUCATORS' LEARNING.

3.1. Introduction

At the time of the study the majority of ECEC research related to the first-generation question: Relative to no ECEC, what impact does ECEC have on children's outcomes? and less so to the second-generation question of: How can ECEC be improved to support children's outcomes? (Rebello Britto et al., 2013). While the literature did include a number of studies in ECEC, described as intervention studies, many of these considered the effect of attending early years provision or not or comparing outcomes following attendance at different types of setting (e.g. the Abecedarian Project, Campbell et al., 2002; the Perry Pre-school Project, Barnett, 2008) and few considered the effects of PD or a short targeted training.

For this reason, it was the literature reviewed in chapter 2 (especially that relating to the characteristics of effective practice) and the theoretical models discussed below together with some practical previous experiences of PD (linked later to PD research see chapter 4) that supported the development of the content, process of delivery and affect of the study PD. The focus of the study was the quality of the learning environments, and in particular the educators' role, in the pre-school settings. The assumption was that improvements in the learning environments and practices within the pre-schools would impact positively on the children's learning and development. While the children's learning outcomes were not measured directly, the previously established links between children's outcomes and Early Childhood Environment Rating Scales were capitalized upon – higher ERS scores correlated positively with enhanced children's socio-emotional and cognitive outcomes (Sylva et al., 2004a; Sylva et al., 2014). Section 2.5 outlines the use of and research on ERS.

This chapter introduces the content of the study PD, making links to the literature on effective practice. It introduces the theoretical framework, including models of learning as applied to the practitioners who participated in the PD, and while it considers the

frameworks generally it also makes specific links to the PD content and delivery itself. Finally, in the conclusion links are made to research question two.

3.2. Description of the study intervention phase and PD

The study included baseline/pre-test and post-test (following a PD/training intervention for the staff at 50 pre-school settings with matched controls) measures of quality, using ERS. While the ERS measured the learning environment, it was the pre-school educators who provided, facilitated and supported this, through the experiences and opportunities they provided for the children. It was therefore the pre-school staff or educators and their learning and development that were the focus for this study (see Figure 1 for the Timeline of the study p15).

The practicalities of ensuring that all of the settings received the same PD, which could be replicated across the county within a reasonable time, if successful, led to the development of four face-to-face evidence-based PD sessions. Each session had a specific powerpoint presentation, teaching notes, dvds and activities. Before linking the content to the theoretical basis in section 3.3. and to a summary of the effective elements of PD in chapter 4 the four face-to-face sessions (each lasting three and a half hours) are itemised below.

The content of the four face-to-face sessions of the study PD:

Session 1 Part 1: Effectiveness research and evidence. Part 2: Supporting the Home Learning Environment

Participants were introduced to national research on quality and effectiveness (e.g. Sylva et al. 2004a). Examples of pedagogy and practice that were found to support children's socio-emotional and cognitive development best were shared and discussed (Sira-Blatchford et al., 2002). The importance of developing partnerships with parent/carers and supporting the early HLE were discussed drawing on relevant work with parents (e.g. Evangelou and Sylva, 2003). A supported process for change and planning for improvement was introduced (see figure 8 p71). Practical materials and resources were made and collaborative whole setting plans, to further parent partnership, were formulated to be trialled before the next session.

Session 2 Part 1: Supporting behaviour for learning. Part 2: Intentional teaching

Experiences and feedback on the last session's action plan were shared and analysed at the beginning of the session. Participants were introduced to research considering the importance of developing positive relationships and supporting young children's personal, social and emotional development (PSED) (Whitebread et al., 2005; Dowling, 2000). New approaches to supporting children's behaviour were discussed. The importance of planning and intentionality, collaboratively focussing on the learning orientated setting and planning for play across the curriculum were discussed and analysed. Video clips were presented and analysed to support understanding and show new approaches within the classroom. Action plans to further support children's PSED and/or learning generally were agreed between staff for trial before the next session.

Session 3: There's more to talk than words (considering the quality of interactions)

Experiences and feedback on the last session's action plan were shared and analysed at the beginning of the session. The importance of relational and intentional pedagogy leading to sustained shared thinking were discussed and illustrated (Sylva et al., 2004a; Early Education, 2004; Wells, 1981). New approaches to planning for play and the adult's role were analysed (Hutchin, 1999). Video clips were presented and analysed to support understanding and show new approaches within the classroom. Action plans around supporting staff to engage in more SST with children were developed for trial before the next session.

Session 4 Part 1: The quality improvement process: assessment and planning. Part 2: Action planning using the setting's pre-test ERS results.

Experiences and feedback on the last session's action plan were shared and analysed at the beginning of the session. The final session consolidated learning in each of the PD sessions and responded to participant's requests for further input relating to the ERS. The ECERS-R and ECERS-E pre-test/baseline results were discussed and analysed, including discussion re their possible future use as tools to support self - assessment and quality improvement processes in the future. Further action planning was undertaken in areas identified and agreed upon following discussion re ERS results: both long and short term plans were agreed by all staff. Finally, the participants

completed an evaluative PD questionnaire reflecting on their learning and participation in the study.

Following this specialized in-service training, the Research Team returned to their original roles within the LA. They visited all the pre-school settings in their 'patch' on a rolling basis as part of their role as Inclusion Team members. When they visited the intervention settings, they mentored the staff supporting them in taking their action plans (developed during the PD) forward.

Collegial study groups were set up as part of the PD process. The specialized in-service training was delivered to the whole staff within the settings in order to encourage collaborative working and problem solving together. Discussions around the supportive and useful nature of meeting regularly together to move improvement forward and share practice formed part of the discussions in the specialized in-service training.

3.3. Theoretical framework for the study

The main theoretical framework, which guided the design and composition of the study, was Bronfenbrenner's (2005) Bio-ecological view of Human Development and the importance he placed on interactions and support for these. In addition, as the study grew, the notion of pre-school settings as communities of learning or practice (Lave and Wenger, 1991) became evident. While Bronfenbrenner's bio-ecological model is used extensively within ECEC research to capture and explain children's development it can also be used to support understandings of adult learning [see, for example Cross and Hong (2012) and Rose and Rogers (2012)]. The main focus of this study, and the PD, was the improvement of the practice of staff within the PVI pre-school settings in the LA, as such the model was applied primarily to the ECEC educators' learning and development, however, it was, on occasion, drawn upon to support understandings of children's development too (see section 2.4 and chapter 9).

The Bio-ecological Model supported the design, implementation and analysis of the study at every level, supporting understandings of the social and political context and the identification of the inter- and intra- relationships between the systems within which the educators operated. The use of multi-level theoretical frameworks in relation to

education is not unusual, such models have been used to support understandings of the development of effective practice and effective PD. They support notions of educators' learning as part of a complex system of inter-relationships at a number of different levels; including the classroom, the teacher/educator, whole school/setting and the social and political context (Kyriakides et al., 2009; Teddlie and Reynolds, 2000; Timperley et al., 2007).

Subsequent to the study, some models have been developed specifically to support understandings of PD, looking at the learning processes educators undergo as they become effective teachers (Creemers et al., 2013; Desimone, 2011). However, Bronfenbrenner's Bio-ecological Model remains the most appropriate theoretical framework for both the study design and the PD design. No other model, even those designed to explain how PD works to influence the educators' and children's outcomes, appears as appropriate.

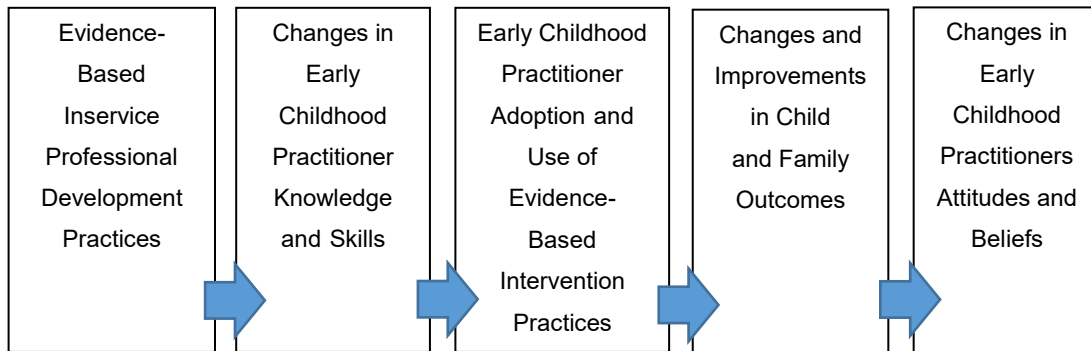
Desimone (2009), for example, suggested a simple basic model (see Figure 4) as a theoretical model that has subsequently been elaborated and built upon. She suggested that successful PD included the following steps:

Figure 4: Desimone's model of educators' learning process

- | |
|--|
| <p>Step 1: Educators experience PD</p> <p>Step 2: The PD increases educators' knowledge and skills, changes their attitudes and beliefs, or both</p> <p>Step 3: The educators use their knowledge, skills attitudes and beliefs to improve the content of their instruction, their approach to pedagogy, or both</p> <p>Step 4: The instructional changes that educators introduce to the classroom boost's the children's learning.</p> |
|--|

Dunst (2015) built upon this model and other similar models such as Guskey's (2002) and applied it to an ECEC context. He postulated that the PD should be evidence based, that the changes may be at the family as well as the child level and that attitudes and beliefs towards the new approaches within the PD change following improvements and changes (See Figure 5)

Figure 5: Dunst’s model of educator’s learning process



Dunst (2015) p312

Interestingly, Dunst (2015), Guskey (1985) and others (Bandura, 1997) suggested that changes in attitudes and beliefs were contingent upon evidence of change in desired outcomes. While this makes for a neat, linear model, it does not reflect the inter-relationships between changes in knowledge and skills, adoption of intervention practices and attitudes and beliefs. For some educators, for example, changes in attitudes and beliefs may be necessary before they adopt new approaches. In addition, it situates the learning and changes within the pre-school setting solely, without considering any outside influences.

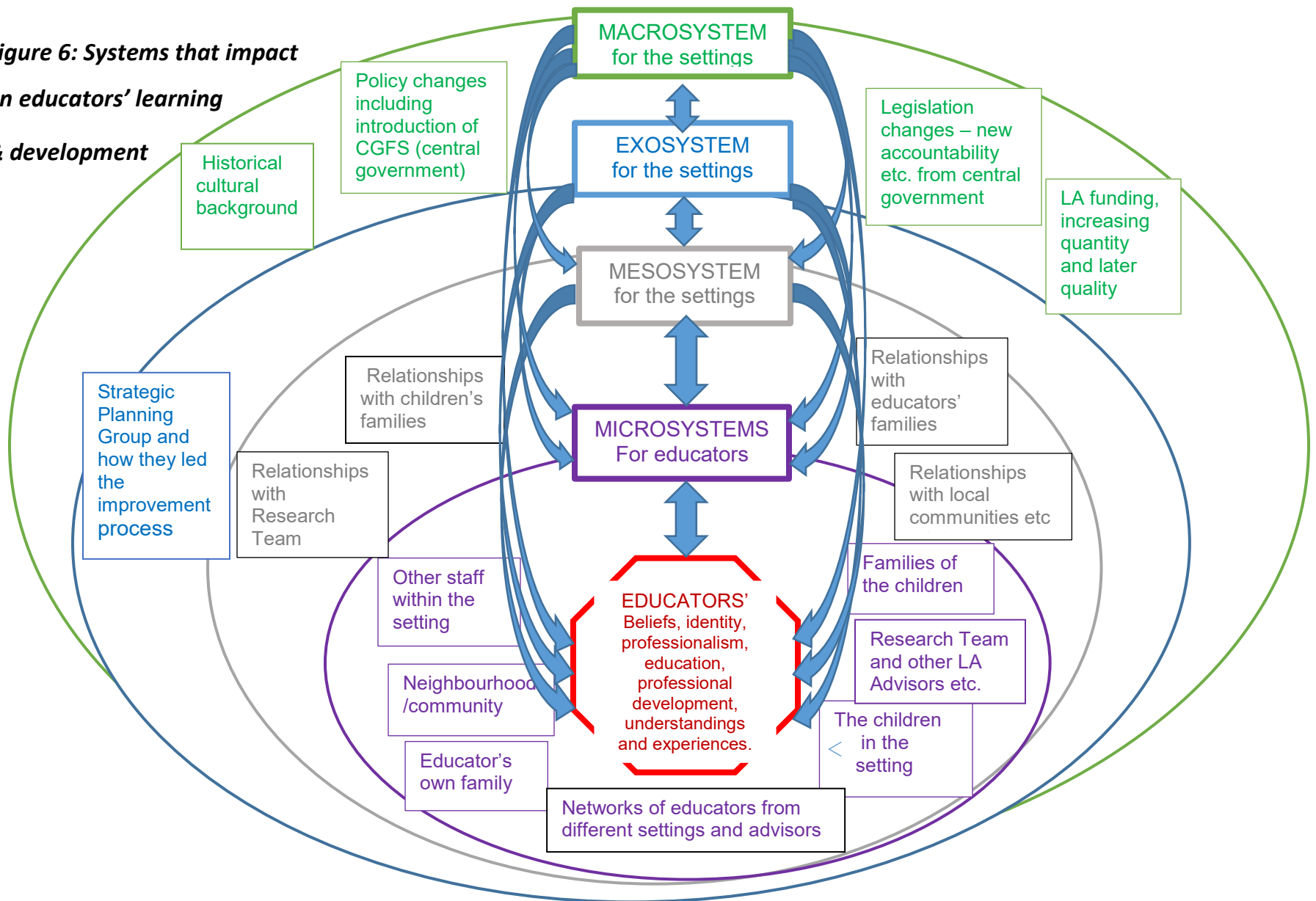
Creemers et al. (2013) developed a multi-levelled model recognising the importance of considering complex inter-relationships for sustained improvement. Their model: *Dynamic Model of Educational Effectiveness (DMEE)* took into account influences beyond the individual’s classroom much like *Bronfenbrenner’s Bio-ecological Model of Human Development*. However, this model was rejected for this study due to the focus of the education effectiveness being related to older children within schools. Differences in how children learn as they develop are well documented (e.g. Whitebread and Coltman, 2015). ECEC contexts are diverse and while some are structured as schools, many are not. A further reason not to use this model related to the factors considered important at the individual teacher level. At this level the *DMEE* (Creemers and Kyriakides, 2013) itemised the factors that effective teachers acquired as their knowledge and skills developed over time. However, these very specific factors (Orientation, Structuring, Questioning, Teacher Modelling, Application, The Classroom

as a Learning Environment, Management of Time, Assessment) appeared to be driven solely by considerations of the curriculum and adult direction rather than individual children, their interests, needs, levels of development and child directed learning.

So, while other models relating specifically to effective PD existed they were either too simplistic, focussed on education practices most suited to educators working with older children within schools and/or were limited to the consideration of educators' improvements in supporting children's literacy or mathematics solely. In this study, developmentally appropriate practice and improvements designed to support children's holistic development were seen as fundamental; formal approaches to pedagogy and models which were limited to academic aspects of development seemed inappropriate.

While Bronfenbrenner honed and refined his original model over a period of more than thirty years: from the *Ecological Model of Human Development* (Bronfenbrenner, 1979) renaming it to the *Bio-ecological Model of Human Development* (Bronfenbrenner, 2005), the inclusion and influence of interconnected systems remained constant. Before moving on to consider his more recent adaptations and extensions to the original model (notably his *propositions* described below) and how these impacted on the study, the multi-levels of influence are discussed, as these had a profound impact on the study (see Figure 6. entitled: Systems that Impact on the Educators' Learning and Development).

Figure 6: Systems that impact on educators' learning & development



Bronfenbrenner's (1979) ecological model of human development emphasised the interconnectedness and interdependency of all the systems that surround the developing person. These included the microsystem, mesosystem, macrosystem and chronosystem which sat together rather like a set of Russian dolls. Figure 6 p 57 shows graphically how these systems are reflected within this study, as applied to the educators' in the PVI pre-school sector in the LA. The educators therefore 'sat' at the centre of the model.

Bronfenbrenner's microsystem consisted of the activities, social roles and interpersonal relations experienced by the individual in a given face-to-face setting which either inhibited or enabled sustained interactions with and in the immediate environment. The face-to-face settings or microsystems pertinent to this study for the educators included the pre-school setting itself (which included the other staff and the children), the Research Team they met with, their own and the children's families, local communities and any local networks they attended.

For this study, Bronfenbrenner's proximal systems were most pertinent: namely the microsystem of the pre-schools and the educators within them, and the mesosystem of the relationships between those educators in the pre-schools and the other systems which surrounded them. The mesosystem was particularly relevant to the study in that it included the relationships and interactions between the educators and the Research Team. Connections between the content of the PD and the mesosystem were also evident, as the content of the PD directly supported interactions between the educators and the Research Team. In addition, some of the content of the PD was linked to the mesosystem itself, as one session was devoted to further developing the partnerships between the educators and the parents/carers microsystem.

While the micro- and meso-systems are the main systems considered during this study, the impact of the other systems cannot be denied. According to Bronfenbrenner (1979) the exosystem comprised of the linkages and processes that take place between two or more settings where at least one of the settings did not contain the developing individual. It was where events occurred that indirectly influenced processes within the individual's immediate setting. Within this study the Research Team was influenced by the strategic planning group (which contained no pre-school setting staff). The strategic planning group influenced the Research Team's interactions with the educators through the

influence it exerted on the PD (namely its content and the process of delivery). No doubt there were other exo-systems that may have impacted on the educators, such as their partners work places and the children's families' workplaces and so on, but these were not included in this model, as they were relatively unknown.

The macrosystem consists of the overarching pattern of micro-, meso- and exosystems characteristic of a given culture or subculture. It includes aspects such as current beliefs, legislation, identity, material resources, prior experiences and knowledge as well as history over time [see section 2.3. for a brief overview of the recent history of pre-school settings including the development of policy and legislation and also the specific type of influences that may historically have influenced thoughts about pedagogy and practice within the PVI sector (see Weikhart, 2000)]. What the macrosystem acknowledged, with regards to the pre-school educators, was the influence of the wider requirements and expectations of the local community, the LA and central government.

The macrosystem influenced the strategic plan for the LA which included the study and its design. The study was therefore guided by national and local priorities. However, LA policy was dominant as the study's focus was quality improvement, which contrasted with central government's main policy directions, at the time. Central government appeared more interested in the quantity of provision and local accessibility to preschools, with the aim of supporting parents/carers back to work. Similar governmental aims continue today, as seen with the 'push' to provide 30 hours a week ECEC provision for the working parents of three and four year olds (DfE, 2015c).

The macrosystem also influenced the content of the PD, which included discussions regarding the expectations and implementation of the Curriculum Guidance for the Foundation Stage (DfEE, 2000), aspects of the educators' status and terms of employment, their route(s) into the work, their levels of qualifications and career prospects. In addition, the PD included considerations of expertise and professionalism, conceptions of child, family and pre-school worth and the educators' role and ability to support learning and development and to support changes further afield (than purely within the child) across the interconnected systems, which were linked to the historical, cultural background and beliefs situated in the macrosystem.

A final system, the chronosystem, does not feature in Figure 6, but is worth mentioning as it was a part of Bronfenbrenner's original model and it is pertinent to this study and its relevance today. The chronosystem relates to the passage of time and encompasses changes or consistencies over time, not only in the characteristics of the individuals but also of the environment in which they lived. Consideration of the educators' characteristics, in relation to their abilities and motivations to adopt new approaches, pedagogies and practices following the PD are discussed during the analysis of the results (see chapter 6), notable similarities between educators in the study and today's educators are evident. This study was set in a time with particular policies, legislations and expectations, and one of the strategic plan's aims was to support the educators and the LA in understanding and moving these forward. Interestingly, while some of the content of current governmental policies may have changed and shifted towards younger aged children and longer hours of entitlement, many of their underlying aims remain the same. While many LA personnel continue to be more concerned with the quality of the preschools (see Mathers et al., 2012). In addition, if the research climate is considered as part of the chronosystem, many of the aims of the study PD can also be found in current PD studies (e.g. see the Fostering Effective Early Learning study (Siraj et al., 2016) and Understanding Research Tools to Improve Language in the Early Years (URLEY) (EEF, 2016)). Suggesting that the chronosystem prevalent at the time of the study is similar to present day.

Bronfenbrenner's model, if applied directly to the impact of the PD on the educators' learning, would suggest that the influences on the resulting educators' effectiveness (and in turn children's socio-emotional and cognitive outcomes) are multi-levelled and while there may be some commonalities there will also be individual differences between educators. There would be different factors operating at the interconnected systems levels, at the acquisition of knowledge and skills level and at the subsequent adoption of practice in the classroom level. Learning would be influenced by the wider educational context in which the children, educators, and settings are expected to operate and by the existing knowledge and understandings of the individual educators. Bronfenbrenner's model explains how differences within the various microsystems may affect educator effectiveness both directly and indirectly. It suggests that for sustainable change all microsystems need consideration. In short, changing the practice of one educator would

be unlikely to make long lasting changes to a setting unless the setting, and support for the setting, also changed (in particular at the microsystem and mesosystem levels).

It was the recognition of these multi-levelled effects that led to the PD being offered to all setting staff (including leaders and managers as well as nursery nurses and assistants). It also led to attempts to include outside agencies in (or at least inform them of) the study and to engage with current policy makers, local networks and decision makers within the LA. Finally, it supported the importance of ensuring that local communities, including parents, were aware of the study and that the results were disseminated in a timely fashion.

Bronfenbrenner's Bio-Ecological Model

Bronfenbrenner's (2005) more recent ideas also impacted on the design and implementation phases of the study and the PD. He put forward a number of propositions which are discussed in turn below. These, rather complex notions, are also summarised in Figure 7, which includes simple links to the educators' learning and development and how this may impact on the children's learning in their care. While Bronfenbrenner's model is used primarily to support understandings of the educators' learning, it is the impact of that learning, in terms of how they support the children's learning, which was the main emphasis within the PD and the ultimate aim of the study. Bronfenbrenner's model can be adapted to consider either.

Bronfenbrenner's *Bio-ecological Model* (2005) supported understandings of the educators' existing knowledge, understandings, beliefs and experiences and how they impacted on their learning. It supported the understanding that despite the PD's objective and controlled design, the settings, and indeed the individuals within the settings, would experience the PD both objectively and subjectively. *'In the bioecological model, both objective and subjective elements are posited as driving the course of human development'* (Bronfenbrenner, 2005, p5). The experiences of the learner were seen as a critical element for human development and were likely to be individual (*Proposition 1*).

The individuality of each educators' experiences and potential for new learning are represented in the centre of Figure 6, in red. Bronfenbrenner's model outlines the interconnected systems, and allows for conjecture about how some of the educators may have experienced and related to those experiences during and after attending the PD.

At the heart of his Bio-ecological Model, Bronfenbrenner (2005) noted the close relationship between experience and emotion and motivation. He suggested that *'positive and negative forces ...can contribute in powerful ways to shaping the course of development in the future'* (Bronfenbrenner, 2005, p5). The elements situated at the 'heart' of the model: the beliefs, personal attributes and dispositions of the educators represent their views of themselves. These impact on their motivations for learning and work, including, how they view their role in supporting children's learning and development (i.e. their professionalism). They would, according to Bronfenbrenner, interact with their experiences and potential for learning and development throughout the PD. Also, situated at the centre of the model, together with the emotional aspects, are the educators' education and previous experiences of professional development, for example. Differences here also reflect the subjectivity of learning, as previous learning, knowledge and understandings affect new learning possibilities.

During Bronfenbrenner's (2005) adaptations to his original model he outlined a number of other notable underlying elements pertinent to the study, the following provide some insight into the processes necessary for learning and development (Propositions II, III, IV, V and VI). They are summarised on Figure 7. These propositions influenced the design and implementation of the PD. The first proposition (proposition II) related to what is often recognised as the main vehicle or *primary engine* for learning: effective interactions. Bronfenbrenner suggested that *'progressively complex reciprocal interactions between [the learner] and the persons, objects and symbols [in the] immediate external environment... [which]... occur on a fairly regular basis over extended periods of time'* (2005, p6) were necessary for development. He called these interactions proximal processes (proposition II). This understanding impacted on both the delivery of the PD and the content within the PD. Proximal processes were seen as important for the educators to experience themselves during the PD and also for them to engage in with the children in their care. So, it was Bronfenbrenner's model and the

REPEY research (Siraj-Blatchford et al., 2002) that influenced the content of the PD and the inclusion of a session considering high quality interactions. It was Bronfenbrenner's proposition II that ensured that the delivery of the PD included the opportunity for rich interactions between the tutors running the sessions and the participants and also between the participants themselves – supporting the educators' learning but also modelling and mirroring what was hoped would happen in the pre-school settings themselves between the staff and children.

Together with the concept of proximal processes and the importance of regular, enduring and progressively more complex reciprocal interactions to support development and learning (proposition II) Bronfenbrenner expounded the importance of the form, power, content and direction of those proximal processes (proposition III). These, he suggested, vary as a function of the developing person (including their genetic inheritance) and of the environment, both the immediate and the more remote. That is, the set of interrelated systems in which the developing person finds themselves over the course of their lives.

In terms of the study, proposition III led to careful consideration of the material and delivery of the PD. The PD was designed to support the educators in engaging in proximal processes, ensuring that interactions were reciprocal and included relevant content and form, supporting the educator's learning in the right direction and with the right intensity. The PD materials needed to engage the educators with just the right level of challenge for them to build on and extend their existing knowledge, skills and dispositions. Vygotsky (1978) termed this teaching within the zone of proximal development. Further, Bronfenbrenner's observation that '*the optimal situation for learning and development is one in which the balance of power gradually shifts in favor of the developing person*' (Bronfenbrenner, 1979, p57) added to the complexity. This influenced the decision to ensure that all staff from each of the intervention settings were present for the PD. The PD was designed to support collaborative working within and beyond the actual sessions, so that the more experienced members of staff could support those who needed it and so that ownership for any changes made could be kept within the setting. The idea was to support powerful transformations within the pre-school settings with the staff deciding what and how they would proceed.

Bronfenbrenner's other pertinent propositions related to the learning that he described taking place within a child's home environment. He suggested that for learning to continue in a positive direction carers/parents needed to be involved in their children's learning, ensuring that the children participated in progressively more complex activities over time. The parents/carers involvement should be underpinned by strong, lasting, warm and nurturing relationships and they should commit to supporting their children's well-being and development for life (proposition IV). This proposition influenced the PD in a number of ways. The fundamental importance of establishing positive, warm, supportive relationships with any learner was seen as critical; equally with regard to the relationships the tutors established with the participants during and following the PD sessions and how they promoted and supported such relationships between the staff and children, their parents/carers and between the staff themselves. Building trust, confidence and the ability to challenge and take risks (with new ideas, strategies and approaches) was recognised as essential within the PD and beyond for all involved. Time was given, within the PD, to foster positive relationships between the Research Team and the educators (providing a model) as well as to supporting and enhancing the educators' relationships with parents/carers and the children in their care. One session of the PD was devoted to supporting the understanding of children's communications, their need for nurture and to promoting behaviour that supported learning. This content was included in the PD following consideration of both Bronfenbrenner's model and the characteristics of effective practice found in the *REPEY* study (Siraj-Blatchford et al., 2002).

Bronfenbrenner's fifth proposition postulated that the establishment of a strong emotional bond with parents/carers led to the child internalising the parents/carers activities and expressed feelings of affection, which, in turn, supported their engagement with the world around them (proposition V). Following on from this, Bronfenbrenner, suggested that parents/carers benefitted from support, especially if they were single parent families. He calculated that it took at least two adults to successfully parent and care for a child (proposition VI). Many studies have also demonstrated that the early home learning environment (HLE) is a powerful predictor of future educational and career success for children (See for example Sylva et al 2004; 2014). In terms of the educators' role, research has indicated that they can support children's development in two ways: First, while the children are in the setting through face-to face, direct support

for the children’s development; and, second, through partnership work with parents designed to enhance the early HLE (Siraj and Mayo, 2014; Sylva et al., 2004a). What Bronfenbrenner’s proposition V reasserted was the importance of establishing and maintaining good relationships with all learners as the foundation to growth and development.

Although family characteristics have been shown to have a greater impact on children’s outcomes than ECEC factors; the effect of attending ECEC on developmental progress can be greater than the effect of social disadvantage (Geddes et al., 2010). Suggesting that ECEC educators can make a difference through the work that they do with parents, especially if the children are from disadvantaged backgrounds. The recognition of this intergenerational role and the importance of the early HLE led to its inclusion in the PD. Educators were supported in understanding the importance of working with parents/carers in developing the early HLE, including how they could support parents and carers attitudes, confidence and abilities so that they continued to be actively involved in their children’s on-going educational journeys, beyond the pre-school.

Figure 7: Bronfenbrenner’s (2005) propositions: educators’ learning and how this translates to support for children’s learning

Bronfenbrenner’s (2005) propositions	Implications for Educators’ learning and for the support they should then give to children’s learning
<p>Proposition I Individuals experience learning both objectively and subjectively. Existing knowledge and emotional responses to learning can shape what is learnt and</p>	<p><i>Educators’ learning</i> The existing beliefs, understandings and experiences of educators may support or hinder new learning. Support for motivation and positive emotional responses to learning (including developing supporting relationships) is fundamental to all learning. New approaches, strategies etc. to teaching need to have strong and explicit evidence-bases which are shared and persuasive.</p>

<p>what is not, emotional responses can be both positive and negative.</p>	<p><i>Children's learning</i> Educators need to be made aware of the importance of existing understandings and emotional responses to learning. They need to develop trusting, warm and responsive relationships with the children in their care and learn to support each child's learning and development individually.</p>
<p>Proposition II Proximal processes – the main vehicle or 'primary engine' of learning. They are the complex reciprocal interactions that occur regularly over extended periods of time between the learner and people, objects or materials in their immediate environment.</p>	<p><i>Educators' learning</i> The educators need to experience high quality reciprocal interactions in order to learn. Such interactions need to engage the educators in thinking and extend their thinking, progressing understandings over time. New knowledge, approaches and strategies etc., once understood, can then be applied within the setting.</p> <p><i>Children's learning</i> Educators need to know how to adapt their interactions so that they can support and extend the thinking of the individual children in their care. In order to do this, they first need to recognise the power of such interactions for themselves.</p>
<p>Proposition III The form, power, content and direction of proximal processes, which vary according to the genetic endowment of the individual learner and the proximal</p>	<p><i>Educators' learning</i> The content and form of new learning needs to be developed and adapted to suit the learners. In addition, the power position of the learner during interactions designed to support learning, needs to shift towards the learner, so that eventually the learner leads their own learning. Support for learning can be found within the environment, especially when collaborative interactions lead to the adoption of new approaches, strategies and teaching.</p>

<p>and distal aspects of their environment (i.e. the set of interrelated systems in which the developing person finds themselves see Figure 6)</p>	<p>Children's learning</p> <p>Careful consideration needs to be given to the form, power, content and direction of interactions educators have with the children. Interactions need to be at the right level for the children and encouragement should be given for the children to solve their own problems, and feel autonomous and powerful over their own learning.</p>
<p>Proposition IV</p> <p>Relates to the parents/carers involvement in their children's learning, which should be underpinned by strong, lasting, warm and nurturing relationships and a commitment to supporting their children's well-being and development for life.</p>	<p>Educators' learning</p> <p>This proposition impacts on the educators' learning at a number of levels: first, the recognition of the importance of the parent/carers in relation to their children's learning and how they may support this; second, to the importance of the establishment of warm, trusting and enduring relationships which underpin learning; third, in regard to the role and responsibilities they take on in 'parentis loco' for the children in their care.</p> <p>Children's learning</p> <p>Support needs to be given to ensure the development of positive, trusting relationships with both the children and their parents/carers. Working with the parents/carers to support the children's learning, as well as supporting the children's learning directly while they are in the preschool are important aspects of all educators' work.</p>
<p>Proposition V</p> <p>The strong emotional bond children have with their parents/carers supports the children in</p>	<p>Educators' learning</p> <p>This proposition reinforces the idea of educators' acknowledging and supporting parent/carers in their important nurturing and caring role and how this may translate to real learning for the children.</p>

<p>internalising their parents/carers expressed feelings of affection, which, in turn, supports their engagement with the world around them and the potential to learn.</p>	<p>Children's learning</p> <p>Educators need to develop partnerships with parents/carers that support them in continuing to support the learning and development of their children, and support their confidence in seeing themselves as important to their children's education and wellbeing beyond the pre-schools and throughout their lifetimes.</p>
<p>Proposition VI</p> <p>Children requires the support and care of at least two parents/carers or adults taking that role.</p>	<p>Educators' learning</p> <p>Educators need to recognise their role in supporting parents/carers in their role of nurturing and supporting their children's well-being and learning, especially in families of single parents/carers.</p> <p>Children's learning</p> <p>Supporting children's development and learning through partnership with their parents/carers.</p>

In summary, Figure 6 situates the educators themselves at the centre of the *Bio-ecological Model*. While Figure 7 considers how Bronfenbrenner's propositions from I to VI can be interpreted to support the educators' learning needs to ensure impact on children's outcomes. The interconnected microsystems are clearly identifiable on Figure 6: the pre-school settings (including colleagues, children and other adults), the children's families, the Research Team, the educators' own families, the communities and, for some, within geographical areas across the LA, there were also networks evolving, as a result of the study. Where the whole staffs within the settings were involved in learning, they could also be viewed as communities of practice (Lave and Wenger, 1991). The PD was designed to develop the microsystems of the pre-schools as communities of practice.

Communities of Practice

Lave and Wenger (1991) described communities of practice as ‘groups of people who share a concern or a passion for something they do and learn how to do it better as they interact regularly.’ Within this study the pre-school settings, the families (where they were working in partnership with the educators to support their children’s learning), the Research Team and any networks they became involved with were identified as the main settings likely to affect the children’s learning and development (the microsystems and mesosystems displayed on Figure 6). They were complex and overlapping. Lave and Wenger posited a relational focus for learning, suggesting that learning was entirely a social process. This notion of communities of practice led to consideration of the collective or group rather than the individual. The three dimensions of communities of practice: mutual engagement, joint enterprise and shared repertoire (Wenger, 1998) became values that overarched the study.

The values of mutual engagement, joint enterprise and shared repertoire (Wenger, 1998) were considered important in the development and delivery of the PD and during any feedback sessions or networks. Schachter (2015), in her recent review of PD studies, supported these ideals and suggested that the lack of the inclusion of work supporting communities of practice in PD was a missed opportunity.

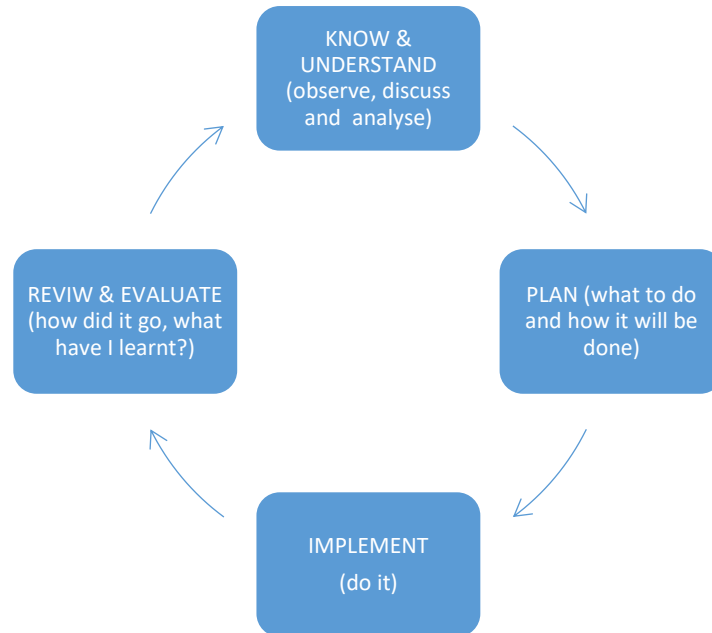
While the PD included content knowledge, each session also included elements of self-assessment and collaborative planning for change which were designed to empower practitioners and support confidence and ownership. The Wenger (1998) values also influenced the process of information giving and the dissemination of the study design and findings across the LA. They influenced the invitations sent to settings asking for expressions of interest in the study. They guided the respect given to confidentiality and choice and the expectation that everyone would be listened to and involved in planning and share successes and challenges together, at PD sessions, meetings and networks. They allowed all of the settings, including the Research Team, to view themselves as collaborators and learners. The Research Team, as well as the educators, were developing their own knowledge, practice and skills and also occasionally they were required to rethink their approaches and beliefs.

A careful balance was needed to ensure that members of the communities of practice saw themselves as active participators in the learning process. And while participation was recognised as a prerequisite to learning it was metered by Edwards (2005) view that this may not in itself be sufficient for new learning to occur. The idea of participation was supplemented and strengthened by *Bronfenbrenner's model of the Bio-ecological Model of Human Development* which also acknowledged the importance of regular, enduring and progressively more complex reciprocal interactions.

Recently, such understandings have been reiterated in contemporary studies of effective PD (e.g. Kingston and Siraj, 2017). Ideally, educators undertaking PD are guided to take responsibility for directing their own learning and ongoing growth and improvement. They are encouraged to collaborate with their colleagues, engage with new approaches and best practice presented during the PD, set personal action plans and try out new approaches in their settings and then reflect and evaluate progress, all of which is focussed on supporting the learning and development of the children. The educators, in this study, were given the opportunity to understand and know, then to apply and finally to reflect upon and evaluate new approaches - all of which required orchestrating and time during the delivery of the PD.

Figure 8 below illustrates the learning processes and cycle of quality improvement (understand and know, do and apply, reflect and evaluate) that were encouraged during the PD. While Figure 6 p57 shows the interconnected systems, itemises the relationships and details some of the social and political influences on the developing educators at the time of the study.

Figure 8: Quality Improvement Process supported through the PD



3.4. Conclusions and links to research question two

The literature reviewed in chapter 2 (especially that relating to the characteristics of effective practice) together with the theoretical models, outlined above, supported the development of the content, delivery and support for the educators' motivation to improve of the study PD – they provided the evidence-base. Four face-to-face sessions were devised (see section 3.2.), which then required evaluation. The PD sat in phase 2 of the study. This led to the development of research question two: Will a Professional Development/short targeted training intervention provide measurable improvements in quality in PVI pre-school settings?

And the following sub-questions:

- a) Will a targeted training intervention/professional development (PD) make improvements in the quality of settings which are statistically significant in comparison to matched control settings who do not receive the PD?
- b) Will these changes, if found, be sustained for at least a year?
- c) Are improvements, if found, linked to type of setting, qualification of staff, areas of deprivation, starting position re quality measures?
- d) Which settings and aspects of practice change most?

The ERS quantitative data, collected before and after the PD/intervention, would support the consideration of these questions.

Research question two, and its sub-questions, was designed to be answered using the quantitative data collected during the pre- and post- tests. More specifically, through the analysis of the ERS observations made at phase one and two (see timeline p15) within the 100 PVI settings, identified and grouped into the 50 intervention settings (who received the PD) and the 50 control settings (who did not receive the PD).

4. PROFESSIONAL DEVELOPMENT AND EFFECTIVENESS

4.1. Introduction

This chapter reviews some of the more recent literature regarding what is often termed the second generation question in Early Childhood Contexts, 'how can ECEC be improved to further support children's outcomes?' (Rebello Britto et al., 2013). While much of the literature was not available during the development of this study, it represents the latest knowledge and research in the area and was supportive during some of the analyses. Further, it gives additional evidence regarding the relevance the study and its findings to today's context and socio-political climate.

This chapter includes a discussion of the PD in relation to the extant literature. The content, delivery and support for motivation and confidence etc. of the PD are linked to the essential or key elements of effective PD as detailed in the literature. A Summary of Effective Elements of Professional Development, see page 83, was developed from the literature and lessons learnt during the study. It includes the elements of effective PD subdivided into the domains of content, delivery and affect.

Finally, in the conclusion, the main aspects of this chapter are summarised in relation to research question three: What made the difference, if the settings did show quality improvements/changes or what have we learnt if they did not?

4.2. Professional Development: short and long term aims

Professional development (PD) is often seen as a generic term which refers to a number of experiences that promote the education, training, and development opportunities for those who already do or will work in ECEC. Given this definition, PD applies to a range of activities that attempt to improve the knowledge, skills, and/or attitudes of ECEC educators working with young children (aged birth to seven years) and their families/carers. Ultimately, though, through supporting the educators and their practice,

the long term aim of PD is the enhancement of children's personal, social, behavioural and cognitive outcomes (Guskey, 2000; Guskey, 2001). As such, changes in these outcomes, are the ultimate measures of successful PD initiatives.

In the shorter term, two aims are consistently sought for the educators attending PD providing ECEC. The first, is the advancement of their knowledge, skills, dispositions, and practices which support them in educating and caring for the children and working in partnership with their families/carers. The second is to promote a culture for ongoing professional growth for the individual educators and the educational systems within which they work (Candy, 1991; Johnson and Johnson, 1989; Sheridan et al., 2009). Ideally, the educators (together with the managers/leaders within their educational context) would take the responsibility to direct their own ongoing growth and improvement. They would collaborate with colleagues, engage with continued study of current and best practice, reflect and set personal action plans all focussed on supporting the learning and development of the children with whom they work.

During this study the focus was restricted to the shorter term aims above. While the longer term aims, of enhancement in children's developmental outcomes, were recognised and desired as the ultimate aim of the study the time, funds and personnel were not available to look at this directly. Instead, a secondary effect was assumed and relied upon; that is, that changes in classroom practice would ultimately impact on children's developmental outcomes. While this was acknowledged as a possible short-coming to the study (see chapter 8), such understandings were, at that time, common. Many studies using the ERS (which were used to measure classroom practice in this study) reported them to be reliably and validly linked to child development outcomes (Burchinal et al., 2002; Cryer et al., 1999; Harms et al., 2005; Helburn, 1995; Henry et al., 2004; Sylva et al., 2004b; Whitebrook et al., 1989).

4.3. Defining Professional Development (PD)

In this rapidly developing field of research – effective PD in the ECEC context - the need for structure, communication, shared frameworks and language are currently under debate (e.g. Zaslow et al., 2010). The National Professional Development Center on

Inclusion (NPDCI) (2008) in the US, published a definition and framework for PD which outlined three key components of early childhood PD: the learners (Who), the content (What), and the instructional methods and approaches used within PD (How) (WWH). Others have used WWH as an organizing framework when reviewing studies (e.g. Egert and Eckhardt, 2012). While this particular framework was not available for the study - the 'who', the 'what' and the 'how' were considered important to both support the development of and to acknowledge some of the challenges to the PD.

a) The 'Who': the workforce

While the 'who' appears, at first glance, to be the simplest component to identify, it is a well-documented challenge for any intervention study conducted in the ECEC sector. This is because there is a diverse range and variety of educators working within it - the 'who'. Educators often have differing understandings and experiences as well as differing existing qualifications and roles within their schools and settings. Such differences may lead naturally to the assumption that they may benefit from different approaches to and/or content in PD, that is the 'what' and 'how' for them may differ. As a result, separate and different PD is typically arranged for different staff members (e.g. teachers, supervisors, nursery nurses and assistants). The PD in this study was atypical for the county in that it brought whole teams of staff together for the face-to-face aspects of the PD. A collegial approach to quality improvement was seen as fundamental to the PD, including the development of communities of practice (Lave and Wenger, 1991) which were seen as integral to the PD. The educators were supported in experiencing the value of regular meetings with colleagues focusing on issues, challenges and successes - related to the PD content - which emerged from their practice. The Research Group tutor, in collaboration with the setting leader, supported all educators to ask questions, offer reactions and give ideas. Together they completed action plans and reported back and reflected on their impact. As well as establishing self-sustaining networks of educators who focussed on translating, applying and, in some cases, creating evidence - bringing research and practice together, the assumption was that those educators with more experience, knowledge and higher qualifications would support their colleagues (if they needed it) through the collaborative approach which was part of the PD.

While there are differences in the 'who', the literature also points to some similarities which are worth considering. They relate to beliefs and attitudes often found within and beyond the sector. First, historically there have been inaccurate views of the workforce; namely, the ideas that the knowledge and skills required by educators are merely common-sense and that mothers could teach young children equally as well, or that play is simply the work of children and the adults (mostly women) need only to provide resources for play and supervise children's experiences. Unfortunately, such understandings are still common today (Vincent and Braun, 2011). Whereas in reality supporting children's learning and development in an early years setting is complex and challenging and requires a great deal from the educators in terms of knowledge, skills and dispositions. These are discussed in more detail in section 4.5., however, it is also worth noting here that an additional challenge in ECEC is the huge disparity in achievements of the young children (aged from birth – 5 years) who attend the provision.

Historically, the early years workforce is gender and social class specific, comprising predominately of white and often working-class women (Kay, 2005). This links back to the traditional view of the occupation which is associated with the role of mothering, the characteristics of nurturing and caring, and a tenuous understanding of child development (Colley, 2006). ECEC is seen as women's work (Vincent and Braun, 2010) and gender is inextricably tied in with the early years workforce (McGillivray, 2008). The workforce in England in 2005, for example, comprised of approximately ninety-eight percent women, few practitioners from ethnic minorities, fewer with disabilities, with the majority of practitioners holding a qualification at or below NVQ level 3 (Kay, 2005).

The majority of the workforce, including those in this study, have little or no qualifications. While this is important as previously determined (see section 2.8) as qualifications are known to impact on quality through a number of means, including the educators' knowledge, skills and dispositions and their self-efficacy (Kyriakides et al., 2009). Fives (2003) noted the importance of how practitioners see themselves and promote themselves, both for the quality of their practice and for ongoing public opinion. Educators' beliefs in their ability to organise and execute the courses of action necessary to support and nurture the children in their care are increasingly being recognised as necessary for effective practice. Many newer ECEC degree courses note the importance of self-belief and confidence and actively promote students' abilities to

see themselves as professionals, leaders and important actors in children's learning and development (e.g. Davis et al., 2014).

The ECEC workforce has been recognised as an under-qualified, underpaid group of working-class women, and the training for many has been reported to be minimal (Vincent and Braun, 2010). With those educators who work in the PVI settings (the educators who were involved in the intervention phase of this study), typically not having teacher or any other relevant qualifications, seen with less regard than their better qualified colleagues, which, in turn, is often reflected in their low pay (Osgood, 2009). While many of these issues are current today as the research indicates, they were also present during the study and needed to be taken into account during the development and delivery of the PD.

b) The 'what' of PD

McMillan et al. (2016) reported on the 'what' of PD, they suggested that there were many and various definitions of PD, ranging from those looking at 'quality, competence and accountability' (Sturrock and Lennie, 2009 p12) to those addressing broader issues of 'lifelong learning' (Lammintakanen and Kivinen, 2012) including aspects of both professional and personal learning. Kennedy (2007) differentiated between approaches which stemmed from the accountability agenda with a focus on professional learning and those which focused on more personal aspects such as the status and rewards attached to professionalism and/or motivation linked to altruism or self-interest.

Earley and Bubb (2014) suggested that effective PD embraced both personal and professional learning and all formal and informal interventions that supported individuals to improve their practice. Further they suggested that personal development should interact and complement professional development. They should not be separated as educators could be held accountable and standards could be raised in an environment that promoted both personal and professional learning. The PD in this study supported both professional and personal development, so for example the content included links to the latest policy developments and requirements and the action/change plans were developed collaboratively by the whole staff. With individual members of staff taking particular responsibility for different aspects of the plans, which may have included new

personal roles and learning. A fuller picture of the 'what' is given in chapter 3, section 3.2. and within this chapter in section 4.5.

c) The 'how' of PD

Consideration of the 'how' of PD is closely aligned to its purpose, length and delivery, including whether the PD leads to a recognised qualification. According to Zaslow and Martinez-Beck (2006) PD can be categorized according to the following five types: (1) formal education (e.g. foundation degrees, degrees); (2) credentialing (e.g. vocational qualifications and apprenticeships); (3) coaching and/or consultative interactions (in setting training typically involving observation and feedback on practice); (4) specialized, on-the-job in-service training (e.g. training designed to support specific aspects of practice); and (5) communities of practice or collegial study groups (e.g. networks or groups of colleagues meeting together with the express aim of sharing and improving practice). The PD in this study can be described as a mixture of the last three of these types. That is, the PD targeted ECEC educators who were already in employment and consisted of specialized, on-the-job in-service training, consultative interactions and the setting up of collegial study groups with all staff within each setting. Sheriden et al., (2009) noted that there were few studies looking at '*the impact of training on participants' implementation of targeted training content in work settings.*'(p 6)

The 'what' and 'how' of the NPDCI framework (2008) are subject to ongoing debates. However, there is a consistent discourse, with some agreement beginning to emerge, in the current literature: PD that supports change and improvement includes what are often described as 'essential key features' of effective PD (see section 4.5) (Dunst et al., 2010; Joyce and Showers, 2002). Research and reviews seeking to identify, clarify and agree what these 'essential key features' are, is, however, still ongoing. Several high profile reviews cited six key features (e.g. Dunst, 2015; Zaslow et al., 2010), however, on examination they were found not to be the same six key features. Cordingly et al. (2015) and Timperley et al. (2007) promoted seven key elements or features, however, they also did not correspond with each other or indeed with the six identified in the previous research. Further, these authors also recognised that additional elements or aspects of the PD may interfere with their efficacy (see Dunst, 2015) suggesting that consideration of these six or seven elements alone might be limiting, an underestimate of or missing some essential aspects.

Given the ethical imperative for improvement within this study, and the inconsistencies between studies and reviews in what they highlighted, it was considered important that all features which may impact on effectiveness were considered. While many of these particular reviews post-date the study, many of the elements were built in to the PD (see section 4.5.) as they were beginning to be identified, albeit not necessarily with the rigour of accompanying research which has developed since that time. Due to the large number of elements of effectiveness that were identified (during and beyond the life of the study) a system for organising and summarising them became important. The resulting list of key features or elements of effective PD was summarised and subdivided into the domains of content, delivery and affect (see section 4.5 and Figure 9).

The chosen 'how' of the study PD was developed after consideration was given to aspects relating to practicality and reach. There were 264 PVI settings in the LA, so in order to reach the settings within a reasonable time frame the PD would need to be relatively short. The PD also needed to complement existing ways of working that the Inclusion Team, who were also part of the Research Team and led all of the face-to-face specialized in-service training, already had established in their geographical visiting areas.

The 'what' and 'how' of the PD was developed following analysis of the pre-test of baseline measures of the ERS, consideration of the evidence-base including; the characteristics of effective educators in REPEY (Siraj-Blatchford et al., 2002), the theoretical frameworks of Bronfenbrenner's (1979; 2005) Bio-ecological Model of Human Development and Lave and Wenger's (1991) (see chapters 2 and 3) views on communities of practice.

The 'how' of the PD included: specialized, on-the-job in-service training, consultative interactions and collaborative working between members of staffs (see earlier: Zaslow and Martinez-Beck, 2006). It gave time for theory and new approaches to be practised and evaluated within the setting between sessions, and consisted initially of four three hour long face-to-face sessions. All of the staff from each setting attended these sessions (see section 3.2. for more details).

4.4. Identifying the essential key elements or features of effective PD

This section considers the essential key elements or features of effective PD through the analysis of recent reviews on effective practice and effective PD. While much of this research has been developed following the PD, many of the elements were evident at the time of the study and those, together with the domains (into which the elements were separated, see below), were considered, prior to the development of the PD. The summary of elements of effective PD, presented in Figure 9 below, is an updated and more formalised version of the elements which informed the PD in this study.

Research considering effective Continuing Professional Development (CPD) for teachers generally, as well as those considering effective Professional Development (PD) designed to support ECEC staff specifically was reviewed to support the development of the summary. Schachter (2015), who reviewed recent robust PD studies, suggested that it was important to learn from research considering teachers' skills, knowledge and dispositions working across the age range, as well as those which looked particularly at ECEC. The following studies/reviews were analysed: Bell et al., (2010); Cordingley, (2013); Cordingley et al., (2015); OECD (2012); Howes et al., (2008); Kyriakides et al., (2009); Pianta et al., (2007); Siraj and Kingston, (2015); Timperley et al., (2007); Zaslow et al., (2010). Not surprisingly, many of the findings of the PD research resonated with the research relating to the provision of high quality settings/schools, and what was found to be educationally effective in ECEC (see chapter 2). For this reason, studies considering educational effectiveness e.g. Sylva et al., (2014); Creemers and Kyriakides, (2013) were also considered here.

Although, the majority of the staff in the PVI pre-schools who undertook the PD (intervention training) in this study were not teachers and there were noteworthy differences between these educators and teachers (see earlier re beliefs and status and Weikhart's (2000) description of types of settings in section 2.3.), there were also many similarities. Differences included the ECEC staff's previous training, experiences, qualifications and their professional identities or lack thereof in contrast to the teaching profession. However, their roles within their respective settings/schools and the

expectations, frameworks and policies under which they worked were very similar. For these reasons both the patterns of effective CPD with teachers and those found associated with PD in ECEC were considered relevant and were included here.

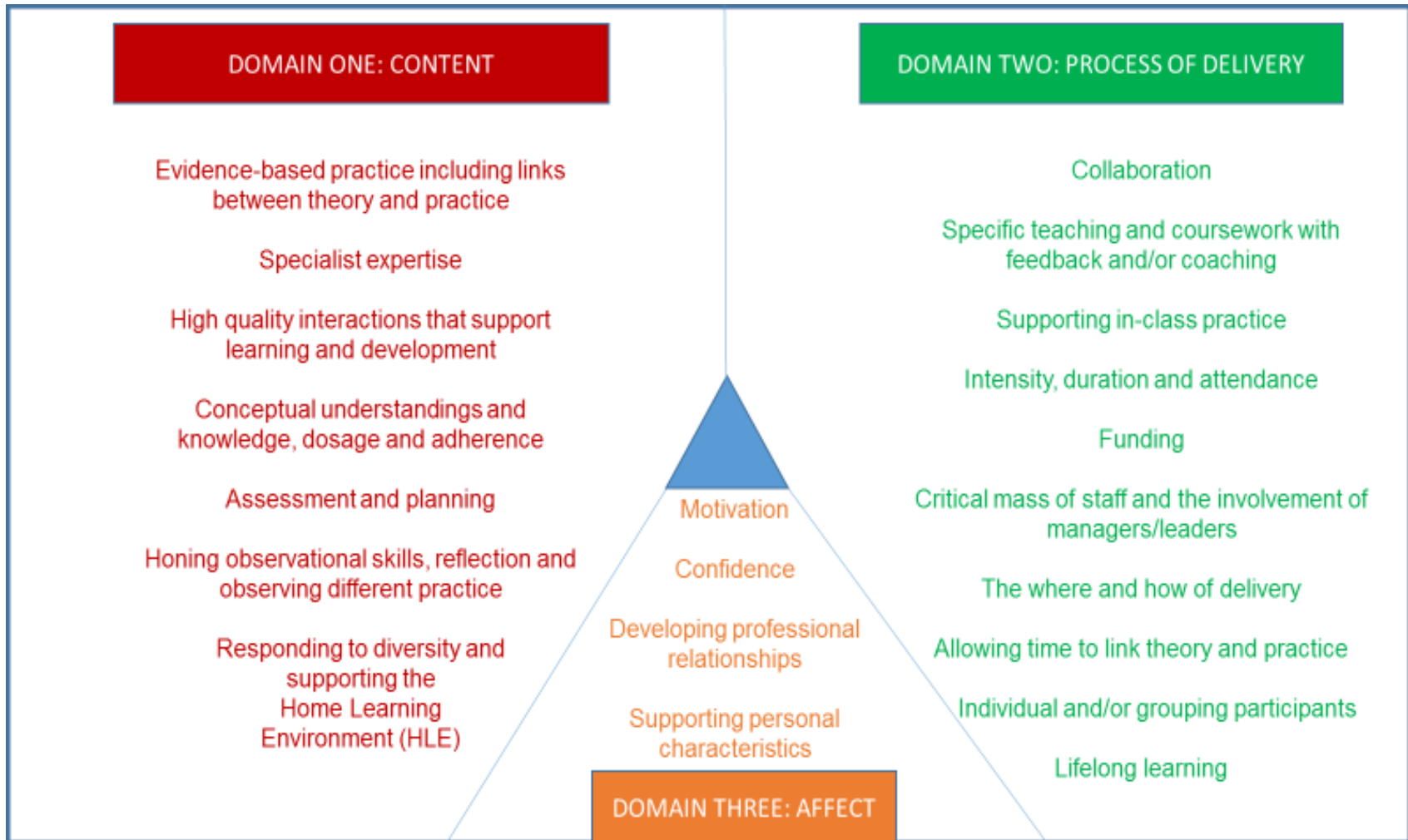
Many of the reviews recognised effective practice as being part of a complex system of inter-relationships at a number of different levels; including the classroom, the teacher, whole school/setting and the social and political context (e.g. Teddlie and Reynolds, 2000; Timperley et al. 2007; Kyriakides et al., 2009). This was consistent with Bronfenbrenner's Bio-Ecological Model of Human Development discussed in chapter 3. which formed the main theoretical framework for the study, specifically it pointed to the need to account for inter- and intra-relationships within these levels when designing and delivering PD. Many of the reviews concurred with this view and, in addition, they identified aspects or elements of the PD that had the greatest impact on the children's personal, social, emotional and academic outcomes.

Many of the reviews postulated that there were particular aspects or elements of PD that were seen as essential to success. However, no one set of key elements included all of the elements described across the studies or that were considered pertinent to the PD in this study. Schachter (2015) suggested a continued need for innovative models of PD efficacy. For this reason, the elements are articulated below and combined to form a separate, Summary of Effective Elements of PD (SEEPD, see page 83). Following the discussion of each element a short exploration of how various elements were incorporated into the PD can be found. The domains of the SEEPD, were also considered during the analysis of the results (see section 7.3. in chapter 7 Discussion).

4.5. Summary of Effective Elements of PD (SEEPD)

Across the studies reviewed, a number of key elements or aspects were identified. They were linked to effective practice and enhanced children's outcomes and were consistent across the literature. Each element was allocated to one of three domains (unfortunately not all of the elements were mutually exclusive and there were some interrelationships between the elements and domains, these are noted below). The domains are: 1) content (the 'what'); 2) delivery (the 'how'); and, 3) affect (the emotional and motivational aspects of learning. Linked to the 'who'

Figure 9: A diagrammatic representation: Summary of Elements of Effective PD



4.5.1. Domain one: content

i. Evidence-based practice including links between theory and practice

One well documented aspect of the content of effective PD was evidence-based practice (Cordingley, 2013). Bell et al. (2010) found extensive benefits for teachers and children when teachers engaged with the research of others while supported by the researchers and/or PD tutors, and also when they engaged in their own self-directed research. Benefits for the children included improvements in achievement, attainment and engagement while benefits for teachers included improvements in differentiation, experimentation and the range of activities they offered. Further, such engagement linked with an increase in teachers' ability to identify and develop underpinning rationales for any new approaches/practices being explored. Within ECEC, Stephen (2012) suggested that an underpinning knowledge of the theories, histories, constructions and beliefs which underlie pre-school practice was fundamental to a professional workforce and would support educators in responding appropriately to new ideas and to developing these themselves. Unfortunately, she also reported that this was sadly lacking in the Scottish ECEC workforce, where she conducted her study (Stephen et al., 2010).

Zaslow et al. (2010) found stronger and more long lasting effects where PD course work or training was combined with opportunities for educators to use newly learnt knowledge, understandings, approaches etc. within ECEC settings. Basically, they suggested that all PD should not only consider strengthening early educator knowledge, but should also focus directly and explicitly on practice. This has implications not only for the content of PD but also for the delivery (see Domain 2: Delivery).

Arbour et al., (2015) suggested that effective PD for ECEC practitioners should include guidance on continuous quality improvement processes as well as knowledge related to children's learning (such as language development). They suggested that this addition may be particularly useful in diverse contexts where quality was low.

The PD for this study included discussions of current research considering the quality of ECEC and the importance of high quality early years experiences for young children (e.g. Sylva et al., 2004). It considered the links between research, theory and practice at

the child, educator and setting levels. It introduced new findings around the importance of the early HLE and supported educators in working in partnership with parents. It considered the evidence and supported observational skills using DVDs and examples of effective approaches to supporting behaviour for learning and high quality interactions. It supported the educators in understanding quality improvement processes and self-assessment procedures, introducing and modelling the cycle of assessment, implementation and review.

ii. Specialist expertise

Being able to link theory appropriately with practice also has implications regarding the attitudes, skills, knowledge and understandings needed in those devising and leading PD. Such skills, sometimes referred to as the '*specialist expertise*', were seen as important to the effectiveness of the PD. Cordingley (2013), for example, wrote that the ability to support others in the understanding and application of research in practice was fundamental to success. Fukkink and Lont (2007), in their review of studies of ECEC training published between 1980-2005, noted the need for those leading the PD to have specialist knowledge in early childhood. They reported that PD with specific and articulated objectives led to greater effects on practice than training where the content was open ended and less focussed.

It follows that '*specialist expertise*' includes understanding how complex theories can be used to support children's learning and development within ECEC contexts, and that successful PD builds in opportunities for the participants to experience this for themselves. As previously discussed the inclusion of child development theories in qualifications and PD is increasingly being recognised as essential to effective practice. However, supporting the understanding of child development has also been criticised (see section 2.4.), perhaps by those who fail to see positive links to practice. It is important to note here that such criticisms would be appropriate and relevant if the '*specialist expertise*' was not available to ensure that child development understandings were integrated into contextually and culturally sensitive practice.

Siraj and Kingston (2015) suggested that PD should include guidance and research provided by experts and professional organisations specific to the area of the participants and be aligned with the relevant standards for practice. Such specialised

PD has been associated with better child outcomes and improved staff competencies in providing suitable pedagogical learning opportunities (Evangelou et al., 2009; OECD, 2012). Effective PD should be informed by knowledge of differences according to such features as the organisational contexts of different ECEC settings - as well as the standards of practice and their particular monitoring and supervision structures (Fulgini et al., 2009; Vu et al., 2008).

The PD in this study was developed and delivered by the staff within the LA who would have been considered to hold '*specialist expertise*'. However, ECEC, and the PVI sector in particular, were relatively new and unfamiliar contexts. While the chosen staff were best placed to run the PD within the LA, it was recognised that this would be a learning experience for all involved.

During and following the PD the leaders of the training met to discuss and evaluate progress. During these meetings, it became clear that the PD had supported them in recognising, developing and/or challenging some existing beliefs and discourses within the settings. They reported the development and delivery of the PD, together with the feedback and evaluation processes attached to it, as rich learning experiences. It was likely that involvement with the PD had developed their '*specialist expertise*'.

iii. High quality interactions that support learning and development.

The importance of educator-child interactions that involve sustained shared thinking (SST) and extending children's thinking - see, for example, Bronfenbrenner (2005), Evangelou et al., (2009), Ramey and Ramey (2005) and Siraj-Blatchford et al. (2002) – are increasingly being identified as key to enhancing children's outcomes. Interactions are captured and described as fundamental to children's learning across the ECEC literature. For example, similarities can be seen between Bronfenbrenner's (2005) proximal processes and *Sustained Shared thinking* (SST) (Sira-Blatchford et al., 2002), *continuous contingent interactions* which Katz (2008) described, the *interactions* Wells (1981) noted as fundamental to the development of language and sharing meaning with others, the *zone of proximal development* (Vygotsky, 1978) and *scaffolding* (Bruner, 1978).

Recent research has replicated and clarified this understanding further. OECD (2012), for example, suggested that critical to ECEC practice are the ways in which staff involve children, stimulate interactions with and between children, and use diverse scaffolding strategies. Further, Fukkink and Lont (2007) reported that it was not the PD per se which effected the quality of practice in ECEC; rather, it was the educators' ability to create a high-quality pedagogic environment which made the difference for children. They reported that training that was '*specialised caregiver training with a focus on interaction skills with children*' (p27) made the largest differences to practice and to children's outcomes.

Raver et al., (2008) recognised that effective adult-child interactions, linked to effective practice, were often the kind of interactions which many educators had never participated in themselves – either as educators working in settings, or as children within their families, or as children in the settings and schools they attended when young. This recognition led to the development of PD studies which included a mixture of the academic skills and knowledge necessary to support effective practice together with relationship-building between the participants on the course and those delivering them. Typically, such PD involved modelling, providing exemplars of sensitive and responsive interactions, and providing support for challenging behaviour - the results were described as successful as improved adult-child interactions were noted (Erickson and Kurz-Riemer, 1999; Toth et al., 2011).

The PD in this study included one session looking at and analysing high quality interactions using transcripts captured during the REPEY research (Siraj-Blatchford et al., 2003) and DVDs designed to show good interactional practice. Between sessions, the educators had the opportunity to practise engaging with the children in their settings. Depending on their starting positions and the relationships between staff, some of the educators used cameras or asked colleagues to observe and then evaluate their discussions with the children, while others just practised engaging more with the children. During the reporting back the educators noted the difficulties in sustaining conversations with the children where they were not used to engaging in this way. They noted the need to be sensitive to the individual needs of the children. Many reported improvements in the interactions they had with the children particularly in length, but they also suggested that they rarely achieved SST. Some educators, from those settings

that scored more highly on the pre-test ERS than the rest and typically included highly qualified staff, suggested that improving interactions would be an on-going process that would require changes in the adults' approaches but also changes in the children's expectations. It was perceived as a high level intentional, pedagogical strategy which needed to be development over a longer period.

Raver et al. (2008) noted the importance of relationship–building between the participants and leaders of the PD. The PD was run by members of staff within the LA who already had supporting, advisory roles within the settings -the Inclusion team. For some, a relationship had already been developed and established and for others it served as a good starting point to establish relationships which would be on-going beyond the four sessions of PD. Indeed, the leaders of the PD suggested that one of the major advantages of the PD was the opportunity to get to know the whole staffs of the settings they served and develop positive relationships. They reported that knowing each member of staff and how they worked together as a team or not, supported them in being sensitive to the individual needs of the adult educators. Where team work was not the norm, the PD allowed for discussion of, as well as experience of, the advantages of working together.

iv. Conceptual understandings and knowledge, dosage and adherence.

Zaslow et al. (2010) discussed the curriculum areas of language, literacy and early mathematics and the importance of equipping ECEC educators with the knowledge and skills necessary to develop these curricula, and how to approach and implement them appropriately with young children (National Reading Panel, 2000; Pianta, 2012). Duncan et al., (2007) reported meaningful instruction in numeracy and science as good predictors of future academic success. While others (for example, Sylva et al., 2004a; Coghlan et al., 2009) promoted the importance of good foundations in language development and literacy to support later learning.

Siraj and Kingston (2015) in their recent review, which included a discussion on effective professional development, for the ECEC workforce in Scotland noted the need for ECEC educators to be given guidance on supporting speaking and listening skills, emergent literacy, numeracy and science, linking learning to interests, and allowing children to understand the purpose and function of their learning. They suggested the need for a

balance between both independent and focussed learning experiences and activities which supported language, literacy, mathematics, exploration and science, and physical development. Further, they noted the importance of the educators' skills in organising and enhancing the learning environment as well as their ability to work together with parents/carers. Young children need numerous opportunities to practice newly learnt skills and to actively explore their environments. ECEC educators need to understand the importance of and have the confidence to support parents/carers in developing their children's literacy, numeracy and scientific exploration in the early HLE as well as in the setting.

Effective educators in ECEC need to be able to both engage children in meaningful activities that promote their conceptual understanding of the world, and to construct positive adult-child relationships (Howes et al., 2008; Pianta et al., 2007). Warm, trusting relationships provide children with a secure and safe base for exploring the interpersonal and the intellectual aspects of the early childhood curriculum. Effective educators integrate intentional teaching with sensitive, responsive and warm interactions. They show a clear understanding of the children's perspectives, are responsive to them and develop appropriate strategies for comforting, encouraging, questioning, listening and scaffolding their learning and development. They provide responsive individualised feedback and intentional engagement while maintaining a setting that is orderly and predictable, but not overly structured or formal (Howes and Tsao, 2012).

Underpinning this practice, OECD (2012) noted the importance of having a good, practical understanding of the holistic development of the children. While Epstein (2014) promoted

'interactions between children and teachers in which the teachers purposefully challenge, scaffold, and extend children's skills and have an understanding of the expected outcomes of instruction' (p242).

Fundamental to such understandings are the educators' knowledge of current child development (Bowman et al., 2001) and the main domains of learning including communication, language and self-regulation together with knowledge of emergent literacy, mathematics and science and exploration.

Mendive et al. (2015) recognised the importance of conceptual understandings and knowledge but also felt that it was important to engage practitioners in discussion around 'dosage' and 'adherence'. They suggested that without this, practice might change sufficiently to capture significant differences on in-class practice measurement tools such as the CLASS (Paro et al., 2012) but may not be of sufficient magnitude to enhance children's learning and development. Durlak (2010) defined dosage as the amount of time given in the classroom to enacting aspects of the intervention and adherence referred to the level of correspondence between the intended intervention and the version implemented.

Yoshikawa et al. (2015) also recognised the importance of 'dosage' if impact on children's socio-emotional and cognitive outcomes was desired. They suggested that the frequency with which the educators engaged the children in activities and experiences ('dosage') supporting learning was key to improved outcomes. While dosage has been recognised as important in newer PD studies it has rarely been included as part of the training outside North USA. In many countries (including those in South America and within pockets of the UK) the discourse around standards and curricula is strongly associated with allowing the educators the freedom to interpret frameworks for themselves and the children and families with whom they work. In South America teachers in Chile, for example, are expected to identify the individual academic and emotional needs of the children and their communities and individualise and adapt the Ministry of Education's learning standards to their own classroom (Peralta, 2011). Within some PD studies, discussions around dosage have therefore been omitted. This is often justified as necessary to avoid criticisms around promoting homogenised teaching practices and/or excessive emphasis on academics rather than play. As well as reducing possible impact, this approach also avoids engagement with the discourse, including the growing evidence base for effective practice which increasingly identifies both child guided and adult guided playful learning as important within ECEC.

Yoshikawa et al. (2015) in their PD study where dosage was not included, with impact later discovered to be minimal, concluded that unless the children had sufficient exposure to the necessary teaching to support and develop their skills in the main domains of learning significant improvements in children's outcomes would be unlikely. It

follows that the attendance and absenteeism rates of the children would also effect outcomes.

The PD in this study included discussion and analysis of the '*Curriculum Guidance for the Foundation Stage*' (CGFS) (DfEE, 2000), the framework used at the time. The discussions were somewhat indirect though, as all educators were already meant to be familiar with and had already received training on the CGFS. Discussions related to parents and carers and supporting the early HLE. Participants engaged in discussion and analyses of the children's outcomes desired and outlined in the framework and produced booklets and materials for parents explaining the '*Curriculum Guidance for the Foundation Stage*'. Unfortunately, while conceptual understandings and knowledge of the domains of learning was presented as part of the session on working with parents, and included in the other sessions through the examples of practice used, the lead researcher would have preferred much more explicit discussions of what constituted meaningful activities, intentional teaching together with the frequency and adherence necessary to exact change. More in-depth discussions around child development, curriculum and the content knowledge that educators needed to support children's emergent language, literacy, mathematics and scientific development, including discussions around how best to support such learning and dosage would have been beneficial. However, within the LA, this would not have been accepted as this was not the remit of the team involved in the PD – the Inclusion Team.

v. Assessment and planning

Clearly recognised as important aspects of practice in effective ECEC settings during the *REPEY* study (Siraj-Blatchford et al., 2002), assessment and planning were identified as fundamental to successful PD at the individual child, educator and setting levels.

Cordingley (2013) pointed to the importance of supporting teachers in an on-going evaluation of their practice, ensuring that child outcomes were monitored as part of an evaluation of any changes made to practice. She suggested that teachers could learn from what worked as well as what did not work. Finally, she also suggested that focussing on specific individuals and their progression was important. Timperley et al. (2007) pointed to the need for teachers to hold sophisticated assessment skills so that they could: first, identify what the children know and can do in relation to valued

outcomes; and, second, so they could identify the further learning they themselves needed in order to support the children's learning further.

At the setting level, PD that introduced tools and protocols to support learning and progression were highlighted as useful (Cordingley, 2013; Siraj and Kingston 2015). The QUINCE research team (2013), who considered ECEC contexts, suggested the use of observational quality measures (such as the Environment Rating Scales) to support the development of the specific and articulated objectives for professional development, with care given to choosing the measure(s) that reflected the areas of practice and the children's outcomes in which improvement was sought.

At the individual level, educators should be prepared and able to conduct individual child assessments that they subsequently analyse to monitor progress and plan for future learning. Knowledge of the '*observation, assessment and planning cycle*' of learning and teaching was found to support educators in understanding their children's outcomes, and how their children were progressing in relation to them. Such understandings supported planning for both the individual child and for groups of children (Garet et al., 2008; Gettinger and Stoiber, 2007).

During the PD in this study aspects of assessment and planning at the educator and setting levels were discussed. The main emphasis was at the setting level through reference to a set of action plans and the ERS which had been used at pre-test. What was missing was in-depth discussion and assessment of the individual children. The decision not to cover this aspect of practice was partly determined by the practicalities of time but also due to the awareness that the responsibility for supporting curriculum (including aspects of child development) improvement and knowledge was outside the remit of the Research Team.

vi. Honing observational skills, reflection and observing different practice.

Cordingley et al. (2013) noted the importance of observational skills, where the teachers focused on the teaching and learning that was occurring rather than merely monitoring or 'looking'. For this to occur the teachers required clarity about what they wanted to achieve for the children (learning intentions) and a willingness to explore the underlying principles of their teaching approaches to ensure that they understood them well enough

to transfer their learning between contexts. Observation, when coupled with structured, collaborative discussion and analysis, was found to act as a catalyst for reflection on how the PD and enhanced practice connected with the children's learning and development.

Reflective practice has been recognised as important to effective teaching and quality improvement for many years (Dewey, 1933). True reflective practice is complex and demands a great deal from the educators, it can be accomplished before, during or after teaching, with or without colleagues. Colwell et al. (2015) described several key characteristics of reflective practice: Reflective teaching implies an active concern with aims and consequences, as well as means and technical efficiency. It typically includes a cyclical process, in which the educators monitor, evaluate and revise their own practice continuously. For this to be effective, they require knowledge of the theory underpinning different approaches to practice, as well as the confidence to be open to and the motivation to change, and make evidence-based judgements on the teaching within their setting. Reflection can be enriched through collaboration and dialogue with colleagues and, at its best, it enables educators to creatively mediate externally developed frameworks. It is a process that sits within many of the elements of the SEEPD and was an important aspect of the PD/intervention of this study and the final model of educators learning introduced in chapter 7.

Gallimore and Stigler (2003) noted the importance of ensuring that teachers had the opportunity to see alternative practices. They argued that seeing something/practice that was completely different to one's own experience was one of the most powerful teaching and learning tools available for creating change. Cordingley et al. (2013) added that opportunities to observe and analyse multiple teaching and learning exchanges to identify strengths and weaknesses, support evaluation and the adoption of new approaches was an important element of successful PD.

Throughout the PD in this study, opportunities to hone observational skills through practise using DVDs, case studies, scenarios, modelling etc. and through work within their own settings was emphasised. Desimone (2009) promoted such techniques to support participants learning during PD. The focus of the observations was to evaluate

practice and inform future planning. For many settings the practice they observed during the sessions illustrated approaches to teaching and learning that were new.

The PD was written so that it was consistent across the various settings that were included in the intervention group. The premise was that all settings would have the same content and experiences so that the impact could be objectively compared. Unfortunately, on occasion this was problematic, as the teaching and learning approaches typically included some assumed understandings which were, on occasion, not present. For example, the DVD which featured the Highscope 6 steps to Conflict Resolution shown in the session designed to support behaviour for learning included the basic assumption that the educators knew how to talk to children and understood the basic premise of positive talk to support learning. Where this was not the case, the sessions needed to be changed to support the underlying skills and understandings and some of the observational activities needed to be substituted and/or omitted.

vii. Responding to diversity and supporting the early Home Learning Environment (HLE).

More recent discussions regarding the content of PD are beginning to emerge around ECEC educators' role of enhancing the learning and development of children from socially disadvantaged backgrounds. The diversity of children and families accessing ECEC is growing and educators are working with children from increasingly complex social environments and encountering a multiplicity of family backgrounds and experiences (Siraj and Kingston, 2015).

Importantly, PD should respond to changes within the sector. It should include training in practices that consider intercultural approaches, approaches to second languages, working with children with special educational needs, working with children at risk, and focussing on language acquisition (Eurydice, 2009). Kyriakides et al. (2009), while working with qualified teachers, noted that the skills of differentiation (across all aspects of teaching in the classroom including: management, questioning, modelling, structures, assessments and relationships) which would be needed for success here were high-order teaching skills. Such skills were typically not achieved until many other skills were practised and well established (for example the skills of quality questioning, assessment and feedback, establishing quality structures for learning, modelling and developing good teacher-student relations). Further, even PD that successfully improved teachers'

skills indicated that some aspects of teaching were more difficult to achieve and took a longer time than others. Making improvements was easier and quicker with teachers whose starting points were lower, than those who were already working at higher skill levels, and a true understanding and application of differentiation in the classroom was time consuming and relatively difficult to achieve (Kyriakides et al., 2009).

Educators should be supported in understanding the effects of poverty, and the power of supporting the early HLE. Recently studies (Scottish Centre for Social Research, 2009; Sylva et al., 2014) have demonstrated the importance of the early HLE. Sylva et al. (2004a) found that the early HLE was more important for intellectual and social development than parental occupation, education or income. Activities (language and educational games, visits, events, reading etc.) were found to have an influence on children's cognitive development and to moderate, but not eradicate, the effects of disadvantage.

The team who developed and delivered the PD for this study were the Inclusion Team who were responsible for supporting the inclusion of children across the LA in all of the ECEC settings. As such they had previously developed and run training to support language acquisition, including approaches to second languages, working with children with special educational needs, working with children at risk and supporting children with challenging behaviour. Differentiation was an important set of skills which featured in many of these previously run PD sessions. Experiences of leading such sessions led directly to the development of this study and this new, more basic, focus. The discourse within the Inclusion Team was that the educators needed support with the skills and understandings that underpinned the training they had previously delivered. Interestingly, the later work of Kyriakides et al. (2009) appeared to support this view. It is noteworthy that the educators involved in the PD rarely had degree level qualifications and therefore may well have had starting points which were lower than those captured by Kyriakides and colleagues working with teachers.

As previously discussed one session in the PD included discussion and analysis of the importance of the early HLE and the development of materials to support and enhance it. What was missing was support for understanding cultural difference in families, the impact of disadvantage (e.g. poverty) and additional factors which could lead to

vulnerability (e.g. parental mental health issues or children with additional needs within the family) as these had been covered in previous training.

4.5.2. Domain two: Delivery

i. Collaboration

Cordingley et al. (2013) and others identified further aspects of effective PD linked more closely to the process of the delivery. They included supporting collaboration where the participants both gave and received peer support, in particular developing professional dialogues and risk taking as core learning strategies. Peer support made an important contribution to embedding new practices (including practices from research) in day to day practice introduced during PD. Interestingly, peer-supported PD was shown in the reviews to work as well for conscripts as for natural enthusiasts (Timperley et al, 2007; Cordingley et al, 2007; and Bell et al, 2010). The notion of volunteers versus conscripts is discussed in more detail under Domain three, relating to Affect.

The important elements of collaborative working were opportunities to process new understandings together and challenge problematic beliefs, with a focus on analysing the impact of the teaching on the children's learning (Timperley et al., 2007). These elements formed a core for the PD developed for this study. Problematic beliefs were identified through analysis of the pre-test ERS scores, structured interview and through discussions during the sessions. These included the belief that the educator's role was one of facilitator rather than teacher/educator, that the early years were not important for a child's education, that common sense and care were the educator's main roles and education was not, that some children were not able to share or 'behave', that it was women's work, that some parents were not good at parenting, that pre-school work was not real work, that the educators were not a part of a team with responsibilities to each other and to the children and families they served, and so on.

For many of the settings involved in the PD working in a collaborative way with support from peers was either completely new or at best rare. Many of the settings seldom met together as a whole staff and when they did meet the agenda was more about administrative issues than developing professional dialogues, discussing practice and

changing and evaluating teaching and learning approaches. The feedback from the staff who attended the PD was consistent about the value of this approach (see chapter six section 6.7).

Following the PD, many of the settings' leaders that did not have regular staff meetings approached their managers/owners or committee members to argue for meetings to become part of their normal working conditions. They sought recognition and payment for attendance, which, for some, unfortunately became an issue that was not resolved by the end of the study.

ii. Specific teaching with coursework including feedback and/or coaching.

Landry et al. (2009) and Neuman and Cunningham (2009) considered the use of specific teaching with detailed feedback which they termed didactic coursework and in-classroom observation and coaching as methods of supporting teachers' language and literacy support in ECEC. They found that a combination of these approaches was the most effective. The benefits of PD providing both tutoring and in class support has been found effective by others too (Rolla et al., 2006; Yoshikawa et al., 2015). The use of consultants/coaches for feedback on observed performance within the classroom/setting including supervision of action plans and their implementation, and support for ongoing challenges and decision-making has been described as necessary for changes in educators' practice (Ager and O'May, 2001; Joyce and Showers, 2002).

In this study a combination of direct teaching and coursework took place during the four sessions with feedback on progress and practice completed in between the sessions. Consultancy/coaching was also provided as part of the ongoing support the leaders of the training gave through their existing support roles as members of the Inclusion Team. Typically, the Inclusion Team members visited the settings and supported the educators when agreeing on action plans, they conducted observations to see how the action plans were implemented and they gave feedback to the educators on what they had seen, supporting reflection on next steps.

iii. Supporting in-class practice, including coaching and mentoring.

As discussed previously, rather than the training or qualifications per se, it is what happens in the classroom that is most important if impact on children's outcomes is

desired. Early et al. (2007), amongst others, showed strong links between educators' actual classroom behaviour and interactions with children and children's outcomes. Pianta et al. (2014) discussed the need to refocus PD on to the practice and behaviour of the teachers in the classroom and away from solely content designed to enhance knowledge and support attitudes. He suggested the use of coaching, modelling and rehearsal practice and a focus directly on actual classroom practice. While this emphasis was recognised as important within this study, the focus solely on in-class behaviours was not considered sufficient or reflective of the educators' baseline understandings and attitudes. Pianta et al.'s (2014) comments referred to PD that was designed to augment the practices of teachers who had previously undertaken higher education qualifications in ECEC. Further, while they promoted PD that included coaching and or mentoring, they also recognised that knowledge, skills in identifying effective practice and enacted classroom behaviours were related and linked.

Within this study, very few of the educators had received much previous PD and few had higher education qualifications and those that did have degrees had rarely studied ECEC. Acquiring knowledge about effective pedagogies and practices and consideration of attitudes towards the children, their families and how they might support learning, were seen as imperatives within this study. In addition, the research and training team were also a support team who had previously spent their time visiting many of the settings where they had focussed on mentoring and modelling practice during their visits. The PD designed for this study was therefore an attempt to support the educators in re-evaluating their values and beliefs, so that they saw how fundamental their role was in supporting children's current and future learning. It was designed to support shared understandings of the CGFS, including discussion around how and what young child learned. Further, it demonstrated the importance of and actualised a collaborative approach to supporting the children's learning. Finally, it was about planning for learning orientated changes which would later be supported by in-class visits by the Research Team as they reverted to their Inclusion Team roles.

iv. Intensity, duration and attendance.

The intensity and duration of the PD has also been associated with effectiveness. Cordingley (2013) proclaimed the need for sustained enquiry-orientated learning typically spanning over two terms, while Zaslow et al., (2010) suggested the length of the

sessions needed to be matched to the content (goals) being delivered. They noted, however, that, generally, single workshops of PD were not as successful, even if they were narrowly targeted, as lengthier extensive professional development and education models (Donovan et al., 1999; Raikes et al., 2006). Timperley et al. (2007) argued that learning typically took place over time and successful PD needed an extended period of time together with frequent contact with the provider.

While the PD in this study appeared to be relatively short – four, three and a half hour sessions, each set of training was conducted by staff who were nominated supporters and advisors of the settings involved. They had an on-going mentoring role beyond the four session input. The follow up mentoring role which the leaders of the PD had, included support for the action plans for improvement developed during and beyond the four sessions.

v. Funding.

Timperley et al. (2007) reported contradictory results regarding funding: studies where schools funded teachers' time for release from other duties together with schools where no such funding was available were both associated with PD that had little or no impact. They interpreted these contradictory findings as suggestive of other factors having interfered with this variable.

While it was not established that funding per se impacted on the success or otherwise of PD within ECEC settings, the attendance and length of PD and the critical mass of staff attending the PD did appear to have an effect. This was why funding was made available to pay for all staff to attend the PD in this study, with the proviso that payment was conditional on all staff attending and that attendance exceeded 80% of the sessions. All of the intervention group settings achieved this condition, with most achieving full attendance for all staff.

vi. Critical mass of staff and the involvement of leaders/managers.

The number of, and positions held by educators attending PD, were found to be important to its success (Cordingley, 2013; Zaslow et al., 2010). These aspects of the process of the PD related particularly to the collective participation of educators/teachers from the same settings or schools in PD. Cordingley (2013) suggested that leaders

needed to give encouragement, time and model changes in practice. They could also support staff who needed specialist coaching and support the engagement of enquiry-orientated approaches to development.

Zaslow et al. (2010) suggested that joint participation helped support a professional culture and ensured the sustainability of new techniques and skills. PD which included the managers and supervisors helped to ensure that educators did not receive contradictory messages about which practices to change, implement or emphasise. Also, including educators working across age phases supported continuity and progression in children's experiences (Bierman et al., 2008; Burchinal et al., 2008).

Timperley et al. (2007) suggested that effective PD influenced change at three inter-related and parallel levels: child, teacher/educator and organisation. They argued that effective leadership of PD involved goal setting, enacting, monitoring and adjusting at each of the three levels. The parallels with Bronfenbrenner's Bio-ecological Model (2005) are unmistakable. The PD designed for this study involved all staff within the setting, including supervisors, managers, all educators and where appropriate/possible owners.

vii. The where and how of delivery.

This aspect of PD reflects some of the tensions between cost and impact. It is particularly pertinent when cost, time and reach are considered. Delivery of PD has typically been held in centres with educators/teachers from settings and schools coming together for training (for example, see Kyriakides et al., 2013)). However, Fukkink and Lont (2007) found results "*were significantly smaller for settings with ... delivery of training at multiple sites...*" (p294). This, together with the research looking at the critical mass of staff, suggested that single venue, possibly based within one setting/school PD may be preferable.

A relatively new development which reflects concerns over cost, time and reach has been the use of online, web-based or e-learning PD. While such methods of delivery may have supported reach to participants in more remote areas, and reduced costs it also made establishing relationships and giving real life experience of effective interactions difficult (see earlier discussion re high quality interactions). Research

comparing PD with a focus on relationship-building, rather than written elements or those that were mostly web-based, has shown that the former approach leads to better gains in terms of increased adult-child positive interactions and children's gains in literacy, language and social and physical behaviours (Archer and Siraj, 2015; Downer et al., 2009; Mashburn et al., 2010; Pianta et al., 2008).

The PD for this study was delivered to whole staff at times and venues that they agreed and that were convenient to them. Many sessions were delivered in the settings themselves while others were delivered at centres close by or within one of the educator's own homes. Although online training was discussed as one way of ensuring follow up, supporting on-going discussions etc., too few of the PVI settings in the LA had access to computers for it to be practical.

viii. Allowing time and opportunity to link theory and practice.

Dickinson and Brady (2006) outlined their view of effective timings between training on instructional approaches with opportunities to apply them shortly afterwards. PD that included a sufficient number of sessions to meet the objectives with time in between to allow for reflection and application of new learning was more successful than PD which did not allow for this.

Many reviews of professional development (e.g. Sheridan et al., 2009) discussed the way in which the educators acquire the skills, knowledge and dispositions required for effective ECEC. Some specified steps or stages in skills development, where educators moved from novice to expert. Commonly educators are thought to move through stages. For example: First, awareness of new strategies that are expected to achieve important child outcomes; Second, application of these strategies, at first in a somewhat awkward fashion; and third, refinement of these skills so that they are implemented automatically in a fluent, flexible and practiced way. While such stage models are often criticised as they fail to specify what mastery of skills and/or effective practice looks like they all point to the importance of developing an understanding of new skills and understandings in practice (Dall'Alba and Sandberg, 2006). They suggest that advanced skill levels are achieved through experience and practical application in "real-work" situational contexts. Discussions of models of practitioner learning can be found in section .3.3.

The PD was designed with the expectation that the educators would try new approaches, materials etc. in between sessions in their own settings. Each session included the discussion and agreement of an action plan(s) to be implemented in between sessions. For this reason, the sessions were spaced with at least two weeks between them. These timings were discussed and agreed with the educators, together with the expectations of trialling new materials, approaches within the setting, before starting the PD.

ix. Individual and/or grouping participants.

Zaslow et al. (2010) discussed the value of individualised PD and, while they recognised that not all individualised PD showed positive effects on practice, they suggested there was promising evidence for such approaches. Creemers and Kyriakides (2013) observed teachers in their classrooms and then grouped them according to their initial skill levels according to the *Developmental Stages of Teaching Skills*. They provided differentiated content in their PD for each group of teachers, matching examples and discussions to the skills typically found in one level above their starting points. They also supported critical reflection and individual action planning. They found that teachers made greater improvements when the PD was targeted to their specific stages of teaching. Interestingly, they also found that teachers at the lower levels made advances quicker than those at the higher levels, suggesting that becoming an effective teacher is not a simple linear journey.

At the outset of the PD the four sessions were developed using powerpoint, teaching notes, dvd clips, proforma's to support planning etc. with all activities itemised and standardised. The rationale was that each setting should receive the same input to support objectivity and later comparison of impact. Unfortunately, with some settings it became clear that the staff did not fully understand the underlying skills and principles of some of the approaches to teaching and learning presented in the original format. This necessitated some adaptations to the content of some of the sessions. Where changes were made the area under consideration remained the same and typically simpler underlying skills and approaches were introduced. In all cases the changes were discussed and agreed with the lead researcher and the title of the sessions maintained their fidelity and integrity.

x. Lifelong learning.

Finally, successful PD supported the notion of proactivity whereby the teachers actively sought out specialist and peer support and took responsibility for creating and taking any opportunities available for professional development, that is, they become life-long learners (Buckler et al., 2009). Successful PD supported the educators in developing the infrastructures necessary to continue their learning journeys (Cordingley, 2013). It supported the development of on-going discussion groups and the joining of groups, networks etc. where they were likely to be kept up to date with changes in policy and new research (Colwell et al., 2015).

The four sessions of PD in this study were not meant to be considered as an isolated event. The leaders of the PD were also supporters of the settings on an on-going basis. They supported the educators' on-going learning through the visits they made, the geographical networks they set up and the liaison between and within settings they facilitated.

4.5.3. Domain three: Affect

i. Motivation.

Some research points to the distinction between volunteers and conscripts to the PD and the consequent impact on the success of the PD, suggesting that the motivation of the participants is important (e.g. Cordingley et al., 2013). Timperley et al. (2007) noted that what was more important was the engagement of the teachers in the learning process. They suggested that those who were initially conscripted, and indeed those who were volunteers, may change their attitudes during the PD sessions. In this study all of the participants were volunteers.

Timperley et al. (2007) suggested that motivating people to change involved *challenging the prevailing discourse*. Within schools, in their studies, they typically found teachers had developed assumptions that some groups of children could not learn as well as others and/or emphasised limited curriculum goals. They recommended the use of iterative cycles of supported rethinking of such assumptions and the reporting of gains made as a result of alternative teaching approaches.

Within the ECEC context motivation to change and improve appeared to be linked to a number of more basic issues (see earlier regarding identified prevailing beliefs and discourses). Although beliefs about groups of children and their abilities to learn would be likely to impact as Timperley et al (2007) noted, there appeared to be some beliefs which were more fundamental than this. The motivation to change within the ECEC context needed many of the educators to change their understandings of the importance of their role within the setting. First, it required them to change to include the recognition of their responsibilities to support the children's learning and development. Second, it required the recognition that they needed to make improvements to their existing practice. Such beliefs were challenged and explored through the discussion of the effective practice research and the exemplars of practice introduced throughout the sessions.

Dall'Alba & Sandberg (2006) and File (1994) suggested that such intrapersonal beliefs such as *'theoretical orientation, view of self and role as teacher and effective change-agent... [together with]... beliefs about children's learning, and attitudes about work and coaching'* in Sheridan et al. (2009 p 10) were likely to impact on educators' willingness and readiness to change. Further, that they were likely to moderate the effects of PD on practice, even when delivered by competent, experienced trainers, coaches or facilitators (Sheridan et al., 2009)

ii. Confidence.

Confidence is an important element of the learning process and was recognised as such during the development and delivery of the PD. Fives (2003) noted the importance of staff believing in their ability to organise and execute the courses of action necessary to support and nurture the children in their care. Cordingley et al. (2013) noted how confidence supported teachers in matching learning needs to strategies and teaching and learning approaches and also to try out new evidence-based approaches within their classrooms.

The PD was designed to support improvement but also to increase the confidence of the educators so that they would engage with research and new ideas and approaches. Many of the participants reported an increase in confidence and motivation in their evaluations of the PD. As discussed earlier, it was necessary to adapt some of the

training to better support the current practice of the staff. While this was done primarily to support understanding it was also to support confidence as it avoided the participants feeling 'out of their depth'. It would not have been useful or supportive to engage with practice that they could not relate to.

iii. Developing professional relationships with and between the educators.

The importance of developing relationships is discussed in more depth the section: High quality interactions that support learning and development and the section: Collaboration. As it is considered fundamental to learning in children, so it was interpreted as fundamental to the learning of the educators. The Research Team worked hard to develop their relationships with the staff teams and to support relationships between them so that collaborative, collegial team work could be encouraged. See also section 3.3 Figure 7 where supportive relationships are prioritized during the PD in response to Bronfenbrenner's (2005) propositions.

iv. Supporting personal characteristics seen as key to success.

Many ECEC educators and experts have reported that working within ECEC is more demanding and complex than it at first appears, with novice teachers often feeling overwhelmed by the pressure and responsibility of the work (Rekalidou and Panitsides, 2015). Evidence of early 'burnout' of teachers in ECEC has become prevalent (see Jalongo and Heider., 2006; Mahmood, 2013). In the USA statistics indicated that over half of new teachers left the profession in the first five years (Jalongo and Heider., 2006).

There has been a multitude of possible reasons for the attrition rates of ECEC educators, including the demanding nature of the profession coupled with low compensation schemes (Torquati et al., 2007; Whitebook et al., 2014), inadequate preparation in appropriate classroom management for young children, failure to support the development of the array of multi-level and diverse attributes needed to respond to the complexity of teaching realities and the need to manage multiple agendas simultaneously (Mahmood, 2013). Such realisations have led to an increasing number of discussions around how ECEC educators should be supported in the literature. Initial education and continuing PD matter if the educators are to be equipped with the appropriate skills, knowledge and attitudes necessary to succeed in ECEC provision.

While knowledge and skills of teaching have long been recognised and included within initial education and PD programmes, new research regarding the personal characteristics of educators as fundamental to success is emerging. Rekalidou and Panitsides (2015) identified patience, perseverance and love for children as important personal attributes which need fostering. While in other studies, ECEC teachers and students, identified being passionate about children and teaching, perseverance, risk taking and pragmatism (Colker, 2008), and enthusiasm, adaptability, effective communication and lifelong learning (Taylor and Wash, 2003 in Colker, 2008) as integral to effective teaching.

Colley (2006) recognised different views regarding the 'emotional labour' necessary for high quality ECEC. Dahlberg et al. (1999) suggested that ECEC settings should not be seen as a home-from-home and that comparisons between educators and parents/carers and the portrayal of the nurseries as providing emotional closeness and intimacy was false. While Elfer et al. (2013) suggested that such objections could and should be overcome if high quality practice is to be achieved. That children in ECEC provision require the love and care from a 'key person' so that they get the closeness and intimacy they want and need. Further, Colley (2006) suggested that the emotional investment many settings and training institutions desired from their personnel and students was not transparent or clear enough. She suggested the need to develop shared understandings with educators regarding how feelings work in ECEC settings, in order to avoid emotions remaining in the control of, and being exploited for profit by, employers. Elfer (2013) suggested, where educators felt cared about and understood, including recognition of their emotional responses, both positive and negative, they were more likely to be attentive and responsive to individual children and their families.

Finally, emotional responses and motivation have long since been recognised as being linked to the attitudes and beliefs educators hold about the work that they do. Vincent and Braun (2011) considered beliefs held by ECEC educators, the gendered role and common sense approach to work which some educators held were likely to impact on the culture within a setting. The culture within the setting (and home) is increasingly being recognised as a factor in the sustainability of change and improvement (Dickinson et al., 2014; Hurry, 2007)

While emotions were not discussed directly in the PD, the importance of beliefs and personal attributes were reflected in the development of this study. The emphasis on understanding developmentally appropriate practice, for example, was designed to support empathy and understanding and ultimately patience and perseverance and adaptability. It served to support educators in being able to interpret children's behaviour as a form of communication, supported interactions/communications with the children, recognised the reciprocal nature of learning and encouraged the view of themselves as lifelong learners. The collaborative nature of the PD was designed to encourage ongoing discussions about the children, as well as the discussion and resolution of challenges and issues within the setting. When successful, it was believed this would support all staff to feel listened to, cared about and understood and develop a culture of ongoing support for improvement. Discussions around the requirements of the CGFS, together with the research on quality in ECEC, was designed to support educators' understandings about the importance of their role, and move them towards an understanding of the complexity of and impacts of high quality ECEC.

4.6. Conclusions and links to research question three

The SEEPD described in this chapter includes evidence from research which was reported following the completion of the study. Despite this there are parallels in what was planned for the PD and what are now considered the effective elements of PD. It, and the literature linked to it, are included in order to update the literature review as well as support analysis of the PD in this study. It supported the analysis of research questions three: What made the difference, if the settings did show quality improvements/changes or what have we learnt if they did not? which was developed following the consideration and development of the PD, with the sub-questions

- a) What do the researchers/trainers perceive as the reasons for change and/or no change within the settings?
- b) What do the managers/supervisors of pre-school settings perceive as the reasons for change and/or no change within the settings?
- c) What aspects of the training intervention (PD) did the educators/participants believe to be successful?

Further, the SEEPD is new and could serve as a useful tool to support future PD development.

5. METHODOLOGY

5.1. Introduction

In this chapter the worldview of the study is revisited and further links are made to the theoretical frameworks and the beliefs of others who were involved in the study (e.g. the strategic planning group who agreed the aims and research design).

The choice of analytical tools is discussed and the quantitative-qualitative debate is introduced. While both quantitative and qualitative approaches are adopted in this mixed methods study, the debate is useful to consider briefly as it explains some of the confusions associated with, and why some researchers would reject, mixed methods.

The research design: a case study adopting a sequential mixed methods design Creswell (1995) is outlined, the research questions are restated, the procedure and sampling strategies are clarified, aspects of validity, reliability, researchers' biases and ethical issues are discussed. Finally, the analytical processes are summarised.

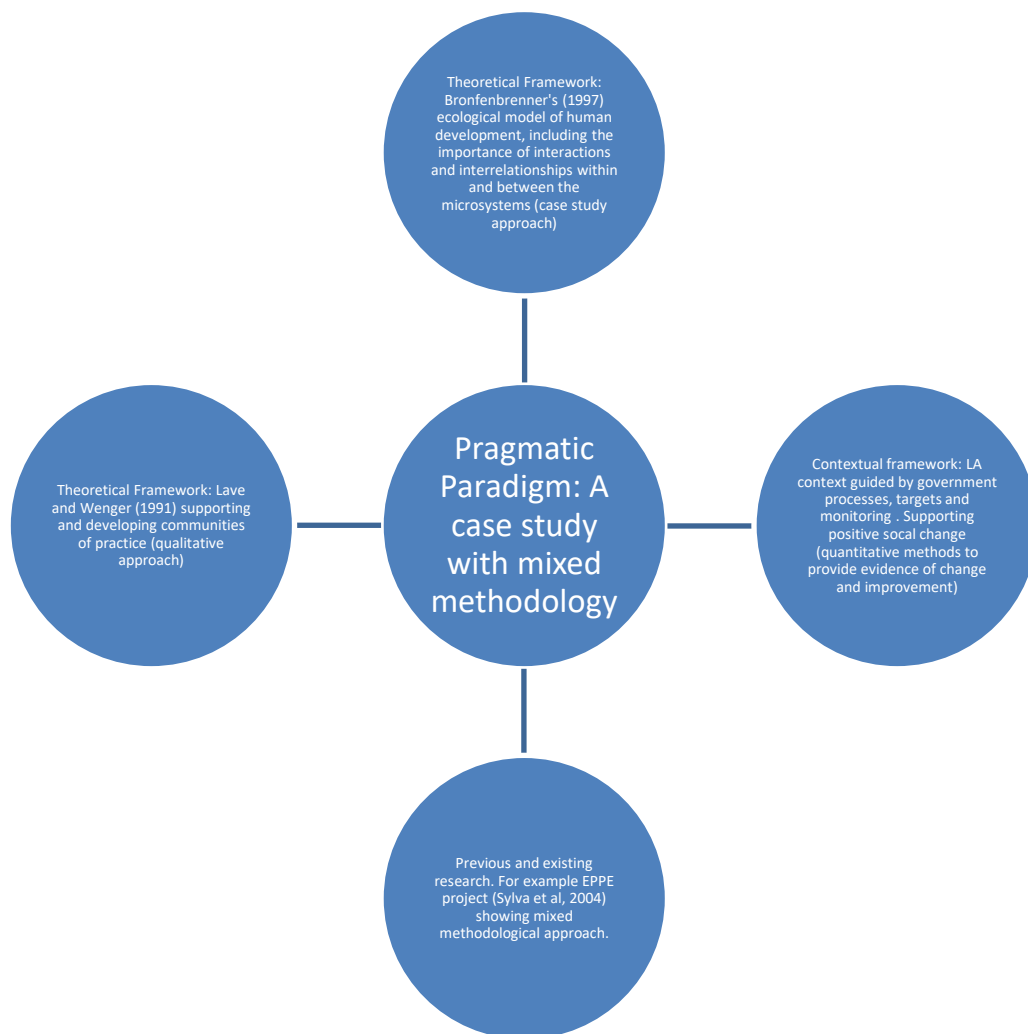
5.2. Research paradigm and mixed methods design

As discussed in the introductory chapter, the worldview adopted within this study was pragmatism. This was useful as it meant the emphasis was placed on the research problem and what works. Allowing for a mix of philosophical underpinnings and views of reality between researchers and, more importantly, flexibility in the choice of frameworks and data gathering techniques. It allowed for the inclusion of the theoretical frameworks of Bronfenbrenner's (1979; 2005) Bio-ecological Model of Human Development and Lave and Wenger's (1991) ideas about communities of practice (see section 3.3.). Both of which are socio-cultural and relativist in approach. As well as satisfying the needs and views of the LA members of the strategic planning group and some members of Research Team, who were, in line with other LAs personnel across England, most convinced by positivist notions of quality. The LA had a strong central government steer, was guided by their principles and legislation and was ultimately accountable to them through government set targets and monitoring processes. LA perspectives were also informed by recent government commissioned studies which consistently showed

quantitative results regarding high quality settings, improved learning outcomes and longer term benefits for children and families (e.g. Sylva et al, 2004a).

The theoretical framework, combined with the LA context (with their differing epistemological assumptions or worldviews) and a strong commitment to supporting positive social change led to the development of a research design within a pragmatic paradigm in line with Tashakkori and Teddlie’s views (1998). They described pragmatic research approaches as often driven by anticipated important social consequences and guided by the value systems of the researchers. Figure 10 shows the mix of worldviews that impacted on the study.

Figure 10. The theoretical and contextual basis of the study: a case study with mixed methodology.



5.2.1. The research paradigm: epistemological and methodological issues

As discussed earlier, worldviews and epistemological assumptions, which arise from ontological assumptions, give rise to methodological considerations which in their turn affect choices in instruments used and data collected (Cohen et al., 2007). In other words, research methods adopted are not simply a technical exercise but represent the researchers understanding of the world; how they view the world, what they believe understanding means and what they see as the purpose of understanding. The parallels here to the discussions regarding the contested nature of quality (section 2.4.) are unavoidable.

Recognising the importance of such underlying assumptions and beliefs is important as it also acknowledges the value ladenness of research and the view that politics, decision making and educational research are inextricably intertwined. This is particularly pertinent in this study given that it is situated within an LA context. Cohen et al. (2007) pointed out that such understandings have implications for the kind of educational research which should be undertaken and the move towards applied and evaluative and away from 'pure' research. This study was applied and evaluative in nature.

There is still much debate about the appropriateness of different approaches to research in education and educational settings. Historically there have been two major and opposing models or paradigms which have been the subject of a deal of discussion and which were derived from very different epistemological assumptions or worldviews. The first incorporates the view that knowledge is 'hard', objective and tangible: the positivist/empiricist approach. This approach allies itself with methods of natural science and gives the researcher the role of observer. It underlies what are called quantitative methods. The second sees knowledge as personal, subjective and unique: the constructivist/phenomenological orientation. This approach rejects the methods of natural science and requires the researcher to become involved with their subjects. It underlies what are called qualitative methods. The debate between these two approaches is often called the quantitative-qualitative debate. For many years

researchers saw these two approaches as incompatible due to the inherent differences in the philosophies underlying them (Tashakkori and Teddlie, 1998; Cohen et al. 2007).

However, during the last ten to twenty years or so there has been a shift away from seeing quantitative and qualitative approaches as incompatible and towards a pragmatic paradigm where researchers use both (Bryman, 2009). This has led to a rethinking about the worldviews which underly them so that similarities rather than differences can be recognised. Reichardt and Ralliss (1994) listed the following basic values as similarities: the value ladenness of inquiry, the theory ladenness of facts, that reality is multiple and constructed, that knowledge is fallible, and that theory is undetermined by facts. They also listed shared beliefs and aspirations within the research field of evaluation regardless of quantitative or qualitative approaches: the importance of understanding and improving the human condition, the importance of evidence based decisions, and finally the belief that the world is complex and multileveled and often hard to understand.

5.3. Theory leading to research design

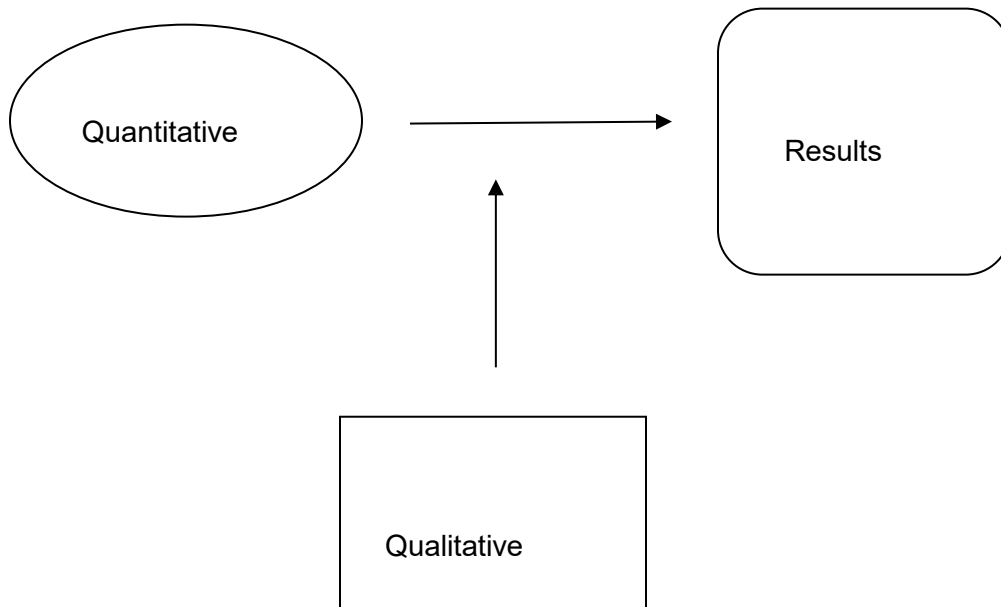
5.3.1. A case study

The term case study refers to the study of naturally occurring phenomena bounded by a defined case (in this study the case refers to all pre-schools in phase one and then a subsection of these, the PVI pre-school settings, in phase two in one LA). Case studies provide a detailed snapshot of a system in action (Edwards, 2001). Yin (2003) described case studies as empirical enquiries that investigate current phenomena in real life contexts and often involve multiple sources of data which come together to consider one aspect (quality in PVI pre-school settings). Bronfennbrenner (1979) stated that this kind of design approach to research will support 'progress in the scientific study of educational systems and processes' (p5)

According to Creswell (1995) this study would be described as having a sequential mixed methods design. This was because the study consisted of a number of phases with different approaches in each. Phases one and two adopted quantitative approaches of observation using ERS and structured interviews, while phases two and three

included qualitative methods of data collection and involved semi-structured interviews, evaluative questionnaires and themed focus group discussions (see Figure 1 p15). The design also involved a multi-levelled approach whereby the quantitative approach of the ERS was at the whole setting level while the qualitative approaches were at the Research Team, participants in the PD and setting supervisor level. Essentially, the study was designed so that the qualitative methods were used to explain the quantitative results. Tashakkori and Teddlie (1998) explain this design pictorially, see Figure 11.

Figure 11. Qualitative methods to explain quantitative Results



(Source: Tashakkori and Teddlie, 1998 p44)

This kind of methodological triangulation – combining quantitative and qualitative approaches - is described as highly valuable and supportive of validity according to Denzin (1988, in Robson, 2002). Data sources included observations, focus groups and interviews and completed questionnaires. The qualitative measures of interviews, questionnaires and focus groups were used to explore ‘interpretations of the data and the tentative links ... between elements of the case as part of a process of progressively increasing an understanding of the case’ (Edwards, 2001, p 131). The aspect of the case study was refined as the study progressed. Initially all pre-school settings were

included in the data gathering processes (in phase one) however later, the PD/intervention was targeted at the PVI sector only (phase two). The LA had an unusually high number of PVI pre-school settings in comparison to maintained settings, they were also a relatively new and unknown group of settings with new and greater demands placed on them at the time of the study. In addition, research (e.g. Sylva et al, 2004; Melhuish et al., 2015) and the pre-test baseline data suggested that quality within PVI settings was generally low and as such they were identified as most in need of support and most likely to benefit from the PD.

As the study was situated within an LA the emphasis was on 'particularisation' to the local context and the idea of generalization to the wider population (including pre-school settings in other LAs) was not the major focus of the study or indeed the LA strategic planning group. Edwards (2001) warned of the danger of over generalization with such studies. However, the exemplar of PVI settings, their quality, how they responded to the PD and generally to the support available within the LA was designed to build up an understanding of issues that were common to all PVI settings within the UK. The research was seen as particularly pertinent to PVI settings and LAs with a large ratio of PVI to maintained pre-school settings.

5.3.2. The Research Questions

A pragmatic paradigm was adopted in this study as it supported the asking and answering of research questions which were driven by anticipated important social consequences and guided by the value systems of the lead researcher and the LA. The aims of the study were: first, to capture existing levels of quality within the LA's pre-school settings; second, to determine whether a short bespoke professional development (PD) could impact on the quality of the PVI settings (a subsection of the pre-schools); and third, to inform and support future PD developments within the LA.

Research Question 1:

Main question: What is the quality like in current pre-school settings across the LA?

Sub-questions:

a) What is the practice and pedagogy like within the pre-schools in the LA? Are the children and families within the county receiving high quality care and education?

- b) How does the quality of the pre-school settings in the LA compare to settings nationally?
- c) Are differences in quality linked to type of setting, areas of deprivation, and/or qualifications of staff?
- d) How do the measures used in this study and the resulting scores compare to existing Ofsted ratings?
- e) What does this research, together with the international and national literature, tell us about the pre-schools strengths and areas for development? (This information was needed to inform future professional development including the short training intervention in this study).

Research Question 2:

Main Question: Will a Professional Development/short targeted training intervention provide measurable improvements in quality in PVI pre-school settings?

Sub-questions:

- a) Will a targeted training intervention/professional development (PD) make improvements in the quality of settings which are statistically significant in comparison to matched control settings who do not receive the PD?
- b) Will these changes, if found, be sustained for at least a year?
- c) Are improvements, if found, linked to type of setting, qualification of staff, areas of deprivation, starting position re quality measures?
- d) Which settings and aspects of practice change most?

Research question 3:

Main question: What made the difference, if the settings did show quality improvements/changes or what have we learnt if they did not?

Sub-questions

- a) What do the researchers/trainers perceive as the reasons for change and/or no change within the settings?
- b) What do the managers/supervisors of pre-school settings perceive as the reasons for change and/or no change within the settings?
- c) What aspects of the training intervention (PD) did the educators/participants believe to be successful?

5.4. Method

This section outlines the design and processes used within the study. It details the participating services – the Research Team – and the pre-school settings involved in the setting. It also describes the measures, the procedure and the sampling techniques used.

In brief, an intervention or PD was designed following measurement of the quality within all of the pre-school settings in the LA (a baseline for the quality of the ECEC provision across the county was established using Early Childhood Environment Rating Scales (ERS)). The PD was then delivered to 50 randomly chosen settings, who were matched with 50 control settings. Finally, a repeat of the baseline measures was conducted, in the matched pairs of settings (the intervention and control groups) who were still open, had a matching pair, and, if an intervention group, still contained the staff who had received the intervention. The repeated measures (ERS) were designed to capture any changes in practice evident following the PD. This strategy and design is sometimes referred to as a Randomised Controlled Trial (RCT). In addition to this, process quality was captured through a series of interviews, questionnaires and focus groups with the managers/supervisors, participants of the PD and Research Team.

5.4.1. Participating LA services and pre-school settings

As national policy on ECEC developed, all LAs in England were obliged to consider and support the ECEC provision within their locality (see section 2.3). The study LA responded to these new demands and set up an early years strategic planning group, which included all of the senior managers across the LA who had advisory or supportive roles within ECEC. The group's remit was to consider quality within the early years sector and support quality improvement where appropriate, it was to ensure that changes and improvements made were evidence-based and well evaluated. The lead researcher was also the strategic lead for the study within this group.

Data collectors background

The Research Team who conducted the ERS observations included all members of the the Inclusion Team (part of the EYDCP), one member of the Early Years Advisory

Service and three members of the Early Years Teaching and Support Service – Playlink (see section 6.2.1). These three teams constituted the education teams working within ECEC at that time. They were all qualified teachers. The lead researcher was the manager of the Inclusion team.

The Research Team who led the PD was a subsection of this original team and consisted solely of members of the Inclusion Team. They delivered the PD to PVI pre-school settings within their 'patch' which gave the added advantage of a continuing mentor role following the delivery of the four face-to face PD sessions (see section 3.2). In addition to being part of the Research team, the lead researcher conducted the interviews, led the focus groups and analysed all of the data.

Summary of the different types of ECEC provision in the LA.

The ECEC settings across the LA could be divided into three or four groups. These groups distinguished providers by their funding source, operational characteristics and accessibility according to families' residence area and affordability.

Nursery Class – A maintained early years class within a primary school with a qualified teacher present. Children usually attended either a 3 hour morning or afternoon session. Nursery classes were situated in areas across the county designated as deprived.

Private nursery and/or pre-school – Privately owned provision – these settings included both full day care and sessional care. They could be privately owned by an individual or by a larger organisation/chain. Some private provision was run on a school site, some on separate premises. Qualifications of staff varied but typically they did not have relevant early years specific qualifications and very few were graduates.

Independent nursery and/or nursery class – Early years provision run by an independent school and delivered on site. It was either full day care or sessional, depending on the arrangement of the individual school. Qualifications of staff varied but typically they did not have relevant early years specific qualifications and very few were graduates.

Voluntary nursery and/or pre-schools often called playgroups – Provision run by a charity or voluntary management committee on a not-for-profit basis. Such settings

typically ran sessional care, usually in the mornings only. These settings were led by a local committee, including parents and members of the local community as well as staff. Again, the qualifications of staff varied but typically they did not have relevant early years specific qualifications and very few were graduates.

The LA database identified these types of provision as sitting within three groups, 1) LA funded nursery classes, 2) playgroups and 3) private or independent provision. They brought together the private and independent nurseries, as they were both market driven provisions which distinguished them from the other settings.

5.4.2. Measures

To assess the quality of provision in the pre-school settings, both process and structural quality and setting characteristics were collected through observations lasting two and a half hours during phase one and phase two of the study (see Figure 1. Timeline p15). The main measurements employed were the Environment Rating Scales (ERS) ECERS-R (Harms, Clifford & Cryer, 1998) and the ECERS-E (Sylva, Siraj-Blatchford & Taggart 2003) together with structured interview questions which provided information about the settings characteristics e.g. size, staff qualifications, intake and use of the building (see appendix E). Further information was also gleaned from existing LA databases, for example, with regards to most recent Ofsted ratings, areas of deprivation, type of setting and previous attendance at PD.

The ECERS-R was designed to evaluate the quality of provision for children aged 2½ to 5 years in centre-based settings. It consists of 43 items organized into seven subscales, including Space and Furnishings, Personal Care Routines, Language-Reasoning, Activities, Interaction, Programme Structure, and Parents and Staff. As this study was looking particularly at pedagogy and curriculum, as opposed to the physical environment and resources, and time was short, several subscales of ECERS-R were omitted. The three subscales chosen for use in the study reflected the Ramey and Ramey four diamond model (see section 2.6.) and relevant national research (see sections 2.7 and 2,8), they were: Personal Care Practices (e.g. how they supported children's general health and care and how they used relaxed time such as lunch times to support interactions), Social Interaction (e.g. considering developmentally appropriate

practice and how the staff supported the children's interactions with each other, and how they supported the children's behaviour for learning) and Parents and Staff working together (e.g. considering the relationships developed between the parents and staff, and the support available for the staff's on-going professional development).

The ECERS-E scale was used in its entirety, it provided greater depth and an additional 15 items in four educational aspects of provision: Literacy (e.g. opportunities for emergent writing, letters and sounds); Mathematics (e.g. number, shape and reasoning); Science and Environment (e.g. supporting children's creative and critical thinking and understanding of the natural and physical world), and Diversity (e.g. planning for children's individual learning needs, valuing and respecting other cultures, gender diversity).

Both ERS provided detailed descriptions for each item within them, items were scored on a 7-point scale, where 1=inadequate, 3=minimal, 5=good and 7=excellent. The scores for the general scale and sub-scales represented the average of the items that composed them. These scores are analysed in the results section. The structure of the two environment scales is discussed in more detail in Appendix B and one example of an individual item from each - ECERS-R and ECERS-E - are shown in Appendix C and D respectively.

It was decided to use these ERS because they were the measures most commonly used both internationally and in England in quality assessments for child care and early education settings, they had proven associations with children's outcomes (e.g. Sylva et al., 2004a) and they had high levels of inter-rater reliability and validity (see section 2.5. for further information).

Further aspects of process quality were investigated through a series of focus groups, questionnaires and interviews (see Figure 1 Timeline p15). Focus groups with the Research Team were conducted during the implementation of the PD and following its completion (phases two and three). The participants of the PD completed a short evaluative questionnaire during the last face-to-face session (phase 2). Interviews were conducted with supervisors/setting managers following the PD (phase 3).

5.4.3. Procedure

The procedure below outlines the mixed methods approach taken in the study which incorporated both quantitative and qualitative data gathering techniques. Robson (2002) described such approaches as necessitating different study designs which he referred to as fixed (for quantitative) and flexible (for qualitative) designs. He preferred this terminology as it avoided many of major objections levelled in the quantitative-qualitative debate, including the incompatibility argument, and allowed for mixed methodology designs.

The study comprised of four phases (see Figure 1 Timeline for the study p15):

Preparation Phase

Before the study began, an LA strategic planning group were gathered together. They agreed the design and process of the study. A series of meetings and discussions designed to gather information on stakeholder's perceptions of quality across the county was conducted. For further information on this process see summary in Appendix G. The Research Team was trained on the use of the ERS. A series of training days and practice in settings was led by an author of ECERS-E.

Phase 1 Year 1

Phase one of the study adopted a fixed design and quantitative data was gathered. Prior to any data gathering, the Research Team underwent training and an inter-rater reliability process on the ERS, to ensure that their observations were consistent and reliable. Five inter-rater reliability joint observations were conducted. Individual raters' scores were compared to the lead researcher's scores and a minimum of 85% correspondence (plus or minus one for each item) in scoring was established for the final, fifth observation. The last visit scores were also analysed using Intra-Class Correlation (ICC). Inter-rater reliability was also established through joint observation and comparison prior to the post-test, which were analysed in the same way (see results chapter sections 6.2.1 and 6.4.1).

Following this process, observations were made, using the ERS, to establish baseline data (which also acted as pre-test data in phase two) on quality in the pre-school settings across the LA (268 out of 279 settings agreed to take part in the study). The

baseline (later the pre-test) data - all of the subscales from ECERS-E and three subscales from ECERS-R (Language and Reasoning, Activities, Parents and Staff) – were captured within a ten-week period (see Figure 1 Timeline p15). Each observation lasted a maximum of two and a half hours in duration. The baseline observations were completed by ten members of staff employed in early years advisory and support roles within the LA (as outlined above). In addition, in line with the recommendations of Snow and Van Hemel (2008) other demographic data was also collected at the time of the observations. This included information re: areas of deprivation, turnover of staff, size of setting, qualifications of staff, type of setting, so that the data could be investigated in relation to these attributes.

Phase 2 Year 2

Phase two incorporated both a fixed and flexible design and both quantitative and qualitative data were gathered. A training intervention/ PD was implemented in 50 randomly chosen PVI settings which were matched with 50 controls (these settings had pre-test data gathered in phase 1 through the baseline). See section 3.2. for further details of the PD. Before the interventions took place, permission was sought (over the telephone) from the setting managers and supervisors either for them to become involved in the training intervention and a post-test observation or, with the control settings, to allow the repeat (post-test) observation in phase two. The training intervention took place in the spring and summer terms of phase two.

Qualitative data was gathered at the end of the intervention when the participants completed a short evaluative questionnaire (see Appendix F for an example). Also, the Research Team reported on progress and discussed the PD, how it was being received and implemented, on two occasions (focus groups) during this phase.

Quantitative data was collected following the PD. First, further checks on inter-rater reliability for the ERS were established. Then, at the same time of year as the baseline (pre-test) data and in the same 10-week time frame, a second set of 'blinded' observations using the same ERS was repeated by the seven members of the LA Inclusion Team (providing the post-test data). Only 42 out of the initial 50 matched pairs of settings were still viable and suitable for the study at that time (see below for viability

and suitability criteria). So, 42 matched pairs were available for analysis for changes from pre- to post-test.

Phase 3 Year 3

Phase three adopted a flexible design and qualitative data was collected. Three interviews with supervisors/managers and a final focus group for the Research Team were conducted in phase three. These were designed to explore possible reasons for changes and improvements and/or no changes or improvements. Six interviews were planned for, but the reorganisation of the county, including changes in personnel and priorities ended the study before they were complete.

At the end of the year a further set of observations using the same ERS was planned for in the intervention and control groups, in order to consider the sustainability of improvements. Adding to the fixed design of the study and providing a further set of quantitative data, however, this was not completed as the study was halted.

5.4.4. Sampling processes

The following subsections describe the sampling procedures adopted during the fixed and flexible designs – gathering of quantitative and qualitative data respectively.

Fixed design: sampling and variables

Phase one – baseline (and pre-test) data

In phase one, the total number of pre-school settings within the LA (279) were approached to take part in the study: the target population. Of these, 268 settings were observed and their data (apart from one setting which was incomplete) formed the baseline scores in Phase one and later the pre-test in Phase two. The baseline was considered to be representative sample of the total population within the LA.

Phase two - random sampling – pre-test data

In phase two, fifty PVI settings (see section 5.3.1 p112 for the rationale for choosing the PVI sector only) were chosen by random stratified sampling from the 264 settings with baseline ERS scores at the time of sampling, and then matched with pairs chosen from the same sample. The variables chosen to inform the random stratified samples were

informed by previous research findings (Sylva et al, 2004) together with baseline results. Nine variables were indicated as relevant and a random digits table was used to select the first of each pair (Haber and Runyon, 1973, p 367).

The variables used for the stratified sampling were: first, their total pre-test quartile scores (the total possible baseline measure was divided into quartiles); second, by situation in a ward designated as deprived or not; third, by type and their designation as a nursery or playgroup; fourth, by building use, whether they were multi-use or single use; fifth, by staff qualification and whether they had a member of staff qualified to level five or above; sixth, according to their Ofsted grade and finally by the number of children aged from three – four years of age on roll, the age ranges catered for and the overall size of the setting.

Typically, with such techniques, four or five variables are chosen to match the pairs (Oppenheim, 1992). The pairs chosen here were all matched by at least five variables, however, where additional matches were possible all nine attributes were considered until no further matches were available. In all cases, it was possible to find control matches according to total quartile ERS score, designation of deprivation or not, type of setting, building use and level 5 qualification or not. However, it was not always possible to match settings by Ofsted grading as many simply did not have one and on other occasions there were no settings left to choose from. Where there were still alternative possible matches the number of children on roll and the age ranges were considered. Each setting was matched with one other single setting.

The pairs of settings were then randomly allocated to either the control or trained intervention groups, with only the trainer knowing which was which. No setting declined the offer of the PD/intervention and all agreed to the repeat (post-test) observations.

Phase Two – post-test

In phase two, 42 out of the initial 50 matched pairs of settings were allocated 'blind' to the Research Team to complete the post-test. The observers did not know which settings had received the training and which had not. The setting practitioners were asked not to reveal whether they had participated in the PD/intervention during the observations.

The post-test included a repeat of the initial observations in the settings (approximately one year after the pre-test or baseline measure) together with a brief structured interview designed to capture any significant changes within the settings over the past year.

Summary of samples in phases one and two

Table i below summaries the sample sizes at each stage of phases one and two.

Between the gathering of data for the baseline (in phase one) and the sampling stage (in phase two) three PVI pre-school settings had closed. This reduced the database from 267 to 264 settings. At the start of the intervention (in phase two), 50 matched pairs of PVI pre-schools were chosen, with 50 settings receiving the intervention and 50 acting as controls, from the baseline data of 264 settings. The data for these 100 settings constituted the pre-test for this phase (two) of the study. At the post-test stage (the end of phase two) five intervention settings and two control settings had shut – reducing the matched pairs by seven. One further intervention setting was eliminated from the sample, as bank staff were staffing the setting when the post-test ERS observations were made, consequently none of those staff had received the intervention and so the resulting observations were not considered to be useful.

Table i: Summary of sample sizes in phases one and two

Phase	Timing	PVI settings	Maintained settings	Total number of settings
One (baseline 1)	Year 1 Winter term	252	15	267
Two (baseline 2- sampling ready for intervention)	Year 2 Early Spring term	249	15	264
Two (pre-test at start of intervention)	Year 2 Spring term	50 matched pairs	0	100

Two (post-test i.e. used in analysis)	Year 2 Winter term	42 matched pairs	0	84
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Flexible design: sampling

Phase two and three - focus groups

Data was gathered through focus groups and interviews. The focus groups involved the Research Team who delivered the PD/ intervention. The entire group, of seven trainers, was included in all of the focus group sessions. These tutors (including the lead researcher) were gathered together on three occasions (twice in phase two and once in phase three) to share experiences and perceptions of the PD/intervention and how it was received by the settings they were working/worked with. They were asked to describe their experiences both positive and negative, their views of the possible reasons for these and whether they thought the settings were making/made quality improvements during the PD or not. Field notes were taken by hand by the lead researcher and also by one of the tutors as part of the minuting process of the meeting. These were compared for accuracy following the meetings.

Phase three – interviews

Following quantitative analysis of the pre- and post-test ERS scores three interviews were conducted, by the lead researcher in the spring term of phase three. Three settings were randomly chosen (by pulling their name from a 'hat') from the following groups of settings 1) received the PD/ intervention and made significant improvements in their total quality score 2) received the PD/intervention but failed to make significant improvements in their total quality score 3) did not receive the PD/intervention but still made significant improvements in their total quality score.

The interviews took place at the settings and lasted from twenty to fifty minutes. Interviews were semi-structured (Oppenheim, 1992) and recorded while the interviewer made contextual notes. The semi-structured interviews focused on questions with probes (Cohen et al 2000) designed to gather data that was relevant to the research questions. However, flexibility was allowed so that the respondents could highlight aspects that were most significant to them and to follow their own line of thought rather

than the researcher's (Robson 2002). See appendix J for the questions and probes used. The respondents were encouraged to describe their experiences and their perceptions of their setting's quality, what may have impacted on any improvements and why and how this may have happened.

Initial categories which supported the development of the interview themes and initial analysis were: understanding of the Curriculum Guidance for the Foundation Stage (CGFS)(DfEE, 2000) including how they talked about their role and work and that of others in the nursery; views of PD including whether they accessed any regularly and saw continued professional development and quality improvement as central to their work; sense of setting as a community of practice including the time they committed to staff meetings and their perceived purposes; recognition of or thoughts on change and improvement including whether they thought they had improved and if so what the causes were for this and if not, again, what the possible reasons were for this.

Incentives

In phase one the majority of providers of ECEC expressed an interest in the study and agreed to participate. They reported thinking that it was in the interest of their setting or school to be part of the study. They realised that their inclusion could positively influence future policy and practice in the LA as well as shape the PD that would be available to them in the future. In addition, each setting was given a book voucher worth £25.00 for a book provider who specialised in early years books designed to support inclusion and celebrate diversity.

In phase two, the staff within the fifty PVI settings who agreed to take part in the intervention and attend the four face-to-face PD sessions were paid their usual hourly rate for all the sessions attended. Both the intervention and the control groups were also given another book token worth £25 following the post-test ERS observations.

Summary of procedure

Phases one and two of the study included gathering quantitative data in a fixed design (Robson, 2002). While, phases two and three of the study included gathering qualitative data in a flexible design (Robson 2002). The basic design, when phases one and two were combined, was pre-test, post-test randomized controlled trial with repeated

measures. While the whole study took a sequential mixed methods design (Creswell, 1985).

5.5. Validity and reliability

Validity is a requirement for both quantitative and qualitative research. In relation to quantitative research it includes a demonstration that the measures used actually measured what they were designed to measure and that the design itself was rigorous in its avoidance of bias. In qualitative research validity is more often addressed through honesty, depth, richness and scope of the data, the participants' approached, the extent of triangulation and the objectivity of the researcher(s) (Cohen et al., 2007).

Reliability in quantitative research considers aspects of dependability, consistency and replicability over time, instruments used and groups of respondents. There are three principles of reliability: stability, equivalence and internal consistency (Cohen et al., 2007). In qualitative research the term reliability is contested and often replaced with terms such as credibility, neutrality, trustworthiness, transferability and dependability. However, Denzin and Lincoln (1994) suggested that reliability can be addressed in several ways which were considered during this study.

5.5.1. Quantitative aspects of the study: validity and reliability

Validity and reliability are important aspects of fixed design studies including qualitative data in establishing the trustworthiness and generalisability of the findings. Validity refers to the accuracy of the result.

General Design considerations and internal validity:

This pre-test post-test randomised controlled trial design was chosen as it was known to support internal validity (Robson, 2002). Internal validity refers to the possibility of showing a causal relationship between the PD/intervention and any quality improvements found in those settings who had received it. Robson (2002) combined earlier work of Campbell and Stanley (1963) and Cook and Campbell (1979) and identified twelve possible threats to internal validity, nine of these were considered important to this study (in Robson, 2002). They are discussed in turn below:

First, the threat they referred to as history, the possibility that other issues outside the experimental situation might have an effect on the quality improvement investigated here, were considered. Possible history threats within this study included the understanding that generally, within the LA, there was an increase in support available to all pre-school settings. There was, also, a growing understanding of the importance of quality and quality improvement generally within the settings. Indeed, this was a major thrust in the preparation phase of the study. History was therefore considered to be a real possible threat to internal validity however the inclusion of a matched control group meant that it could be precluded. Both the PD/intervention and the control groups were involved in the study over the same period of time.

The second threat, of testing, related to the observations themselves and the possibility that the pre-test may sensitize those taking part, so that their subsequent testing may be affected. For example, asking questions about staff development opportunities might have led respondents to develop this aspect of their practice further. This was minimized by limiting interactions at the pre-test stage and explaining that this was part of the experimental rigour. Also, as a control group was included, it was felt that any effect would be recognized and therefore taken into account. In addition, as the study was situated within a real world context and supported the LA's social improvement agenda, the pre-test was seen as an important element of the overall LA strategic plan. It would be used to inform further work beyond the scope of the study. In addition, the testing effect, if evident, was viewed as an advantage, rather than a negative to be avoided (see earlier discussion re the pragmatic paradigm adopted in this study). Supporting settings in moving forward in their journeys of improvement was a major aim within the LA (this is discussed in more detail below in the discussion re the qualitative elements of the study).

A third threat, instrumentation, related to possible changes in the Research Team themselves between the pre- and post-tests and the way they interpreted the descriptors used on ERS in particular. This seemed pertinent as many researchers reported an improved understanding of quality and quality practice during and following the intervention period (discussed during staff meetings). The Research Team also felt that they had become more knowledgeable on particular aspects of practice such as, for

example, sustained shared thinking. This would be likely to lower the scores they gave to settings during the post-test observations as they were clearer on what they expected to see. As well as repeating inter-rater reliability tests, discussion about this as a possibility together with reference to notes and discussions taken during the pre-test ERS observations took place in order to support consistency of observations. However, while the matched control group supported validity, it was acknowledged that this might affect the post-test scores and make any improvements more difficult to detect across either group.

A fourth threat, regression to the mean, was identified by Robson (2002), this was avoided by ensuring that participant settings at the intervention stage represented the spread of settings within the LA. The stratified random sampling method used to choose the settings ensured that the settings were diverse enough for this not to be an issue. Further, during analysis, where the groups were divided into quartiles according to initial ERS total scores, descriptive analysis was used to compare changes over time between the intervention and control groups (see section 6.4.5).

Fifth, mortality of settings was another threat; this related to settings dropping out of the study before completion. This was seen as a real threat, and appeared to be particularly prevalent in those settings with poor Ofsted results and low initial levels of quality. Generally, within the early years sector there is a high turnover of settings and staff within them. Indeed, the sample size (total of 50 matched pairs initially) was thought to be large enough at the outset when time and resources were considered. However, a larger sample would have been useful and some of the effects may have been more clearly detectable had the final sample (used in the analysis) been greater than 42 matched pairs.

Sixth, selection of the groups was deemed another possible threat, with initial differences in groups prior to the involvement in the study possibly affecting results. This was avoided by careful matching of pairs of settings and then randomly allocating them to either the training intervention or the control groups. In addition, the analyses completed were designed to take into account any interrelationships between ERS scores and initial quality, type of setting, area of disadvantage and previous Ofsted ratings.

Seventh, diffusion of treatments was considered; this is where one group learns information from another or otherwise inadvertently receives aspects of the PD intended only for one group. Although this could not be completely avoided it seemed particularly pertinent for chains of nurseries where information was typically shared across the groups. In the design, this recognised threat was avoided by choosing only one nursery from any given chain, to form one of a pair.

Eighth, compensatory equalization of treatment was another issue which was identified as important, especially as later during the study some control groups asked for the PD. It was the relevance and importance of this, together with ethical issues, which led to the agreement that the control groups would be offered the training once the study was complete, given that it was proved effective.

Ninth, the threat of compensatory rivalry was another strong possibility and seemed likely given that settings within the same geographical areas (as the pairs typically were) were often in competition for the same children. In order to reduce this as much as possible the control groups were not told about their position, they were merely asked if a post-test observation could take place. However, it became obvious that some control groups were aware of their position. Some settings outside the PD/intervention group voiced their concerns, that the trained groups would be advantaged by the PD/intervention, and worked hard to equalize the effects by seeking out other training and conducting their own in house professional development sessions. If they contacted the Research Team they were informed that they would be offered the training in the next round of training.

External validity

Robson (2002) described external validity in terms of generalisability which was important to consider as without care the findings of the study might be limited to only those pre-school settings sampled and/or to the specific study LA. Further and more importantly the research may measure 'quality' which was specific to the study and not to the universally acknowledged and internationally agreed concept of quality within early years pre-school settings, which research has shown correlates highly with the

socio-emotional and cognitive outcomes of children within them. These are considered below:

It was important that the samples chosen were representative of the whole county so that they could be generalized across the LA. In phase one the data was designed to act as a baseline and to inform future practice across the county and in phase two the PD/intervention findings needed to inform future practice with PVI settings. In phase one, the sampling of settings was done on a voluntary basis, and so possibly could be criticized as having a selection bias. However, the number of sampled settings was very close to the total population and so was considered to be high on representativeness. The data was therefore considered to have high internal validity and to have 'population external validity' (Henry, 1990). In phase two the randomised stratified technique of sampling was attractive as it reduced the problem of differences between settings obscuring the effects of the PD/intervention. It also supported the generalisability of the results without setting strong restrictions on important variables such as deprivation, qualification level etc which might otherwise limit this (Robson, 2002).

Generalisability to other LAs was not the aim of the LA strategic plan, however indications that it may indeed be generalisable beyond the specific LA were considered. First, the sample size was large enough to suggest ecological validity with other similar LAs. The LA was one with a history of little previous support for pre-school settings prior to this study and with a high ratio of PVI to maintained settings. Second, following phase one data collection, analysis included comparison of scores with a large national study: the EPPE project (Sylva et al, 2004). Findings similar to this national project supported the notion of generalisability of this study to other LAs in England.

Quality was measured using observational scales of national and international repute. ECERS-R and ECERS-E have shown content validity in a number of studies with high agreement with professional judgments (Sylva et al, 1999) and construct validity through the results of child outcomes following attendance at settings judged to be of higher or lower quality by the scales (Sylva et al, 2004). The predictive criterion validity of ECERS-R and ECERS-E and other similar observational scales has been shown to be high as the quality judgments made on these ERS have been consistently linked to children's

cognitive and social skills in large multi-site studies (e.g. NICHD, 2005; Sylva et al., 2004).

Reliability

The fixed design aspects of this study's reliability is associated with the use of the standardized research instruments; that is the observational scales: ECERS-R and ECERS-E and also with the consistency with which these are applied by different researchers or observers.

Reliability stability was established between researchers through a series of joint observations and comparisons of scores at both pre- and post-test stages (see earlier). Reliability using ERS has been established in many studies where inter-rater agreement has been high (Sylva et al., 2004). It was also established through analysis of the first data set (pre-test) where comparisons were made with observations of the same subscales in similar settings in the UK in earlier research: the EPPE project (Sylva et al., 2004).

Reliability as equivalence was also established through comparison with Ofsted ratings following the pre-test. The baseline data was compared to Ofsted ratings which were subdivided into two sections (settings rated as good compared to those who did not). Generally, the ratings correlated to the ERS scores (see results section 6.2.5).

Reliability as participant error (the practice within the settings and how that may change over time) was also considered. Participant error was reduced by rearranging the observations if Ofsted were present and by gathering data about staff changes/present on the day, as these were thought likely to affect the settings in significant ways.

5.5.2. Qualitative aspects of the research: validity and reliability

Validity and reliability

Flexible designs need to be adaptable and flexible as they rarely end exactly as planned (Robson, 2002). Even the initial plans for a study may change, in this part of the study initially interviews were planned to look at the effects the PD/intervention had, unpicking why some settings had improved while others had not. However, surprisingly, significant

improvements were also found within the control group, so they needed to be followed up too. During this part of study the lead researcher became the instrument rather than the specialist tools (ERS) as previously. The researcher needed to be able to ask questions and then listen carefully to the responses (not only being aware of verbal interactions but also non-verbal ones). The interviews and focus groups were designed to allow for the possibility of modifying the line of enquiry, following up interesting responses and investigating underlying motives. This is common in qualitative studies where a lack in standardisation is known to risk reducing the reliability of the responses, but is deemed important if rich and illuminating material is to be gathered (Robson, 2002).

In order to support reliability, and capture people's words and actions as accurately as possible a tape recorder, together with written contextual information, was used during the interviews. Unfortunately, during the focus groups the recorder did not work well enough to capture everyone's voice, however the lead researcher and another practitioner took notes which were compared afterwards for accuracy. Robson (2002) argued that seeing and talking to people and writing reports of real responses made at the time reduces misunderstandings. However, he also suggested that interviews may be genuine and rich but they may also be biased and unreliable. However, he agreed that when used post intervention, they support interpretations and give the participants' perspective of the findings, which was important in this study.

Reliability was supported by the avoidance of as many common pitfalls as possible. The interviews and focus groups took place in carefully chosen and agreed places, where distractions and interruptions were minimized. A research journal was kept which recorded all activities and individual storage space was allocated for raw data and a separate, purpose built data base designed to hold the information for analysis.

Denzin and Lincoln (1994) suggested that reliability can be addressed in several ways in qualitative research. First, the stability of observations over time and context; second, parallel forms which refers to the phenomena under investigation and whether a different focus would provide different data and interpretations; and third, inter-rater reliability which considers whether different researchers with the same theoretical framework and the same data would interpret them in the same way. The focus groups were conducted

over the space of a year and followed a similar format each time. They provided a parallel view of the quality improvement of the PD/intervention settings under investigation to those gleaned from the supervisors/managers through interviews at the end of the study. Incidentally, they also gave a parallel view to the quantitative data collected in other phases of the study. Inter-rater reliability was considered as the data and analyses were shared at strategic management level within the LA, a shared interpretation was necessary in order to plan for future developments.

Much of the validity in such designs depends on the researcher's ability to grasp the issues and interpret the information gleaned during the study. Without a firm grasp of the issues, clues and contradictions etc. may be missed. However, they also need to lack bias as the preceding skills are negated if they are simply used to substantiate a preconceived position. Some authors suggested that consideration of validity is inappropriate within qualitative research paradigms and argue instead that authenticity or understanding is considered. However, Maxwell (1992, in Cohen et al., 2007) described five kinds of validity: descriptive, interpretive, theoretical, generalisability and evaluative.

Descriptive validity, referred to the factual accuracy of an account and as such it subsumes reliability. Reliability was discussed above and included the use of tape recorders, note taking and comparisons in an effort to capture people's words and actions as accurately as possible. The evaluative questionnaire completed by the educators during the last PD session allowed them to give their views in their own words.

Interpretive validity related to the researcher's ability to capture the meanings, intentions, terms and events described by the respondents and then interpret these so that they accurately represent the respondents' intentions and thoughts. This was one reason why focus groups were chosen to explore the Research Teams' thoughts, these made it possible for the groups to engage in the process of interpretation as each commented on and built on what was said earlier. With the interviews, which were individual, care was taken to allow the respondents to 'move' the discussions in their chosen direction and to allow sufficient time for each aspect of the interview. In addition, the notes that the researcher had taken during the interview were read back to the interviewees at the end

of the interview to check for representation and accuracy. The use of open ended questions on the questionnaires supported the expression of personal views and the capturing of intentions.

Theoretical validity referred to the theoretical constructions that the researchers and participants brought to the research. In this instance, initially the lead researcher devised the questions and probes around notions of professionalism, quality and quality improvement. The diverse understanding of these complex constructs was evident within the interviews and the focus groups. The themes served to support understanding and share meaning, however, they expanded and changed over time suggesting that the theoretical constructions which developed over time were indeed shared by the lead researcher, the Research Team and the participants.

Generalisability referred to the idea that the findings may be useful in understanding quality improvement in settings and contexts beyond the immediate one and is similar to external validity discussed earlier. It seems likely that the Research Team's experiences and views of the pre-school settings and how to support quality improvement would be transferable to other teams of LA supporters/advisors, as their histories, goals and aspirations were not uncommon and similar teams could be found across the UK. The supervisors interviewed were chosen at random from groups of PVI settings, two from groups based on their differing responses to the training intervention and one from the control group. They were all very different and together gave diverse views of the aspects under study. Increasing the number of interviews would have supported generalisability further, however this was not possible as the study was stopped following a reorganisation of the strategic leaders within the LA. The PD evaluative questionnaire could have been given more time and more emphasis during the design stage so that more views were captured. However, as the findings were supporting the interpretations of quantitative data, as a form of triangulation, it is likely that they would be generalisable. One possible concern in terms of generalisability might be the time of the data collection and current practice and thoughts. However, the extant literature appears to suggest many of the findings are still relevant and that designs such as this are still appropriate (e.g. Melhuish et al. 2016; Siraj et al., 2016; <https://educationendowmentfoundation.org.uk/evaluation/projects/using-research-tools-to-improve-language-in-the-early-years/>).

Evaluative validity referred to evaluative judgements made in relation to what was being researched. Interestingly, this study was one of evaluation but this was not where the evaluative judgements were being made (they were made on the basis of the quantitative data) instead this aspect of the research was more exploratory and explanatory in nature. The interviews were about describing experiences over the past year and gathering people's perceptions and interpretations of what had happened and why. The lead researcher was aware not to allow her own evaluative agenda to intrude on the interview or later at the analysis stage. None of the supervisors were told their overall scores or whether they had improved their scores from pre- to post-test. The interviews were explained as part of the general data gathering process and that they had been chosen at random. This seemed to be particularly important with the setting that had received the PD/intervention but had not moved forward in practice (according to the ERS scores). Interestingly, all of the supervisors appeared to know whether they had improved or not. The supervisor of the setting that had received the PD but made little quality improvement guessed as much, but she was still amenable to the interview and provided some rich and illustrative reasons for this, judgemental actions (either verbal or non-verbal) on the part of the interviewer may have inhibited this. While the questionnaire was evaluative, in that it evaluated the impact of the PD and the educators' perceptions of change, it too was used to support the quantitative data findings and was not considered the main study evaluation tool.

It has long been established that it is impossible to rule out all threats, called the critical realist assumption (Robson, 2002). Indeed, ruling out such threats may not be desirable as was illustrated in some of the discussions of threats discussed above. Qualitative researchers often recognize and encourage such threats as part of the research process, where the research itself is often designed to support and facilitate the development of social and/or inclusive improvements (Cohen, Manion and Morrison, 2007). Within this mixed methods research both positions re threats (recognising both their potential positive as well as their biasing effects) was evident.

5.6. The research team: insider researchers

One important aspect of the study, which affected both internal and external validity and which crossed both the qualitative and quantitative aspects of the study, was the choice of the Research Team and lead researcher. As they also worked as supporters, advisors or similar within the study LA they were termed insider researchers and objectivity, amongst other aspects, was at risk (Robson 2002). Swantz (1996) argued there may be some self-deception by the researchers in adopting dual roles: as researchers and those who share the situation and interests of the participants.

The lead researcher and team of researchers were aware of the dangers inherent in the dual roles they were adopting, as this was discussed openly. Many members of the Research Team had worked together before and so honest and open communication was established quickly where concerns and issues were shared and explored. For many, the researcher role was new and aspects of this, including the need for objectivity, was on occasion challenging. The need for consistency across and within the LA teams involved, including developing shared views on quality, the ERS used and the observations undertaken, required the development and extension of close working. Members of the three LA early years supporting and advisory teams (whose work was specifically work in the early years) were invited to join the Research Team (in phase one of the study) and kept up to date with progress throughout the study.

The Inclusion Team members (six initially and then seven), led by the lead researcher, all expressed the desire to become researchers/trainers and they became the main research team. Members from the two other teams were involved in the observations in phase one. These colleagues, from the different teams, were paired with members of the Inclusion Team who worked in the same geographic location in order to support the regular flow of information and communication. The Inclusion Team worked from three different bases across the county but met together on at least a monthly basis (and often more regularly when developing materials, making joint visits etc. or if a specific issue needed discussing). Colleagues from the other teams were invited to those meetings but practical restraints in time and other commitments meant they did not attend as often as the Inclusion Team staff. Joint email groups were set up and administered by the lead researcher, so that agreed actions from those meetings could be disseminated quickly

and so that any query could be accessed, together with the response, by all of the Research Team members.

There were a number of advantages to having insider researchers, including an understanding of the politics and history within the organization, and a certain amount of pre-established credibility. The number of settings who agreed to the pre-test or baseline observations in phase one and later to the PD/intervention and repeat observations (in phase two) was very high. In addition, the research was generally given a high profile across the county.

Being insider researchers allowed the opportunity to work on and build a shared understanding of quality and how to measure and support it within the LA. Farquhar (1990) urged that quality is defined before any attempts at change are made. She recognized the importance of stakeholders coming together to discuss and agree what quality meant to them as she saw it as a complex and changing concept. This aspect of the study began in the preparation phase (see Figure 1 Timeline p15) and was developed throughout the study. In addition, it allowed the continuation of the PD beyond the four face-to-face sessions as the Research Team reverted to their Inclusion/mentoring role.

However, as mentioned above, there were also disadvantages to using an insider research team. During the study, the amount of time spent collecting data and the large number of settings involved necessitated a renegotiation of how staff used their time and a move away from previous working practices in phases one and two. The Research Team needed to spend several months making their ERS observations and therefore needed to suspend their other duties.

Despite consultation with the Research Team and the development of a shared understanding of quality, a vision for quality improvement within the LA and the importance of evidence-based practice resistance to change was inevitable. A few members of the Research Team expressed concerns over the impact that this might have on settings, seeing their previous work as essential and perhaps also interpreting the change as implying criticism of previous ways of working. Rodd (2006) described resistance to change as inevitable, natural and healthy. The lead researcher engaged in

numerous discussions and group and individual consultations with the team, however, the need for directive leadership became apparent and the lead researcher needed to insist that everyone who had committed to the project also commit to their research roles. This change in leadership style (see Gill, 2006) did not sit well with the principles which over-arched the study (see earlier discussion re Lave and Wenger, 2001 and Bronfenbrenner, 1979) but was deemed necessary to the success of the study. However, resistance was short lived as the advantages of the research became evident.

The notion of objectivity and consistency during the implementation and evaluation processes was also challenging at times. The level of planning to ensure objectivity including issues such as 'blind' assessments of settings, inter-rater reliability and matched controls were sometimes seen as unnecessarily prescriptive by the Research Team and strategic planning group. The development of the PD and the consistency of delivery and approach also caused some difficulties as the team wanted the freedom to be able to adapt the delivery to suit the participants.

The lead researcher was responsible for ensuring that ERS assessments were 'blind' through: first, explaining that no-one was to mention the real name of the settings they were working with to any other member of the Research Team; second, the settings were allocated to the Research Team, for ERS visits, with no knowledge of which were control or PD/Intervention groups; and third, in the last PD session, the staff in the settings were urged to keep a secret of the fact that they had received the PD. This was a particularly difficult aspect for the lead researcher to organise, as having oversight over the data may easily have led to the identification of setting groups (intervention or control) prior to post-test observations. An uninvolved administrator was therefore enlisted to allocate settings to the Research Team for post-test visits.

With regard to the consistency of the PD, while the lead researcher recognised that the sessions needed to suit the pre-school setting staffs' existing knowledge and experiences, which were diverse, it was agreed that the sessions would be delivered in as consistent a way as possible. They were devised to include complete aspects of knowledge, that were not reliant on earlier prerequisite understandings. The main emphasis of the PD was underlying principles and values and aspects of child development and high quality interactions. The lead researcher was involved with and

oversaw the development of all of the PD sessions. There were powerpoints, teaching notes, activities, DVDs and evaluations that the entire Research Team used.

During the delivery of the PD close communications were kept between the lead researcher and the Research Team. While most of the sessions were free standing and deemed appropriate across the diverse range of settings Unfortunately, it appeared that one session, considering behaviour for learning, did assume some simpler underlying principles and knowledge. As a result, three settings had slightly different, simpler sessions delivered on support for behaviour for learning. However, the changes made were agreed and noted, so that, if necessary, this could be taken into account during analysis.

Being insider researchers was also difficult in terms of ensuring that the study continued and remained high profile within the county, without introducing undue bias into the study. The lead researcher fed-back to the strategic planning group regularly, updating them on progress, however it was important that the impact (or content of the PD) did not become common knowledge until the post-test observations had been undertaken in order to avoid compromising the control groups' positions. In addition, as the study progressed so the Research Team's knowledge of quality improvement grew and while they spent a deal of time working for the study they also had other duties such as supporting failing settings. It is difficult to believe that their new knowledge would not have impacted on their work generally and so may have unavoidably moved beyond the intervention groups they were working with.

Lincoln and Guba (1985) discussed three researcher biases: respondent bias, reactivity and researcher bias all of which were pertinent. Respondent bias was particularly relevant in phases two and three of the study where the Research Team became the respondents during the focus groups. There was a danger that they may inadvertently have tried to give the answers or impressions that they thought the research wanted or indeed what they themselves hoped the research would find. In an effort to avoid this, the group discussions were structured in such a way as to support opposing views and positions. The discussions also always included the notion of objectivity.

Bias related to Lincoln and Guba's (1985) reactivity, related to the researchers' presence interfering in some way with the settings and with the practitioners within them. This is a commonly found bias, which was partly eradicated by the randomised controlled trial design adopted in relation to the quantitative data. However, this bias may have been compounded with insider researchers where ongoing relationships and power hierarchies already existed. Without care the observations may have been viewed as intimidating and/or inspectorial in nature. It was important that the educators in the settings understood the purposes of the research, saw it as supportive rather than inspectorial, and were clear that it was designed to look across the county at training needs and not at individual settings.

Predominantly, the Research Team, in their LA roles, worked within existing teams, they offered support, advice and training countywide to the pre-school settings. The researchers wanted to foster what they perceived as generally positive, supportive relationships with the educators in the settings and so in addition to clarity of the aims of the research they decided not use clip boards (avoiding some of the associations with inspections), settings were invited to join the research - so take-up was voluntary and book tokens were given as a gesture of appreciation.

Finally, research bias (Lincoln and Guba, 1985) seems particularly important with insider researchers, as the results of the research would be likely to impact on their future work and credibility within the county. This bias, which included the danger of trying to predict the outcomes of the study or aspects within it, was real and so was considered in detail and influenced both the research design and discussions of the researchers' roles within the Research Team. One aspect which was important to consider was prior knowledge of settings and the consequent lack of objectivity this brought. For this reason, the Research Teams were allocated settings outside their geographical 'patch' for ERS observations (with different settings at each phase) at both pre- and post-test. In addition, during data collection, the Research Team agreed to put aside existing knowledge of the pre-school settings and practitioners within them (if they had any) so that they could be seen with 'fresh eyes' and so that observations were consistent. Also, inter-rater reliability measures were stringent and some joint observations were made at each phase.

It was acknowledged that during the post-test observations, in phase two, the researchers were committed to the project and wanted the PD/intervention to have made a difference, after all they were involved in its development and delivery. The lead researcher had designed and led the study so commitment was especially high there. So, as discussed earlier, the post-test observations were conducted 'blind' and in unfamiliar settings. Researchers were allocated settings in geographic areas in which they themselves did not work and they were allocated pairs of settings without knowing which setting had received the PD/intervention and which were in the control group. In addition, the data-base was outsourced to a company to ensure that the data input was reliable and anonymous.

5.7. Potential ethical issues

Hammersley's (1999) recognition that research is likely to impact on people's lives through either being involved in the research and/or being in a context affected by the research led to the understanding that the impact of this study was likely to be countywide. It could affect all of the early years practitioners working within or supporting the LA pre-school settings together with all of the children and families who used them.

Ethical considerations, together with the values and principles underlying the study, were particularly important in this real-world research. Building communities of practice (Lave and Wenger, 1991) and supporting the interrelationships within and between the micro- and meso-systems (in particular of the homes and pre-schools), as well as supporting the quality of the pre-schools themselves (Bronfenbrenner, 1979), were important aspects of the study. Further, consideration to ensure that participants were treated with respect and were engaged in open communication and that deception and/or causing harm was avoided was seen as fundamental to the research.

The theoretical framework and context of the study led to the notion of ensuring a balance of power and power relationships. Researchers and subjects are socially positioned and tend to reproduce in their relationships the power relationships of the groups to which they belong (for instance researcher and subject, advisor and practitioners, supporter and supported) (Robson, 2002). The relationship between the researchers and subjects was compounded in this study as the researchers were

insiders (see earlier). Reflexivity by the researchers/trainers on their position and identity and how they perceived the pre-school practitioners - as knowledgeable and competent – was therefore crucial (Hammersley, 1999).

In an effort to ensure the development of communities of practice (Lave and Wenger, 1991), to ensure a shared understanding of quality (see section 2.4.) and in order to reduce potential power relationships many meetings and discussions took place across the county before the study started.

Ethical considerations: the research design

Whenever an experimental design with a control group is adopted ethical issues of fairness arise. As the training intervention was designed with the intention of supporting the quality of pre-school settings, and thus to have an impact on the lives of the children and families who attended those settings, careful ethical considerations were necessary to ensure that settings other than those targeted for the intervention initially would also have the opportunity of receiving the training. Interestingly, many of the control settings asked whether they could have the training intervention too and other settings contacted the LA asking to be included in the study. The strategic plan was therefore extended so that the control group would be offered the training following the intervention and post-test observations and that following this it would be offered to other settings as part of the usual training programme. Unfortunately, the study was halted before this was possible.

Ethical considerations and insider researcher issues

Additional ethical concerns arose from the dual roles of researcher/trainer together with their LA supporter roles. Some researchers expressed concerns over the transparency of the reasons behind the study and the potential for harming relatively good existing relationships with the pre-school setting staff (see earlier section on insider research). For some, the idea that, as researchers, they would need to adopt an observational 'fly on the wall' stance and avoid unnecessary contact and interference with either the children or staff during their observations was difficult to understand and to adhere to in practice. Along with several lengthy discussions around these points, files including outlines of these arguments and descriptions, suggestions (and even words to say) for conduct together with copies of all correspondence the researchers had with the settings

in relation to the research were compiled. The files and practical resources such as copies of the scales to be scored, pencils, rubbers and book tokens were given to all of the researchers. This supported the researchers in giving similar and clear messages about the study to the pre-school practitioners as well as providing them with protocols for behaviour within the settings. As part of this process, it was agreed that the researchers would not score their observations once they had completed them. Instead, this would be done centrally by administrative staff who did not know the true identity of any setting being observed. In this way, the setting's identities were protected and the researchers were able to avoid answering potentially difficult questions from setting staff regarding their scores. Researchers were guided to be polite, find something positive to say about the setting and be vague about any individual scores with impunity.

The use of new knowledge (gained during the training on ERS and through the additional PD developed and delivered during the study) and the importance of not applying this outside the study was also difficult to reconcile. However, the Research Team were aware that the embargo on use of new materials, knowledge etc was limited to following the post-test observations. They were also aware of the danger of contaminating the data and so they agreed, as far as possible, not to draw on these until the end of phase two. Following this, details of where they were involved in supporting control groups and drawing on new knowledge was noted so that they were not drawn upon for interview in phase three.

Ethical considerations and use of findings

The anticipated use of the data and associated findings was shared with the settings prior to their participation in the study. The research was not about individual settings, making comparisons or sharing individual scores. The results would be held in confidence with no individual setting identified. Each setting and their results would be anonymised with only the lead researcher having access to the key. Individual setting scores would not be shared in any context, instead the results would be summarized to show trends of strengths, weaknesses and areas for development in the future. The findings would inform the LA strategic plan which was designed to support all settings in their quality improvement journeys. In addition, if the research was reported outside of the LA, the name of the LA itself would also be kept confidential.

Unfortunately, it was use of data which eventually led to the end of the study. Under new management, following a change in administration, the senior management team decided that individual data was needed for each pre-school setting in order to target support in inverse proportion to success. As this was not an agreed use of the data, support for the study was discontinued so that individual data could be gathered instead.

Ethical considerations regarding power in Phases one, two and three

The observations in phase one and two and the PD/intervention in phase two were areas where balancing power was important. Following discussion, the Research Team agreed to go into the settings with the intention of learning about the settings, what the practitioners thought and their views as to the future support they might require in their self-assessment and quality improvement journeys. In the PD/intervention self-assessment and setting agreed plans of action (between all staff) were a major focus.

In phase three the lead researcher interviewed supervisors with respect and attempted to avoid making any value judgements prior to or during the process (see earlier).

Ethical considerations: informed consent

At the preparation phase practitioners were invited to a variety of different consultation evenings across the county, so that most of them were aware of the study and its purposes before they were contacted directly.

Informed consent was necessary to ensure that the researchers could enter the settings and complete their observations, to run the PD/interventions and to engage in the individual interviews. The majority of the settings in the LA were PVI settings and involvement in the study was optional. Prior to the first set of observations in phase one, letters with dates of visits were sent to all settings at least two weeks before the proposed visit. The tone of the letter suggested an opt-in approach and was written in an 'up beat' yet official manner, the setting staff were asked to contact someone in order to change or cancel the proposed visit. The letter also explained that settings would be thanked with a token for books worth £25 pounds, that no individual setting would be identified and that everyone would be invited to a meeting where the results of the study would be shared and the informed proposed plans of action by the support services would be discussed.

Despite no individual children being targeted for observation, each setting was asked to inform parents about their involvement in the study and seek their permission. Before commencing any observations, the researcher discussed the research aims with the supervisor in person, they completed some paperwork which confirmed that the settings had sought and been given parent permission and they also reminded them that they or their staff could choose to withdraw at any time. As a number of settings did withdraw at various times during the study it seems likely that this message was clear and understood.

Finally, two potential ethical issues arose during the ethical approval procedure.

Ethics approval was received from the Institute of Education, University of London's Human Research Ethics Committee for the study. However, they raised two issues: one relating to ensuring child protection procedures were in place and the other relating to the ethics of a randomised controlled trial (RCT) designed study, which included a control group. As the ERS observations were conducted by existing LA staff the necessary checks for staff who came into contact with children were already in place. The Research Team were members of staff from the existing education support and advisory teams for ECEC within the county. As discussed above, before the study started, it was agreed that the control group would be given access to the PD, if successful, on completion of the study. Unfortunately, however, the PD was not delivered to the control group as the study was halted during the restructuring of the LA.

5.8. Analytical processes

The results of the relevant analyses can be found in chapter 6. The chapter is divided by quantitative and qualitative data collected, and, then the quantitative data is further divided into two sections: results pertaining to the baseline (phase one) and the intervention (phase two). At the end of each relevant section, the results are analysed in relation to the three research questions and sub-questions. At the end of the chapter, the use of the quantitative and qualitative results are discussed and some of the consistent findings are summarised.

5.8.1. Quantitative data

Analytical Analysis was completed using both descriptive and inferential statistics and with the help of the Statistical Package for the Social Sciences (IBM SPSS version 22 and R 3.2.1.).

Both descriptive and analytical statistics were used to describe and investigate the quality of the settings and the effects of the PD. The following investigations were made:

- The average scores for the two ERS measures were computed, including the overall scale averages and the averages of the individual sub-scales. These were compared to the EPPE study and then to various structural characteristics.
- ANOVA repeated measures and multivariate regressions were used to compare the mean scores for the scales and subscales of different groups of settings.
- Subsequently, multivariate analyses were undertaken to look at the impact of the intervention and to discover if structural characteristics impacted on the scores following the PD.
- Finally, comparisons between the intervention and control groups were made (which included further multivariate regressions) at subscale level to consider where changes occurred.

5.8.2. Qualitative data

An iterative process of analysis was conducted on all of the qualitative data (questionnaires, interviews and focus groups) - see Appendix I for an example of the analysis of the focus groups (Denscombe, 2008). First, analysis took place at the individual level and then combined according to type and finally as a whole set of data in order to find the themes that permeated all data and linked to the quantitative findings and to the Summary of Effective Elements of Professional Development (see chapter 7).

The raw data gleaned from phase two and three of the study were written up from the focus groups and partial transcripts were noted from the interviews (see Appendices I and J). The short evaluative questionnaires written by the PD participants/educators at the end of the PD were collated and sorted (see Appendix F). The analysis of the data

was done by hand as they were relatively small data sets. Both the focus groups and the interviews were separately analysed using a template approach or content analysis technique which was similar to that described by Miles and Huberman (1994, in Robson 2002) and Strauss and Cobin (1998).

The lead researcher engaged in data analysis and interpretation as soon the data became available so that each transcript was considered individually and it could inform later data gathering. Micro-analysis – the in-depth line-by-line analysis of the focus group and interview data - preceded coding of each set of data. Coding was used to identify initial concepts and similar concepts were grouped to form categories (an example of this process can be found in Appendix I which includes a table showing the combinations of concepts and resulting categories). The results are outlined in chapter 6.

Analysis of the combined sets of data included links SEEPD. The concepts and categories across the different sets of data were clustered into the descriptive categories and related to the SEEPD domains: content, delivery and affect in chapter 7.

6. RESULTS

6.1. Introduction

The quantitative and qualitative data of this mixed methods study are presented and analysed in this chapter in two sections.

Section 1: The quantitative data is presented in two parts:

- 1) baseline data
- 2) intervention and control group pre- and post-test data.

Both sections include inter-rater reliability scores, followed by descriptive and inferential analysis.

At the end of part 1) Research question 1: What is the quality like in current pre-school settings across the LA? is considered.

At the end of part 2) Research question 2: Will professional development/a short targeted training intervention provide measurable improvements in quality in PVI pre-school settings? is considered.

Section 2: The qualitative data is presented in three parts:

- 1) research team perceptions
- 2) managers/supervisors of settings perceptions of change/no change; and,
- 3) evaluative feedback from PD participants.

The qualitative data was designed to answer Research question 3) What made the difference, if the settings did show quality improvements/changes or what have we learnt if they did not? At the end of this section research question 3 is considered.

Finally, a brief summary of the overall results is given, with further analysis sitting in the following chapters.

6.2. Quantitative data phase one: descriptive and inferential statistics

6.2.1. The research team: inter-rater reliability at preparation phase

Establishing a high level of inter-rater reliability is a pre-requisite for research associated with the effective use of observational rating scales such as ECERS-R and ECERS-E. Good levels of agreement rely on a sound training, including the opportunity to practice using the ERS in settings. The training needs to focus on the detail of the scales and give a clear understanding of the rationale for determining ratings.

In this study, training was led by a co-author of ECERS-E. The Research Team, all LA employees, were trained on the two observational instruments (see Table ii). This was followed by a reliability exercise: each researcher completed 5 trial or practice observations. After each practice, scores and differences were discussed and congruency increased. Finally, the scores obtained during the fifth observation were compared with the lead researcher's results who acted as the 'gold standard' for the team. The lead researcher, acting as the 'gold standard', accompanied all of the other researchers on their fifth visit in pairs or small groups of two or three.

Table ii: The research team for the initial observations: pre-test or baseline

Research Team	Number of staff
The Area Inclusion team	6
The Early Years Teaching and Support Service (one teacher who supported individual children with SEN and their families in ECEC centres and two Playlink staff who worked in designated geographical areas of deprivation with all families and children from that area. They worked with parents supporting them with play and in the management of their young children)	3
Advisory and Improvement service (one teacher)	1
TOTAL	10

The reliability for each small group of observers was computed as follows:

- a) where each observer scored within one point of the 'gold standard' on each item (% agreement). See Table iii.
- b) an Intra-Class Correlation (ICC) value was computed. ICC is a measure that provides an estimate of inter-rater reliability on quantitative data. See Table iv.

Table iii: Inter-rater reliability comparisons made between research team and lead researcher.

Researcher	% agreement with standard (researcher 10)
1	88
2	91
3	94
4	97
5	97
6	97
7	100
8	100
9	100

Each researcher needed to score items with an agreement of at least 85% with the 'gold standard' for them to be considered reliable. This was in accordance with inter-rater reliability measures recommended by the national and USA ERS teams (e.g. <http://ers.fpg.unc.edu/>). Table iii shows that all of the researchers were above the recommended 85% level when compared to the standard or lead researcher.

The ICC figures for each of the five groups for the total ECERS scores is included below.

Table iv: ERS ICC results

Group	ICC
Group 1	0.907
Group 2	0.981
Group 3	0.984
Group 4	0.887
Group 5	0.981

Typically, when interpreting ICC values, a score of 0.9 or above is regarded as excellent. The results of this analysis indicated excellent inter-rater reliability across all researchers with the exception of one. This researcher was accompanied on the following two observations she made where her reliability with the standard improved. However, she only conducted one further observation and then withdrew from the project.

Once inter-rater reliability was ensured the researchers were allocated a number of settings to visit. These visits were allocated to researchers on a geographical basis so that where possible they visited settings within their work load 'patches'. It was agreed that, at this point in the study, it would not affect reliability. It supported the Research Team to develop new and further develop established relationships within their 'patch' settings. It also informed the development of the PD as the researchers had an ongoing relationship with the settings which supported both the identification of needs and open communication.

6.2.2. Phase one year one: pre-test/baseline measures

This baseline data was examined to consider the relationships between some of the structural characteristics of pre-school settings and their staff and ECERS-R and ECERS-E scores.

The initial observations, for this baseline, took place during a ten-week period in the schools' Autumn term Phase 1 year 1 (see Figure 1: timeline p15). Each setting was allocated a minimum observation period of two and a half and maximum of three hours.

The time was set to ensure equity of opportunity, and the time was limited to roughly two and a half hours as some settings only opened for those hours. The short time period available meant that the number of subscales sampled had to be reduced as it was not possible to meaningfully complete all of the ECERS-R and ECERS- E subscales.

A range of time was allowed (2 ½ to 3 hours) in order to ensure that some beginnings and endings of sessions/days could be observed. Visits usually took place in the morning, however, on the rare occasion that a visit took place in the afternoon this was noted. Some settings arranged morning and afternoon activities quite differently, arguing that the children were tired in the afternoons. Noting timings of visits ensured more meaningful comparisons during repeat observations at the post-test phase.

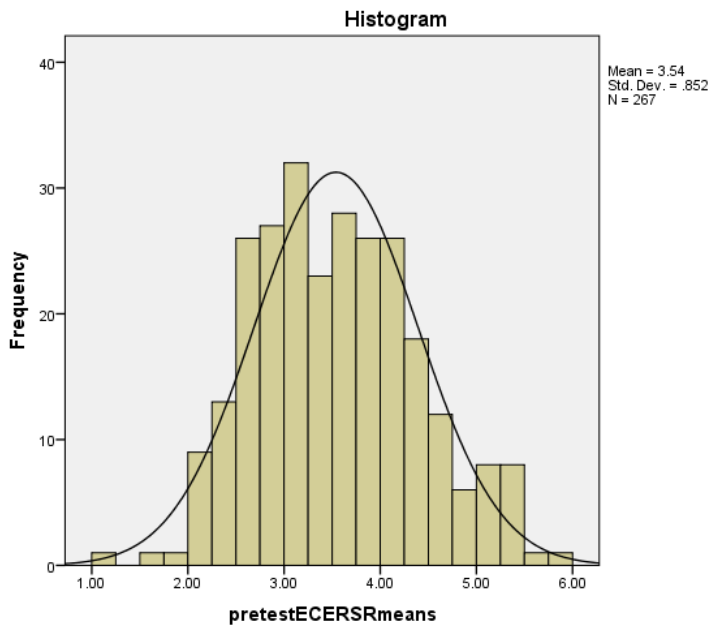
Observations were made using the ECERS-R subscales: Personal care practices, Social Interaction, Parents/staff working together (Harms et al, 2005) and ECERS-E subscales: Literacy, Numeracy, Science/environment, and Diversity (Sylva et al, 2003). The ERS were used to gather information on both process and structural aspects of quality - section 2.5. (Early et al., 2007). In addition, information about the setting, the staff and the surrounding environment were gathered (further structural aspects). Finally, thoughts regarding the setting's areas of strength and areas for improvement were discussed and noted with a manager/supervisor within all of the settings.

Of the 272 settings who agreed to take part in the study, four settings' visits were ended too early to gather the necessary data. The visits were abandoned most typically due to a clash in visiting time with an Ofsted inspection or due to ill health of the setting practitioners or researcher. For these four settings, it was not possible to reschedule the visit within the allocated 10-week period. In total 268 sets of data were collected and submitted to the database. One further set of data was not used in the final analysis as it was incomplete leaving a total of 267 settings.

6.2.3. Descriptive analysis of mean scores: ECERS-R & ECERS-E

Figures 12 and 13 below show the histograms of mean scores of the subscales used in ECERS-R and ECERS- E for all settings observed during the pre-test or baseline measures. Note the possible range of scores is from 1 to 7.

Figure 12: Histogram of mean subscale ECERS-R scores at pre-test



Mean 3.54

Standard deviation .85

N 267

Skewness .285

Kurtosis -.303

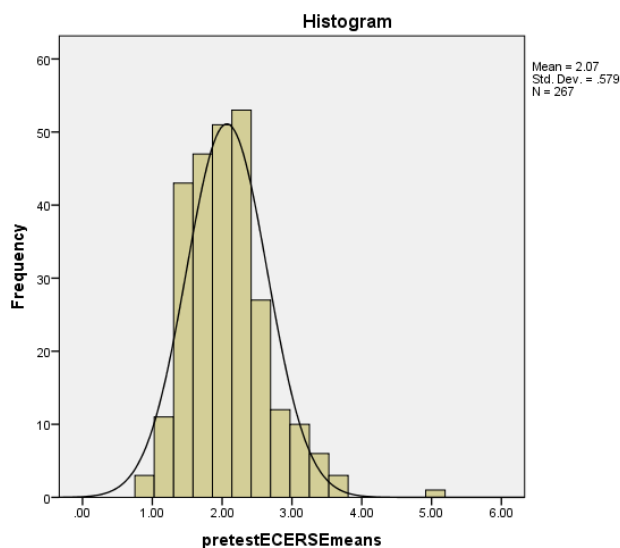
The diagram above (Figure 12) displays the spread of mean scores achieved by all of the settings on the three ECERS-R subscales at the pre-test phase 1 year 1. There is a normal curve superimposed over the top for comparison. The overall mean score for all settings is 3.54 and the range of mean scores varies from 1.24 to 5.88.

Determining the distribution of a sample of scores is important, and in particular considering whether they follow a normal distribution pattern, to ensure that the correct statistical analyses are applied (Howett and Cramer, 2011). Some tests are based on the assumption that the scores follow a pattern of normal distribution, if they are used when this is not the case it can affect the power of the test. To support determination of whether the mean scores follow a normal distribution a normal curve has been superimposed over the top of the scores (on Figures 12 and 13). The resulting histogram

and the accompanying skewness and kurtosis values suggest that the sample is normally distributed. The scores are distributed in a roughly bell shaped curve synonymous with normal distribution.

The kurtosis is the measure of the degree of flatness or steepness of the curve. The negative value suggests a slightly flattened shape. However, it is close to the zero value which is the score of a normally distributed curve and so it is accepted as normal. The skewness refers to the overall shape of the curve, the value suggests that it can be assumed to be within normal limits. If skewness values fall between -0.5 and 0.5 typically they are considered as approximately symmetrical. (Adams and Bogranskaya, 2015).

Figure 13: Histogram of mean subscale ECERS-E scores at pre-test.



Mean 2.07

Standard deviation .579

N 267

Skewness 1.031

Kurtosis 2.375

The diagram above (figure 13) displays the spread of mean scores achieved by all of the settings on the ECERS-E at the pre-test phase 1 year 1. There is a normal curve superimposed over the top of the graph for comparison. The overall mean score for all settings is 2.07 and the range of mean scores varies from 1 to 5.06.

The histogram and skewness (1.031) and kurtosis (2.375) values suggest that the sample may not be normally distributed. The kurtosis value suggests a rather steep curve and the skewness value suggests that the scores are skewed towards the lower end of possible scores. However, when non-parametric tests were applied they gave similar results to parametric tests, so parametric test results have been used here as they are typically considered to be more robust (Howitt and Cramer, 2011). Appendix H Part One gives examples of comparisons of analyses using both parametric and non-parametric tests.

Figures 12 and 13 and the mean scores for ECERS-R and ECERS-E show that at the beginning of the study the quality was low, and while there was a range of quality within these settings, the ability of the educators to support children's learning and development was likely to be limited, especially for any children living in disadvantage (Melhuish et al., 2015). They showed slightly better achievements on the ECERS-R than ECERS-E which has been found in previous studies (e.g. Sylva et al., 2004a). This suggests that while some of the more global aspects of quality might be present, the educators' curricula, concept development and pedagogical knowledge and skills needed support.

6.2.4. Descriptive analysis of structural quality: centres & staff characteristics

This section considers the relationships between some structural aspects of quality:

i) types of provision ii) type of building iii) level of qualification of staff iv) areas of deprivation and v) Ofsted ratings

i) Types of provision:

Within the LA the ECEC provision was divided into three groups: LA run nursery classes, nurseries and playgroups.

LA nursery classes (n=15)

These were part of primary schools within the county and were typically situated in designated areas of disadvantage. They had an adult to child ratio of 1:13 with one adult

having qualified teacher status. They operated on a half day sessional basis and were open during school term time only.

Nurseries (n=140)

These were either private or independent settings run for profit; the independent settings were attached to private schools while the private nurseries were typically stand-alone institutions. They had an adult to child ratio of 1:8 with their three and four year olds. Some offered full day care for 52 weeks a year while others offered school day and half day length sessions during term time. The qualifications of adults were variable, from no qualifications to graduate level qualifications.

Playgroups (n=112)

These were run by volunteers within the community and usually had charity status. Typically, the playgroups were held in village halls and so were 'packaway' settings (at the end of each session they would pack away all resources and store them for the next session) because their premises were multi-purposed. They had an adult to child ratio of 1:8 with their three and four year olds. The qualifications of the adults were variable, from no qualifications to graduate level qualifications. All offered sessional provision in term time only. Many children attended on a part-time basis for less than five days per week.

The mean total scores for each type of setting were calculated, showing some differences in quality as measured using ECERS-R and ECERS-E (see Table v).

Table v: Total mean ECERS-R & ECERS-E scores each type of setting

Structural Measure		Number	Mean scores on ECERS-R	SD	Mean Scores on ECERS-E	SD
Type of setting:	Playgroup	112	3.30	.78	1.94	.51
	Nursery	140	3.68	.87	2.11	.59
	LA Nursery	15	4.01	.76	2.66	.55

ii) Type of building – multi-use or single use:

A large number of the early years settings within the county were ‘packaway’ settings and/or situated in buildings designed for multi-use. Many playgroups for example ran in village halls, which were used for village meetings and other groups such as scouts, brownies and youth clubs. These were described as multi-use buildings. There were some settings that ran in purpose built premises which were for the sole use of the pre-school setting. These were designated as single use buildings. Table vi below shows the means of the scores for the settings according to the type/different uses of buildings.

Table vi: Total mean ECERS-R & ECERS-E scores for building type

Building type	Number of settings	Mean ECERS-R	SD	Mean ECERS-E	SD
Unknown	6				
Multi-use	125	3.24	.71	1.91	.55
Single use	136	3.80	.89	2.20	.57

iii) Level five or above qualifications

The educators working in the pre-school settings held a diverse range of qualifications. During the questionnaire designed to collect structural, contextual information all qualifications of all staff were noted. Previous studies had pointed to the importance of higher level qualification (Sylva et al., 2004). The level 5 (and above) qualifications included the following: FdA Early Years, Cert Ed, BEd, BA (hons), BA(QTS), BSc (Hons), BSc (QTS), MA Ed, PGCE, MA other, PhD. Table vii below shows the means of the total number of staff who had a level five qualification of above together with ECERS-R and ECERS-E scores at the pre-test.

Table vii: Total mean ECERS-R & ECERS-E scores for staff with and without level 5 or above

Level 5 or above qualification	Number of settings	Mean ECERS-R	SD	Means ECERS-E	SD
No	194	3.43	.85	1.97	.55
yes	66	3.81	.79	2.27	.55

iv) Areas of deprivation

In 2000 the LA collected data on poverty and deprivation at ward level and subsequently identified 24 out of a possible 111 (i.e. 21.6%) wards as deprived. This recognition was corroborated by national figures where many of the same wards were recognized nationally as falling within the top 10% of most deprived wards across England. The indices used to rate the wards included income; employment; disability and health; education, skills and training; housing and geographical access to services such as local schools, GP and shops.

The settings sampled within this study were located within 96 of the possible 111 wards and within 18 wards designated as deprived according to the County's Statistics and Information Department. Table viii below shows the means of the total scores that settings in wards designated as deprived or not in deprived achieved.

Table viii: Total mean ECERS-R & ECERS-E scores in or not in deprived wards

In a deprived ward	Number of settings	Mean ECERS-R	SD	Mean ECERS-E	SD
No	216	3.60	.85	2.10	.57
yes	48	3.26	.81	1.90	.54

v) **Comparison of Ofsted ratings with mean scores on ECERS-R and ECERS-E.**

Many (209) of the pre-school settings in the sample had undergone Ofsted inspections during the previous three years. They were then given a rating of outstanding, good, satisfactory or inadequate (at two different levels). The inspections were either for education alone or a combination of education and care. At the time of the study, no pre-school setting in the LA had achieved a rating of outstanding, so only four levels were noted within the database.

The mean ECERS-R and ECERS-E scores were compared to the Ofsted ratings awarded to the settings (see Table ix). The differences between the Ofsted ratings and ERS mean scores suggested that there were some associations and also a few differences. However, the disparities were most notable at the two different levels of Inadequate, where the numbers of settings receiving these scores were too small to make any meaningful statistical analyses. They were therefore combined in the table below.

Table ix: Total mean ECERS-R & ECERS-E scores and Ofsted award

Ofsted grading:		Number	Mean ECERS-R	SD	Mean ECERS-E	SD
Level achieved:	1. good	70	3.797	.820	2.242	.529
	2. satisfactory	117	3.422	.875	1.918	.502
	3. Inadequate (i) and (ii)	22	3.198	.842	1.838	.438

6.2.5. Inferential analysis of structural quality: centres & staff characteristics

Statistical analysis of structural and staff characteristics were conducted using a multiple regression analysis. This analysis considered the relationship between the independent variables (such as the type of setting, type of building, qualifications of staff, whether the setting is situated in an area of disadvantage and the ofsted scores) with the dependent

variable (in this case the ECERS-R and ECERS-E scores separately). Multiple regression allows the consideration of relationships between a number of variables, while allowing for other variables that may affect the dependent variable. Also, it reduces the total number of statistical comparisons needed, as compared with simple univariate statistics such as T-tests and correlations, and takes into account the co-relationships between the independent variables thus giving more robust results.

Table x: Multiple regressions with baseline ECERS-R and ECERS-E scores as dependent variables

Structural aspect	Regression Results for ECERS-R t=	Significance	Regression Results for ECERS-E t=	Significance
Type of setting Nursery (for profit) or not	.787	.432 NOT SIGNIFICANT	-1.474	.142 NOT SIGNIFICANT
Type of building (multi-use or single use)	3.715	.000 SIGNIFICANT	3.808	.000 SIGNIFICANT
Qualifications of staff (level 5 or above or not)	1.673	.096 NOT SIGNIFICANT	2.384	.018 SIGNIFICANT
Situated in area of deprivation or not	-2.454	.015 SIGNIFICANT	-2.347	.020 SIGNIFICANT
Ofsted outcome of good or less	2.531	.012 SIGNIFICANT	2.946	.004 SIGNIFICANT

i) Type of provision: nursery or playgroup

The type of setting, more specifically whether it was classified as a nursery or a playgroup in the LA database, was not found to have a significant relationship with either the ECERS-R or ECERS-E results. This was true when the classification nursery was compared to the rest of the settings and when the classification playgroup was compared to the rest of the settings (not shown above but calculated separately) - no significant relationships were found. Unfortunately, the third and final category of settings - the maintained sector - could not readily be compared statistically to the rest of the settings as numbers were too low (only 15 nursery classes across the entire LA). The

non-significant findings suggest that either the differences between the groups were not big enough to be apparent or one or more of the other variables in the multiple regression analysis (e.g. type of building and/or qualifications of staff) was linked to type of setting and therefore interfered with the results. Interestingly, when this was followed up during visits to settings there appeared to be confusion over the definitions of the terms nursery and playgroup. Many setting leaders said they did not know what they meant and did not know how to respond to the question. As the settings were categorised following settings' self-reports this may have interfered with the groupings and the authenticity of the variable. A better question might have been, do you run for profit or are you a charitable organisation with a committee made up of people from your local area?

ii) Type of Building: multi-use or single use.

The type of building – whether it was purpose built and only served as a pre-school setting or whether it was multi-use and housed a 'pack-away' setting impacted on the both the ECERS-R and ECERS-E scores. Both multiple regressions showed significant relationships between type of building and the quality scores achieved. Settings situated in single use buildings scored significantly higher than those in multi-use buildings on both ECERS-R and ECERS- E. It suggests that the restrictions found in multi-use premises (e.g. the need to set up and pack away all resources, displays and areas of learning at the beginning and end of each session) impact negatively on the adult's abilities to support learning. The difference in quality associated with use of the building was particularly important for this LA, as more than half of the entire pre-school provision was situated in multi-use buildings.

iii) Level five or above qualifications.

The qualification levels of staff (or at least lead staff) appeared to have a significant effect on the quality within the pre-school settings, as measured by ECERS-E but not ECERS-R scores. This is an interesting result as it points to the importance of qualifications to support the pedagogy, concept development and implementation of the curricula (in subject areas such as emergent literacy and mathematics). The ECERS-R subscales, which considered personal care practices, social interaction, parents/staff working together, did not appear to be so reliant of staff qualifications.

iv) Area of Deprivation.

Whether a pre-school was situated in an area of deprivation or not was found to be significantly related to both ECERS-R and ECERS-E scores. The lower levels of quality associated with areas of deprivation was an interesting finding, especially for this LA. As, despite having invested very little in ECEC, the LA had funded 18 LA nursery classes attached to primary schools typically located in areas of disadvantage. The findings suggested that they needed further investment if they were to reduce the gap of disadvantage, both within the existing LA settings and beyond them.

v) Comparison of Ofsted Ratings (good or not good) with mean scores on ECERS-R and ECERS-E.

Multiple regression analysis was not possible between all of the ratings awarded by Ofsted and the ECERS-R and ECERS-E for two reasons. First, multiple regression calls for the data to be binary or normally distributed and for the intervals on any scale used to be equal. It was difficult to determine if this was the case with the Ofsted data. It seemed unlikely that the difference between good and satisfactory was the same as between inadequate i and ii. Second, the low number of cases, especially in the inadequate levels and the missing scores (as not all settings had had an Ofsted visit within the last three years) meant a direct comparison was not possible. However, a general relationship between Ofsted outcomes and ECERS-R and ECERS-E scores was possible when the settings were divided into binary data, considering those settings awarded good with those who were not. Significant correlations were found between the Ofsted ratings (good or not good) and both ECERS-R and ECERS-E.

It would have been useful to have been able to look more closely at Ofsted ratings and ERS scores. As some anomalies within this general relationship (settings rated as good also typically scored higher ECERS-R and ECERS-E scores) were noted. There were two settings which were rated as inadequate at level (ii) who scored relatively highly on ECERS-R and ECERS-E (means of 3.38 and 2.08 respectively). While the difference in scoring did not appear to undermine the general relationship - probably because there were only two settings in this category – they did not fit the pattern either. The disparity, however, may in part be explained by the timing of the different observations (Ofsted vs

ERS). As soon as a setting received an inadequate rating following an Ofsted inspection the LA followed an agreed protocol of responses. The settings were offered and typically accepted intensive support from all of the appropriate LA support and advisory services. The changes in quality that occurred as a result were often very quick and profound or the setting closed. The observations, using the ERS, may well have occurred following or during such interventions.

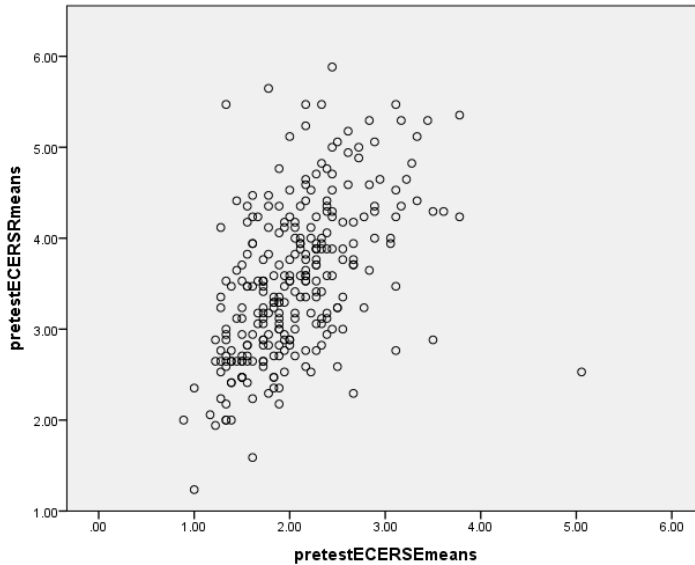
6.2.6. The relationship between ECERS-R & ECERS-E scores: an overall measure of quality.

An overall total score for each individual setting, which combined both the ECERS-R and ECERS-R scores, was considered useful for later sampling but also for supporting comparisons.

The rationale for combining the ECERS-R and ECERS-E scores rested in their strong positive relationship. In the preceding sections the pattern was clear, where a significant effect was found with ECERS-R it was also typically present for ECERS-E. Pearson's correlation test was administered to the mean scores on ECERS-R and ECERS-E to further consider the relationship between the two scales.

A strong positive relationship $R [r(265)= 0.508; p= 0.000]$ was found to exist between ECERS-R and ECERS-E, that is settings who scored highly on ECERS-R were also likely to score highly on ECERS-E. Figure 14 shows a scatterplot of the mean scores of ECERS-R and ECERS-E. The strong positive linear relationship is clearly evident.

Figure 14: Scatterplot of mean scores on pre-test ECERS-R and ECERS-E.



Identifying initial pre-test /baseline quality (across both ECERS-R and ECERS-E) was needed to support sampling of settings for phase 2, to ensure inclusion of the whole range of quality. The high positive correlations between the ERS suggested that a joint score (covering both ECERS-R and ECERS-E) could be useful for sampling purposes .

In order to support the sampling process, the total scores (of both ECERS-R and ECERS-E) achieved by each setting were divided into quartiles. The quartile ranges were: 32 – 79, 80 – 127, 128 – 176, 177 – 224. The range of total scores achieved was 120 (varying from 42 to 162) with no setting having scored at the upper end of the possible range (highest possible score 224). Table xi below shows the number of settings which achieved a total score within each of the quartiles.

Table xi: Settings combined total mean ECERS-R and ECERS-E scores divided into quartile ranges

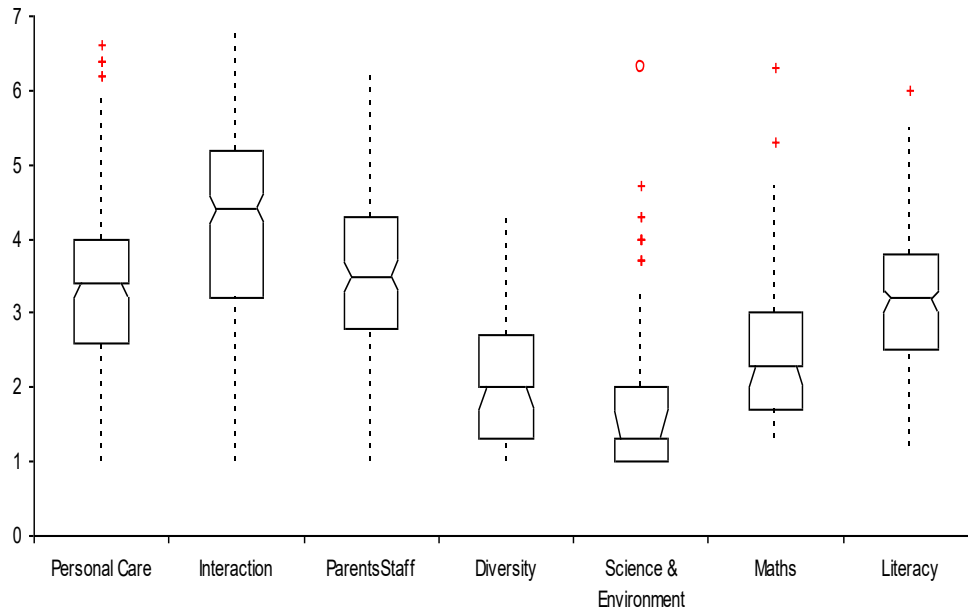
Quartile range	First quartile Score 32-79	Second quartile Score 80-127	Third quartile Score 128-176	Fourth quartile Score 177-224
Number of settings with total scores	52	183	32	0
Percentage of settings in this range	19.5%	68.5%	11.9%	0

Figures 12 and 13 (p152 and 153) show the general level of achievement of settings, itemising mean scores on each of the ERS.

6.2.7. Descriptive analysis of data at subscale level

While the total ECERS-R and ECERS-E scores gave a good general picture of the quality of settings, the scores at subscale level gave some useful indications of strengths and areas of weakness. Three subscales of ECERS-R: personal care, interactions and parents and staff and four subscales (the total scale) of ECERS-E: diversity, science/environment, maths and literacy were considered. Each item of the 32 scored items had a possible score range from 1 – 7 and sat within one of the seven subscales. The mean scores for each subscale were calculated – see Figure 15. The scores were generally low with some interesting outsider scores (for example in personal care and science and environment), but generally it confirmed the low starting point for the County's early years settings.

Figure 15: All LA pre-school foundation stage settings, mean subscale ECERS-R and ECERS-E scores



Note the first three subscales are from the ECERS-R while the other four are from ECERS-E. The lower ECERS-E scores are evident, with the lowest scores found for the subscales diversity, science and environment and maths.

6.2.8. Comparison of mean subscale scores: LA with EPPE project

During the EPPE project (Sylva et al., 2004a) observations using ECERS-R and ECERS-E, in approximately 3,000 pre-school foundation stage settings across England, were conducted (Sylva et al, 2004). Figure 16 compares the mean scores, on the subscales observed in the EPPE project with those within the study LA. Although the EPPE project included observations of LA nursery schools these are not included here as this LA had no such maintained settings. Interestingly, this was where EPPE found the highest quality. Table v, earlier showed the number of settings according to type of setting and their overall mean scores obtained in this study while Figure 16 below shows how this compares with EPPE findings.

Figure 16: Approximate comparisons of setting type by subscales: LA with EPPE findings.

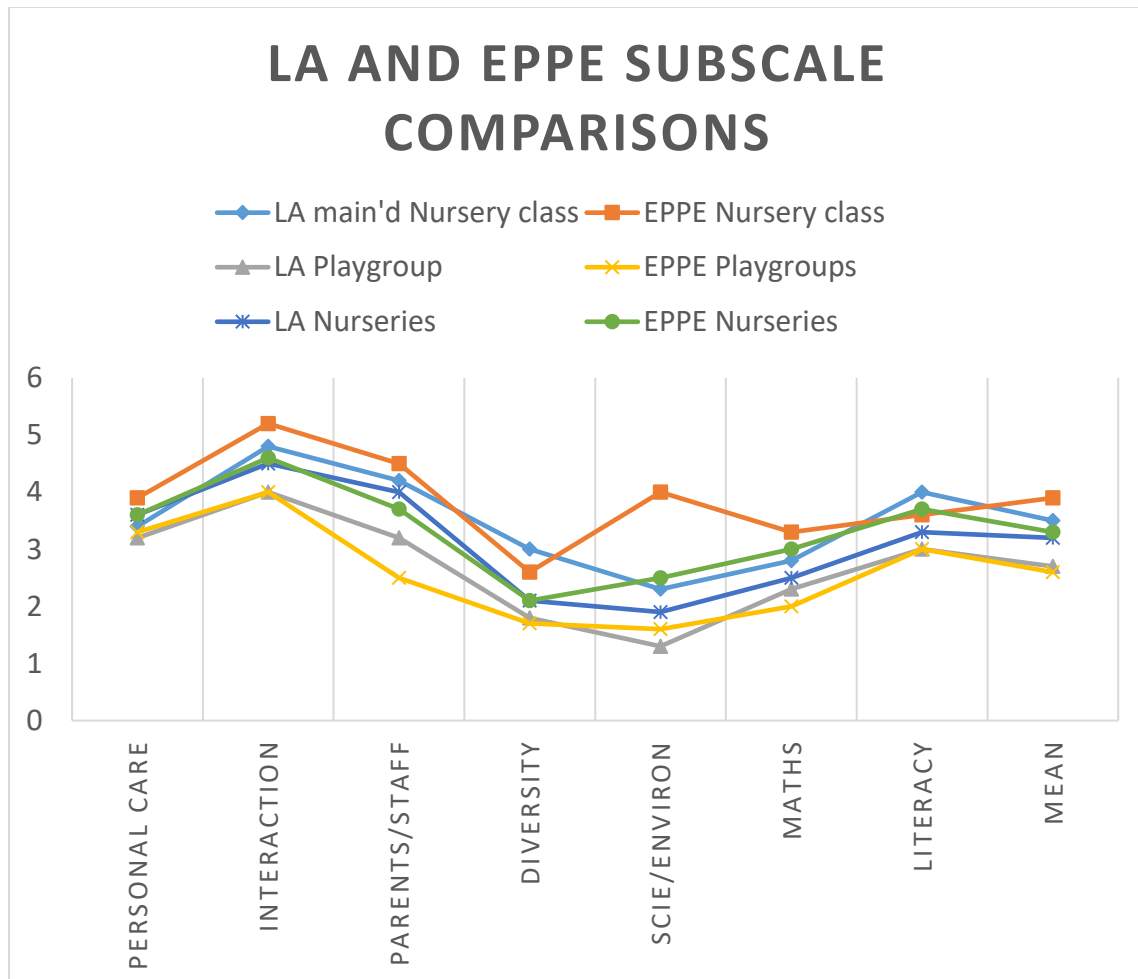


Figure 16 shows a comparison of subscale mean scores (ECERS-R: personal care, interactions and parents and staff; ECERS-E: diversity, science/environment, maths and literacy) by setting type. This shows the study LA's subscale scores followed a similar pattern to the average scores for the settings observed by the EPPE team (Sylva et al., 2004). While it could be viewed as disappointing that the settings had not improved following the new understandings the EPPE research brought, it is not unusual for there to be a considerable lag in time between research findings and improvements in practice. The personnel needed to implement new policies and support practice, the new qualifications and expectations that became available as a result of the findings and the changes in the early years guidance and frameworks needed longer to have an impact. Unfortunately, it was not possible to test this information for statistical significance as this

would require access to the original EPPE data. This information was estimated from graphs included in technical Paper 6 (Sylva et al., 1999b).

6.3. Summary and relevance of phase one to research question one:

What is the quality like in current pre-school settings in the Local Authority (LA)?

- a) **What is the practice and pedagogy like within the pre-schools of the LA? Are the children and families within the County receiving high quality care and education?**

Phase 1 Year 1. The baseline or pre-test: The quality of education and care according to both the ECERS-R and ECERS-E were deemed, for the purposes of statistical analysis, to be approximately normally distributed. However, no settings scored highly. When the scores on ECERS-R and ECERS-E were summed and the range of possible total scores was subdivided into quartiles no setting scored in the top quartile.

The ERS were scored on a seven-point scale where 7 was excellent and 1 inadequate. The mean score for the three subscales of ECERS-R for all of the settings was 3.54; while it was considerably lower on ECERS-E it was 2.07. This finding, that ECERS-E scores are lower than those of ECERS-R, is common to other studies (e.g. Sylva et al., 2004).

The baseline assessments or pre-tests revealed that the quality of education and care in the LA was minimal in relation to the more global aspects of quality as measured by ECERS-R, and below this in relation to curricula, concept development and pedagogy linked to supporting children's emergent literacy, mathematics and science and exploration in ECERS-E. In addition, the settings were poor in supporting and responding to diversity, as measured by ECERS-E (see Figure 15). This came as no particular surprise to those LA supporters and advisors who were familiar with the settings, however, it was a difficult finding for senior management and officers within the LA to accept.

b) How does the quality of the pre-school settings in the LA compare to settings nationally?

The baseline scores were compared to those produced by the Effective Provision of Pre-school Education (EPPE) project (Sylva et al., 2004) at subscale level. The quality of the pre-school settings was found to be very similar to the national picture found in the EPPE project. Figure 16 shows, graphically, how the subscales mean scores from this study mirror the EPPE findings when compared to similar settings (the setting types in this study were classified as nurseries, playgroups and maintained classes attached to maintained schools).

When differences between types of settings were statistically analysed they did not show significant differences, as they did in the EPPE study. These differences in findings (between the two studies) can be explained in a number of ways: first, the small sample sizes in this study made some comparisons not possible e.g. only 15 LA nursery classes in the county. Second, there may have been some errors made when allocating settings to the different groups as the terms nursery and playgroup were not well understood and settings self-selected. Third, the multiple regression technique used to analyse the variable (type of setting) in this study was rigorous and took into account inter-relationships between this variable and others (see Table x). A different variable may have been interacting with scores by setting types. Multiple analyses such as these only give significant results when differences are large and relatively independent of other variables, the larger the sample the more likely that any real differences will be detected. However, Figure 16 gives an indication of the relative quality in each type of setting and the pattern of mean scores was similar to the EPPE findings, where the PVI settings showed significantly lower quality (according to ERS scores) than maintained settings (Sylva et al, 2004a).

The findings that the baseline data was similar to the results in the EPPE project (the national picture) was received positively by the settings (despite the minimal level). However, overall the scores were disappointing, and, further, while it was expected, it was disappointing to realise that the influential EPPE research (and subsequent policy developments) had not impacted on the LA in the study. It could be that time was needed for the new legislations, guidance's, frameworks and inspection procedures to

support and improve practice. Alternatively, it pointed to the need for more targeted professional development work, which this study was designed to consider. What was clear was that the level of quality across the LA was low, and, therefore, it was unlikely to support and enhance the children's learning and development as hoped, especially in the areas of disadvantage which was a main aim of the LA.

c) Are differences in quality linked to type of setting, areas of deprivation, and/or qualifications of staff?

Type of setting in terms of classifications: nursery, playgroup and maintained class are discussed above in relation to the EPPE study. No significant differences between types of setting: Nursery or playgroup were found in this study; this was likely to be due to inaccuracies in allocating names and the small sample size of maintained settings. However, Figure 16 suggests some similarities with the EPPE study.

Table x p159 shows findings of differences following multiple regression analysis.

Namely in:

- the type of building being used for ECEC provision impacted on the quality, with multi-use or packaway settings scoring significantly lower than single use and purpose built settings on both measures (ECERS-R: $t= 3.715$, $p=.000$; ECERS-E $t=3.808$, $p=.000$);
- the level of the qualifications of staff, with settings with staff with qualifications above level 5 scoring significantly higher on ECERS-E but not ECERS-R (ECERS-R: $t= 1.673$, $p=.096$; ECERS-E: $t= 2.384$, $p=.018$);
- whether they were situated in areas designated as areas of deprivation, with settings in areas of deprivation scoring significantly less on both measures (ECERS-R: $t= -2.454$, $p=.015$; ECERS-E: $t= -2.347$, $p=.020$);

Finding significant differences here informed the researchers that these were important variables which needed to be taken into account in Year 2 when matching intervention and control settings for Phase 2 of the study. They also added to the discussion around what supports quality and where it is most likely to occur.

In multi-use settings, for example, a number of aspects may have led to their lower scores than found in single-use settings. Typically, staff spent more time setting up and packing away resources (which often led to less time for interactions which supported children's learning), multi-use settings often had a limited number of resources (due to storage space) and displays (due to restrictions on being able to demarcate the space as early years provision), and, the space itself was often inappropriate (typically a large church hall, with high ceilings and no safe outdoor space).

The level of qualifications appeared to be particularly important for practice associated with ECERS-E, suggesting that higher qualifications lead to better pedagogical knowledge, support for concept development and support for individuals with diverse needs. While the differences were not significant for ECERS-R subscales, the results did suggest that given a larger sample size they may have been. Alternatively, not finding differences in ECERS-R subscales scores may suggest that ECERS-R captures staff characteristics which were either more available within the general population (regardless of qualifications) and/or captured attributes which had already been a focus in previous PD across the county, to which all educators were invited. While ECERS-E focussed more on characteristics which were typically taught during relevant qualifications; for example, understanding subject knowledge (mathematics, literacy, and science) is taught during most initial teacher education degrees.

The importance of qualifications has been well documented in the extant literature (e.g. Sylva et al., 2004a; Melhuish et al., 2015). While the results support the notion that qualifications are important for quality provision it is worth noting that quality was not high even where qualified staff were present. Even the highest scoring outlier settings (the highest scoring setting achieved mean scores of 5.35 on ECERS-R and 3.78 on ECERS-E) had the potential for improvement and did not reach the good level on ECERS-E. The findings point towards the need to ensure that settings have well qualified staff and continued professional development if high quality, enhanced children's outcomes and school readiness is desired.

The significant differences found in ERS scores (both ECERS-R and ECERS-E) in pre-school settings situated in areas of deprivation with those that were not was in line with Ofsted's thoughts (Mathers and Sylva, 2013). This study provides some empirical

evidence supporting this idea. Despite the recognised need for high quality early years provision in areas of deprivation if the 'gap of achievement' is likely to be closed, the opposite is found in reality. It suggests that further investment would be important in areas of deprivation in the future.

d) How do the measures used in this study and the resulting scores compare to existing Ofsted ratings?

Ofsted outcomes were compared to ERS scores. During Phase 1 of the study Ofsted had only awarded settings four of the possible five ratings available to them (good, satisfactory, inadequate at level I and II), with no setting achieving outstanding. This corresponded well with the total mean scores of ECERS-R and ECERS-E combined on the baseline (phase 1) as, when the range of possible total scores were divided into quartiles, no setting achieved a score in the highest quartile.

Both ECERS-R and ECERS-E showed significant positive relationships with Ofsted ratings when they were separated into binary data: ratings of good or not good. The ECERS-E scores' association with Ofsted appeared slightly stronger than with ECERS-R. This may have been due to the focus of the Ofsted inspections being more closely aligned with the curricula and pedagogical aspects within ECERS-E, than the more global aspects of quality associated with ECERS-R such as parent partnerships, social interactions and care routines. Such possibilities would link strongly to the backgrounds in education (in schools) that many of the inspectors had at that time and would be in line with other research that suggests that Ofsted does not always measure the same aspects of quality as ERS (see Mathers et al., 2012).

e) What does this research, together with the international and national literature, tell us about the pre-schools strengths and areas for development? (This information was needed to inform future professional development including the short intervention in this study)

Consideration of the scores at the subscale level illustrated the generally low starting point that the settings had, with ECERS-E subscales: science & environment, diversity and maths scoring at the lower levels and ECERS-R subscale: interaction at the highest. Again this mirrored the findings of the EPPE study and the national picture (Sylva et al., 2004a).

Even though there were some areas where the practice seemed better than others, the overall picture suggested only minimal (or worse) levels of quality. All areas of practice required support for improvement and all settings required support. As the findings were similar to those found in the EPPE project, drawing on this research to support local quality and when developing the PD for Phase 2 in Year 2 seemed appropriate. This short study was likely to be the beginning of a journey, with the most important question being is it possible to make improvements with a short targeted intervention or set of PD? (see the next section).

6.4. Quantitative data phase two: Intervention and control pre- and post-test data

In this section the results of the pre- and post-test ECERS-R and ECERS-E are compared.

First, inter-rater reliability is established and then descriptive analysis of the total ECERS-R and ECERS-E pre- and post-test scores are undertaken. These are followed by inferential analyses of the total scores.

Second, the pre- and post-test ECERS-R and ECERS-E subscale scores are analysed. Initially using descriptive statistics and then inferential statistics.

In the final part of this section the main results are linked to research question 2: Did the PD/ short targeted training provide measurable improvements in quality in PVI pre-school settings?

6.4.1. Inter-rater reliability at pre- and post-test

As the repeated ECERS-R and ECERS-E observations took place one year after the initial baseline observations it was necessary to check inter-rater reliability again. As there were only 100 observations required at this time the original six researchers, plus a new additional member of staff, from the Area Inclusion Team conducted them as the Research Team.

For comparison against the 'standard', a setting was chosen that no-one had visited previously and all seven researchers undertook the observations together.

The two techniques used previously to check for inter-rater reliability were repeated.

- a) where each observer scored within one point of the 'standard' on each item (% agreement). See Table xii.

- b) an Intra-Class Correlation (ICC) value was computed. ICC is a measure that provides an estimate of inter-rater reliability on quantitative data. See Table xiii.

Each researcher's individual item scores were compared with the standard's score (the lead researcher's score). They needed to be within one point of this score to be considered comparable and acceptable. The total numbers of item level differences, of more than one point discrepancy to the 'standard's' score, were summed for each researcher. Each researcher needed to score items with an agreement of at least 85% with the standard for them to be considered reliable. Table xii shows that all of the researchers were above the recommended 85% level when compared to the standard.

Table xii: Inter-rater reliability comparisons made between research team and lead researcher.

Researcher	% agreement with standard (researcher 7)
1	91
2	97
3	94
4	94
5	91
6	97
7	100

The ICC figure for total ECERS score is included below.

Table xiii: ERS ICC results

	ICC
Group	0.993

Typically, when interpreting ICC values, a score of 0.9 or above is regarded as excellent. The results of this analysis indicated excellent inter-rater reliability across all researchers.

6.4.2. Descriptive Analysis: total ECERS-R & ECERS-E scores for intervention & control

6.4.2.i. Establishing random sampling of intervention & control group

Fifty settings were chosen to attend the PD and were trained during Phase 2 Year 2 of the study. The settings were chosen through a system of randomised stratified sampling and then matched in pairs, on up to nine variables. The number of pairs of settings chosen within each quartile range available matched the percentage of settings scoring in that quartile at the pre-test (see Table xiv). A minimum of eight settings was required in each quartile for analysis to be reasonable. In an effort to ensure that eight settings would be available for analysis within each group, at the end of the intervention period, more than eight settings were chosen in each group. A greater proportion of settings was chosen in the lowest quartile as there appeared to be a greater risk of closure, and then withdrawal from the study, for this group.

Table xiv: Intervention group and quartile ranges

Quartile range	First quartile Score 32-79	Second quartile Score 80-127	Third quartile Score 128-176	Fourth quartile Score 177-224
Total number of settings	51	181	32	0
Number of trained settings	11	29	10	0
% of trained settings in this range	22%	58%	20%	0
No. of settings closed in Phase two	3	2	0	0
No. of settings without matched controls	1	1		
No. of settings discarded due to change in staff			1	
Settings used in final analysis	7	26	9	0

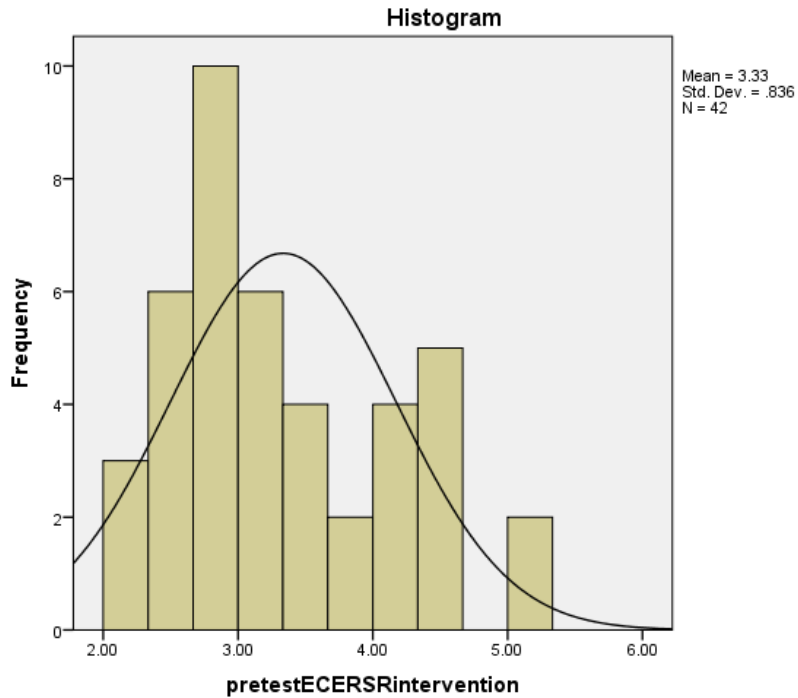
By the end of phase 2 Year 2, when the repeated observations took place, five settings had closed (10% of the sample), they had initially scored in the two lowest quartiles at the pre-test. In addition, two control settings had closed and it was not possible to find suitable replacements. During the post-test (repeated measures) observations one further setting was removed from the sample as it was staffed almost entirely by bank staff and so none of the educators had received the intervention. A total of 42 settings were included in the final analyses.

6.4.2.ii. Descriptive analysis of total ECERS-R & ECERS-E scores at pre-test

Figure 17 shows the distribution of mean scores of ECERS-R pre-test intervention group. Figure 18 shows the distribution of the mean scores of the ECERS-E pre-test intervention group. Tables showing the distribution of mean ECERS-R and ECERS-E mean scores for the control group can be found in Appendix H Part Two. As discussed earlier, the data was considered in this way to establish which tests should be used at the analytic stage of analysis. It is considered important to establish whether the data is normally distributed or not. Data which is normally distributed can be analysed using

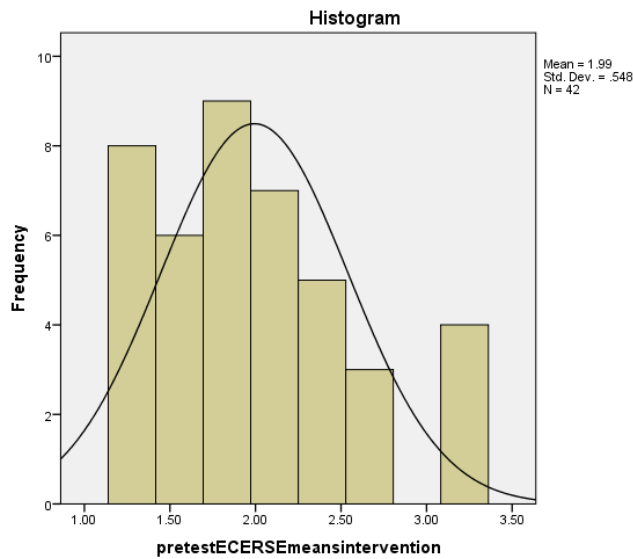
parametric tests while data which is not normally distributed is typically analysed using non-parametric tests. The data is presented with a normal curve superimposed over the top for comparison.

Figure 17: Distribution of mean ECERS-R scores at pre-test: intervention group



Skewness	0.618	Standard Error: 0.365
Kurtosis	-0.639	Standard Error: 0.717

Figure 18: Distribution of mean ECERS-E scores at pre-test: intervention group



Skewness	0.706	Standard Error: 0.365
Kurtosis	-0.162	Standard Error: 0.717

Kurtosis is the measure of the degree of flatness or steepness of the curve. The negative value suggests a slightly flattened shape. The skewness refers to the overall shape of the curve, the value suggests it is slightly skewed towards the left or lower end of scores. While the data was not entirely normally distributed neither was it sufficiently different to make parametric tests out of the question. In addition, the standard errors for both the kurtosis score and skewness are relatively high suggesting that the scores obtained here may be unreliable. Many researchers note that parametric tests are more reliable and robust especially when approximations towards a normal curve are observed (Howitt and Cramer, 2005). For this reason, both parametric and non-parametric tests were used, to double check results. As the results were very similar only the parametric test results are included here (the non-parametric test results can be found in Appendix H Part One).

6.4.2.iii. Descriptive analysis of total mean ECERS-R & ECERS-E scores for the intervention & control groups

Table xv below shows the means for each group. The pattern of means suggests that the control group settings may have shown slightly higher levels of quality in both ECERS-R and ECERS-E at the pre-test stage, however these were not significant differences (see later). They also suggest that improvements in ECERS-E and ECERS-R quality occurred from pre- to post- test for both the intervention and control groups, but with a greater shift in the intervention than control group.

Table xv: Mean ECERS-R & ECERS-E scores: intervention & control groups pre- and post-test

Scale	Intervention Group			Control Group		
	Pre-test	Post-test	Difference in means	Pre-test	Post-test	Difference in means
ECERS-R	Mean = 3.335 SD=.836	Mean = 4.233 SD=.871	0.898	Mean = 3.634 SD=.762	Mean = 3.879 SD=.720	0.245
ECERS-E	Mean = 1.993 SD=.548	Mean = 2.618 SD=.632	0.625	Mean = 2.196 SD=.685	Mean = 2.504 SD=.673	0.308

Figure 19: Comparison of mean ECERS-R and ECERS-E scores: intervention and control groups

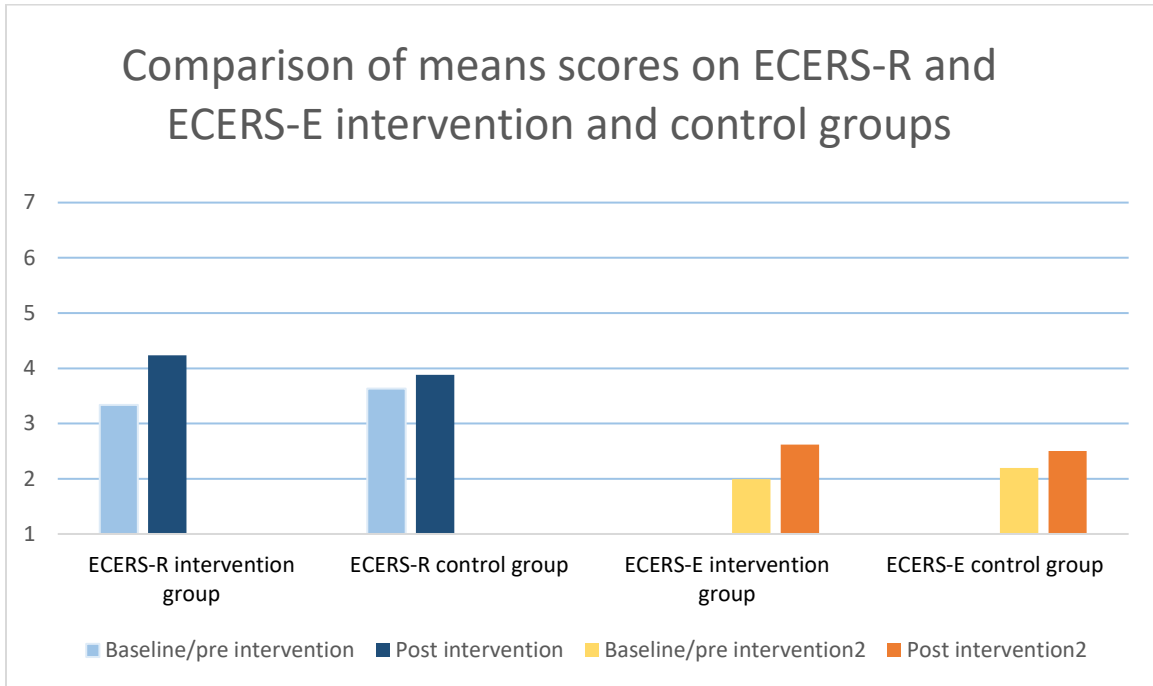


Figure 19 shows the mean scores for the ECERS-E and ECERS-R at pre- and post-test. The increase in scores at post test for the PD/intervention appear to be greater than for the control group.

6.4.3. Inferential analysis: ECERS-R & ECERS-E, intervention & control, pre- & post-test

First, consideration was given to the design of the study. The groups of settings and allocation to either the PD/intervention or control group was done on a random basis, however, the control group mean scores for both the intervention and control groups were higher. To test whether this was random, non-related T tests were used to consider the mean scores of the pre-test intervention groups with the control group. Table xvi below gives the results.

Table xvi: Comparison of pre-test means ECERS-R & ECERS-E scores between the intervention & control groups

Sample groups	ECERS-R T-test (parametric) t=	Sign p=	conclusion	ECERS-E T-test (parametric) t=	Sign p=	conclusion
Intervention and control Groups pre-test comparisons	-1.717	0.09	NS	-1.495	0.139	NS

Using non-related t-tests, the results suggest that despite the means of the control and intervention groups appearing like they may have been biased (as the control group means were slightly higher), the non-significant results suggest they were not. The differences in means at pre-test were likely to be due to chance rather than true differences in scores and associated quality – suggesting true random sampling of the settings into control and experimental/intervention groups at the start of this phase.

Inferential analysis using multivariate analyses: multiple regressions were completed to consider the relationships between the post-test ECERS-R and ECERS-E mean scores and the PD/intervention. The dependent variables were post-test/intervention means of ECERS-R and ECERS-E scores. The independent variables were: intervention vs control group (to establish whether the PD had an effect); pre-test mean scores on the appropriate ERS and other structural variables: situated in multi- vs single-use buildings, qualification levels of staff, situation in an area of deprivation or not and Ofsted rating of good or not.

Table xvii shows the relationship, as identified through multiple regression techniques, between the post-test ECERS-E and ECERS-R separately and the intervention or PD together with relationships with the pre-test scores on the appropriate ERS and with structural variables: Multi-use or single use; staff qualified at level 5 or not; setting situated in area of deprivation or not; and rating achieved by Ofsted. These two analyses

reduce the number of statistical analyses that would be necessary if simpler univariate statistical tests were applied to look at all of these relationships. Multiple regressions also take into account inter-relationships between the independent variables and the dependent variable which might otherwise lead to false positives.

Table xvii: Multi-variate analysis: comparison of intervention impact in relation to structural quality measures.

Variable	ECERS-R t=	Sign p=	Conclusion	ECERS-E t=	Sign p=	Conclusion
Intervention or control	-3.452	.001	SIGNIFICANT	-1.468	.147	NS
Pre-test mean score on appropriate ERS	4.449	.000	SIGNIFICANT	4.709	.000	SIGNIFICANT
Multi/single use setting	-1.668	.100	NS	.054	.957	NS
Qual at level 5	0.437	.663	NS	-.107	.915	NS
Deprivation	-1.476	.145	NS	-1.107	.273	NS
OFSTED good or not good	-.241	.810	NS	.1407	.164	NS

These analyses suggest that the PD (intervention) did effect the results of ECERS-R scores at the post-test, but did not have an independent effect on the ECERS-E scores. The PD appeared to have a significant impact on ECERS-R scores and the differences in mean scores from pre- to post-test when compared to the control group were significantly larger. Further consideration (of Table xvii and xv together with Figure 19) suggests that while there were changes in ECERS-E they were not big enough to be significant. Table xv shows that there were definite increases in mean scores following the PD on ECERS-E scores (indicating a relationship between post-test ECERS-E

scores and the PD) however, there were also comparatively large increases in ECERS-E scores in the control group, and the Standard Deviations for both groups (control and intervention) were relatively large. These facts, together with the total number of settings in the sample being relatively small (42 groups), are likely to have impacted on the results and contributed to the not significant findings.

The analyses also suggest that pre-test scores on the ERS were predictive of the post-test scores, but that none of the structural measures impacted on the results; that is the intervention or PD was equally effective (or ineffective) regardless of type of setting, qualifications of staff, situation in or out of an area of deprivation and previous Ofsted rating of good or not good. Any pre-existing differences in ERS scores between the groups of settings remained following the intervention. No group of staff benefitted more or less than the others, regardless of qualification level. Also, there were no significant findings with regards to an interaction between the intervention and Ofsted ratings. The differences between the post-test scores could be explained by pre-existing differences between the groups and not the intervention.

6.4.4. Effect sizes

Effect size is a simple way of quantifying the difference between two groups that has many advantages over the use of tests of statistical significance alone. Effect size emphasises the size of the difference rather than confounding this with sample size. Cohen's d was calculated, it compares effect sizes when intervention and control groups are used in the experimental design. Cohen suggested that $d=0.2$ be considered a 'small' effect size, 0.5 represents a 'medium' effect size and 0.8 a 'large' effect size. The calculator used can be found at: <http://www.uccs.edu/~lbecker/>

Table xviii: Effect sizes: differences in mean ECERS-R & ECERS-E score between pre- and post-test

ERS	
Effects size for ECERS-R Cohen's d	Effect size for ECERS-E Cohen's d
0.443	0.175

The effect size for ECERS-R is larger than for ECERS-E which is to be expected given earlier findings. Both effect sizes would be classified as small or reaching a small effect size, according to Cohen.

An effect size of 0.4, as found with ECERS-R, is often considered a hinge point. Hattie and the Visible Learning Team (2016) suggest that an effect size of 0.4 is often a good starting point when seeking to understand success within an intervention. Here it might suggest that the PD was particularly effective in enhancing the pedagogies and practices associated with the subscales used from ECERS-R. They also note that small effect sizes can also be useful, especially when they are associated with measurements of broad concepts. As ECERS-E measures pedagogies and practices associated with emergent literacy, mathematics, science and exploration and support for children with diverse needs, it could be considered a measure of a broad range of concepts. Further, the Visible Learning Team suggest that smaller effect sizes (than the 0.4 hinge point) can be valuable as they indicate that the intervention is moving in the right direction. Smaller effect sizes *'... can also indicate that some deeper processes may be changing, and they can indicate that more time, implementation press, or adjustment is needed'* (Visible Learning, 2016). In addition, small effect sizes have been valuable within different research studies, as they have been accumulated through meta-analyses, and used to support policy changes.

6.4.5. ECERS-R and ECERS-E scores by pre-test interquartile range

All of the analyses considering the variables that impact on the post-test scores point to the importance of the pre-test scores on the ERS, so these were investigated further. During the stratified sampling process the settings were divided into quartile ranges according to total pre-test scores on ECERS-R and ECERS-E see section 5.1.4. Comparisons were made between the settings grouped according to quartile range and their post-test ECERS-R and ECERS-E mean scores. The multiple regression (see Table xvii) had clearly indicated the relationships between pre- and post-test scores for both ECERS-R and ECERS-E. A one way ANOVA was conducted to determine if there were significant differences related to their original pre-test total scores on ECERS-R and ECERS-E when divided into their quartile range.

Table xix: ANOVA: consideration of the pre-test ERS scores by interquartile range

Variables	ECERS-R <i>F=</i>	Sign <i>p=</i>	conclusion	ECERS-E <i>F=</i>	Sign <i>p=</i>	conclusion
Relationship between quartile range and ERS at post-test for intervention group	66.203	.000	SIGNIFICANT	27.869	.000	SIGNIFICANT

The relationship between pre-test quartile range and post-test scores on both ECERS-R and ECERS-E were significant. This difference in findings in comparison to the multiple regression, in relation to ECERS-E, reflects the differences in robustness, and ability to take other factors into account of the ANOVA. The pattern of difference remains, however, with ECERS-R significance being higher than ECERS-E. No further inferential analysis were deemed appropriate for total scores given these findings and the small

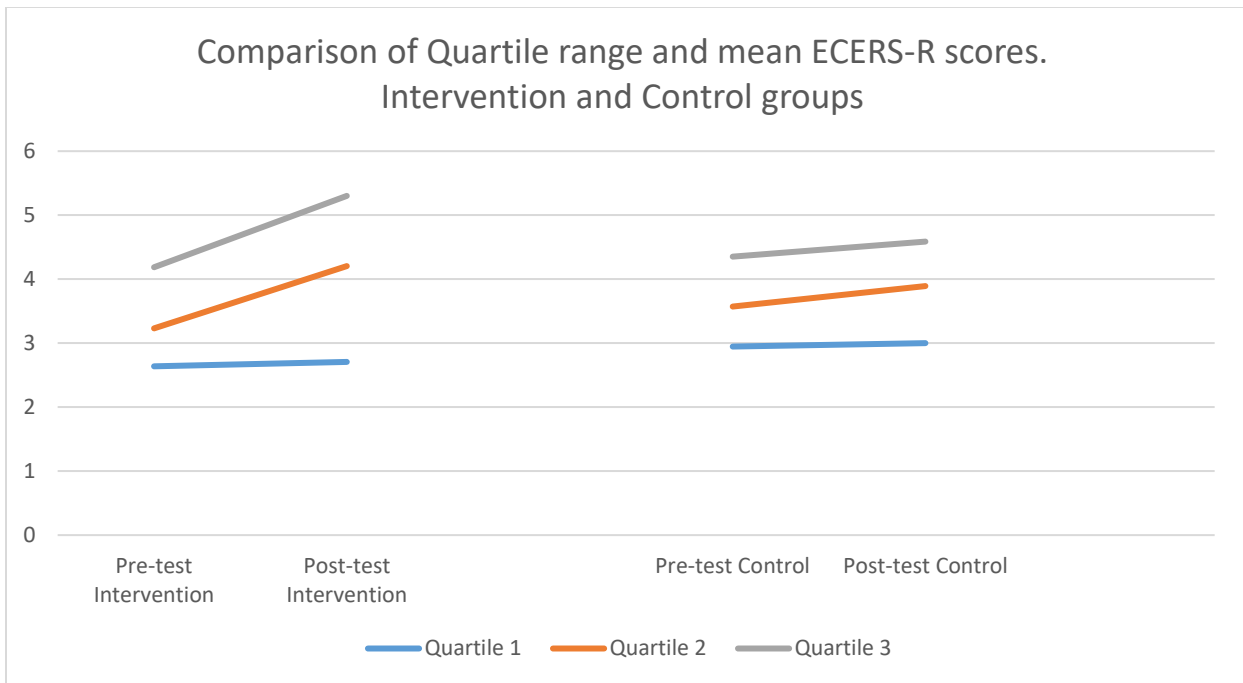
sample sizes associated with quartile ranges. The remaining discussions considering total scores therefore only include descriptive analysis and so need to be interpreted with caution. At the subscale level, multi-level regression analyses were used in order to ensure the robustness of results.

This relationship between improvements made and initial quartile range was considered in more detail, table xx and the graphs - Figures 20 and 21 - below show how the settings in each quartile range responded to the intervention.

Table xx: Intervention and control group pre- and post-test mean ERS scores according to the interquartile range they were originally allocated.

Scale and Quartile range (re total score of ECERS-R and ECERS-E at pre-test)	Intervention			Control	
	Number	Mean score	Std. Deviation	Mean score	Std. Deviation
ECERS-R pre-test					
1	7	2.638	.454	2.949	.394
2	26	3.231	.694	3.570	.678
3	9	4.186	.817	4.352	.647
ECERS-R post-test.					
1	7	2.706	.387	3.000	.309
2	26	4.204	.486	3.894	.632
3	9	5.301	.484	4.589	.447
ECERS-E pre-test					
1	7	1.468	.210	1.436	.218
2	26	1.872	.346	2.083	.503
3	9	2.753	.439	3.111	.305
ECERS-E post-test					
1	7	2.008	.093	1.794	.307
2	26	2.568	.493	2.466	.565
3	9	3.238	.718	3.167	.557

Figure 20: Graphical comparison by quartile range, pre- & post-test mean ECERS-R scores



The graph above illustrates the improvements made within the settings when separated by initial pre-test quartile ranges. Note no settings scored in the fourth quartile range which is why only three groups appear above. The settings in the lowest quartile appear to have made little improvement in either the PD/intervention group or the control group suggesting that, for settings scoring very poorly on pre-test ECERS-R scores, something different needed to occur than the support naturally available within the LA or within the PD/intervention. For the intervention group, the improvements appeared to be most notable in the second and third quartile ranges, suggesting that the PD supported improvements best with settings with initial/pre-test ECERS-R scores within these ranges. For the control group, while the effect was less notable, the graph suggested greater improvement for those settings grouped within the second quartile range. One possible explanation would be that the naturally available support for improvements, within the LA, may have supported their needs more than the needs of the settings initially scoring higher and lower on ECERS-R.

Figure 21: Graphical comparison by quartile range, pre- & post-test mean ECERS-E scores

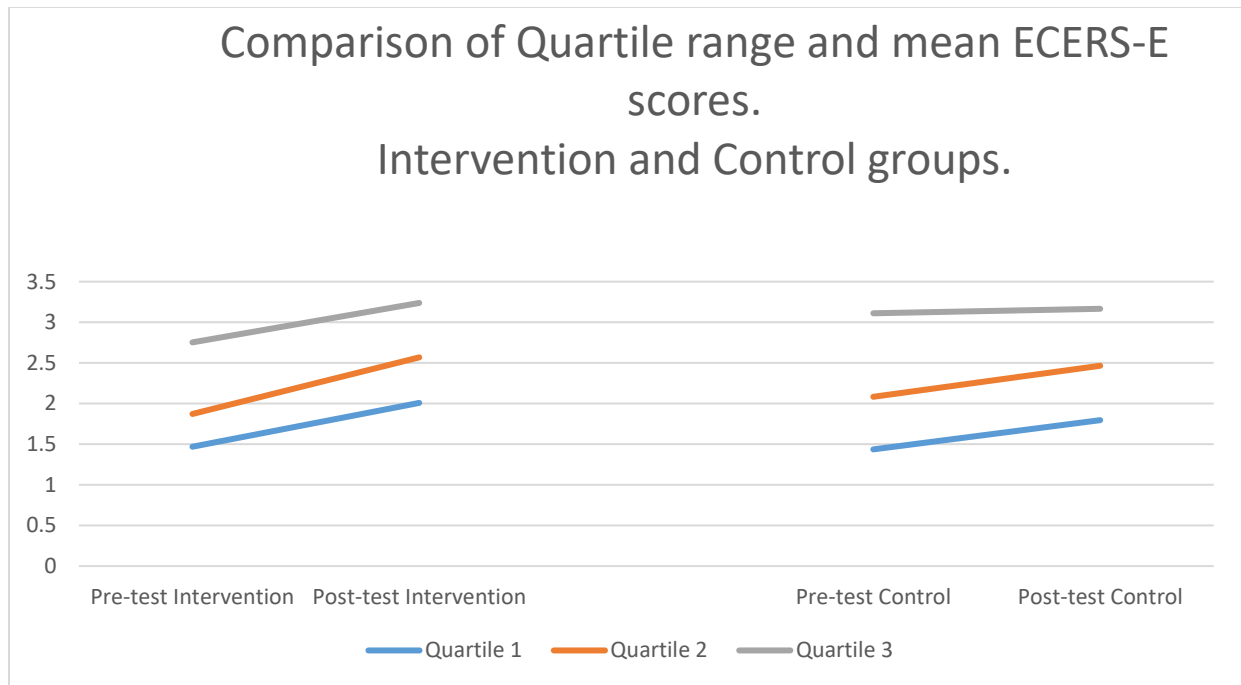


Figure 21 shows similar small improvements for the PD/intervention group across all of the quartile ranges for ECERS-E. The graph suggests that the PD/intervention favoured no particular group of settings in terms of the pedagogies and practices measured by ECERS-E, according to initial quality scores.

Within both groups (PD/intervention and control group) even those settings scoring in the first quartile made some improvements on ECERS-E, a different pattern to that found with ECERS-R. It is, however, important to remember that improvements made for the complete group were not significant when analysed using multiple regression technique and less significant than for ECERS-R when analysed using ANOVA.

Within the control group, one further pattern is noteworthy, and is mirrored in the results for ECERS-R, the absence of improvement found for the third quartile range. It suggests that there was no support naturally available within the LA for settings starting with this level of quality.

In order to investigate these patterns further inferential analysis would have been useful, unfortunately, as already discussed, the data set was too small for further statistical analysis. While it would have been useful to consider interactions and relationships between the quartile groups, larger sample sizes would have been necessary for these to be viable and support robust findings.

6.4.6. Descriptive analysis: subscale ECERS-R & E scores, intervention & control, pre- & post-test

Table xxi and xxii below show the means subscale scores for first the PD/intervention group and second the control group. Figures 22 and 23 show these graphically.

Table xxi: Intervention subscale means with differences between pre- and post-test scores.

Scale	Subscales	Intervention group Pre-test mean scores	SD	Intervention group Post-test mean scores	SD	<i>Differences between mean scores at pre- and post-test</i>
ECERS-R	1. Personal care	2.766	.909	3.608	1.015	0.842
ECERS-R	2. Interaction	3.957	1.308	4.679	1.229	0.722
ECERS-R	3. Parents staff	3.340	.857	4.338	1.199	0.998
ECERS-E	4. Diversity	2.034	.778	2.419	1.080	0.385
ECERS-E	5. Science	1.360	.375	1.790	.804	0.43
ECERS-E	6. Maths	1.762	.599	2.202	.633	0.44
ECERS-E	7. Literacy	3.147	.847	3.734	.682	0.587

Table xxii: Control subscale means, with differences between pre- and post- test scores.

Scale	Subscales	Control Group Pre-test mean scores	SD	Control Group Post-test mean scores	SD	<i>Differences between mean scores at pre- and post-test</i>
ECERS-R	1. Personal care	2.861	.805	3.122	.944	0.261
ECERS-R	2. Interaction	4.285	1.131	4.289	1.214	0.004
ECERS-R	3. Parents staff	3.762	.873	4.262	.892	0.5
ECERS-E	4. Diversity	2.151	.938	2.396	.894	0.245
ECERS-E	5. Science	1.519	.554	1.705	.603	0.186
ECERS-E	6. Maths	1.805	.704	2.031	.681	0.226
ECERS-E	7. Literacy	3.286	.913	3.874	.829	0.588

It is interesting to note that from pre- to post-test all subscales (including in the control group) increased, if only slightly. The changes in mean subscale scores were greater in the intervention group than for the control group.

**Figure 22: Comparison of pre- & post-test mean subscale ERS scores:
intervention group**

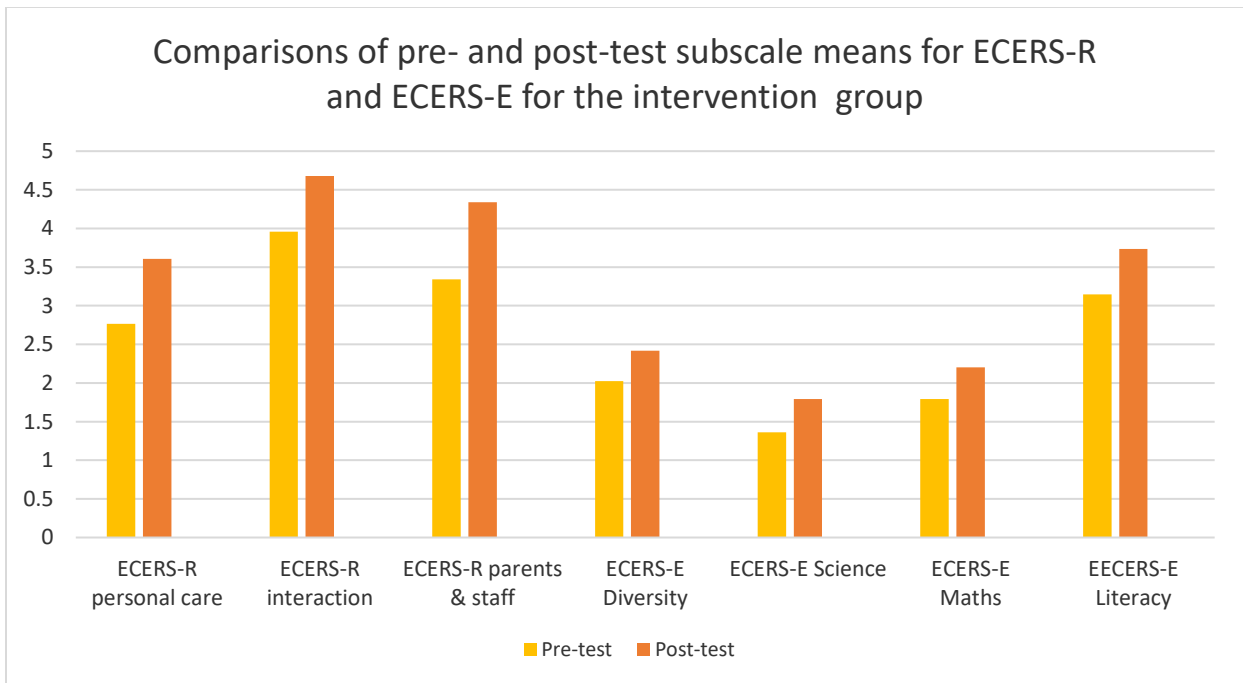
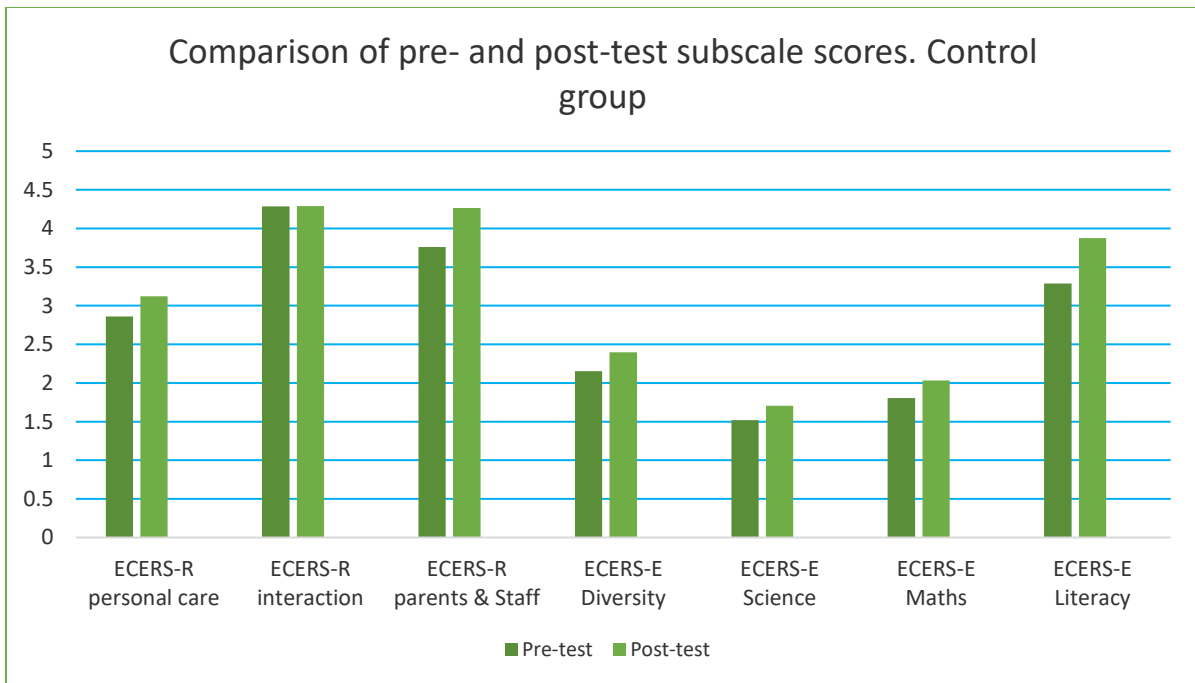


Figure 22 shows the changes across all of the subscales in both scales for the intervention group. The largest changes were seen within the ECERS-R subscales: parents and staff, interaction and personal care. ECERS-R includes aspects of quality which are often described as basic and global aspects quality. As such, they include physical changes to the environment which can be achieved relatively easily and quickly. Many of the items in the ECERS-R require minimal changes, in resources for example, for improvement to occur. The least changes were seen in the ECERS-E diversity, science and mathematics subscales. ECERS-E considers aspects of quality relating to the educators' knowledge and role in supporting the children's learning. This has been described as capturing higher order skills and often requires time for changes here to occur (e.g. Siraj et al., 2016).

Figure 23: Comparison of pre- & post-test mean subscale ERS scores: control group



The largest differences were found in the subscale scores of parents and staff in ECERS-R and Literacy in ECERS-E. The other subscales also showed improvements but they were relatively small changes. The changes suggested that something other than the PD had supported quality and changed scores on the ERS.

6.4.7. Inferential analysis: subscale ECERS-R & E scores, intervention & control, pre- & post-test:

Inferential analysis using multivariate analyses: multiple regressions were completed. The dependent variables were post-test/intervention means of ECERS-R and ECERS-E subscale scores. The independent variables were: intervention vs control group (to establish whether the PD had an effect); pre-test mean scores on the appropriate ERS subscale and other structural variables: situated in multi- vs single-use buildings, qualification levels of staff, situation in an area of deprivation or not and Ofsted rating of good or not. Table xxiii shows the relationship between the post-test ERS subscale

scores and whether or not they received the intervention. In other words, did the PD (intervention) impact on the post-test subscale score.

Table xxiii: Multi-variate analysis: impact of PD on post-test subscale ERS scores

Scale	Subscale	T-test <i>t</i> =	Sign	Conclusion
ECERS-R	1. Personal care	-2.721	.008	SIGNIFICANT
ECERS-R	2. Interaction	-2.694	.009	SIGNIFICANT
ECERS-R	3. Parents staff	-1.797	.076	NS
ECERS-E	4. Diversity	-.490	.626	NS
ECERS-E	5. Science	-1.416	.161	NS
ECERS-E	6. Maths	-1.655	.102	NS
ECERS-E	7. Literacy	-.052	.958	NS

As discussed earlier using a multivariate regression allows for the interrelationships between the independent variables (Intervention or control, multi-vs single use, qualifications of staff, situated in an area of deprivation, previous Ofsted score of good or not and previous ERS subscale score) to be accounted for. What is reported above are the results of analyses in relation to the PD, when all of the other relevant variables have been taken into account. It is interesting to note that if simple T-tests were used to compare pre- and post-test scores for the intervention group then all of the subscales would have showed significant differences. However, the significant differences found using the multi-variate regression relate to changes made following the PD/intervention in relation to changes made within the control group over the same time period. So while, for example, the intervention group showed a large change in scores on the pre- and post- test ECERS-R subscale staff and parents so also (although to a lesser extend)

did the control group, thus rendering the change not significant when considering the impact of the PD alone.

While only two subscales clearly showed the impact of the PD (personal care and interaction in ECERS-R), as discussed earlier, the increases in mean scores are suggestive of further improvements (e.g. staff and parents in ECERS-R and literacy in EECERS-E) made following the PD. If the sample sizes had been larger these would, most likely, have been more apparent.

6.5. Summary and relevance of phase two to research question two.

Will a short-targeted training intervention provide measurable improvements in quality in PVI pre-school settings?

a. Will a targeted training intervention make improvements in the quality of settings which are statistically significant in comparison to matched control settings who do not receive the training?

Descriptive analysis clearly showed improvements in the mean scores of ECERS-R and ECERS-E in settings who had received the professional development and also in the control settings who had not (see Table xv and graphically: Figures 22 and 23).

For the intervention group who received the PD the mean differences in the pre- and post-tests were significantly larger (Intervention/PD group: ECERS-R mean scores pre-test 3.335 and post-test 4.233; ECERS-E mean scores pre-test 1.993 and post-test 2.618) than for the matched control group (Control group: ECERS-R mean scores pre-test 3.634 and post-test 3.879; ECERS-E mean scores pre-test 2.198 and post-test 2.504).

Simple unrelated t-tests (see Table xvi) suggested that at the pre-test there were no significant differences between the intervention/PD group and the control groups for either ECERS-R ($t = -1.717, p = 0.09$) or ECERS-E ($t = -1.495, p = 0.139$) and the settings were successfully randomly assigned to the intervention and control groups. Multi-level regression analysis revealed significant effects of the PD/intervention on the post-test

scores of ECERS-R ($t = -3.452$, $p = 0.001$), but they did not quite reach significance for ECERS-E ($t = -1.468$, $p = 0.147$) with effect sizes: ECERS-R: $d = 0.443$; and, ECERS-E: $d = 0.175$.

The multiple regression analysis also revealed the importance of initial pre-test ECERS-R and ECERS-E scores on post-test scores. These relationships were investigated further through descriptive analyses of pre-test scores when settings were grouped into initial quartile ranges. In summary, while it appears that the PD/intervention supported improvement across both the ECERS-R and the ECERS-E, the improvements were more robust with ECERS-R, suggesting that the professional development supported skills and understanding better for these particular aspects of quality i.e. more basic global aspects of quality. It also appeared to support settings whose initial quality scores were higher in ECERS-R (quartile 2 and 3) and across all quartile ranges for ECERS-E. The control groups showed slightly different patterns, with improvements seen in ECERS-R in settings grouped in quartile 2 only and for ECERS-E in quartile 1 and 2.

At the subscale level, the PD/intervention settings showed significant improvements in their subscale scores for personal care and interaction following the PD/intervention. All other subscales showed some improvements which were approaching significance (especially the parents and staff, ECERS-R subscale) but did not reach significant levels. It seems most likely that if the sample size were larger real differences would have been apparent.

b) Will these changes, if found, be sustained for at least a year?

Unfortunately, the LA was re-organised and restructured in Phase 3 Year 3, the year following the PD/training intervention and the study was halted, so it was not possible to retest the settings to see if the changes had been sustained.

c) Are improvements, if found, linked to type of setting, qualification of staff, areas of deprivation, starting position re quality measures?

Consideration of the mean scores of ECERS-R and ECERS-E using multivariate analysis: multiple regression suggested that the professional development made a significant difference to ECERS-R but not ECERS-E at post-test. It also suggested that the original scores on both of these measures (pre-test scores on ECERS-R and

ECERS-E) predicted scores on the post-test measures. However, there were no effects linked to type of building, qualifications levels of staff, situation in an area of deprivation or not, and/or previous Ofsted ratings (when split into good or not good). None of these factors were predictive of the success of the professional development, which supported improvement and modest changes regardless of these.

d) Which settings and aspects of practice change most?

A closer look at the significant findings reported earlier included: first, an exploration of the relationship between settings initial pre-test mean scores when divided into quartiles and post-test mean scores in those quartiles; and, second, an exploration at subscales level including where and how large the changes were from pre- to post-test.

The ERS scores were divided into quartiles for comparison purposes. First, this showed the low level of scores across both ECERS-R and ECERS-E as no setting scored in the fourth, highest quartile. While no further tests of significance were conducted upon the quartile ranges, in order to avoid false positives which often accompany the multi-use and over testing of the same data using univariate analysis, descriptive analyses revealed some interesting patterns of results. The Graphs (Figures 20 and 21) suggested that the settings in the lowest quartile of quality of ECERS-R did not benefit from the intervention, as much as those in quartile 2 or 3, as little to no improvement was shown. While, in the control group the changes in quality appeared to be limited to the settings in the second quartile with little change in those settings grouped in quartile 1 or 3. This suggests that in terms of ECERS-R the PD/intervention supported those settings with initial quality scores in quartile 2 and 3, and the naturally occurring support for quality in the LA supported improvements for settings in quartile 2 only. It leads to the assumption that settings in quartile 1 may need something different and unique to the others - more than a short PD/intervention or what is usually available within the LA - if change is to be seen. Also, and perhaps more interestingly, it suggests that what was usually available within the LA was not supportive of the highest scoring settings, while the PD was. It suggests that if the LA wished to support settings to have higher scores (and Ofsted ratings) they would need to provide more of the kind of specific evidence-based support found in the PD.

The findings when quartile range analysis was completed for ECERS-E mirrored the findings of ECERS-R for the PD/intervention group, except that some minimal improvements were also seen within settings at quartile 1. In the control group, the highest scoring settings again did not show improvement through naturally occurring support in the LA, reinforcing the view that specific evidence-based PD would be necessary to support them. It is worth noting that the ECERS-E improvements, were small, when the intervention and control group improvements were compared, and did not reach statistical significance at either the total mean score or subscale levels. Analyses at the subscale level supported the identification of the areas of pedagogy and practice which changed most. Multi-variate regression analysis showed significant results in relation to the subscales personal care and interaction in ECERS-R and approaching significance for the parents and carers subscale in ECERS-R. While there were changes in mean scores in all of the subscales (including ECERS-E) and these can be interpreted as indicative that the PD/intervention did impact here and that extra time (to allow changes in practice to embed) and or larger group sizes are likely to have produced significant results.

6.6. Qualitative data phases two and three.

The qualitative data was captured in order to unpick and support the quantitative data in this mixed methods study. It was designed to support understandings of the elements of the PD/intervention and/or environment which supported the settings in making quality improvements.

Data was gathered from three sources: focus groups with the Research Team (see Appendix I for an example), interviews with a selection of managers/supervisors of the settings from the intervention and control groups (see Appendix J for the themes/questions focussed upon during the interviews) and questionnaires (see Appendix F for an example of the questionnaire) given to the participants during the PD/intervention.

All of the members of the Research Team involved in the PD/intervention engaged in three focus groups. Three Interviews were conducted with managers/supervisors in randomly chosen settings where 1) changes were evident following the PD in an

intervention group setting 2) no changes were evident following the PD in an intervention group setting. 3) changes were evident following the PD in a control group setting (see Timeline p15).

The focus groups and interviews were taped and then the discussions were transcribed so that concepts and categories could be identified and coded. The participant evaluations (questionnaires) were collated and again analysed for common themes with simple counting of recurrent ideas. Each piece of data was analysed separately in the first instance (summaries of these can be found below) and then combined so that an overall picture of what the data captured could be seen.

The discussion below is divided by the research questions which are linked to the three different data sets:

- a) What do the Research Team perceive as the reasons for change or no change?
- b) What do the managers/supervisors of pre-school settings perceive as the reasons for change or no change?
- c) How was the PD/intervention evaluated by those educators who attended it.

6.7. Summary and relevance of phases 2 & 3 to research question three

In this section, each of the sub-questions to research question three is explored in turn.

6.7.1. Research Team perceptions of reasons for change or no change - focus groups

The analysis of the focus group data included an iterative process that produced a number of common themes or categories, following Strauss and Corbin's (1998) method (see appendix I for an example showing the concepts and categories as they emerged). Initially, categories were clustered around the following concepts: a range in understanding and interpretation of the CGFS and how it should be implemented; a range of understandings of roles within and the purposes of ECEC; while related to the roles, responsibilities and purposes of ECEC there were also differing responses to the

offer of and then responses to professional development and training opportunities including the PD in this study; differing attitudes towards change and why it might be helpful or not; and differing levels of confidence of the staffs within and between settings.

However, following further iterative analysis, the data revealed a richer and fuller picture. (Appendix I gives an example of the analysis undertaken for focus group one and two, and a table showing combined categories and thoughts following analysis involving both sets of data). Below the themes (a combination of the categories which emerged from all three focus groups) are outlined. They include the combination of concepts/categories identified and discussed by the research team during the focus groups: a construction of their perceptions of the participants' reactions and responses to the PD. Interestingly, the resulting themes could easily be linked to the three domains within the SEEPD, discussed in section 7.3.

The final themes which emerged following analysis of all three focus groups (links to the domains of the SEEPD in brackets):

1. The principles and practices within the CGFS: understanding and implementation (content)
2. The skills and knowledge of the Research Team, including knowledge of and application of theory to practice (content)
3. The team culture: how staff worked together/collaborated, the leadership or absence of leadership (content and delivery)
4. The accessibility of the PD: for the practitioners, related to their understanding and existing skills (content and delivery)
5. The relevance of the training to the educators: including the sustainability of processes (e.g. team quality improvement planning), their initial understandings, experiences, beliefs and practices (content, delivery and affect).
6. The practicalities of delivery: setting up and running the training sessions (delivery)
7. The EY practitioner's role: understanding and accepting responsibilities to children and families, each other and government (content and affect)

8. Quality improvement: The staffs' willingness to change a) try new ways of working/change in between sessions and b) see change as an important aspect of practice (affect and content)
9. Motivation: The attitude of setting staff to the PD and levels of confidence (affect)
10. Relationships between setting and RT: The perceived confidence/willingness of staff to engage with training, trainer, materials, discussions (affect)

While the analysis was completed by the lead researcher, the focus groups included the Research Team (with the lead researcher as part of the Research Team) and so their responses were not naïve and some concepts were apparent even in the first focus group. However, none of the Research Team (other than the lead researcher) had been involved in research prior to this study, they were learning about the purposes of the measures and evaluations as they were used. They did not fully appreciate how all of the measures sat together or how they would inter-link. They had never taken part in a focus group prior to this study and they did not know how the data would be used. They did not realise, for example, that the categories emerging from earlier focus groups would be used as prompts to support discussion in later focus groups. The lead researcher had tried to explain the purposes of the various measures but time was short and they were more interested in the results and hearing from each other than the research design or methodology.

It was evident that the Research Team's ideas and understandings, about the responses they had to the training, became more reflexive and more detailed over time. The prompts, used by the lead researcher, identified in earlier analyses may have supported this journey. The time needed for the feedback on the last session was more than double the time taken on the first. The resultant categories developed over time, with initial responses still being relevant to discussions in the third focus group but new ideas being added as the PD progressed. In the first focus group the discussions revolved mostly around categories 1,2,3 and 4 in the second group 5,6, 7 and 8 appeared to dominate and in the last focus group all were present but 9 and 10 were added and appeared to dominate some of the Research Teams thoughts. Interestingly, the Research Team spent a deal of time reflecting on the impact of the PD on their own knowledge, skills and their attitudes towards learning and improvement. They were aware of the immediate impact of the PD and were interested to see how sustainable

some of the changes they had witnessed would be. They recognised that the PD needed to be accessible to the practitioners and that it also needed to challenge inappropriate pedagogies and beliefs. We discussed the diverse nature of these using Weikhart's (2000 in section 2.3.) ideas. They realised that fundamental to the PD's success was the ability of the practitioners to continue with the quality improvement process by themselves. They noted that they had not considered this in earlier training.

6.7.2. Managers/supervisors perceptions of reasons for change or no change - interviews

The themes/questions considered in the semi-structured interviews can be found in Appendix J. The interviews were semi-structured, as while the themes were used to structure the discussions, the interviewer also followed the interviewee's responses and asked additional questions where appropriate.

A similar iterative process of analysis was completed with the interview data, by the lead researcher, as used with the focus groups data (Strauss and Corben, 1998) (see Appendix I).

On analysis of the responses to the interviews several categories emerged:

a) PD opportunities and quality Improvement:

The supervisors/managers perceived professional development opportunities differently. Discussions included whether they or their staff valued PD and accessed training regularly before the intervention. They also included discussion relating to their and staffs' views on quality and improvement and whether the setting was responsive to and positive about change and improvement. The successful settings viewed PD as essential to quality improvement and following attendance at training there was an expectation that practice would change and that new approaches, resources would follow.

b) The presence of a community of learners/practice and the ongoing process of improvement

The supervisors/managers discussed their setting and staff in relation to how they worked together, the perceived purposes and goals of their settings. They described the

opportunities they had (or did not have) to meet together and develop a shared view of learning and quality improvement.

c) Reflective practice and critical thinking

The supervisors/managers of successful settings discussed understanding, use of and ability to engage in reflective practice within the staff, together with more practical aspects including allowing time for this individually and within the team.

d) The recognition of their work as a profession, which included confidence in their abilities as experts in children’s learning and development

The supervisors/managers described aspects of professionalism. Successful settings recognised the culture of professionalism within the culture of their setting including a willingness and confidence to assert themselves as early years professionals and focus on support for children’s learning and development.

Differences between settings that made improvement and those that did not.

What was particularly striking about these themes were the differences between the settings that did make improvements and those that did not. A summary of some of the details of those differences follows:

Figure 24: Differences between settings that made improvements and those that did not

MANAGERS WHERE IMPROVEMENTS IN QUALITY WERE FOUND	
PD opportunities and quality improvement	<ul style="list-style-type: none"> • Made references to the importance of quality and quality improvement. • They were members of the quality improvement scheme (and valued quality improvement processes). • Described recent attendance at other PD attended in the previous year making links to changes made in the setting.
The presence of a community of learners/practice and the ongoing process of improvement	<ul style="list-style-type: none"> • Made references to the importance of leading staff and supporting career development and progression. • Both were qualified teachers and described staff and the training that they had attended, which was specifically designed to support their individual needs.

<p>Reflective practice and critical thinking</p> <p>Early years work as a profession</p>	<ul style="list-style-type: none"> • They were active members of early years networks (both local and national). • Described collaborative processes they were involved with (both in and outside of the setting). • Described a learning orientated approach within their settings. • Discussed how they encouraged staff to reflect on their learning as well as on the learning of the children. • Organised regular meetings to discuss and reflect on practice and children. • Made references to the use of the CGFS as a guide to practice and to support the development of a vision • Discussed the importance of early years provision in relation to 'closing the gap of disadvantage' • Recognised that quality had improved during the year (from pre- to post-test)
<p>MANAGER WHERE NO IMPROVEMENTS IN QUALITY WERE FOUND</p>	
<p>PD opportunities and quality improvement</p> <p>The presence of a community of learners/practice and the ongoing process of improvement</p> <p>Reflective practice and critical thinking</p> <p>Early Years work as a profession</p>	<ul style="list-style-type: none"> • Made reference to changing practice and quality improvement during the PD but not beyond. • Described barriers to attending PD and making changes e.g. lack of funding and time. • Described the staff and their abilities in detail, but was unable to bring them together as a community of learners. • Reported that none of the staff had relevant qualifications and no-one attended PD prior to the study PD • Reported that the staff had little understanding of quality improvement or the CGFS • Described poor support from their committee • Reported that while she and her staff valued the opportunity to discuss practice and the children's learning during the PD sessions, this was not continued beyond the four face-to-face PD sessions. • Showed her frustration at not being able to continue meeting with staff to discuss practice. • Recognised the impact of families' and practitioners' understandings and beliefs about their work • Showed awareness that no improvements had been made from pre- to post-test

a) PD opportunities and quality improvement:

Interestingly the two supervisors/managers who appeared to recognize the importance of quality and quality improvement, including how PD could support this were the supervisors of settings which improved. The settings that made improvements, both in the intervention and control group, described attendance at numerous training sessions in previous years and linked these to quality improvements they subsequently made within their settings.

PD group supervisor interview response:

'Actually [we are] quite good at reflecting on all of our practice and working together and to have agreed targets.' And *'Training is taken seriously and valued... [We do]... a lot of training as its really important'*

And in the control group setting:

'We take advantage of any training offered by the county council and like to get involved in any projects going on. Currently we are involved in an ICT project and have been given a load of interactive toys to try out, which the children love. We have a good working relationship with CFBT and our INCO and also the speech therapist, as we have a little girl with speech difficulties.'

While the supervisor of the setting which did not improve described barriers to attending PD and making changes, despite recognizing their importance once they were explained. She talked about funding difficulties and staff not wishing to encroach on family time or attend training without payment. She also reported that some staff felt that training or changing aspects of practice was not part of their role.

Supervisor interview (no improvements found at post-test) when asked about attending other training:

'...many of us are just too busy with other aspects of our lives. XXX's husband is really hot on her not wasting her time. She could attend the training because she was paid but you don't get paid usually, do you?'

b) The presence of a community of learners/practice and the ongoing process of improvement

The two supervisors in settings that made improvements following the intervention phase appeared to take their leadership roles seriously. They reported that PD and the

career development of staff was important to them. They systematically identified and supported staff to attend training relevant to their needs and those of the setting. They had done this prior to, and during for the control group setting, the PD phase. Following training, they, typically, expected the staff to report back on and lead the rest of the staff on any new knowledge, skills or approaches they had learnt and also to implement changes, as appropriate, using a distributed leadership approach (Rodd, 2006).

These two supervisors were active members of the early years networks within the LA and saw collaborative approaches to learning both within their settings and beyond as important. They both had teaching qualifications, they both embraced the idea of self-assessment and quality improvement. They were both signed up to the quality assurance scheme in the county. They wanted to ensure that all children were given exciting and interesting opportunities to learn and that the staff could support them well.

The supervisor in the setting that had not made progress following receiving the PD was in a setting that scored in the quartile 1 range in the pre-test scores for ECERS-R and ECERS-E. She appeared to know the staff well, and what they could and could not do. She recognized the importance of qualifications and PD, but recognised that none of the staff at her setting had any relevant qualifications and typically no one accessed training. The PD in this study had been the first ECEC training any of them had attended. She explained that her setting '*did not get involved in that sort of thing.*'

She had never seen the LA training manual which was sent to all settings at the beginning of each academic year. It became clear that there was an issue with the 'named contacts' within some settings, as for some, as in this case, all correspondence went to the chair of the committee and on occasion it never reached the educators in the settings. Not surprisingly, she and the staff at the setting did not fully understand the changes, or the new requirements, that had come into force when the CGFS was introduced. She reported that the PD/intervention had left them '*stunned*' but understanding that they needed to do something. However, they did not really know what or how to do anything.

She described how she had sought help from both her committee and the local school into which most of the children in her setting transferred at age 4 years. Her requests for

payment to set up and support attendance at regular staff meetings had been denied, and she gave the impression that nothing would change in her setting unless wages and payment were involved. She also reported that the head teacher of the local school was dismissive of her concerns over meeting the new requirements of the CGFS. Apparently, the head teacher had assured her '*... not to worry, and that she would sort them all [the children] out when they got to school*'.

She explained that she was still unsure about the quality improvement process and how developing a community of practice for her was difficult. When asked if they engaged in an improvement process she appeared a little defensive at first:

'Not sure what you mean? Improving what? We are just a local playgroup run by local people.'

c) Reflective practice and critical thinking

In the two settings with improved ERS scores, both supervisors mentioned supporting staff's confidence and both typically supported them attending and reporting back from training, other than the study PD. They talked about encouraging staff to reflect on their learning as well as on the learning of the children. One talked specifically about reflective practice (linked to the PD experiences she particularly valued):

Supervisor of PD group interview response:

'We could give examples to support each other as a team. Actually, we got quite good at that - reflecting on all of the practice and working together... up until then [the PD] although we shared ideas they really only came from me but after the training we worked together...'

'... Also [the PD] gave you a structure to be safely critical about.'

Both supervisors of the improved settings described elements of evaluation in their responses. They both set time aside for the educators to engage in joint reflections on practice and the children's progress on a relatively regular basis (monthly and fortnightly).

Unfortunately, most of this was lacking in the setting which had not improved. Although the supervisor did report that she and her staff valued the opportunity to discuss practice

and the children's learning during the PD sessions, this was not continued beyond the four face-to-face PD sessions.

Supervisor of setting that did not improve beyond the PD sessions themselves:

'I liked the way some of the things we tried made an immediate difference e.g. 'walk nicely, please' rather than 'don't run'... so simple, but made a real difference.'

d) Early years work as a profession, including confidence in their abilities as experts in children's learning and development

Both of the settings that made improvements reported engaging with systems of staff appraisal and with networks beyond the setting and encouraging staff to do the same. They were actively working with the CGFS and included some of the wording and concepts in their visions for their settings and within their planning and paperwork. They understood the context within which they worked and appeared to understand the important role ECEC could play in supporting children's learning and reducing the 'achievement gap' between advantaged and disadvantaged children and families. They discussed their ideas about the staff (their needs, strengths and areas for development) and the importance of working together (and with parents). They recognized the need for continuous improvement processes and to support all staff, including those that were underconfident, in this process.

Supervisor from PD group interview response:

'I think it [the PD] really gave people a lot of self-esteem I think the practitioner who doubted herself ... it really made her see.... That's the trick isn't it.'

The supervisor from the setting that did not improve appeared visibly distressed and frustrated by some of the restrictions imposed upon her by the committee, staff and their understandings, knowledge and attitudes. She talked about wanting to introduce staff meetings, for example, but felt that practical reasons prohibited this. She explained that the committee did not recognise the value of staff meetings and so they would not support or pay for staff to attend. Funding and money seemed important with these particular practitioners.

Supervisor of group that did not improve following the PD interview response:

'We all really liked the training and liked being paid for it. It was the first time that we had all been together to talk about the nursery and things.'

And supervisor of group that did improve following the PD interview response:

'Really, really important that they got paid for it. It's really important that people do not have to give their time freely.'

When asked directly whether they thought they had improved practice following the PD, all of the supervisors appeared to be aware of their progress and whether they had improved or not. The two supervisors who recognised their improvements said they felt positive about it and put it down to working together as a team. Further evidencing the value and respect they had for their teams and the importance of involving all staff.

Supervisor from PD group interview response:

'...really important that we all got trained together ... the most significant part of it. All practitioners in different ways benefitted from that. One practitioner in particular was able to think through what she was doing.' She went on to explain how they worked together to support each other.

The supervisor who knew the setting had not improved apportioned blame to the culture within the setting, including the committee and staffs' views of their jobs. She noted that most staff were happy with things as they were and that neither *'they nor their husbands would want them working late to attend staff meetings'*. She explained that members of the staff and their families saw their jobs as more of a *'little hobby than a real job'* and, as such, the *'hobby'* should not interfere too much with the real life of the family. She revealed that one husband was cross about his wife attending the PD, even though she was being paid, as it was held in the evening.

6.7.3. Participants' evaluations of the PD/intervention – questionnaire responses.

An example of the final evaluation questionnaire can be found in Appendix F. Some educators completed the questionnaire individually while others completed a joint setting evaluation. However, unfortunately, most of the participants did not complete the entire evaluation, as time was short and the Research Team did not appear to prioritise it. Sixty-seven evaluations were returned with only twenty-two having something written against each question. While there was enough information to analyse, this raised an

issue for the Research Team in ensuring that sufficient time and emphasis was placed on evaluation.

In general, the responses to the evaluation questionnaires were positive and educators reported enjoying the experiences and opportunities offered by the PD. They mentioned renewed interest in their work, increased confidence and feeling that they had learnt new skills and information. Fifty of the responses mentioned the importance of the payment they received, as respectful and valuing.

Educator Evaluations:

'I now see my work with fresh eyes.'

And

'I love coming to work to try out the new things and ideas. It is so fun!'

And

'I think I am more patient with XXX now that I understand his frustrations more.'

All responses included descriptions of changes they had made within their settings, which they viewed positively and interpreted as having had a positive impact on them, the children and/or the parents. Examples of changes included collaborative working with each other, parents, more engagement and discussion with children, trying out new approaches to planning, conflict, SST and so on.

Many educators mentioned the challenges to change as allied to time and money. A few showed problematic beliefs about either children and/or their ability to make changes and/or the parents and their parenting skills, in their responses. While these were rare they were considered important as they suggested a continued need for attention here. It was also possible that such views were more common than the questionnaire revealed. There was no direct question about such matters and many practitioners would have been aware that such views would have been considered problematic and so may have omitted them.

All said they would like further PD/training and many (46) mentioned an interest in learning how to use the ERS as self-assessment tools.

Examples of some of the responses to the questions:

1. Changes made as a result of the PD

The changes made within the settings were variable.

46 responses discussed working more with colleagues as a team

'I think it has made a difference to how we work together and the confidence we have in relying on each other'

And

'I never thought about saying anything about what should be out for the children as I thought that was management's job, but I like doing that'

35 responses suggested that they had increased the amount they talked with children and families:

'The home-setting booklet we developed was really well received and parents are approaching us more and telling us more about what goes on at home'

And

'I try to spend more time on conversations with the children, as I now know how important talk is'

48 responses mentioned high quality interactions/SST

'We all practiced sustaining our interactions with children, challenging them to think more and find their own solutions, and generally, we use open-ended questions more. It seems to have made a difference but it's hard to find the time and get it right'

And

'I make an effort to talk to all of key children every session no matter what else I do'

And

'We have added a six steps [to conflict resolution] chart to the wall and we all use it and it makes a huge difference to how calm the nursery feels'

8 responses discussed planning

'I used to do all the planning my-self and now we do it together and that is great because people know what it is about more.'

And

'I am glad that the planning was around play. I thought it might be too formal and teacher-like'

2. Differences noted following implementing changes

Differences noted in the setting included references to more team work (40), better relationships with parents/carers (28) and calmer more engaged children (9).

'At first the children didn't get it when we asked more questions and expected more of them, but now they rise to the challenges. They tell us about their successes and ask us to join them rather than just get things or tell them things'

3. Challenges to changes/improvements

Most responses regarding challenges could be linked back to resources and money (51). For example, those who recognized the importance of team work also noted staff meetings were either potentially expensive or were asking more from an already *'poorly paid and stretched'* staff.

7 noted challenges regarding the diversity of knowledge, experiences and the expectations of staff. With 3 of those suggesting that this meant they needed to make improvements more slowly than they would have liked.

While the following responses were rare and only came from a few questionnaires, they are noteworthy as they reflect findings from other data sources: 2 responses noted that a good work-life balance was important for them and that their families did not expect them to work extra unpaid hours or plan etc. at home.

'the CGFS expects too much. We are not teachers'

2 responses referred to the backgrounds of the children as problematic and preventing change.

'It don't matter what we do here when they go home to nothing but the TV'

'... gets away with that at home so she tries it out here'

4. Future directions

51 responses explained that they aimed to continue working as a team within the setting. Though some suggested that this would be dependent upon the support they got (and remuneration) from the committee or owners.

46 responses suggested that they would like to learn more about the ERS and have training so that they could use the scales themselves for self-assessment.

While the remainder of responses were rare they were still deemed important as they reflected thoughts from other data sources. They included requests for training re support for children with Special Educational Needs (3), leadership (2) and behaviour (2). While two other responses (from different settings) asked if we could '*...teach parents how to look after their children properly*' or similar, again suggesting that problematic beliefs remained.

5. Educators who responded to the section: Any other comments:

33 responses included positive comments on the expertise and professionalism of the Research Team and the quality of the PD.

17 mentioned a renewed interest in and enthusiasm for work and 8 said they would miss the sessions and working together in this way.

Summary of results

This chapter presented the results and analysis from both the quantitative and qualitative data. It made links to the three research questions establishing how the data linked to the questions and revealing an overview of the findings. In the final section, it brought the results together to look specifically at the impact of the PD and consider the implications of these.

Finally, it is worth noting how the mixed methods design of this study supported understandings of the quality across the LA as well as the impact and changes made

following the PD. The qualitative data supported and gave some possible reasons for the quantitative findings. If the study had been purely quantitative, determining which elements of the PD (within the domains of content, delivery and affect) impacted on changes in scores from pre- to post-test, would have required multiple comparisons where the elements were systematically varied. Whereas purely qualitative data would not have supported the identification of patterns of quality, such as the lower scoring settings situated in areas of deprivation. Or the importance of initial quality on changes made. The use of both data collection methods provided rich information and allowed a depth of analysis that one alone would not.

There were a number of consistent findings across the combined sets of data in relation to the PD: Collaboration and team work, providing modelling and examples as well as theoretical underpinnings, allowing time to undergo the quality improvement process (including assessing, implementing and evaluating changes) and ensuring the content and delivery was accessible, motivating and suited the needs and levels of achievement of the groups of practitioners receiving the PD were indicated as important.

7. DISCUSSION

7.1. Introduction

This study was conducted first, to investigate the quality of the pre-school ECEC settings across one LA; second to consider the impact of a short-targeted training or PD intervention within the PVI sector; and, third, to add to existing understandings regarding effective PD in ECEC.

The first section in this chapter, the main findings, discusses and considers the levels of quality (according to ERS scores) within the pre-schools during phase one and phase two of the study. Strengths and areas of weakness, comparisons from pre- to post-test and between the intervention and control groups are considered. Links are made between the results and the needs for improvement across the county, to possible future policy directions and to future PD.

In the second section, the impact of the PD, using both the quantitative and qualitative results in terms of the changes seen within the settings following the PD, are outlined. The domains of the summary of effective professional development (SEEPD) - content, delivery and affect - are used to illustrate the elements that supported both the effectiveness and ineffectiveness of the PD. Links are made to possible future PD. This is followed by a short section describing possible future uses of the SEEDP.

In the fourth section, links are made between the findings of the study and the theoretical frameworks introduced in chapter 3: *Bronfenbrenner's bio-ecological model of human development* (2005) and Lave and Wengers (1991) *communities of practice*.

The final section extends the discussions outlined in the fourth section, and presents an extension to Bronfenbrenner's model: Model of Educator's Learning and Development (MELD). Designed to illustrate the processes of learning of the participants of the PD, this model is linked to the systems that impact on the educators learning and development (presented in chapter 3) and to the summary of elements of effective PD (SEEPD) (presented in chapter 4). Finally, there is a discussion regarding the potential usefulness of the SEEPD and MELD in the development, use and analysis of future PD.

7.2. Main findings

There were clear indications that the PD or short targeted training intervention impacted positively on the practice within the settings – with both the quantitative (if only modestly in some areas) and qualitative data supporting this view. Interestingly, but not unexpectedly, the results reflected the PD, the content and discussions it included, suggesting that the targeting of the intervention is possible and important. The quantitative results showed a pattern of significant improvements in the PD/intervention group settings which mirrored the PD itself. Significant differences were found between the intervention and control group settings following the PD in ECERS-R scores, and there were also clear increases in scores in ECERS-E, which were indicative of improvements.

However, while improvements were evident, generally the ERS scores were low. Even at the post-test observations for the PD/intervention group, further improvements appear to be needed, before they could be described as having reached good standards. No post-test ECERS-R or ECERS-E subscale mean scores reached a score of 5, which is labelled as good within ERS and diversity, mathematics and science scores were very low (ECERS-R mean total subscale scores: Personal care = 3.608; Interaction= 4.679; Parents and Staff = 4.338; ECERS-E: Diversity=2.419; Science= 1.790; Maths=2.202; Literacy=3.734). It seems likely that if the LA's wishes to 'close the gap of disadvantage' are to be realised, further investment and support would be necessary. This seems to be especially important in areas designated as disadvantaged, where overall the quality of the provision was poorer than for the rest of the county (see section 6.2.5.).

Consideration, at the subscale level, revealed the greatest improvements (from pre- to post-test in the intervention group) in the subscales: parents and carers, interactions and personal care in ECERS-R; and, in literacy in ECERS-E (differences in mean scores for the intervention group from pre- to post-test: personal care 0.842, interaction 0.722, parents and staff 0.998, diversity 0.385, science 0.43, mathematics 0.44 and literacy 0.588 - see Tables xxi and xxii).

The first session of the PD, covered working with parents (the early HLE session) and appeared to impact positively on the parents and staff subscale. The second session,

considered support for interactions and behaviour for learning more generally, which appeared to impact across the subscales but on the interaction subscale, in particular. The third session, considered sustained shared thinking which again appeared to impact on all subscales but on the interaction and literacy subscales, in particular. Aspects of personal care were discussed with all settings in relation to their own individual ERS scores in session 4, as all settings apart from one scored particularly poorly on hygiene related to hand washing. Responses to the questionnaires, interviews and focus groups supported these views.

While curricula aspects (found in ECERS-E) were covered as part of the early HLE and during discussions on assessment, intentionality and planning, they were not covered in the detail or as directly as recent research suggests is needed for real change to occur (Siraj et al., 2016a). As improvements were found in targeted areas, it seems likely that direct discussion and content on aspects of curricula, concept development and pedagogy in the areas of science and mathematics would have further supported improvements in these subscales. The results, and more recent research, point to the importance of covering such subject areas more fully in future PD.

The least change and improvement was found within the diversity subscale of ECERS-E. This corresponds with other recent effective practice research. Differentiation and supporting individual needs appear to be higher order skills for educators (Kyriakides et al., 2009). Such skills are often associated with experienced teachers and advanced teaching. They require time to develop and improve. Further PD considering planning for individuals' learning and planning across the setting to support diversity, child development (including language development and self-regulation), and understanding challenges to equality, common stereotypes and misunderstandings, the effects of poverty and other stressors on families and so on, may have supported practice related to the diversity subscale better. They may also have supported further changes to some of the problematic beliefs held by the educators, which were still apparent at the end of the PD, within a few questionnaire and Research Team responses.

A closer look at the control group results – namely mean scores at subscale level (see Table xxii) - suggested that what was naturally occurring in the environment supported small improvements in the parents and staff subscale of ECERS-R and the literacy

subscale of ECERS-E most, while there was almost no improvement in the subscale interaction of ECERS-R. This was one of the major differences between the intervention and control groups. Research on effective practice suggests that omitting support for interactions is counterproductive. Interactions, between the adults and children and children themselves, are still considered to be the most powerful indicator of quality. They are closely associated with enhanced children's learning outcomes (OECD, 2012; Pianta, 2012).

Another noteworthy finding, related to the pattern of improvements made, linked to the quality of the settings at the start of the study. For many settings, there was a simple positive linear relationship between pre- and post-test scores. So typically, settings starting with higher quality scores at the beginning of the study, having increased their scores, also ended with higher scores (when compared to the rest of the group) at the end of the study (see Table xv). However, when this relationship was considered in more detail and the settings were divided into quartiles by initial ERS scores some interesting anomalies emerged. Table xx shows the differences in total mean scores from pre- to post-test by quartile range and Figures 20 and 21 show these differences graphically.

Figure 20 shows when initial quality was very low in ECERS-R (Quartile 1 at pre-test) improvement was not evident following the PD. The PD appeared to support the quality improvement of the settings who scored initially within quartiles 2 and 3, however, this pattern was not replicated for settings within the quartile 1 range. This was an interesting finding as initially it was thought, the lower the quality score of a setting at the beginning of the study the easier it would be to make and see improvements, as this pattern of responses has been reported by others working on PD studies (see Creemers and Kyriakides, 2009). The assumption was also based on the view that simple changes in resources (including the addition of books in the book corner and displays) and routines would be quick to make and establish. While more complex changes, in higher scoring settings, whose resources were already in place, such as working on higher order skills like interaction would take longer to master, become proficient in and part of daily practice. The lack of change found at quartile one, may be specific to the chosen subscales used in this study. Other subscales, for example subscales with a stronger focus on resources (e.g. ECERS-R subscale: Activities), may show a different pattern, and may be more easily changed in groups with low initial scores.

The lack in improvements of the settings at quartile one may have occurred for a number of reasons. The level at which the PD was 'pitched', the PD may have included information and knowledge beyond the educators' understanding and consequently it would have been inaccessible to them. Alternatively, or perhaps in combination, motivation for change may have been an issue. The concepts introduced (including high quality interactions), in this PD, may have been too complex and required asserted effort and direct practice, which was not achievable or sustainable for lower quality settings. The qualitative feedback, when combined with the quantitative findings, suggest differences between educators' motivation for change. Understandings of the educators' role in ECEC and the importance attributed to their jobs, which were often compounded by the support (or lack of it) they received from family and friends, differed between pre-schools. These differences appeared to impact on the time and commitment they gave to trying and practising new approaches in their settings. Another prominent difference, discernible in the qualitative data appeared to be the quality of leadership within the settings. Responses to questions regarding progress, revealed perceptions that leadership was required to support collaboration, learning orientated goals and to maintain, sustain and extend quality improvement processes. The findings suggested that there might be something unique about settings scoring in quartile one on ECERS-R at pre-test and that a combination of reasons (including those outlined above) may have contributed to these differences.

Further, this lack of improvement, for settings in quartile one, was also evident within the control group for ECERS-R (see Figure 20). Such findings suggest that neither the PD nor the naturally occurring opportunities for support within the environment targeted the specific needs of this group of settings. Close analysis of the qualitative data related to this finding, suggested that the initial level of quality, linked to the qualifications of staff and their knowledge and experiences of effective PD, together with their (and those close to them) attitudes and beliefs about ECEC mitigated against quality improvement. With one major barrier to improvement - the lack of leadership. In settings where on-one planned - and integrated into the working life of the setting - for staff to discuss teaching and learning together, or promoted collaborative working relationships or led and motivated the staff on issues such as assessment, planning and quality improvement processes, little or no improvement was found.

Figure 21 shows the pattern of improvement by initial quartile range for ECERS-E, small linear, positive improvements are seen across all quartiles in the PD/intervention group and across quartile one and two for the control group. A closer look at the control group results in Figures 20 and 21 revealed a similar pattern for settings in quartile three for both the ECERS-R and ECERS-E scores – very little change. Whatever was naturally available within the environment, it did not appear to meet the needs for improvement of the highest or lowest scoring settings at pre-test. Such findings indicate a need for targeted evidence-based PD to support improvements.

The quantitative post-test results were collected approximately one year after the baseline or pre-test scores were captured (see the Timeline p15). This was between four to eight months after the completion of the PD. It is well known that PD/intervention needs time to change practice and for the learning to become embedded (Cordingley et al., 2007; Siraj et al., 2016b). Despite the short timescales involved in the study, significant improvements in the intervention group settings were found, with reasonable effect sizes (ECERS-R $d=0.443$; ECERS-E $d=0.175$). They suggest that generally the content, delivery and support for affect were successful (see SEEPD), that the process of learning developed during the PD worked and that changes were sustainable for at least a few months following completion of the PD, when the post-test was conducted. Longer term sustainability measures were unfortunately not possible as the study was ended. There were, however, some anecdotal reports of continued improvement by members of the Research Team who continued to work within the LA, as Ofsted ratings within the county continued to improve across the county, especially in the PD/intervention settings. This may have been linked to the ongoing collaboration and continuous quality improvement promoted within the PD.

Identifying what the PD/intervention provided, which was over and above what influenced the control group, was important to ensure that the models developed were useful for future PD. The discussion so far points to the importance of identifying goals for any PD and matching content, delivery and affect to the participants existing knowledge, skills, abilities and dispositions, as these aspects and subsequent improvements appear closely linked. The importance of goals and initial understandings of participants concurs with more recent research on effective PD (Zaslow, 2012;

Creemers and Kyriakides, 2009). However, as already discussed, the control group settings showed improvements in quality ERS scores from pre- to post-test, albeit smaller improvements than the PD/intervention groups, which require explanation.

The changes in ERS scores from pre- to post-test in the control group settings have, so far, been attributed to naturally occurring opportunities within the environment.

Throughout the study, there were numerous opportunities to participate in alternative PD, provided both locally and nationally. However, it is possible that the research process itself may have had an effect on all of the groups involved in it and specific effects for those classified as either intervention or control groups in phase two. All settings were observed using the ERS during the baseline data collection process, which meant that all staff present at that time were aware of the quality agenda across the county. In addition, within all settings at least one member of staff was asked questions about their practice, including what was available to and how they supported children's learning, how staff were supported to develop their knowledge and understandings of children's learning and how parents were included in the setting and supported with their own children's learning. In addition, each setting was given book tokens (as a 'thank you' for allowing the observations to take place), highlighting the importance of books and reading with the children, as well as adding to their book corner collections (which would contribute to the ECERS-R scores).

In relation to the changes found within the control group, the research process, including the questions, prompts and resources involved, may have had direct or indirect effects. Direct changes could result from the additional resources settings received for agreeing to be part of the study and agreeing to having post-test observations. Indirect changes may have included aspects such as an increase in motivation for change and improvement, together with knowledge about what was included in the ERS and the anticipation of the post-test observations. The changes research itself can make to practice are well-recognised (e.g. Hattie, 2009). This is why an RCT design is seen as offering more robust findings, when attempting to identify the impact of the PD/intervention.

A clearer picture of what may have been causing these naturally occurring changes in the environment, the impact of the research itself, as well as possible ongoing effects of

the PD, would have been possible if the planned repeated ERS observations a year later had been conducted (see timeline p15) and if the original baseline had continued to be used beyond phase two of the study. The ongoing collection of data, together with information about all alternative PD activities, may have been useful in further unpicking possible patterns of cause and effect. Though, it is important to note, direct links may always be difficult to determine regardless of experimental design in real world research (Robson, 2002). PD opportunities within and beyond the LA are always likely to be ongoing, numerous, take many forms and difficult to control for. In addition, newer understandings of PD – including the important role of time, following the PD, to allow changes and new practices to embed (Cordingley et al., 2007) are likely to compound results.

However, these findings demonstrate that there were notable differences between the control and intervention groups following the PD. Analysis at subscale level detected important links between the PD and practice and showed patterns of relative strengths, areas for development and possible future directions for PD. They also suggest that the initial quality of a setting is likely to be a factor which needs consideration before and during PD, as it appears that a minimal level of quality is required for any sustained or even relatively short term (from pre- to post-test) improvements to occur.

Finally, it is important to note how and whether the findings of this study might be useful beyond this LA and how they may serve to inform future research. While the results of this particular study may be limited to this group of PVI settings within this particular LA, and/or only be appropriate for LAs with a very similar profile of preschools, some of the general findings, tools used and models developed throughout may be useful beyond these.

Many of the findings, while peculiar to this group of PVI settings, are indicative of aspects to consider when developing and implementing PD regardless of setting type, context and so on. First, the group of settings' (who will undergo the PD) initial quality is indicated as an important factor. While the findings relating to the very low initial quality and lack of progress in this study may be limited to groups where quality is particularly low, gauging initial quality still appears to be important. This might include the recognition of the collective knowledge, skills, abilities and dispositions of the learners

which is typical within the settings in question. The maintained sector and nursery schools, in particular, have been identified as generally having higher quality than the PVI sector (Sylva et al., 2004a). Weikhart (2000) described types of settings, their histories and how they impacted on their pedagogy and practices (see section 2.3.) and quality. As well as initial quality, the range of quality within and between the groups is also indicated, to ensure the suitability of the levels of challenge within the PD. Grouping of staff is discussed in more detail in section 7.3. Second, histories of past educational experiences, support and PD, together with engagement of staff in education, qualifications, local and national networks and so on might warrant review. This gives an indication of the settings' understandings of the need to keep up to date, their motivation and understanding of quality improvement and evidence-based practice. Third, the impact of using good measurement tools, not only in their ability to track change and progress but also to highlight strengths and areas for development (this is discussed in more detail in chapter 8). Fourth, the profile of settings across a county, which may provide some insight into what might be needed within and beyond the PD to support improvement (see section 2.3. for an analysis of some of the historical, political and pedagogical beliefs associated with LAs with little historical investment in ECEC). Finally, the next section (7.3) discusses and uses aspects of the SEEPD for a deeper understanding of the findings and section 7.6. introduces the Model of Educators' Learning and Development (MELD). While both of these tools were developed during PD focussing on PVI settings, they could be adapted for use with other ECEC settings.

7.3. The impact of the PD: combining the quantitative and qualitative data.

This section considers the quantitative and qualitative results in relation to the PD itself. Consideration is given to the results, with mapping to the content, delivery and affect of the PD. They reveal where and how the improvements occurred and give some insight into how the PD might have been improved, together with consideration of possible future applications.

7.3.1. The content:

While there were significant improvements in mean scores for ECERS-R from pre- to post-test, the differences in mean scores for ECERS-E were smaller and did not reach significance. Further, overall, both sets of scores were low, suggesting that more PD would be useful across all of the areas measured by both ERS. Larger improvements were seen in scores in ECER-R suggesting that the content of the study PD had the greatest impact here. The lower scores, and improvements, for ECERS-E suggest that conceptual understandings and knowledge in relation to children's language development, emergent literacy, mathematics and science and exploration (all measured in ECERS-E) still require further support relative to the more global aspect of quality (as measured by ECERS-R). Interestingly, general understandings around child development (e.g. language development, self-regulation and meta-cognition) are being recognised as increasingly important and powerful supporters of effective pedagogies and practices within ECEC (OECD, 2012).

Very few of the educators (in their evaluations) asked for additional training in subject knowledge relating to children's language development, emergent literacy, mathematics and science and exploration. This may have been due to misunderstandings associated with subject knowledge in ECEC, particularly in the PVI sector. Alternatively, it may correspond with other findings where educators appear unaware of their quality needs (Education Review Office 2010; Penn 2011). In current degree courses aimed at supporting the pedagogy and practice of practitioners working in the PVI sector similar patterns of omissions of subject knowledge appear to be prevalent, as some courses do not include aspects of child development and subject knowledge (teacher-type skills) (Siraj and Kingston, 2015). So the importance of subject knowledge may be missed for a number of reasons. First, educators may believe subject knowledge is typically associated with older children and formal learning. Second, the practitioners may have assumed that the CGFS provided enough detail and information. Third, the practitioners may have mistakenly assumed that training on ECERS-E would be sufficient to cover the necessary knowledge (which they did request). While ECERS-E considers aspects of literacy, mathematics and science and exploration and indicates the level of quality practice here, it does this through sampling of activities, it does not cover subject knowledge in the early years entirely and it was not designed to act as curricula guidance. Fourth, it may reflect the educators' own learning needs and confidence – some practitioners had literacy difficulties of their own, and may also have been

underconfident in their understandings of maths and science. In which case they may naturally wish to avoid these areas. However, the ERS data and current research strongly suggest that PD on child development and subject knowledge is indicated.

The qualitative data suggested that the research and theory content of the PD were well received. The rationale for their inclusion relates to the depth of understanding and the ability to generalise understandings and approaches to new situations through critical reflection. An emphasis on practice, only, would not have allowed the educators to understand why activities, opportunities and resources were offered to the children or supported them in determining how to creatively support and extend the children's learning and development. Practice examples allowed the educators to offer similar experiences to those modelled and described during the PD, but would have been unlikely to have supported them in extending or adapting these to new circumstances and children without the knowledge of the theory and research behind them. An emphasis purely on knowledge, theory and research would also have been inappropriate, as new learning and understanding may never have been transferred into the classroom, which is where differences in children's outcomes (in terms of their social-emotional and cognitive development) occurs (Pianta, 2012).

If the content of theory and practice was effective, improvements would have been sustainable and ongoing. While it was planned to determine this during the study (with repeat ERS in phase three: see Timeline p15) unfortunately this was not possible, due to the reorganisation of county personnel and consequently the end of the study before it was completed. However, the data gathered to date does suggest that a mix of theory and practice is important, and that this was recognised as a strength of the PD by the participants.

Engaging in SST or supporting high quality interactions has been found to impact positively on pedagogy and practice in many other studies (OECD, 2012, Pianta et al., 2012). Educators reported, during the feedback time in the face-to-face sessions, their responses to the questionnaires and through Research Team focus groups, that engaging in high quality interactions supported improvements, but that they were demanding and that they would have benefitted from further training and time to practice. Engaging in SST requires a great deal from educators, they need to know the

children well and have developed warm and trusting relationships with them. As they interact with the children they need to be intentional, thoughtful and playful. Such planning and intentionality requires a wide ranging knowledge about how children learn and develop, a repertoire of different teaching and learning strategies and specific content knowledge about what the children are learning (Kingston and Siraj, 2017).

Further, the educators need to find the time, when both they and the children are ready and prepared to think deeply, and then ensure that the challenges, extensions and scaffolding they offer are right for the child(ren) they are working with. They need to develop a 'culture' of high quality interactions within their settings. While this was an area that was covered during the PD and improvements were noted, further discussion and examples of SST may have been useful. The relevance and importance of supporting educators' interactions (especially those involving SST) between the adults and children and children themselves, are growing and current. While high quality intentional interactions are still rare (Early et al., 2007; Pianta et al., 2014) recent research continues to suggest that PD supporting educators' knowledge, understanding and use of interactions is critical if children's learning outcomes are to be supported (Siraj et al., 2016a; 2016b).

One improvement to the content, according to the Research Team focus group feedback, would have been more and better examples of high quality interactions. Good dvd examples were not readily available, and the Research Team needed to model high quality interactions through their interactions with the educators themselves and written examples, as the dvd examples did not reach high quality. Good quality dvds have later been confirmed as useful in augmenting practitioners' understandings of pedagogies and practices (e.g. Mashburn et al., 2008). Good dvd examples would have been useful, however, it has been recognised that SST is rare (Justice et al., 2008; Phillips et al., 2009; Siraj-Blatchford et al., 2002) and so difficult to capture on dvd [see for example the dvd by Dowling (2005)]. Capturing more good dvd footage was noted as an important piece of work for the future. In addition, encouragement for educators themselves to video their own practice for analysis may also have been beneficial.

While aspects of assessment and planning were included in the PD this was an area that needed extending and revisiting. Assessment for learning is increasingly being

recognised as an important element of quality and one that requires additional support (Siraj et al., 2015). In order to support planning for the learning of individuals and groups of children, assessment and planning would require links made to areas of the curriculum and educators would require further support in subject knowledge and conceptual development (which was not included in the PD with enough clarity and detail). See discussion above relating to the low ECERS-E scores. On reflection, a greater emphasis on child-child interactions and children's engagement with learning more generally may have supported the educators' observations and understanding of the assessment, planning, learning and teaching cycle (which was discussed but not fully explored).

The educators did recognise the importance of planning across the setting, as 46 questionnaire responses included requests for training on the ERS, so that they could use them for self-assessment purposes. This was not part of this study as the ERS were the measures used to capture changes, and including teaching their use in the content of the PD would have jeopardised the design of the study (teaching to the test). Future PD could, however, respond to their requests, changing the measures used to capture progress. Chapter 9 discusses the importance of including child assessment measures in PD studies. Recently, the assumption that increased ERS scores always equates to increased children's development have been challenged (e.g. Mendive et al., 2015).

While phase three of the study was cut short, the Research Team (including the lead researcher) continued to visit the settings for a while before their roles changed. Following setting visits, shared views suggested that the educators who received the PD were engaging more with the children, but that they still lacked intentionality in their pedagogy. Intentionality may be linked to the practitioner's understanding of developmentally appropriate practice and subject knowledge (Epstein, 2014), which has already been discussed. It may also be linked to historical beliefs about the role and purpose of ECEC. Within the majority of the settings, and within the playgroups in particular, the educators still appeared to act more as facilitators of learning rather than supporters and extenders of children's learning. Then within some settings, and within the independent settings attached to independent schools in particular, the use of more formal and didactic pedagogy, normally associated with older children continued. However, the groups in which adult-focussed activities took place were typically smaller than previously, following the PD. Clear differences between the playgroups and

independent sector, who continued to plan for and engage in many more teacher-directed activities than the playgroups remained. This finding suggests that Weikhart's (2000) types of early years settings may still be useful to consider when planning for future PD. The different groups may require slightly adapted content, including examples of practice which emphasise a more balanced approach to teacher-guided and child-guided activities and opportunities. Although types of setting were considered in the quantitative analysis, no significant differences were found. However, as explained in section 6.2.5., this may have been due to the allocation of settings to types being inconsistent.

Throughout the PD, the emphasis on reflection, and especially collaborative reflection, appeared to be recognised as a strength. Across all of the qualitative data gathered, the respondents noted the importance of collaboration and reflection. Suggesting that this element should be included in future PD, but also, perhaps, suggesting that further support for reflective practice itself, which takes time to develop and hone (Colwell et al., 2015), may be useful.

The PD included discussions around the early HLE and many settings made changes to the way they worked with parents as a result. However, it was obvious from some of the discussion, and a few responses to the questionnaires, that misunderstandings, stereotypical views and problematic beliefs remained (see section 6.7.). Further PD on working with parents was indicated.

Attitudes to diversity appeared to continue to be of concern as the low score on the ECERS-E subscale: diversity suggested. It appears that there may be a need to change attitudes. Changes in attitudes could be supported through the PD offering examples of alternative experiences, viewpoints and content. Some of the difficulties in relation to supporting diversity may be due to a lack of knowledge, skills and understandings; such as knowing how to observe, assess and plan for an individual's learning and development (discussed above). In addition, some educators may not have a real understanding of how poverty, and other stressors such as abuse and mental health issues, may affect confidence and parenting. Addressing such issues may require longer and more in-depth PD than that within this study.

The baseline data suggested that across the county there were inequalities, with areas of deprivation typically having a lower quality base (according to ERS scores) than those in non-deprived wards. The difficulties may be compounded by the the lack of leadership in such areas (discussed in the delivery section here in more detail) and possibly some misunderstandings and problematic beliefs held by the educators. Unfortunately, it was not possible to look at these aspects in detail in this study. However, this study does suggest that areas of deprivation should be targeted for intensive PD, including support for leadership, concept development, subject knowledge and content designed to combat any stereotypical views and misunderstandings in relation to aspects of diversity.

One important finding in relation to the PD relates to the content and the levels of challenges (difficulty and expectations) associated with these. Kyriakides et al. (2009) recognised this in their work, where they grouped teachers according to initial knowledge and understandings and then provided PD at one level above participants existing levels. The PD needs to be suitable for the workforce, the individuals within it and designed to extend understandings from their starting points (this is discussed in more detail in the delivery section). The importance of ensuring the right fit of content for the participants in PD was evidenced in a number of ways during this study. First, some settings were not able to follow the standardised PD in its original form and it needed to be adapted to support earlier, underpinning knowledge and understandings (see section 3.2.). Second, patterns of improvement were associated with and distinguishable according to initial ERS scores (see section 6.4.5.). The PD appeared to support progress for settings who initially scored in the quartile ranges of two and three for ECERS-R, and the support available naturally in the environment (for the control group) appeared to support improvements for those scoring in the quartile two range only. Section 6.4.5. and 7.2. discuss the importance of starting position and the need to incorporate this knowledge into plans for PD.

While higher level qualifications were outside of the control of this study. The link between staff qualifications (at level 5 or above) and quality within the settings was undeniable. It suggests that long term, indepth learning may be necessary if quality is to be improved. Further, the links with Ofsted awards, and the similarities in their judgements with ERS scores, appears to be in agreement with this view - higher level qualifications support quality. The analysis by initial ERS scores supports the notion that

at least one member of staff needs indepth knowldege of effective pedagogy and practice within ECEC and the leadership skills to take this forward within the settings if improvements are likely.

Consideration of the content of PD within this study may add to the extant literature regarding the PVI sector, the qualitative data includes descriptions of some of the challenges and time needed to embed higher order skills according to the educators' own views (see section 6.7.). Many researchers are beginning to realise that high-quality interactions, which have already been described as fundamental to quality, are the result of the culmination of a number of other qualities, skills and abilities (Epstein, 2014). They require wide ranging knowledge about how children learn and develop, a repertoire of different teaching and learning strategies and specific content knowledge about what the children are learning. So, while many studies have concentrated purely on the promotion of interactions (e.g. Painta et al., 2009) or in relation to the skills and abilities related to language and literacy in ECEC (Snow, 2014), yet others are recognising the importance of supporting underpinning knowledge and practice, including knowledge and understanding of child development, strategies to support learning and subject knowledge (Siraj et al., 2016a; 2016b).

In summary, the data suggests that new PD content needs to be developed to support: child development and subject knowledge; planning and assessment of individual children; the use of the ERS as self-assessment tools; reflection; leadership; equality and fairness (including support for understanding diversity and the challenges some children and families meet in their everyday lives) and basic literacy and numeracy skills. In addition, the original PD needs to be extended to other settings incorporating many of the original aspects including: research and practice, support for the early HLE, SST, health and safety practices, behaviour for learning and the quality improvement process.

7.3.2. The delivery

The delivery of the PD appeared to be well received, however, the number of sessions was short and it has already been determined that high quality ECEC practice requires staff who have received intensive and extended opportunities for learning and development (with learning at level 5 and above). One possible change to the delivery of the PD, and for consideration for the future, would be to increase the number of sessions to support more in-depth knowledge and understandings.

Four face-to-face sessions was very short and necessarily limited the content and new learning that was possible. While intuitively it seems likely that more sessions would be advantageous, recent research also supports this view (Zaslow et al., 2010). However, this PD was designed to see if such a short input could make an impact, and it needed to be practical to implement any successful elements across the county for all settings within the near future. It was also, potentially, the beginning of PD delivered in the LA that could be systematically evaluated for impact, with the baseline data (collected in phase one) continuing to act as a comparison. The impact of the study PD was apparent, even if the changes in quality appeared to be modest.

In addition, it is probably worth noting that while the PD was relatively short, it represented a change from previous PD sessions in the LA, which were often one-off, content driven, centre-based sessions with staff from other centres present. The four face-to-face sessions, together with the critical mass of the number of staff, the expectations that there would be work done in between sessions and that after the four sessions there would be an ongoing relationship with their Research Team tutor, all appeared to support interest and engagement. All of the settings who started the PD finished it and attendance was very good.

The importance of delivery which supported collaboration (all staff present and time given to work together both within and between the sessions) was evident across all of the qualitative data, collected from the Research Team, the educators and the supervisors/managers. Collaboration, and support for this, was seen as fundamental to effective practice and a particular strength of the PD. Even the supervisor interviewed, where there was no improvement, recognised that this was important and placed a deal of significance on the fact that she had not been supported in introducing regular staff meetings as she had hoped.

Spacing the sessions out to give sufficient time between each face-to-face session, to allow the educators to try out new approaches and develop new materials etc., appeared to support progress. In this study the sessions were run fortnightly and most people agreed this was a good time interval. At the beginning of each face-to-face session, time was given for feedback and changes were discussed so that challenges and successes could be shared. While some settings were more diligent and adventurous in what they tried, all settings made changes and reported back. The data suggested that this aspect of the PD was important and the extent to which the educators took this on was indicative of the improvements they made. It gave them the opportunity to not only try out new approaches etc. but to engage together in a quality improvement process.

The involvement of whole staffs seemed to be particularly important and valued by those educators that attended the PD. It was mentioned as important in 49 of the responses to the evaluative questionnaire at the end of the four sessions. For some settings, it was the first opportunity they had had as a whole staff to meet together and for others, who had already established staff meetings, it was unusual to have dedicated time to focus on practice, the children and their learning. Previous staff meetings had been focussed on administration and administrative duties. The setting up of communities of practice/learning was initiated during those sessions, and many settings continued to engage with them following the four face-to-face sessions.

Interestingly, the funding, including the vouchers for £25 following each observation period and the payment for time to attend the PD, was highly valued. It is difficult to determine if whole setting staffs would have agreed to attending the PD, or whether every setting would have agreed to allow the Research Team to make observations in their settings, without the money. However, it did appear to support the development of relationships and positive attitudes towards the PD. This was important as, for many educators, there was no pre-existing relationship with LA personnel and no history of attending PD. The need for funding may also signify a difference between this sector (with many for-profit settings) and the maintained teaching sector where funding was not considered an important element of PD or its potential for success (Timperley et al., 2007).

The importance of flexibility in the where and when of the PD was emphasised by the Research Team feedback, who negotiated these aspects with the settings and tried to be flexible to their needs. They suggested that this supported the development of positive relationships between the Research Team and the educators. They also suggested that ensuring that the four face-to-face sessions were accessible to all staff before finalising arrangements supported the impact of the PD. This allowed whole staffs to work together to decide on, discuss and evaluate the changes they made to their practices. It supported the changes made, collaboration between staff and the depth of reflection.

The grouping in this study was by whole staff within a setting, and not by initial understandings and skills, abilities etc. of educators, as later Kyriakides et al. recommended (2009). Further, the expectation, at the outset of the PD, was to provide an objective set of training to all settings included in the study, to see if it impacted on their practice. A series of PD sessions were developed and designed so that they could be objectively compared and later replicated, if successful. During the design phase of the PD, as well as trying to ensure the content was applicable to all settings, some known difficulties were taken into account. Some practitioners were known to have literacy difficulties (from previous training), and so where activities included some pre-reading, either the Research Team tutor or a volunteer read the information aloud.

Originally, it was recognised that there would be diversity within the staff teams, in practice there were also huge variations in knowledge, skills and understandings between the settings too (see Sylva et al., 2004). This led to the need to adapt some of the training in order to ensure that it was understood and to facilitate change and improvement. This was particularly necessary and obvious when there was no one on the staff team with knowledge and experience of good practice. This suggests that future PD may need to include grouping of practitioners into training sessions that suit the needs of the groups of practitioners attending them.

Where there was diversity in skills, abilities, understanding and experience within the staff as long as at least one member was experienced and knowledgeable, the PD appeared to work well. The PD was delivered to encourage more able staff to support those with less experience and knowledge through collaboration. Where the settings

involved at least one leader with good knowledge and experiences of ECEC, the leaders supported the rest of the team. Together, they decided on, implemented and reflected on changes as they occurred. However, there were some settings where there was no apparent leader with these skills. During the four face-to-face sessions, the Research Team tutor took this role, and supported changes. However, following the end of the four sessions, where there was no leader supporting improvements, practice appeared to return to its original form. This is reflected in the findings related to quartile ranges (see section 6.4.5.) where those settings scoring initially in the lowest quartile (quartile 1) made few improvements in ERS score pre- and post-test, and in the supervisor interviews. In terms of future PD, it points to the importance of developing leadership training in an effort to ensure that each setting has at least one effective leader. This would mean establishing the needs of the practitioners prior to the PD and grouping them accordingly.

In summary, the delivery of the study PD needs to be extended to settings who had not received it, and also extended in length if practical. The content, timing, grouping (including all staff) and time for collaborative discussions and in-setting trials appears to have impacted on quality in all settings with a strong leader, knowledgeable about effective practice in ECEC. In settings with very low initial quality scores and no leader of learning, additional support may be required for sustainable change. Higher level qualifications were found to be linked to higher quality (see section 6.2.5.) and may make the difference in terms of pre-dispositions for change and improvement. Such qualifications are beyond the remit of this study. Future PD could, however, be developed to support the leaders of low quality settings. They could be invited to PD designed to support leadership for learning within their settings. Alternatively, new leaders could be recruited, if the low-quality settings are under LA management, such as many of those situated in areas of deprivation. The quality of the staff in a setting is fundamental to the quality of the setting (Melhuish et al., 2015).

New PD developed with alternative content (see content section) could be made available to all settings e.g. using the ERS as self-assessment tools, supporting knowledge of child development and subject knowledge. Some of this PD could be delivered to whole settings as this delivery style was seen to successfully support the development of communities of practice/learning within and beyond the settings, in this

study. However, all future PD would need to take into account the levels of understanding (e.g. previous PD attended, qualifications, ERS scores, leadership skills.) and experiences and beliefs of the staff groups (e.g. see discussion re pedagogy and practices in playgroups as opposed to independent schools) and the individuals within the settings so that the content and 'pitch' of the PD is appropriate. Some of the new PD would only be appropriate for some groups of staff, such as PD designed to support practitioner's own basic skills in literacy and mathematics, for example. While other PD, such as supporting self-assessment through the use of ERS, may better suit whole staff group delivery.

7.3.3. The affect

Within this study the motivation of the educators appeared to be very important. Many educators, especially within the playgroups, described themselves as having 'drifted' into ECEC following the birth of their own children. So, while for some working in ECEC was considered to be a second career, others appeared to subscribe to the belief that the work was 'Mother's work' and that the children only required 'feeding and watering' and being kept safe (see Siraj and Kingston, 2015). They would, most likely, return to their 'proper work' once their own children were old enough and attending school. Within the private settings, there were many more career orientated, often younger, educators. However, despite choosing ECEC as their chosen careers, they also had diverse views about the work and many subscribed to the 'common sense' views of practice that Vincent and Braun (2011) later described.

The first session of the intervention was designed to support changes in attitude, motivation for change and a greater understanding of the value of ECEC work. It was interesting to note that responses to this session varied in intensity and direction. The supervisor interviews and Research Team focus groups suggested that some educators appeared to feel validated by the research and the potential impact of their roles, while others found it daunting and expressed concerns over being ill-equipped and unprepared. A few even expressed anger that their jobs had changed so significantly, with little information and preparation. One supervisor reported anecdotal discussions with a local head teacher who had told her not to worry about the CGFS, and that *they*

would 'sort the children out' once they entered school'. Others suggested that they were not paid enough and yet others said that they did not want a job with such responsibility. The intensity of responses suggests that this would need revisiting and importantly, the role of ECEC in children and families' lives and beyond, needed to be disseminated across the county. While this finding is linked to the time of the study, many of the beliefs are still apparent today as recent research attests (e.g. Vincent and Braun, 2011).

Discussion regarding inequalities, in pay and status, between the PVI and maintained sectors were common in session one. While it was not possible to engage with such debates for long, or to make any real differences to workforce inequalities within this study PD, it was important to note that such issues exist within the PVI workforce. They needed to be acknowledged and accounted for, in future PD. However, the focus of the PD was the entitlement of the children and families to high quality ECEC provision, and the possibility of that provision supporting those children and families in 'closing the gap' in achievement due to disadvantage, which was already present as the children entered their pre-school settings.

Despite some educators clearly having problematic beliefs, some of which remained following the PD and were found within the educators' evaluations and supervisor interviews, all of the settings engaged in changes during the four face-to-face sessions. Problematic beliefs are likely to mitigate against ongoing quality improvement, without leadership to support sustained discussion and changes over time. Although, it was not possible to analyse the data to look for associations between problematic beliefs, leadership and areas of deprivation, high quality practice, including knowledge and understanding of families in crisis, the effects of poverty and children with additional needs etc., would be particularly important for practitioners working in areas of disadvantage.

While many of the skills associated with supporting families and children with additional needs may be higher order skills (Kyriakides et al., 2009) and require compassion and understandings that may take time to develop, these would be the very skills that educators working in areas of deprivation need. Unfortunately, the quantitative results suggested that quality within the designated areas of deprivation, was significantly lower than in areas not designated as deprived, so it did not appear to be a case of building on

strong foundations. Educators working in areas of disadvantage, and in other areas of the county, may first need a better grasp of some of the more basic, underpinning knowledge, skills, and abilities included in this PD. They may also need to understand that support and sensitivity for all children and families is an essential part of their role – rejecting judgemental attitudes and problematic beliefs. The quantitative data suggested that the PD in this study was equally effective for staffs working in areas of deprivation or not. So, while the study PD (in delivery and content) may continue to suit all groups of practitioners, improving the quality of the care and education in areas of deprivation must be a priority for the LA. Consideration of leadership and problematic beliefs in areas of deprivation should be investigated further with changes in beliefs in these groups seen as critical.

Before leaving the discussion on problematic beliefs it is important to note that the majority of the educators reported that they were not working in ECEC for monetary gain, but because they enjoyed the company of young children and the other staff. Many commented positively on the emphasis on working together in the PD and some linked these experiences directly to changes in their personal attributes; such as, confidence, patience and understanding (see responses to questionnaires).

With regards to the study PD supporting confidence, it was an aim of the PD as it was being developed, as confidence was recognised as a particular issue for women working in ECEC (Bloom, 2000). The reporting of a renewed interest in their work and greater empathy for some of the children with whom they worked were also original aims. During the development phase of the PD, while it was recognised that it may not be possible for the PD to impact on some personal attributes of educators (such as love for children), it may be possible to support patience and perseverance (identified as important to attrition rates within the sector by Rekalidou and Panitsides, 2015). The PD supported the skills of close observation, understanding of children's development and the sharing of stories about children's views of and theories about the world, which may have supported the educators in recognising the different ways children see and respond to the world, building empathy and understanding.

Other attributes were not planned for during the development of the PD. However, in some groups, the PD included discussions around the importance of perseverance, risk

taking and pragmatism, enthusiasm, adaptability, effective communication and lifelong learning which were seen as integral to effective teaching and which later research has validated (Colker, 2008). Typically, these discussions occurred naturally during the collaborative planning and evaluation sessions and were not written into the content of the PD. They now appear important to supporting motivation, emotional responsiveness to each other as well as to the children and families and to the sustainability of the quality improvement process. So much so, that teaching notes, outlining such attitudes, to be introduced during the collaborative discussions, may be included in future PD.

In summary, the affect domain of the PD appears to be important to its success, particularly if collaborative reflective team work and a culture of sensitive responsiveness to the children, families, other staff and outside professionals is intended. The study PD was found to support the personal attitudes of some of the educators, such as confidence, patience, empathy and understanding and the desire to work collaboratively with others. Other attributes such as enthusiasm, perseverance, adaptability and life-long learning were discussed and included in discussions in some groups but not in others. They may be usefully added to the aims of future PD. The rejection of judgemental attitudes and problematic beliefs seemed important in all settings and where they remained they appeared problematic to improvement (see supervisor interview where no improvement occurred following the PD). However, they may be most important to eradicate in areas of disadvantage where currently quality is low, and the need for high quality settings is greatest.

7.4. Ensuring the PD is evidence-based: using the SEEPD

Analysis of the impact of the PD using the domains of the SEEPD, supported the recognition of the key elements of the PD which were associated with its success. Ensuring that the content (domain one) was evidence-based and linked to effective practice in ECEC and that the delivery (domain two) supported the implementation of many of the aspects of the content (including allowing time for collaboration and to trial and reflect upon new approaches to teaching and learning) together with recognising the

emotional investment or affect (domain three) needed to support quality improvement, supported the analysis.

The SEEPD was developed from literature considering PD within ECEC and beyond (i.e. in schools with older children). Findings from research with schools and older children was included despite the recognition of differences across these workforces - in their knowledge, skills, abilities and attitudes, their status and pay. Many of these differences are also present within the ECEC sector itself, as ECEC includes both the PVI and maintained sectors.

The headings of the SEEPD should be useful across the ECEC sector, as they highlight areas or elements of PD to be considered. However, some interpretations of the aspects may be specific to certain groups of educators and not others. For example, differences were found in relation to the impact of funding. While payment for time to attend PD was not seen as a relevant factor in the success of PD in the maintained sector (Timperley et al., 2007), the results of this study suggest that it supported inclusion in the study, and promoted motivation and collaboration. Interpretation and links to the SEEPD may therefore be sector specific, understandings regarding this will grow with the literature base.

In this study, the intervention phase (phase two) was limited to settings within the PVI sector. The decision to exclude maintained settings (who were included in the baseline assessments) was taken partly because of the greater need for improvement within PVI settings (Sylva et al., 2004) and also in recognition of potential differences in quality and improvement needs and therefore in the content, delivery and support for affect of effective PD (that is, the application of the SEEPD).

While the SEEPD is designed to support the consideration of all relevant elements of effective PD and the current evidence-base, knowledge of the learners receiving the PD need to be factored in to decisions regarding each domain and element. The SEEPD identifies areas to be considered when developing and analysing PD, but this information needs to be augmented by knowledge of the learners, and their starting positions in relation to content, delivery and affect (possibly supported through ERS scores), if improvements are to be guaranteed.

In this study, the SEEPD was found to be a useful tool. It could, potentially, be used and adapted with different groups of ECEC educators and settings when devising and analysing different PD. The SEEPD has subsequently supported the development and implementation of new PD studies (e.g. Quality Improvement Study (QIS) (Siraj et al 2016b); Fostering Effective Early Learning (Siraj et al., 2016a; Melhuish et al., 2017); Researching Effective Early Learning (REEL) (Siraj et al., 2016c). It supported the analysis of the impact and evaluation of the PD (see section 7.3.). While it is recognised that other factors may impact on the final form of PD (as described above), it seems likely that the SEEPD may serve as a useful framework beyond this study.

7.5. Links to theoretical frameworks: extending the framework

7.5.1. Evaluation with links to Lave and Wenger's communities of practice

The importance of developing communities of practice within the settings for ongoing and continuing self-improvement (Lave and Wenger, 1991) was supported both within the quantitative data (see section 6.4., where leaders were present to take the practice forward) and within the qualitative data (e.g. responses from managers/supervisors during interviews and Research Team during focus groups).

Responses, within interviews, focus groups and questionnaires, supported the view that collaboration and team work were important to improvement. For those teams where there appeared to be the development of '*communities of practice*' improvements appeared to follow. The educators within improving settings were described as having a shared passion, shared learning orientated goals and the desire to constantly self-assess and improve. To allow for this they met together regularly to interact with each other and discuss children's learning and their approaches to supporting their learning. Descriptions of this kind were strongly associated with settings that appeared to make the most progress (in relation to ERS scores).

In contrast, in those settings where there appeared to be no experienced leader there was no-one to take over the role of expert facilitator (following the PD), who had relevant experience and practical wisdom, and who would support the setting staff in asking and answering questions, connecting and building ideas, focusing on key points, providing useful background information and resources and staying on task (Kennedy, 2004). In settings with initial ERS scores in the quartile one range, there appeared to be a lack of leadership. The links between leadership and quality are well established (Rodd, 2006). Lack of leadership was problematic as there was no-one to support and sustain the *communities of practice* (Wenger, 1991) developed during the PD, and as a consequence little or no improvements were found at the post-test.

Beyond the settings, it was interesting to note that successful improvements were also aligned to ongoing PD and involvement in some of the local geographic networks. There were a number of opportunities for further PD, both locally and nationally, and the settings that scored more highly on the ERS appeared to be more likely to take up such offers, despite the cost implications, than those of lesser quality (see supervisors' interviews).

Local networks were set up by the LA to encourage collaboration across all ECEC settings in geographical areas. They were designed to support progression from pre-school to reception (and participants were often grouped to ensure discussions between educators in these different settings), to allow sharing of good practice and expertise and to inform those present of any new legislation, research and challenges as they arose. While some settings did not engage with these networks, possibly because they were in competition with each other for the children in their local area and/or they did not see their relevance, there did appear to be a pattern of attendance. Those settings with the higher quality ERS scores attended more meetings than other settings where quality scores were lower.

7.5.2. Evaluation with links to Bronfenbrenner's Bio-ecological model.

Bronfenbrenner's model was chosen as a framework for this study, over specific models of educational effectiveness, such as the Dynamic Model of Educational Effectiveness (DMEE) (Creemers and Kyriakides, 2014). While the DMEE included multi-levels similar to those outlined in Bronfenbrenner's Bio-Ecological model (Bronfenbrenner, 2005) and recognised the inter- and intra- relationships between these, it appeared to be driven by more formal educational expectations and considerations of the curriculum which were considered inappropriate when considering younger children within ECEC. Unlike some other models of PD, the DMEE was designed to consider universal factors, so at the teacher level, it outlined factors related to teaching which impacted on children's socio-emotional as well as academic outcomes. The findings and the discussions that emanated from research using the DMEE were therefore considered relevant to the study even though the model itself was not.

The similarities between the DMEE and Bronfenbrenner's model provided support for the use of Bronfenbrenner's model when considering educational effectiveness and the impact of PD in this study. It also provided support for the consideration of effective practice in relation to the development of the whole child. Bronfenbrenner's model and the inter-related systems considered important for the educators in this study are outlined on Figure 6 p57. This model (with its links to Bronfenbrenner's ideas) is later built upon to form part of the Model of Educators' Learning and Development (MELD) on p247.

During the preparation phase of this study, Bronfenbrenner's model supported the recognition that the educators (as they were the focus of development) were not isolated and that if change and development was desired all of the relevant microsystems needed to be considered. It supported understandings of the important impact of the educator's setting itself, their families and local communities. It invited a critical look at the social and political systems that impacted on the educators' work, including how and if the educators were aware of them. This seemed especially pertinent as the political context was in constant flux at the time of the study. Government were issuing new guidance and legislation that were constantly changing, however, many educators had no systematic way of finding out about and/or unpicking those changes in expectations, processes and/or working practices.

Very early on, the LA recognised the difficulties of communication, understanding and implementation of government policies, guidance etc. across ECEC within the county. The LA set out a strategic plan which included the development of systems to support knowledge exchange and to ensure that all settings were aware of their responsibilities and any new guidelines, legislations etc. as they were developed, and what they meant in practice to their day to day work. The study was part of the strategic plan.

The use of Bronfenbrenner's model was not confined to consideration of the educators' learning only, while this was its primary use, many of the ideas within it were considered relevant to learning beyond the educators and settings to the ECEC sector as a whole, and, ofcourse, to the children's learning too. In the preparation phase (and beyond) of the study, Bronfenbrenner's Model supported the recognition of relationships and the need for collaboration between the LA and the ECEC sector. The ECEC sector were and continue to be unlike any other sector that the LA support. The variety and levels of qualifications the workforce possessed at the time of the study, were minimal and remain so (see Nutbrown, 2012). Despite changes to inspection procedures, funding and new legislation etc. standards remain low and the minimum requirements for qualifications do not appear to recognise the complexity or importance of the role of teaching within ECEC (Davies et al, 2016; Melhuish et al., 2015).

The PVI sector continues to enjoy a deal of autonomy and independence from the LA. The dynamics of the size of the sector, the diversity of settings and the market-led nature of the provision mitigate against close monitoring and regulation by the LA and a shared view of quality (Penn, 2011). So, the establishment of good and on-going relationships between settings and the LA remain critical. The development of *communities of practice* (Lave and Wenger, 1991) within and beyond the settings continue to be priorities.

Within phase two of the study, awareness of Bronfenbrenner's model in relation to the educators' responses to the PD, first, supported the recognition of multi-levelled influences on the educators, their effectiveness and the likelihood for improvement (and in turn children's socio-emotional and cognitive outcomes). It encouraged scrutiny of possible factors operating at the microsystem, mesosystem, exosystem and macrosystem levels. It suggested that the PD's effectiveness would be influenced by the

wider educational and social contexts in which the educators and settings were expected to operate (see Figure 6 p57).

During the development of the SEEPD and the PD, clear links were made to Bronfenbrenner's model. For example, at the microsystem and mesosystem levels Bronfenbrenner's model supported the development of close relationships and shared understandings between and within relevant systems, which influenced the affect and content domains of the SEEPD, and led to the inclusion of information about the importance of ECEC in the PD, and the educator's role within it. Bronfenbrenner's views of the importance of the macrosystems, led to discussions around new expectations, legislations etc. as well as information from research, in session one of the PD. His notion of the importance of transitions, supported understandings relating to the pedagogies and practices associated with ECEC, and the encouragement and promotion of change and quality improvement.

Second, Bronfenbrenner's model supported the identification of possible direct and indirect influences on the impact of the PD, and resulting educator effectiveness, within each of the levels (see Figure 6). Since, for example, at the macrosystem level the research and theory influenced both the content of the PD (direct) and the policies, frameworks and legislation under which the ECEC settings operated (indirect).

Third, it supported the notion that for sustainable change/improvement at the microsystem level, where the teaching and learning took place within the setting, change was necessary at the other levels too. In particular, it suggested that improving the practice of one educator within one setting would be unlikely to lead to sustainable improvement, because as soon as that educator moved away changes would stop. One finding that supported this notion was linked to settings who did not have an effective leader, and leadership was solely reliant on the tutor from the Research Team. While changes were evident during the PD, sustainable changes and improvements were not seen at the post-test.

Bronfenbrenner's model suggested that unless changes occur at a number of levels and are embedded within the setting and educational context as a whole, any improvements made would quickly dissipate. Such understandings led to deeper reflections on the microsystems and mesosystems, where the PD was situated. The notions of the PD

supporting systemic changes, through support for collaboration across whole staff teams and their use of quality improvement processes, where the educators themselves self-assessed and identified their own areas for development, wrote their own development plans and evaluated their success, became central.

It also led to the set-up of geographical networks of settings so that support could be found within the community at the mesosystem level. Within the PD content itself, it gave support to the inter-generational approach to supporting children's learning (across different microsystems). Where the focus on the pedagogy and practice was related to the individual children, and extended to the early Home Learning Environment. Since then recognised as key to the ECEC sector's success (OECD, 2012).

Fourth, the model supported findings that factors associated with effective practice and improvements in children's outcomes may not show simple linear relationships, due to interference from other factors (both within and across systems). For example, within the school sector, teacher subject knowledge was widely perceived as a factor affecting teacher effectiveness (Scriven, 1994) and one that is also considered important within ECEC (Epstein, 2014; Hamre et al., 2012). A simplistic view of this would suggest a simple linear relationship between subject knowledge and teacher effectiveness. However, Monk (1994) reported the relationship to be curvilinear. Teachers needed to have a minimal level of knowledge to be effective but beyond a certain point a negative or even no relation at all occurred. This pointed to the need for the PD to include a multiplicity of evidence-based factors and to include close monitoring of effects to see how they might interact with each other. For example, at the microsystem level understanding of subject knowledge might be metered with understandings of how young children best learn, such as through playful child and adult guided processes. It also suggested that existing knowledge and practice (such as those related to the educators' differing historical, cultural and educational backgrounds at the macro-system level) warranted further consideration. It supported the notion that different educators would learn at different rates, that they would have different starting points and that some settings may require different content.

Interestingly, Creemers and Kyriakides (2006), who noted such complex interactions between the factors they identified for effective teachers, suggested that strategies

designed to improve effectiveness may need to be more comprehensive than specific in nature. Further, Davies et al. (2016) suggested that it was important to recognise the complex and changing nature of teaching. Effective teaching consists of complex relationships between knowledge and activities, theory and practice which cannot easily be reduced to a simple set of rules or the consistent application of techniques. Teaching requires the creative application of knowledge, skills and abilities so that new challenges can be met with teaching decisions that can be justified, evaluated and linked to an evidence-base.

Creemers and Kyriakides (2006) reiterated the importance of effective evaluation at the setting and educational context level. Supporting the notion of the importance of assessment and planning at all levels, including the ability to assess and plan for change for individual children as well as for the setting staff as a whole. Guidance on the development of quality improvement processes and the cycle of assessment, planning, implementation and evaluation (see MELD and the cycle of knowing and understanding, seeing, reviewing and reflecting p247) in the PD was seen as fundamental to its success.

7.6. Extending Bronfenbrenner's Model: the Model of Educators' Learning and Development (MELD).

Currently there are a number of studies that have investigated the structure and form of professional development and there is a growing literature base which is reflected in the SEEPD (see section 4.5.). The SEEPD details what is known about the content, delivery and affect which support effective PD, and are strongly associated with children's outcomes. However, less appears to be known about how the PD operates to support the process of new learning and skills in the extant literature (Sheridan et al., 2009). In section 3.3. there are a number of models that illustrate and begin to describe current thoughts on the processes learners go through in effective PD. Many are simple stage models, which are simplistic and reductionist and appear to miss the complexities of such learning. Dreyfus and Dreyfus (1986) articulated one such stage model, which included the series of stages: novice, advanced beginner, competent, advanced, expert. And throughout each stage the learners were described as progressing from concrete to

rule governed approaches to tasks, to flexible use of plans, to intuitive and seamless use of strategies.

While such stage-like models are useful for conceptualising basic processes by which educators are likely to learn new skills, concepts and abilities and possibly adopt new approaches and attitudes. They omit to consider contextual influences on the individual and what is likely to impact on their development. This was discussed in section 3.3. and led to the development of Figure 6 showing Systems Impacting on the Educators' Learning and Development p57, which was guided by Bronfenbrenner's Influential model of Bio-ecological Human Development (Bronfenbrenner and Ceci, 2006).

Further such simplistic stage-like models fail to determine exactly what constitutes skilful or effective pedagogies and practices, as they also ignore the content of effective PD. They concentrate on generic process which they suggest are equally relevant to all professionals and all contexts. Chapters 2 and 4 discuss the pedagogies and practices which are prevalent in ECEC and also illustrate how important it is for those pedagogies and practices to support the learning of young children, which appear to be qualitatively different to the learning of older children and adults.

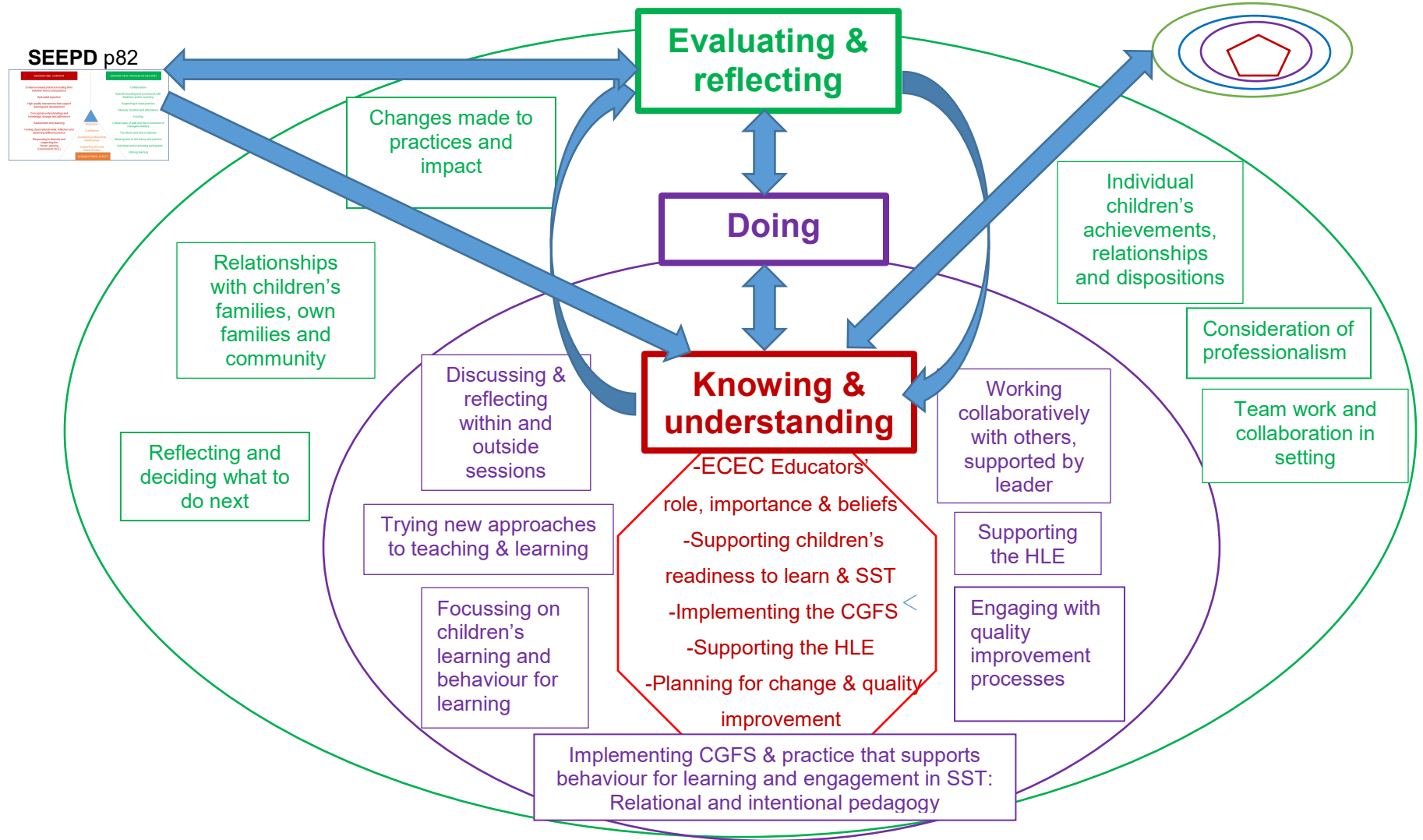
This study was built upon a number of premises that dispute such simplistic stage-like notions of the educators' learning. Contextual, social learning and content are considered important to the process of learning and as such are included in the Model of Educators' Learning and Development (MELD) outlined below (p247). In addition, the PD delivery need to synchronise with the content and affect of the PD, this is illustrated by the addition of the SEEPD and the systems that impact on educators' learning and development to the sides of the main diagram.

The resulting model: the MELD has been designed based on the learning journey that the educators in this study undertook. At the heart of the model headed **knowing and understanding** is a representation of the content, delivery and affect employed in this study, which becomes known and understood during the PD. This aspect is likely to change from PD to PD depending on the context of the setting(s) and the skills, knowledge, abilities and attitudes of the participants.

The MELD shows the inter-related nature of the various aspects of the PD, and the processes of learning and reflection that educators were supported in following. These include the cycle of **knowing and understanding** moving on to **doing** and trialling or practicing and then through to **evaluating and reflecting**. According to Schulman and Schulman (2004) staff need to both know and be able 'to do' while being reflective (learning from experience).

Figure 25: Model of Educators' Learning and Development

Systems that Impact on Educators' Learning and Development p57.



At the centre of the model, a summary of the **Knowing and understanding** aspect of this study can be found: the learning and understandings taught within the four face-to-face sessions (which incorporated the content, delivery process and affect outlined in section 3.2. and 4.5.). Each of the four sessions included examples of practice and discussions of the underlying theoretical models and concepts together with recent research to enable critical reflection and to support possible future improvements. The centre of the diagram (in red) outlines the **Knowing** aspect for this study, it includes: consideration of the educator's role, importance and beliefs; how educators could support children's behaviour for learning and engage in SST; the implementation of the CGFS; support for the HLE; and, the evaluation and quality improvement process.

During the four face-to-face sessions, time was devoted to planning for the **doing** which supported **understanding**. The delivery of the PD was designed with time between the sessions to allow knowledge to be combined with practice (**doing**). In between sessions, the educators were given time to use newly learnt knowledge, understandings, approaches etc. within their settings. The **doing** aspect included the implementation of the CGFS and strategies and approaches designed to support behaviour for learning and SST within the setting and the early HLE beyond it. Educators were invited to reconsider how they interpreted children's behaviour and how they communicated with and developed relationships within and beyond the setting. They were supported in planning together and using the CGFS to support the development of activities and interactions and identify learning intentions that were appropriate for each child.

This was followed by time to critically analyse and reflect upon their impact. Hamre et al., (2012) suggested a cycle of planning for, trialling and reflecting on practice that supported the effectiveness of PD. The **evaluating and reflecting** aspects of the study PD were completed both in the settings and within sessions. Each session, following the first, incorporated guided evaluation and reflection time, focussing on what had been trialled in the settings as well as giving additional content and preparing for further in-setting trials. The educators were encouraged to evaluate and reflect on: changes made to practices; individual children's achievements, relationships and dispositions; the relationships they had with the children's and their own families; how well they worked together as a team; possible next steps; and, how their own beliefs and views of the

profession may impact on their practice and future developments within their setting as well as across the sector generally.

The importance of context, content and delivery (allowing for practical changes in settings to be trialled) was reflected in the MELD. Learning was also supported by requirements around the critical mass of staff attending the PD. All staffs, in their PD-supported communities of practice, were encouraged to choose aspects of practice that they would trial, and to develop their own action plans for improvement. This process enabled educators to make their own choices/plans and make relevant adaptations to suit their own particular contexts. This aspect of the process was designed to support collaboration, ownership and confidence and promote sustainability over time.

The cycle of evaluation/quality improvement process which formed part of the PD was continuous and reciprocal between the levels, as the MELD suggests. The PD took the educators through the evaluation process, responding to each setting individually.

Following the trials, time was given in the *communities of practice* to **evaluating and reflecting** upon changes and improvement plans and deciding on next steps. Next steps often included the identification of new opportunities for learning (**Knowing**) and new approaches to teaching and learning (**understanding**) and practice with these (**Doing**). The Research Team tutors supported and scaffolded the cycle of evaluation or quality improvement process, and were aware of the ultimate aim: the process would, hopefully, become established and embedded in the practice of the setting and continue beyond the life of the project. On reflection, in future PD using this model, the MELD could be usefully shared with educators to support their understandings of the journey they are likely to undertake and the expectations which accompany the PD.

If this model was to be used to design new PD then various aspects would need to be altered to suit the PD. In particular, the content would need to take the context and participants into account. The context would include how the educators' role is perceived by the proposed participants of the PD, those close to them and society as a whole. Perceptions of teachers and the teaching profession are different to ECEC educators typically working without such qualifications. Working in the maintained sector in a

school is different to working in the PVI sector. Working in a for-profit setting may be different to working in one not for-profit, and so on.

This study has illustrated how professionalism, attitudes and beliefs attached to a role, can either support or undermine the learning process. Consider the interview with the supervisor (section 6.7.) who explained staff would not give up their own time for staff meetings, the committee would not support staff meetings, hinting that neither educators nor management recognised or understood their role in teaching the children or quality improvement. Further the educators' families did not support them either, with some seeing work within the ECEC setting as a 'hobby' rather than a job. Vincent and Braun (2011) reported similar findings in their research. It seems unlikely that the importance of beliefs and views such as these can be ignored now or in future PD research. As despite policy changes, designed to upskill and support ECEC workers, as yet they appear to have had little impact on the status, pay, conditions or commonly held beliefs and views associated with the sector (Siraj and Kingston, 2015).

In addition, to such context aspects, the content should reflect the initial knowledge, skills and abilities of the practitioners for whom the PD is devised. Different experiences, qualifications and knowledge lead to different strengths and areas for development. While the SEEPD includes the effective elements of PD, the chosen content should suit the particular needs of the groups of participants. Indeed, the SEEPD content may be added to over time. This study, for example, pointed to the need for PD supporting educators' own literacy and mathematical knowledge which was not part of the original list of contents (which may be specific to the PVI sector?). It also pointed to specific training on leadership for learning.

The content of the PD is critical, the SEEPD can support its evidence-base. It was important in this study, and will be in future studies involving PD, for any new approaches, strategies and learning to be clearly linked to children's outcomes, as enhancement here is the ultimate aim of PD. Recently, the interest in neuroscience and its impact on education has grown, with the result that many teachers are mistakenly changing practice based upon popular myths rather than evidence (Dekker et al., 2012). Such approaches are unlikely to support children's outcomes. Equally without informed knowledge and practice, engaging in the evaluation cycle (of knowing and

understanding, seeing and reviewing and reflecting) – another element of the content and delivery - would be pointless ‘*navel gazing*’ (Lyons, 2010). Both the evidence base and the process for reflection and evaluation need to be present and clear. Without the goal of positive outcomes for the children, the evaluation and reflection aspects would be unlikely to support continued use, persistence and refinement in practice.

Allowing time for the development of skills and abilities within practice appears to be indicative of improvement in this study, and this may be a consistent feature across ECEC PD. The opportunity to trial approaches and strategies within the context of the setting was built in to the delivery of this PD, and was judged to be essential to the success of the PD. Advanced skill levels (see Dreyfus and Dreyfus’s (1986) expert) are achieved through experience and practical application in real-work situational contexts. This combination of factors: the cycle of trialling evidence-based approaches and strategies in the classroom and then engaging in the evaluation and reflection is likely to remain stable across different sets of PD also. The process of knowing, understanding, doing and evaluating and reflecting appears to be strongly linked to effective practice, within the ECEC context (e.g. see Hamre et al., 2012).

In addition, joint approaches, collaboration between staff and others and leadership for learning may also be consistently important in PD for all educational settings. They are highlighted as important within the current literature (Siraj and Manni, 2006; Siraj and Hallet, 2014) and featured strongly in the qualitative data. The development of *communities of practice* (as described in section 7.5.1.) with the support and facilitation of a knowledgeable and supportive leader was consistently shown to be associated with quality improvement in this study. Contextual knowledge and experience, and the ability to support collaborative working with colleagues, appear to be intertwined and interrelated within ECEC.

The Model of Educators’ Learning and Development (MELD) provides a summary of the process of learning that the educators were required to engage with during the study. The use of concentric circles in the MELD demonstrates the inter-related nature of the process of learning supported by the PD, much like Bronfenbrenner’s model of bio-ecological development which contained the inter-related systems that he suggested impacted on children’s development (Bronfenbrenner and Morris, 2006). The MELD is

also considered to be ecological and multi-levelled because, first, it takes into account the levels and systems that impact on the educators' knowledge, abilities and attitudes described earlier (including the Systems that Impact on the Educators' Learning and Development p57). Second, following consideration of the SEEPD (p83), it describes the inter-related processes (of **knowing and understanding**, **seeing** and **evaluating and reflecting**) seen to support effective practice for the educators participating in the PD.

8. LIMITATIONS OF THE STUDY.

This chapter considers limitations within the study and PD. It considers limitations in relation to the measures of quality chosen, the ECERS-R and ECERS-E, and whether they were fit for purpose. It considers the PD itself; its content, delivery and affect. The research design, including the use of mixed methods, and, finally, it considers whether the study's findings are still relevant today.

The ERS are considered in relation to: first, the established links between these tools and children's outcomes; second, a reappraisal of the critical socio-cultural perspective; and, third, more recent thoughts about the ERS and newly developed quality measurement tools. ECERS-R and ECERS-E are probably the most widely used rating scales in research and as section 2.5. discusses, both have good psychometric properties and predictive validity, with resulting scores which are highly associated with children's developmental outcomes (Sylva et al., 2004). There are, however, a number of possible criticisms, linked to the use of the ERS as the measures, within this study. The first relates to the assumption that changes in the scores of the ERS following an intervention are associated with enhanced children's outcomes. Newer studies (e.g. Mendive et al., 2015; Pianta, 2012) suggest that small changes in practice in the classroom, measured by ERS or similar measures, may not be sufficient to impact on children's outcomes.

Pianta (2012) and Snow et al. (2014) have conducted many studies, using measures, such as the ERS and CLASS (Hamre et al., 2009). They have found differences in classroom practice according to these measures, but have had limited success in establishing links between the PD and enhanced children's learning and developmental outcomes. Associations between classroom quality and child outcomes are generally small in magnitude (Burchinal et al., 2010), and even moderate to large impacts on classroom quality may not translate to statistically significant impacts on children. So, while Levy et al. (2015) found evidence of small positively significant associations between the domains of teacher-adult interactions as measured by the CLASS (Hamre et al., 2009) and children's outcomes. Yoshikawa et al. (2015) did not find an impact on child outcomes despite an apparent impact on CLASS scorings following their PD. Possible reasons for the difficulty in establishing relationships between the PD and

children's outcomes are discussed in the chapter 9. While these newer studies may be more of a criticism of the CLASS measurement tool, which was not used in this study, such findings do suggest that PD studies considering the impact of an intervention on children's outcomes should include assessments of the children's development.

A second possible criticism, for this study, relates to the incomplete use of ECERS-R as only three out of the six subscales were used. This makes comparisons with other studies more difficult and also, possibly, meant that some important elements of global quality were omitted. Research to date has not isolated which subscales, individual items or indicators within the scales are essential to quality or to the previously mentioned links with children's outcomes and so use of the complete scale is indicated. Three sub-scales were omitted from ECERS-R in order to make the number of observations possible within the timescale, and, at the time, it was felt that it would reduce some of the repetitions of areas covered between the two chosen ERS, as the ECERS-E was also used. The subscales that were chosen within the ECERS-R appeared to be more closely linked to the literature (e.g. Ramey and Ramey model of quality p41) and to the PD content, where changes in practice were sought, than those left out. In addition, the whole ECERS-E scale was included in the study which had the strongest links, of the two ERS, to children's cognitive and socio-behavioural outcomes (Sylva et al., 2004a).

Third, for some, the use of the ERS as universally recognised measures of quality would still be considered inappropriate [see section 2.4. and Dahlberg et al. (1999); Moss (2016)]. They suggest that the use of universal measures, such as the ERS, do not take the context or values of a particular society into account. The research in this study followed a pragmatic worldview (see chapter 5) and while it was recognised that 'quality' may, in part, be subjective, it was not seen as arbitrary [Woodhead (1996)] and Siraj-Blatchford and Wong (1999)]. Further, the worldview of pragmatism allowed for a pluralistic approach and flexibility in the research design and the use of mixed methods, which acknowledged such criticisms, and allowed for, qualitative data, to be collected from the practitioners themselves, the supervisors and the Research Team. So, while the criticisms (re the term 'quality' and the use of ERS) were seen as valid, as Dahlberg et al. (1999) offered no real, alternative approach, the research design including the use of the ERS were considered appropriate. The focus of this study: enhancing quality

experiences for young children and their families and promoting equity, particularly for those living in areas of deprivation was an imperative within ECEC and the LA and needed to be explored. The study included developing better understandings of how it might be possible to improve the educational opportunities of young children and support quality improvement within ECEC, as well as the recognition that certain areas and settings within the county, especially those situated in areas of disadvantage, warranted additional support. This would not have been possible if Dahlberg et al. (1999) criticisms and approach had been uncritically followed.

One of the main objections to the use of ERS, in this relativist versus objectivist debate (see section 2.4.), relates to their initial development. ECERS, for example, was initially developed in the USA in the late 1970s and revised in 1998 and again in 2005. Suggesting that such criticisms (and the changing nature of quality) are recognised by the authors of the ERS. As new understandings emerge about ECEC and effective practice, so the ERS are updated and when they are translated for use in other countries they are also revised to suit the particular context. More recently a new version of ECERS-R which incorporates more expectations around interactions (ECERS-3: Harms et al., 2014) has been developed. It is worth noting here that the criticism around the suitability of the scale to the context and country cannot be applied to ECERS-E. It was developed in the UK through an iterative process that included academics, early childhood authorities and practitioners. In addition, at the time of the study, both of these tools had already been used and validated for use in the UK, through the EPPE project (Sylva et al., 2004a).

Fourth, as new understandings have emerged though research considering quality in ECEC, consideration of ECERS-R and ECERS-E, and whether they measure all of the important aspects of quality, have been ongoing. The latest version of ECERS-R includes much more on interaction. A new scale which looks specifically at the educator's role, their use of relational and intentional pedagogy and how they support children's emotional well-being and SST (SSTEW scale: Siraj et al., 2015) has been developed in the UK. The new scales were designed to incorporate pedagogy and practice omitted in earlier ERS e.g. curiosity and creativity in children (Sylva et al., 2010), which is found in the SSTEW scale. In addition, as discussed earlier, there is another measurement tool, which is not an ERS but has been used extensively to look at

the educator's role in the classroom: Classroom Assessment Scoring System (CLASS) (Hamre et al., 2009). Current studies considering PD, using ERS and other similar measures of quality, typically incorporate the use of these newer tools. However, these were not available at the time of this study.

While using ECERS-3 (Harms et al., 2014) and the SSTEWS scale (Siraj et al., 2015) may have been useful in this study, had they existed, there are two reasons not to use them. First, they are new and do not yet have clear associations with children's outcomes, and, second, the importance of matching the intervention to existing levels of quality within the settings. Both the SSTEWS scale and ECERS-3 consider higher order skills and competencies of the practitioners than ECERS-R, which would, no doubt, lower the scores obtained. The importance of matching the PD to educators' existing understandings and experiences could usefully be extended to the choice of measurement tools. That is, measurements need to capture existing levels of quality adequately in order to reflect changes. The scores on ECERS-R and ECERS-E in this study, together with the knowledge that ECERS-R is designed to measure more global, underlying aspects of quality (relatively low level aspects of quality) while ECERS-E considers higher order aspects of pedagogy, concept development and curricula, support this view. They suggest that if initial quality is low, then more change is likely (and was found) within measures that capture that (ECERS-R as opposed to ECERS-E scores), in this study. So, while the addition of the SSTEWS scale may have been useful, especially as one of the main areas covered in the PD was SST, given the levels of educator knowledge, skills, abilities and attitudes within the study, improvements found would, most likely, have been minimal, corresponding to the smaller improvements found within the ECERS-E.

Fifth, increasing the sample sizes, length of time between pre- and post-test and adjusting the role of the follow-on mentoring role may have also improved the robustness of the study design. While significant improvements, following the PD, were found for quality associated with ECERS-R, the changes noted in ECERS-E were not of sufficient size to reach significance following the application of inferential statistical tests. As discussed earlier, the sample size used in this study, at the PD/intervention phase, meant that some results only gave indications of improvements, whereas larger group sizes would have been more likely to show significant results. Working with larger

groups of settings may have proved useful during statistical analyses. In addition, extending the length of the intervention and/or the time allowed for new changes and approaches to embed, prior to the post-test, may also have supported the likelihood of significant findings. Another possible change to the design of the study relates to the follow-up or mentoring completed in the settings themselves. Mendive et al. (2015) considered the impact of intervention fidelity suggesting that it warranted consideration in any research on PD effectiveness. They suggested that the dosage and adherence to approaches introduced within the sessions would affect the outcomes. If new approaches were practiced only rarely or if they were changed due to improper understanding or implementation, the effects would be minimised. While there was follow-up in the settings in this study, focussing specifically on intervention fidelity would have been a useful addition.

Sixth, regarding the PD itself, and its content in particular, there are some conflicting ideas. Researchers such as Snow et al. (2014) and Pianta et al. (2009) tend to recommend concentrating the content of PD on particular areas of practice, typically including interactions, language and literacy. Justifying this approach as supportive of deeper understanding, the avoidance of too many new and complex ideas and allowing more time to embed related understandings. Whereas, Schachter (2015) and Zaslow (2012) suggest that the content of PD, in research, should diversify and include other elements of practice, for example early mathematics. Recognising the contribution that subject knowledge has to the pedagogy and practice of the educators. This study, while short, focussed on areas of practice which were known to impact on quality at that time, they were not limited to one area, and so followed the second approach described above. It is, however, questions such as this, with the support of the SEEPD structure, that future research will consider and inform further.

Current literature is consistently reporting high quality interactions, between the adult and child and children themselves, as key to effective practice (Early et al., 2017; Kingston and Siraj, 2017; Pianta, 2014). While the content of the PD included high quality interactions, newer understandings are suggesting that there are a number of underpinning competencies that educators need to possess. Such higher order skills and abilities appear to be underpinned by subject knowledge and child development, together with the experience of applying that knowledge in practice, as well as the

abilities, approaches and strategies to increase interactions directly. While this study included consideration of high quality interactions, it would have benefitted from more content on child development and subject knowledge.

The content of the PD in this study covered aspects of interaction, together with behaviour for learning, support for the HLE and implementation of the CGFS, as well as introducing a quality improvement process. While it included some discussion around the individual setting's results of ERS in session four, very little time was given to ERS directly. The introduction and use of the ERS as part of the content may have supported and sustained the quality improvement process further. Zaslow et al. (2012) recommended the use and introduction of ERS to educators during PD designed to improve practice. However, in this type of study, where the ERS were the main instruments used to measure success rate and improvement, this may have been considered inappropriate to the study design (teaching to the test). However, this adds to the importance of including child assessments as measures of changes in child outcomes (which, are more expensive, but also lead to a more robust research design) as the use of ERS as self-assessment tools are likely to support ongoing and sustainable quality improvements.

A seventh key area for PD success, that warrants further investigation and more attention than was allowed for during this study, (possibly because it extends beyond the remit of the study and the settings included within it) are the constructions of professionalism and associated professional values within ECEC. They require further thought and exploration as they appear to continue to be having far reaching effects on recruitment to, values and beliefs within and the quality of ECEC provision. While discussion around roles and responsibilities together with research showing the possible short and long term impact of high quality ECEC was included in the PD, the extent of, enduring nature and impact of beliefs and values seem to indicate that future PD may need to be designed to explicitly support change here. Allied to this, and important for a number of reasons, including the continued quality improvement journey of the setting is the establishment and support needed for leadership, especially leadership for learning. Some of these considerations may not, however, be resolved within a LA context and would require central government involvement, understanding and investment.

Finally, and possibly, the most important criticism of this study relates to the timescale in which it was conducted. In order to consider this criticism, the main values and contextual components of the study need to be considered in turn in relation to what was happening at the time of the study in comparison to current day: namely the context of the study LA and beyond, the particular needs of the PVI sector (including their beliefs and values and need for support), and finally whether any new understandings and learning are generalizable in today's context.

Consideration of the context within the LA study, in relation to the PVI and maintained sector mix and qualification requirements, reveal a deal of flux and change. However, they also reveal current trends which appear to have reverted to similar ratios of PVI and maintained settings and similar qualification requirements to those at the time of the study. The LA context and mix of maintained and PVI settings has been inconsistent over the past ten years or so. Under the labour government (1997 – 2010) initiatives for Sure Start Centres to be built and made available across England for all children and families through 'Sure Start Local' projects (e.g. DFES, 2005) resulted in the study LA building, managing and running an additional 28 children's centres, following the study. This led to a shift in the proportion of PVI to maintained settings within the county, albeit a small one. At that time, the agenda was around the provision of services not only for those children and families living in disadvantage, but for universal services across the county. However, the conservative-liberal government (2010 - 2015) removed the directive around universal day care, which led to the closure and selling off, to private providers, of many of the children's centres (e.g. see DfE, 2013b) in areas not designated as disadvantaged. Currently the ratios of PVI to maintained sector provision, across the study LA, has returned to similar levels to those found at the time of the study. Similar patterns of developments and changes have also occurred across England, with many of the remaining children's centres complaining about lack of funding.

With regards to the minimum qualifications of staff within ECEC provision, again there has been considerable flux and change. In 2006, the government announced its intention to develop a new form of graduate qualification: Early Years Professional Status (DfES, 2006) with a target of an Early Years Professional (EYP) working in every full day-care setting by 2015. However, this was never achieved and in 2013 the

conservative-liberal government introduced the early years educator qualification (at level 3) as the minimum qualification required for a manager within an ECEC setting (DfE, 2014). So, again, the requirements for staff qualifications within ECEC are minimal and similar to those expected at the time of the study. While it seems likely that the quality in settings improved during the introduction of the early years professional status (see Mathers et al., 2011) the removal of the requirement of an EYP in all day care centres, is a backward step and is likely to be particularly relevant to pre-school PVI sector, as discussed below. Further, the current government, having developed new legislation and frameworks, appear to remain committed to a focus on quantity rather than quality, and the agenda of parents returning to work. Consider, for example, their current policies around increasing the entitlements to free ECEC provision to 30 hours for three and four year olds (DfE, 2015c).

In the current context, the for-profit settings within the PVI sector, in general, are less likely to employ staff who require additional payment due to enhanced qualifications and experience. As it is no longer a requirement to have a member of staff with an appropriate degree level qualification, financial considerations are likely to take precedence. The level of quality within the PVI sector is therefore likely to be lower than found in maintained settings. Adding to this assumption are recent reviews, which suggest the workforce (especially the PVI workforce) is still predominantly female, with low levels of qualifications, status, pay and conditions (e.g. Siraj and Kingston, 2015). The PVI settings continue to employ staff requiring support for basic literacy and numeracy and have difficulty retaining staff (ibid). Further, work considering current beliefs and views about the role of the early years educator reveal similar misconceptions and problematic beliefs to those found in the study (e.g. Vincent and Braun, 2011). Similarities between the study findings and current practitioners' needs appear undeniable.

Finally, the relevance and generalisability of the study findings need consideration, given the similarities in values and contexts described above. While generalisation to contexts other than the LA was not important to the study LA itself, it is an important consideration for any piece of research. Within the LA study there were large numbers of PVI settings (95%) and very few settings within the maintained sector, indeed at the PD level, in phase two, only PVI settings featured. It could therefore be argued that generalisation

would only be applicable to LAs with similar patterns of provision, and at the PD level for PVI settings only. This may be the case with the specific quantitative results and the content, delivery and affect of this particular PD. This may still be useful, however, as the majority of three year olds continue to attend PVI settings (see DfE, 2015b), and so further information on PVI settings seems important.

The literature reviews and the more qualitative findings may, however, be applicable beyond the PVI sector, as they reflect research in many diverse ECEC settings and schools. The SEEPD and MELD, for example, were developed following an amalgamation of reviews and other research studies as well as findings from this study (see Pianta, 2012; Zaslow et al 2010). It, therefore, seems likely that, as long as aspects which appear to impact on quality and PD are taken into account - such as, any beliefs and value systems linked to the group(s) of staff/settings under consideration, the initial quality including existing knowledge, experience and qualifications of the staffs and the make-up of the staff teams in each setting (including whether there is a leader, able to support leadership for learning) - then the SEEPD and MELD may support the development of bespoke PD for those groups, and be useful tools in future research. Indeed, they have already been used to support current research studies (e.g. Siraj et al., 2016; Siraj et al., 2017). Finally, it is worth noting that other high profile researchers within the UK and beyond, are currently working on research with very similar research designs and foci to the one used in the study (e.g. URLEY funded through the EEF, 2016).

In conclusion, many of the criticisms of the study, and the PD within it, relate to the practicalities of running such a large-scale study and ensuring its relevance and reach to all of the ECEC settings within the LA, while keeping within a given timescale and budget. Suggestions for change include increasing the sample size, length of time between pre- and post-test ERS observations and of the PD, including additional content and ensuring the rigour of implementation of new knowledge, understandings and approaches. While this is problematic and needs acknowledging within this study, it is not uncommon for research to have such limitations (see Gorard and Taylor, 2004) and reinforces the notion that the collaboration and accumulation of evidence is essential (Oakley, 2004).

9. CONCLUSIONS

This final chapter first outlines the three aims and main findings in relation to this study. It summarises the potential uses of some of the findings for future research and unpicks and considers some of the main questions which remain unanswered in the extant literature and which link to the study. Namely, why enhanced children's outcomes may be difficult to find and why additional time (and underpinning knowledge and understandings) may be needed to support the development of high quality interactions (SST). Finally, it considers the research design and measures used to capture quality and changes, highlighting the importance of confidence in the measurement tools used; in the evidence base relating to the content, delivery and affect of the PD and in the fidelity of the intervention. Finally, the chapter summarises the new structures and the model that were developed during the study and suggests possible uses for them in future research.

This study included three main aims: to capture the quality of ECEC settings across the LA; determine whether a short bespoke professional development could successfully improve practice; and, add to existing understandings regarding effective PD in ECEC. While there are limitations to the study, as discussed in chapter 8, there are also new understandings and knowledge. The baseline observations identified and provided empirical evidence that certain structural aspects of the settings impacted on quality; including whether they were single or multi-use, the qualifications of the staff and, perhaps most importantly, whether the settings were situated in areas designated as deprived or not. The short bespoke PD demonstrated that within the PVI sector it is possible to move practice forward in predictable and consistent ways. Even though the improvements found were modest they suggested that the implementation of evidence-based content, delivery and affect aspects of PD can support change. Finally, the development of the SEEPD and the MELD offer some alternative structures and thoughts to the extant literature on effective PD, and could potentially be used to support the development and analysis of future PD research.

The most notable findings at the baseline phase of the study were, first, the generally low levels of quality across the LA in all settings, and, second, the particularly low quality in settings situated in areas of deprivation. Suggesting that all of the settings would

benefit from further support and investment, especially if the government's agenda of closing the 'gap in achievement' was to be realised. A notable finding relating to phase two of the study and the PD, was the importance of matching the PD to the initial quality and needs of the settings for whom the PD is designed (see section 7.2. for further details). What seemed particularly pertinent, and which may be useful beyond the study LA, was the link found between initial quality and improvements made. The initial quality of a PVI setting may, in part, determine whether successful changes can be made and sustained. Low quality settings, without effective leadership, may be unique in that they may require changes at a more fundamental level than PD typically provides.

The impact of a short-targeted intervention, and the links seen between the content, delivery and affect of the PD and improvements in practice (according to the ERS and responses given by the Research Team, participants of the PD and report by supervisors/lead practitioners) were clearly suggestive that the evidence-based PD impacted on practice in predictable and consistent ways. The findings support the notion that it is possible to make improvements, albeit modest improvements, to the pedagogy and practice of the educators through the implementation of PD in predictable ways, using the evidence-base chosen to support the development of this study (see section 7.3.).

The study supported the development of a summary of effective elements of PD (SEEPD) and the development of a model of educators' learning and development (MELD). The MELD was developed as an extension to the *Bronfenbrenner's Model of Human Development* (Bronfenbrenner, 2005) and features a process similar to setting up *communities of practice* (Lave and Wenger, 1991) which were the theoretical frameworks which underpinned the study. The quantitative and qualitative results provided specific information which could be used to guide possible improvements to the PD in the future for the LA, with the potential for the findings to be generalised to other LAs with large numbers of PVI settings. Analysis was supported by the use of the SEEPD (see section 7.3.). The SEEPD provides a comprehensive list of evidence-based content, delivery and affect which could also be used beyond this study, to support the development of elements of effective PD in relation to the settings and staff participating in new PD. While the MELD may serve to support explanations of collaborative working and quality improvement processes (or barriers to these) for the participants of the PD,

as well as capture the SEEPD. It may also serve as a useful model to share with participants so that they have an overview of the 'journey' of the PD, before they embark on it.

Within the current literature there are mixed results regarding the impact of PD studies on children's outcomes. The ultimate aim of this PD, like most intervention studies, was to impact on the children's developmental outcomes within the settings who participated in the PD. The omission of assessing the children's outcomes directly has already been considered in the limitations section of the thesis, and it is acknowledged that the addition of child assessments would have added a deal of robustness to the research design of this study.

The current literature reveals that child assessments do not always show improvements despite changes in practice, typically as measured by CLASS (Hamre et al. 2009) (e.g. Yoshikawa et al., 2015). As this study uses older ERS, which have well established links to child outcomes (e.g. Sylva et al., 2004a), it may be that such findings are limited to newer studies using CLASS. CLASS does not have the predictive validity that is well-established in both ECERS-R and ECERS-E. However, it is always possible that this is a general finding, yet to be confirmed in this newly emerging field of research.

Consideration of the complex nature of child development, may therefore be useful in order to explain why enhancing children's outcomes may be problematic. ECEC settings are only one of a number of different systems that impact on children's development [see Sylva et al., 2014 and Bronfenbrenner's bio-ecological model of human development (2005)]. While Bronfenbrenner's framework has been applied to the learning of the educators throughout this thesis, its more traditional use is in relation to children's development. See sections 2.4. and 2.6. and Melhuish's (1991) model of influences on child development and how this links to Bronfenbrenner's microsystems and mesosystems. One important system, which is known to have a major impact on child development is the family home; including the early HLE and the socio-economic status of the child's family. This study included a session designed to support the early HLE, but unfortunately no measurement of changes within the family homes were included. Child assessments would have captured the impact of both, the home and the pre-school micosystems, but would not differentiate or show which change(s) was

attributable to which system. The addition of some measure of change within the early HLE may also have been useful, as it is known to be a powerful indicator of quality (Sylva et al., 2004). However, it is important to note that there are potentially many systems (ECEC setting, family home, extended family, friends, community and so on) which may impact on children's outcomes. Such systems may mask changes in the setting through the interactions they have with the developing child, and it would not be possible or viable to measure changes across them all.

Yoshikawa et al.'s (2015) findings, of no changes in children's outcomes despite changes found in practice in classrooms, may relate to the complexity of the ECEC educators' work, which has only relatively recently been recognised and supported (e.g. see page 105 and the attrition rate of ECEC educators). It is becoming clear from the extant literature that changing educators' practices is a slower and more effortful process than policymakers (including those found within the study LA) expect (Borko, 2004; Wilson and Berne, 1999). There is no quick route to becoming an effective educator. This understanding, together with identified difficulties in moving educators through the higher stages of teacher effectiveness (Kyriakides et al., 2009), could combine to make changes at the children's outcomes level rare. One possible reading of the research to date suggests that for an impact on child development and outcomes, educators need to be functioning at excellent stages of teacher effectiveness. That is, changes in children's developmental outcomes are reliant upon the educators using higher order teaching and learning skills and knowledge. Higher order skills appear to be linked to developmentally appropriate practice, including differentiation (see Kyriakides et al., 2009).

Improvements in child outcomes, then, may be closely linked to the educators' abilities to work at the higher order end of pedagogy and practice. Recent research points to the educators' abilities to engage in adult-child interactions, and support child-child interactions, that extend and scaffold thinking (e.g. SST) as fundamental to quality (see Early et al., 2017) and also as 'sitting' at the higher end or more advanced level of skills, abilities, understandings and dispositions of educators within ECEC. As previously described, SST episodes appear to be hard to find. Pianta et al. (2014), for example, stated that the continued limited use of instructionally supportive practices, including engagement in stimulating conversational language, supporting conceptual understanding, and providing rich feedback, was particularly concerning.

One interesting future area of research may be consideration and investigation of possible missing underpinning skills, abilities and dispositions. PD wishing to impact on the quality of interactions may need to ensure that underpinning and prerequisite aspects of knowledge and skills are present in the educators' repertoire of pedagogy and practice if the goal is to eventually support engagement with SST. Support for underpinning knowledge and practice, including knowledge and understanding of child development, strategies to support learning and subject knowledge may, therefore, lead on to a greater ability to support SST (Siraj et al., 2016a; 2016b).

In relation to this study, if these assumptions are correct, one interpretation would be that the staff in the PVI settings (especially those with very low quality) were not ready for discussions about high quality interactions, and its inclusion in the study equated to faulty content. The low level of the quality within the settings, in the study, mitigated against them achieving SST. Interestingly, if this argument is extended further, it would result in questions about the expectations of and inclusion of SST within many early childhood frameworks (e.g. Early Education, 2012). However, this would be a very drastic, poorly constructed and disrespectful argument to follow to such conclusions. It is well known that high quality interactions are a necessary prerequisite for high quality provision, it is an evidence-based finding that is important to the ECEC sector, it gives direction and substance to moves towards effective practice. When children's and families' entitlements to high quality early experiences are prioritised, clearly articulating what that should look like is a necessity, even if some practitioners are still working towards such achievements. Finally, suggesting its removal from the content of the PD, also reveals a misunderstanding about how interactions work and develop.

A session on high quality interactions such as the one included in this study may lead to change at a number of different levels, and respectful talking to and with children is important at any level. Even if the practitioners did not manage to consistently engage the children in SST, their reports (and the post-test ERS scores) suggested there was a growth in engagement with and modelling of language and interactions with the children. Further, some of the educators noted the need for further growth, practise and development themselves, as the session helped them to recognise the significance of SST. Increases in respectful interactions, as well as supporting language development,

may also support the children's growing self-concepts, through the knowledge that the educators are interested in them and want to spend time talking with them, even if those conversations do not extend their thinking. Sessions on supporting educators in engaging in high quality interactions appear important whatever their current level, but revisiting interactions and ensuring underlying skills, abilities and knowledge are also addressed may be indicated.

What the current debate about the difficulty of finding an impact on children's outcomes following PD indicates, is that this study may not have impacted on the children's outcomes directly. It is not possible to know for sure as child assessments were not completed. However, what has been seen are changes in quality following the intervention even if they were modest. The study may have improved some of the underlying aspects of pedagogy and practice which may eventually lead to the educators being ready to acquire the higher order skills, abilities and dispositions necessary for SST to occur. The study PD was not designed to be a final product, it was designed to see if a short targeted intervention could impact on quality, which could then be extended and built upon. The results, although modest, demonstrated that this was possible. Within the LA possible further development and refinement of PD opportunities are described in section 7.3.

Kingston and Siraj (2017) point to the importance of relational and intentional pedagogy if SST is to be achieved. Further, they argue that intentionality requires a wide ranging knowledge about how children learn and develop, a repertoire of different teaching and learning strategies and specific content knowledge about what the children are learning. Epstein (2014) described child development and subject knowledge as being necessary prerequisites to high quality interactions. There appear to be links between subject knowledge and rich interactions. Consider, for example, the subject area of emergent science, and the scientific process in particular. If taught properly, engaging in the scientific process is likely to encourage the child to problem solve, develop their curiosity and creativity, make and test predictions and evaluate findings. Aspects which support deep learning and link to the definition of SST found in the *REPEY* project, where the term was initially coined (Siraj-Blatchford et al., 2002).

Increasingly, links between child development, including the importance of self-regulation and metacognition, and effective practice (e.g. Moffitt et al., 2011) point to the inclusion of such concepts in effective PD. OECD (2012) and Siraj and Kingston (2015) noted the growing recognition of the need for child development knowledge within ECEC but also the inconsistencies of inclusion of such knowledge in current degree qualifications. The results of this study point to the importance of including content on subject knowledge and child development within PD, while the current literature suggests that this need is still current.

Before leaving the discussion re high quality interactions, it is important to note that such changes (including support for SST) may take a longer-time to develop than previously considered, due to the changes required from the educator as well as accompanying changes required from the partners in the interactions (the children) and the processes within the settings needed to support them. Time would be needed to support the educators in reaching mastery of their new skills (see Sheridan et al., 2009). In addition, to the adjustments made by the educators when they make deliberate efforts to engage in high quality interactions, adjustments may need to be made by the children too. The children would need to meter their expectations of the educators to come in line with their new ways of responding to children's requests. For example, when the children ask for help, the educators may include more support for the children to solve their own problems and become more autonomous in their learning, through an increase in the use of open-ended questions, rather than immediately supplying an answer or resource. The children would need to adapt to the new culture within the setting, of increased communication, expectations and sharing and co-construction of meanings, which often accompany moves towards high quality interactions. The whole staff themselves would also need to develop a culture within the setting which was supportive of SST. They would need to support others by, for example, prioritising time for such interactions and taking a learning-orientated approach within the setting. This would be important to ensure the growth of high quality interactions, as, if children experience unsatisfactory interactions, which are cut short by staff needing to attend to other duties, administration and so on, they would, most likely, withdraw and quickly grow tired of the fruitless effort involved.

Close consideration of the research designs of effective PD studies, led to consideration of the methods applied and the tools and processes used to gather and interpret results in this study. In relation to the study design and the use of a mixed methods approach within the context of ECEC, Dyson and Desforges (2002) called for further research of this type. They claimed that much of ECEC research is made up of large volumes of small-scale, qualitative-orientated studies and that little research is devoted to replication, testing and development of prior research findings. This study included the collection of quantitative data and a comparison to previous EPPE findings (Sylva et al., 2004). It was also designed to build on the EPPE research with the addition of the PD intervention. Oakley (2004) called for more collaborative research and the accumulation and extension of knowledge regarding quality within ECEC. Green (2005) argued that mixed methods approaches are suitable to consider the complex nature of teaching and learning in ECEC. Siraj-Blatchford et al. (2006) described mixed methods approaches as ‘... an extremely fruitful way forward’ (p79).

The idea of building upon previous work and accumulating and extending knowledge is clearly articulated in this study with the development of the SEEPD and MELD which are revisited towards the end of this chapter. Perhaps the most important factor, in relation to the mixed methods design in this study, is that it allowed for the exploration of quality in ECEC settings across one LA and the identification of settings and areas that required additional support. It also gave indications as to what support should be and where priorities should lay.

Other interesting findings around the research design, relate to the measures used within the study. The study findings suggest ensuring good matches between the measurement tools used to record progress, the PD/intervention and the levels of quality of the settings. Limitations of the ERS measures used in the study have already been discussed (see chapter 8). It is worth noting, however, that many of the studies that are finding changes in practice and not accompanying changes in child development have often relied on the use of the CLASS (Hamre et al. 2009) to detect classroom changes. The current literature reveals a growing dissatisfaction with the tool. It has been criticised as potentially unreliable, especially in contexts other than within the USA where they were originally developed (Yoshikawa et al. 2015).

While the CLASS was not used in this study, there is a strong need to measure the adult role and high quality interactions (such as SST) and all its constituent parts in greater depth than either the ECERS-R or ECERS-E allowed. Studies such as the Study of Early Education and Development (DfE, 2016), Fostering Effective Early Learning study (Siraj et al., 2016) and Understanding Research Tools to Improve Language in the Early Years (URLEY) (EEF, 2016) are using the SSTEW scale (Siraj et al., 2015) for this purpose. It will be interesting to see if this captures the pedagogy and practice which impacts on children's outcomes more successfully.

New understandings from the research literature regarding research design are pointing to a greater need to include monitoring and support for intervention fidelity in PD studies, if true links between the PD and changes in children's outcomes are to be established. Pianta (2012) points out that PD often only results in small or non-significant changes in children's outcomes. Many other studies point to ensuring the fidelity and dosage of new approaches, strategies etc. as the key to successful and significant changes in children's outcomes. Studies where frequency and dosage were prescribed, for example, as part of the PD, reported positive impacts on the PD's effectiveness (Beck & McKeown, 2007; Biemiller & Boote, 2006; Silverman, 2007). Further investigation and findings in relation to intervention fidelity may prove useful in the future.

In summary, it is important to note that the impact of PD and studies in this area, are still relatively new. They relate to what Rello Britto et al. (2013) referred to as the second-generation question in ECEC. This study adds to the extant literature relating specifically to supporting improvements within the PVI sector of the ECEC. It introduces a summary of effective elements of PD (SEEPD) and a new Model of Educators' Learning and Development (MELD), which is an adaptation of *Bronfenbrenner's Model of Bio-ecological Development*.

The SEEPD summarises the elements of effective PD currently identified within the extant literature. Given the relatively new interest in PD in ECEC, it seems likely that new elements of effective PD are yet to be identified and added to the literature. Indeed, the SEEPD was developed through the combination of numerous lists of such elements from different studies, none of which incorporated all of the elements included in the SEEPD. It is envisaged that the SEEPD will continue to serve as a useful structure to

add to and organise new findings as they emerge. While the MELD adds to the literature seeking to explain the learning processes that learners progress through for successful change and quality improvement to occur. It is designed to support both the development and analysis of results of future PD. It will need further testing and, no doubt, will be adapted and refined over time.

The interest in effective PD within ECEC seems set to continue and grow, as interest continues to shift towards this second-generation question. It is also likely to continue to include measures of pedagogy and practice such as the ERS (or newer versions of these), despite some of the criticisms regarding the use of universal measures of quality (see Dahlberg, 2016). Unfortunately, such socio-cultural objections are not accompanied by alternative methods of research, and due to the importance of ensuring children's and families' entitlements to high quality provision such research becomes an imperative. It reflects the commitment of researchers to the promotion of equity and enhancing the quality of early years experiences for young children and their families, particularly those from disadvantaged groups (see Siraj-Blatchford et al., 2006).

10. REFERENCES

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Appendix A: List of Acronyms

ANOVA	Analysis of Variance
CLASS	Classroom Assessment Scoring System
CFBT	Centre for British Teachers
CGFS	Curriculum Guidance for the Foundation Stage
DfE	Department for Education
DfEE	Department for Education and Employment
DfES	Department for Education and Skills
DCSF	Department for Children, Schools and Families
DMEE	Dynamic Model of Educational Effectiveness
ECEC	Early Childhood Education and Care
ECERS-E	Early Childhood Environment Rating Scales-Extension
ECERS-R	Early Childhood Environment Rating Scales-Revision
EEF	Education Endowment Fund
EPPE	Effective Provision of Pre-School Education
EPPSE	The Effective Pre-school, Primary and Secondary Education
ERS	Environment Rating Scales
EYDCP	Early Years Development and Childcare Partnership
EYFS	Early Years Foundation Stage
EYP	Early Years Professional
EYPS	Early Years Professional Status
FEEL	Fostering Effective Early Learning
HLE	Home Learning Environment
HMSO	Her Majesty's Stationary Office
ICC	Intra-Class Correlation
ICT	Information Communications Technology
INCO	Inclusion Co-ordinator
ITERS	Infant and Toddlers Environment Rating Scales
LA	Local Authority
LEA	Local Education Authority
MELD	Model of Educators' Learning and Development
NICHD	National Institute of Child Health and Human Development

NPDCI	National Professional Development Center on Inclusion
NVQ	National Vocational Qualifications
OECD	Organisation for Economic Co-operation and Development
OfSTED	Office for Standards in Education, Children's Services and Skills
PD	Professional Development
PISA	Programme for International Student Assessment
PSED	Personal, Social and Emotional Development
PVI	Private, Voluntary and Independent
QCA	Qualifications and Curriculum Authority
QIS	Quality Improvement Study
REEL	Researching Effective Early Learning
REPEY	Researching Effective Pedagogy in Early Years
SEEPD	Summary of Effective Elements of PD
SPEEL	Study of Pedagogical Effectiveness in Early Learning
SPSS	Statistical Package for the Social Sciences
SST	Sustained Shared Thinking
SSTEW	Sustained Shared Thinking and emotional well-being
UNESCO	United Nations Educational, Scientific and Cultural Organization
URLEY	Understanding Research Tools to Improve Language in the Early Years
WWH	Who, What, and How.

Appendix B: Structure of ERS

Early Childhood Environment Rating Scale - Revised (ECERS-R) (Harms, T., Clifford, R.M. and Cryer, D. (2005)

ECERS was devised in 1998 to consider quality practice within ECEC in America. It was revised in 2005. The ECERS-R was developed to consider the quality within ECEC in America. It consists of 43 items divided into 7 subscales

1.Space and Furnishings (items 1-8), which is comprised of

1. Personal care routines (items 9 – 14)
2. Language reasoning (items 15 -18)
3. Activities (item 19 -28)
4. Interaction (items 29 – 33)
5. Program Structure (items 34 - 37__)
6. Parents and staff (items 38 – 43)

Early Childhood Environment Rating Scale - Extension (ECERS-E) (Sylva, Siraj-Blatchford & Taggart, 2003).

In the UK, results of the Effective Provision of Pre-school Education (EPPSE) project generated this early childhood environment rating scale which was focused on the more educational aspects of provision and provision for diversity (Sylva, Siraj-Blatchford & Taggart, 2010). The ECERS-E was devised after wide consultation with experts and piloted extensively, and has been found to be predictive of child cognitive and social outcomes. The ECERS-E is based on a conceptual framework that takes account of pedagogical processes and curriculum. The ECERS-E consists of 15 items, divided into 4 subscales:

1. Literacy (Items 1-6), which is comprised of print in the environment, book and literacy areas, adult reading with children, sounds in words, emergent writing/mark making and talking and listening;
2. Mathematics (Items 7-9), which is comprised of counting and the application of counting, reading and representing simple numbers, shape, as well as sorting, matching and comparing;

3. Science and Environment (Items 10-12), which is comprised of natural materials, areas featuring science/science materials, science activities (non-living), science activities (living) and science activities (food preparation); and,
4. Diversity (Items 13-15), which is comprised of planning for individual learning needs, gender equality and awareness and race equality and awareness.

Appendix C: Example Item from ECERS-R

Space and Furnishings: Item 3 Room arrangement for play and learning (pages 18 and 19)			
Inadequate 1	Minimal 3	Good 5	Excellent 7
Most play areas are so crowded that play cannot progress well.	At least 2 play areas have sufficient space for the type of play encouraged by the materials.	Space is arranged so that children generally do not interrupt play.	Quiet and noisy play areas all separated from one another, not just by furniture but by physical space.
Very Few play materials in classroom are organised for children's independent use.	At least 3 centers that meet the required definition are accessible. (see p 11)	At least 5 interest centers are used, including a cozy area protected form active play.	All play areas requiring special provisions are conveniently equipped (Ex: art and sand/water interest centers have easily cleaned and sink near-by; block center has a rug to reduce noise).
Extremely difficult for teachers to supervise children while they play (Ex many children frequently completely out of sight or hearing, and teachers do not circulate in room to monitor	Teachers can minimally supervise children. (Ex can hear of there are problems and move to the area quickly; can see some of the children by glancing around the room).	Teachers can adequately supervise all children visually most of the time (Ex: if children are hidden, teachers move about the space often enough to ensure children's safety or to encourage learning).	Centers requiring more space (blocks, dramatic play, very popular or active play) have sufficient space to accommodate the type of play required and the number of children who want to participate.
No play area is accessible for enrolled children with disabilities requiring special accommodation.	Some play areas are accessible to enrolled children with disabilities. <i>NA permitted</i>	All play areas are accessible to enrolled children with disabilities. <i>NA permitted</i>	

Appendix D: Example Item from ECERS-E

Item	Inadequate 1	2	Minimal 3	4	Good 5	6	Excellent 7
Item 10. Natural materials *							
	1.1 There is little access indoors to natural materials (fewer than 3 examples).		3.1 Some natural materials are accessible to the children indoors.*		5.1 Natural materials are used beyond decoration to illustrate specific concepts, (e.g. <i>planting seeds or bulbs to illustrate growth, seed dispersal</i>). P D *		7.1 Children are encouraged to identify and explore a range of natural phenomena in their environment outside the centre and talk about/describe them. (P D) *
			3.2 Natural materials are accessible outdoors.*		5.2 Children are often encouraged to explore the characteristics of natural materials. *		7.2 Children are encouraged to bring natural materials into the centre. D Q*
					5.3 Adults show appreciation, curiosity and/or respect for nature when with children (e.g. <i>interest in, rather than fear or disgust, for fungi or worms</i>). *		7.3 Children are encouraged to make close observations of natural objects and/or draw them. P D R *

Appendix E: Questions asked at baseline: structural elements of quality

Questions to be asked by ECERS research team:

Is the setting managed by a committee or an individual

Is the manager/committee involved in the day to day running of the setting

How long has the present manager been in post

Number of children on roll

Age range of children

No of pre-school classrooms

Descriptive profile of children attending e.g. urban/borough, rural/district, local, ward high on deprivation index, church links, scattered, travellers etc.

Is it a neighbourhood nursery?

Description of building: purpose built? Sole/multi-use

Size of building, number of rooms.

Any outside area?. size?

Number of staff

Number of staff with qualification e.g. qualified teacher status.

Number of qualified educators with formal early years specialism.

Typical length of time staff work within a setting. Ie years of service ... may need to take an average.

What do you think are the particular strengths in your setting.

What areas do you think need improving in your setting

Have you or your staff attended any training that you consider particularly useful. What and why

Has your named SENCO attended the Inclusion Training...What stage did they reach.

Do you have any specific training needs?

Do you have further comments that you'd like to add, or questions

Appendix F: Short evaluative questionnaire following the PD

Please describe any changes you have made in your setting or to the way you work with other staff, the children, parents or others since attending the training?

Have you noticed any differences in your setting, or in the staff, children, parents or others since attending the training?

When you made changes in your setting were there any particular difficulties or challenges to those changes? Please give examples

Has the training influenced any changes that you would like to make in the future? Please give examples.

What would you like training on next?

Any other comments

Appendix G: Preparatory Measures taken to support collaborative working.

The balance of power, supporting collaborative working (Preparation Phase)

In an effort to move away from the expert view and the imposition of formal measures of quality by outside professionals and support the development of communities of learners (Lave and Wenger, 1991) and balanced power relationships between the researchers and pre-school practitioners, ensuring that the study was context specific, a series of consultations were carried out. The consultations were designed to support good relationships both within and outside the pre-school settings, as many settings had not yet worked with the LA, build a joint sense of ownership of the study and avoid disempowerment.

Before any data was gathered (and the study proper was started) discussions about quality, the study and possible measuring techniques and instruments took place at various different levels and meetings within the county. These included members' briefings, strategic management meetings, service level and EYDCP local area network meetings. The local area network meetings included representatives from various children and family services and members of the community (for example representatives from: the speech and language service, parent partnership service, library service, local schools, after school and playwork, pre-schools, parents, childminders, job seekers plus, voluntary bodies, local charities, educational psychology and EYDCP). In addition, a series of consultation and information evenings were arranged across the county for all pre-school foundation stage practitioners to attend. Seventy-five percent of the pre-school settings sent representatives to these meetings, and although this high number may have been boosted by the free books that were given out during the evenings, it also generated a deal of positive discussion.

During these meetings the notion of improving quality, and what was meant by this, together with initial thoughts and plans for the study were introduced. Discussions about quality and how to measure it led to the ideas that good measures of quality needed to be evidence-based and include both process and structural elements (Munton et al., 1995). Process measures involved direct assessments of the quality of adult-child interactions and/or the childcare environment. Structural measures involved more

indirect measures of quality such as adult-child ratio, group size, teacher/practitioner qualifications and links with parents. In addition, the 'family' of widely used observational measures which met these criteria were also introduced, the Early Childhood Rating Scales. The Early Childhood Environment Rating Scale- Revised (ECERS-R; Harms and Clifford 1998) and the Early Childhood Environment Rating Scale (ECERS-E; Sylva et al 1998) were discussed in some detail.

Unfortunately, at most meetings the discussions were short and time limited by other agenda items, so rather than consultation the discussions appeared more like presentations. They became centred around giving information and answering questions, appearing more directive than collaborative in nature (see Gill, 2006). It was also noted that generally people attending the meetings were looking towards 'the experts' to take the lead and be more directive than at first anticipated. When offered a choice or an opportunity to debate issues most people, and in particular parents, appeared to defer to professional opinion and would ask directly what the professionals thought rather than share their own views. Whether this was due to preconceptions and expectations within such meetings, shortness of time or lack of knowledge or confidence was difficult to determine. It may have reflected differences in perceived power in decision making as described by Mitchell et al., (1997) who described different stakeholders of such settings as naturally having different levels of power. However, it did support a growing understanding of Farquhar's (1990) view that it is important to understand the problems with and complexities of quality before defining it or using it to support change or make assessments.

This consultation process was a new way of working within the LA, with pre-school services and all stakeholders, which did appear to support the development of relationships and may have had an impact on the early years community generally and their empowerment but did not appear to impact particularly on the direction or focus of the study. The quality measurement tools chosen were those identified initially by the professionals within the LA and the proposed structure of the study met little resistance. ERS were agreed upon as the main quality measure, again identified and introduced for discussion by the LA.

Appendix H: Examples of analyses using both parametric and non-parametric statistical tests

This appendix includes examples of some of the initial statistical analyses completed which led to the analyses which were included in the final chapter.

Part One: examples of analyses showing how parametric and non-parametric tests revealed similar results

Part Two: normal distribution curves for the control groups at the beginning of the intervention stage

Part One:

Early analysis suggested that both parametric and non-parametric tests gave similar results. See below

The following tests were applied to the baseline data and total ERS scores.

Table One: Overall differences between types of setting and total scores

Structural measure	Test score	significance
Difference between the means of the Types of setting	<i>Parametric: One Way ANOVA</i> $F(2,261) = 10.29$	$p = 0.000.$
Difference between the ranked scores of the Types of setting	Non- Parameric Kruskall-Wallis $\chi^2(2) = 20.89$	$p = 0.001$

As this information was limited to the overall effect, both parametric and non-parametric tests were completed to determine which type of setting differed from which and in what direction - see Table Seven.

The parametric tests (unrelated t-tests) revealed that the mean of the total score for playgroups was significantly lower [$t(247) = -3.48$, two tailed, $p = 0.001$] than for the

nurseries and also significantly lower [$t(125) = -3.79$, two tailed, $p = 0.000$] than the LA Nurseries. While the mean total scores for the Nurseries was also significantly lower [$t(150) = -2.04$, two tailed, $p = 0.043$] than the LA Nurseries.

The non- parametric tests (Mann Whitney U -test) revealed essentially the same information. The playgroup scores were significantly lower than those of the nurseries [$U(n112,n137) = 5663.00$, two tailed, $p = 0.000$] and the LA nurseries [$U(n112,n15) = 353.00$, two tailed, $p = 0.000$]. While the nurseries scored at a significantly lower level than the LA nurseries [$U(n137,n15) = 685.00$, two tailed, $p = 0.034$].

Table Two: Comparison between types of setting and total scores

Types of setting compared	Test results	Significance
Playgroup & nursery	parametric $t = -3.48$	$p = 0.001$
	non- parametric $U = 5663.00$	$p = 0.000$
Nursery & LA Nursery	Parametric $t = -2.04$	$p = 0.043$
	non- parametric $U = 685.00$	$p = 0.034$
Playgroup & LA Nursery	Parametric $t = -3.79$	$p = 0.000$
	non- parametric $U = 353.00$	$p = 0.000$

Statistical tests were applied in order to see if the type of building, multi-use or single use, impacted on the total score achieved by the settings. Both the parametric test:

unrelated t-test and the non parametric test: Mann-Whitney *U* test were applied to the total scores of the two building types (multi-use or single use). Both tests were significant at the 0.01 level with $p\text{-value} < .01$. Table Three below shows the results of the unrelated t-test [$t(258) = -6.14$, two tailed, $p = 0.000$] and the Mann Whitney *U* test [$U(n125,n137) = 5138.00$, two tailed, $p = 0.000$].

Table Three: Comparison of building use and total scores

Use of building compared	Test results	Significance
Multi-use vs Single use	parametric	
	$t = -6.14$	$p = 0.000$
	non- parametric	
	$U = 5138.00$	$p = 0.000$

Statistical tests were applied in order to see if having staff with a level 5 qualification or above impacted on the total score achieved by the settings. Both the parametric test: unrelated t-test and the non-parametric test: Mann-Whitney *U* test were applied to the total scores of the settings with and without staff who had achieved a level 5 or above qualification. Both tests were significant at the 0.01 level with $p\text{-value} < .01$. Table Four below shows the results of the unrelated t-test [$t(262) = -3.37$, two tailed, $p = 0.001$] and the Mann Whitney *U* test [$U(n199,n65) = 4859.50$, two tailed, $p = 0.003$].

Table Four Comparison of settings with and without staff with level 5 or above qualifications

Level5 or above qualified staff	Test results	Significance
No vs Yes	parametric	
	$t = -3.37$	$p = 0.001$
	non- parametric	
	$U = 4859.50$	$p = 0.003$

Statistical tests were applied in order to see if being cited in a ward designated as deprived impacted on the total score achieved by the settings. Both the parametric test: unrelated t-test and the non-parametric test: Mann-Whitney *U* test were applied to the total scores of the settings with and outside of wards designated as deprived. Both tests were significant at the 0.05 level with $p < .05$. Table Five below shows the results of the unrelated t-test [$t(262) = 2.27$, two tailed, $p = 0.024$] and the Mann-Whitney *U* test [$U(n213, n51) = 4226.00$, two tailed, $p = 0.014$].

Table Five: Comparison of settings within and outside of wards designated as deprived

In a deprived ward	Test results	Significance
No vs Yes	parametric	
	$t = 2.27$	$p = 0.024$
	non-parametric	
	$U = 4226.00$	$p = 0.014$

Consideration of the type of setting revealed significant results (see Table Six): parametric test, $F(3, 209) = 7.18$, $p = 0.000$. The non-parametric test, The Kruskal-Wallis test, found that the total scores in the three types of setting differed significantly $\chi^2(3) = 18.72$, two tailed, $p = 0.000$. While conducting the parametric tests the Levene statistic of homogeneity of variances was calculated and found not to be significant (with a significance of 0.558). This suggested that the variances between the types of settings were similar or homogenous.

Table Six: Overall differences between Ofsted grade awarded and total scores

Structural measure	Test score	significance
Difference between the means of the Types of setting	<i>Parametric: One Way ANOVA</i>	$p = 0.000$.
	$F(3, 209) = 7.18$	
Difference between the	Non-Parametric	$p = 0.000$
	Kruskall-Wallis	

ranked scores $\chi^2 (3) = 18.72$
of the Types of
setting

Statistical tests were applied in order to see if the grading given my Ofsted was linked to the total score achieved by the settings Both the parametric test: one-way ANOVA and the non-parametric test: Kruskal Wallis test were applied to the total scores of the ofsted scores of setting. Both tests were significant at the 0.01 level.

Inferential analysis of total scores of trained and control samples at pre-test and post-test

Consideration of the four groups together revealed significant differences of the means of total scores. The overall means were compared using the parametric test: one way related ANOVA and found to be significant at the 5% level [$F(1,41) = 1214.49$ two way $p=0.000$ partial $\chi^2 = .967$]. They were also compared using Friedman non-parametric test and again found to be significant at the 5% level [Friedman $\chi^2 (n=42) = 31.04$, two tailed, $p=.000$].

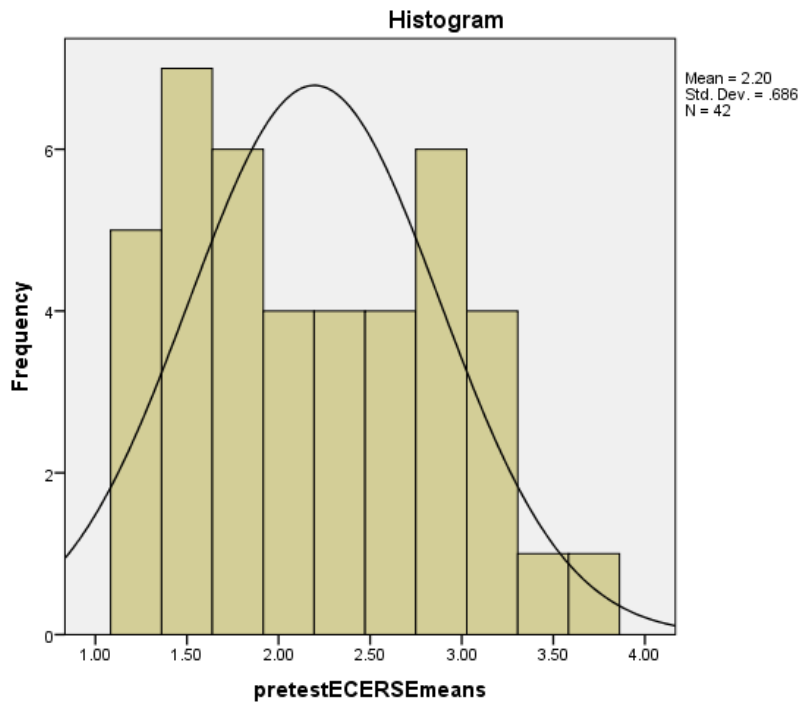
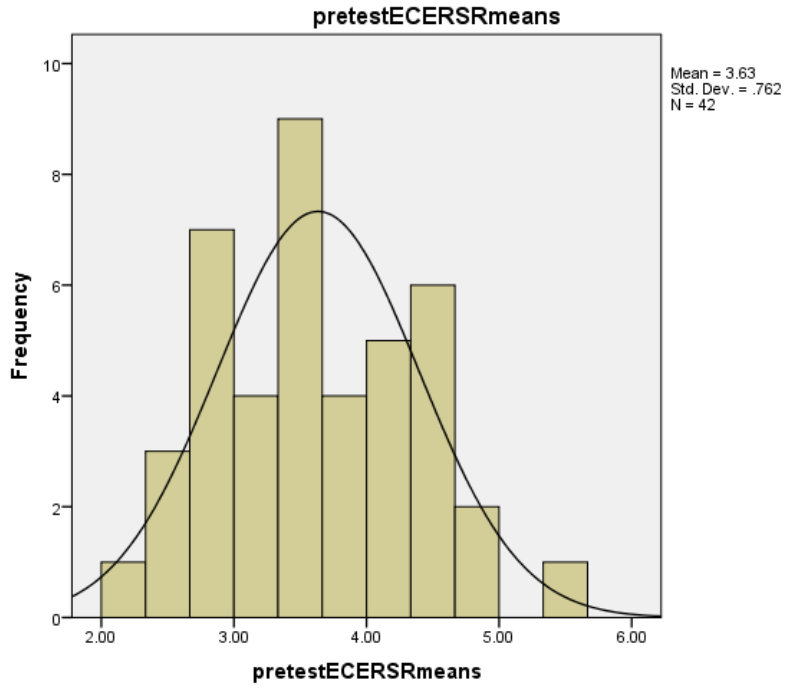
This positive significance result led to further analysis to consider which groups differed significantly from others and in which directions. Differences were not found between the control and trained sample groups in 2004 [parametric: $t(41) = -1.19$ two tailed $p = .239$ ($p= .956$) and non-parametric: Wilcoxon $z(n=42)=-.876$, two tailed $p= .381$]. However significant differences were found between the trained sample prior to the training intervention and after it [parametric: $t(41) = -5.87$ two tailed $p=.000$ and non-parametric: Wilcoxon $z(n=42)= -4.452$, two tailed $p= .000$], the control sample prior to the training intervention and after it [parametric: $t(41) = -2.75$ two tailed $p=.009$ and non-parametric: Wilcoxon $z(n=42)= -2.372$, two tailed $p= .018$] and between the control and trained groups following the intervention [parametric: $t(41) = 3.49$ two tailed $p=.001$ and non-parametric: Wilcoxon $z(n=42)= -3.033$, two tailed $p= .002$]. Further, the significance levels for the parametric tests were robust as the significance patterns remained the same even when Bronferroni's calculation of multiplying the significance by the number of additional paired analyses, in this case four, was applied. See Table Seven

Table Seven: Comparison of means and ranks of mean scores between the sample groups

Sample groups	Related t-test (parametric) <i>t</i> =	Sign <i>p</i> =	Applying Bronferroni's formula	Wilcoxon matched-pairs signs-test (non-parametric) <i>z</i> =	Sign <i>p</i> =	conclusion
Trained and control 2004	-1.19	.239	.956	-0.876	.381	NS
Trained sample 2004 and 2005	-5.87	.000	.000	-4.452	.000	Sign at 5% level
Control sample 2004 and 2005	-2.75	.009	.036	-2.372	.018	Sign at 5% level
Trained and Control samples 2005	3.49	.001	.004	-3.033	.002	Sign at 5% level

Part Two:

Looking at the distribution of the ECERS-R and ECERS-E scores at pre-test ie prior to the intervention.



Parametric tests are used to compare the means of sets of scores to see if they are significantly different to one another when they are normally distributed. Non-parametric

tests do not test for differences in means; they turn the scores into ranks and usually test whether the ranks in one group are typically larger or smaller than the ranks in another. Non-parametric tests make fewer assumptions about the characteristics of the population sample, including for example the need for the sample to follow the bell shaped frequency curves which are typically associated with parametric tests.

There are contradicting views about the robust nature of non-parametric tests in comparison to parametric ones. Some statisticians promote the use of parametric tests even when the samples are not normally distributed. Kinnear and Gray (2010) suggest that the ANOVA (a parametric test) is to some extent robust to small to moderate violations of the assumptions of normal distributed samples and that they can tolerate some heterogeneity of variance and skewness of distribution. Howell (1997) suggests that if the distributions of the populations are not normal but similar in type then variances can differ by a factor of four without Type I or Type II errors rising unacceptably. While Howett and Cramer (2011) state that very few sets of data will meet the requirements for parametric tests exactly and using them when the data violates the assumptions can have an impact on the outcome of the study.

Appendix I: Example of qualitative analysis of focus group 1 and 2

Transcripts from focus group 1 and 2 with notes re analysis and thoughts, concepts and grouping into categories.

First, I read each document of data without making any annotations. Strauss and Corbin (1998) describe this process of 'enter vicariously into the life of participants, feel what they are experiencing and listen to what they are telling us' page 5.

Data was analysed in the order in which it was collected with 2 focus groups being analysed first. Then the participant evaluations (as they arrived at my desk) and finally the last focus group and the interviews.

With focus group 1 (the group members were asked to share progress so far, what had worked well and what challenges there had been) each person spoke in turn so it was easy to break down the document into chunks. Unfortunately, the recorder on the table did not pick up much of the conversation and so the notes below are taken from the note taker (who tried to take down what was said verbatim. This meant that some of the 'fillers' in the conversation were not noted so that more relevant discussions were.)

In focus group 2, initially everyone took a turn to report on progress, success and challenges and then each person added elements. The discussions were recorded and then transcribed. In the table of data, the elements have been brought together and then allocated to a research team member. Only, discussion relevant to the study has been captured here.

This was not a typical analysis as I was part of the research group but I also tried not to lead the discussion. I did not start the discussion and I tried to keep my responses to roughly the same length as and along similar lines to my co-researchers. As I went through various iterations of analysis I also brought concepts and ideas back to the group for validation during the last focus group (focus group 3 which does not appear here). I used the categories within earlier focus groups to guide questions and extend conversations in the follow-on focus group (3).

Having read through the notes from the focus group once (without annotating them) I realised that many of the responses, as they involved the Research Team, included the concepts and ideas that they felt were relevant to the research. They were not naive, what Strauss and Corbin (1998) called early concepts as they already included some thought and reflection (on the part of the Research team). The first focus group reflected

the early stage of the research study i.e. for some it was prior to the PD having begun and for others they had only completed one or so session in a few settings. So, the discussion here was around contacting the settings and their initial responses to the telephone call and to the first sessions, including problems and issues. The second focus group was richer and the discussions reflected higher order concepts. Note: at the time of analysis these annotations were made by hand. They have been transcribed here purely to demonstrate the process.

My first reading of the first focus group notes led me to think that I needed to separate out of two main areas: setting up the training and then delivering the first session(s) of the training. This appeared to make analysis simpler for me. It also made me realise that what was important was discussion of the sessions, and that the practical aspects of the setting-up process was not the main interest. I felt that the later focus groups would, most likely provide much richer data.

Focus group 1 Spring 05 half an hour was allocated at the end a staff meeting for individuals to report back on progress and share thoughts re the training interventions both positive and negative. The atmosphere was calm and convivial.

Early Thoughts re setting up and starting the training

1. *Early days but they all wanted to do it and they all said yes to the repeat ECERS. For the training, I've got a good mix of settings with some really lovely ones who are already on board and raring to go, but others that will take some time, but I'm sure they will get there...*

2. *... one of my settings is really ready for this and already making changes, but others I'm not sure its too soon to say...*

3. *I found it hard to persuade some of the settings to get involved, but the offer of money/tokens helped! A couple of them don't think they need to improve as they are doing very well by themselves. They don't think we can offer much.*

4. *As I have only just started I am only just contacting my settings, though I am finding that problematic, with one, especially, I'm finding contact and agreeing times difficult. Thanks XXX, I'll start next time by telling them about the tokens...*

5 *I have one setting that I cannot quite get hold of to agree a time, they say yes but agreeing the practical side seems problematic ... and then I have a mediocre setting who seem to just be going along with me when I'm training. I am not sure that I will have much impact there ...we will see*

6 Yes me too. In the one I have started with, mine have asked me to change the last session so that it is not about them... I think they're very under confident. Also, they do not like doing any self-assessment so action planning is hard. What they are working on in between the session is self chosen, but bizarre!

Two of my control settings have heard about the training on the grapevine and are asking when they can have it. What do we tell them?

Note 1

The concepts being explored appeared to relate to the Research Team's perceptions of the staff's motivation and interest in becoming involved and receiving the PD. Having said that I also felt they were a little limited and thought that I needed to support longer and more thoughtful discussions and hoped that more would come in later focus groups. However, it was early days and the resultant limited concepts may have merely been a reflection of this.

Note 2

In this focus group on the second iteration the concepts were identified:

Being motivated (responding positively to the telephone conversations, expressing interested and being welcoming and excited about the training) seemed to me to be a relevant concept. I know that motivation is important for learning and getting positive feedback is important to the deliverer of the training.

Funding seemed an important part of motivation

Note 3

There definitely appeared to be an emotional response from the research team depending on how welcoming the settings were See 'some lovely ones' and a 'mediocre' setting (though not sure how mediocrity was measured and what it meant but it did appear that it might impact on progress)

I wondered if the response to the request to start training with them had any impact on outcomes for the participants. Did it suggest that some educators were more ready for change, more interested in PD generally already? That some had already established good relationships with the team? Did this also have an effect on the research team?

Were they more positive about going into welcoming settings?

Some people had just begun the training and were already making judgements about some of the responses they had from their settings. One did not want to know how they had done in their ERS assessments and were anti self-assessment processes. The researcher interpreted this as lack of confidence but it may also have been lack of

understanding or fear that others would find out about what or how they were doing. The settings in the study, and across the county, often reported themselves as being in competition for children with other local settings.

Starting position seems important, so do the settings staffs thoughts about their existing quality. Some appear to think they do not need to change because they are good enough while others either don't want to or are too underconfident. However, all RTs, said they had some settings that were changing practice and getting involved with the training.

Relevant concepts emerging

1. Relationships between the trainer and setting staff
2. Motivation to attend training or not (including practical aspects such as agreeing times dates and impact of funding)
3. Judgements about quality of setting, mostly RT but also settings
4. Confidence of setting staff

Second set of data for focus groups

Focus group 2: Middle of Spring 05 term half an hour was allocated at the end a staff meeting for individuals to report back on progress and share thoughts re the training interventions both positive and negative (the time ran over and the focus group lasted 45 mins though not all was relevant to the study (e.g. preferences of cake!) and so is not presented here). The atmosphere was calm and convivial.

The following table contains the transcribed contributions of the Research team by team member. The bold parts of the transcript are numbered and linked to concepts on the second column of the table.

Responses from individual RT members	Initial concepts
<i>.Mostly done a session 1s, not started in 3 settings but done 3 sessions already in setting G with interesting responses. Got some lovely parent booklets to share (she gives everyone a copy)[1].</i>	<ol style="list-style-type: none"> 1. Evidence of change useful materials for others to share 2. CGFS 3. their role 4. Effects of change and feedback

<p><i>It is interesting to see how little some setting know about and understand the CGFS and their role[2][3].</i></p> <p><i>Already finding that some settings cancel a lot– busy, not prioritising but complicated - I think one is about to shut.</i></p> <p><i>Some of the feedback [4]is already coming a Chair noticed a ‘buzz’ that wasn’t there which the staff think is connected to the SCI session. Also, the staff seem more keen. I got positive feedback once the group started to turn things around.</i></p> <p><i>But I am really enjoying doing it – personal relationships[5] with setting established. Staff now come and talk and ask alternative questions too. They didn’t ask before as I think they felt asking was a sign of weakness. Importance of whole team[6][7] and how marvellous that has been.</i></p>	<p>5. Personal relationships between setting and RT: come and talk ask questions etc</p> <p>6. Collaboration and team work</p> <p>7. reflective practice asking questions admitting weakness</p>
<p><i>Did not think they would get so much out of it (previously we had thought of combining settings for training so two could work together and learn from each other) but now I think they get more out of it on their own[8]. Avoids competitiveness and not letting another setting know your weaknesses. When action planning they are all equal and discussions (if there were any) are no longer led by supervisor. Interested in follow-up How much can we follow up with Action planning over summer?</i></p> <p><i>Its also very Interesting as the worst settings seems to think they are the best![9]</i></p>	<p>8 Delivery to whole group; avoid competitiveness, admitting weakness, joint planning</p> <p>9.Settings own judgements on quality</p>

<p><i>. I have enjoyed doing the training and yes the mix of the whole setting is good[10], though I have had some staff pulling in the opposite direction. It needs whole staff commitment [11]. One teacher led setting she just keeps saying yes we are doing everything. They are happy with their good Ofsted [12]and so think there is no need to do more. I asked directly about this and previous training. This teacher did not take into account prior training[13] she had in the past she sort of dismissed that too. Then last week she surprised me and said yes she had something to work on behaviour for learning, but it seems to be tense whole staff environment.... staff issues tension in the air. I had to act as a mediator and deal with a staffing issue separately. She was turned off and when I asked why she said there was no point as she (teacher) never appreciated anything she did. I shared the need to acknowledge hard work and changes especially with junior staff with the teacher.[14] It has worked, I think, as things appear a bit smoother now. We will see.</i></p> <p><i>One setting seems to be on burn out, possibly due to too much training? They see the training as an additional burden,[15] it is a new setting with very few NEG children. For us we get to know the settings really well, but some practitioners appear very wary of that and us. They are worried about us and our input, some have never been on any of our courses and we are an unknown[16].</i></p>	<ul style="list-style-type: none"> 10. whole staff involvement 11. Staff commitment 12. Settings own judgements on quality 13. Views on training: dismissive but changing 14. Leadership role taken on by RT: tense support for junior members of staff 15. views on training: a burden 16. personal relationships between setting and RT: wary
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<p><i>Really interesting, one really capable set of staff, the other had a bad ofsted and staff leaving so not an ideal setting or situation.[17]</i></p> <p><i>In the good setting the supervisor said she liked the training, as it was giving the same messages as she wanted given. [18]But there has been a sudden influx of children into the group so not ideal time.</i></p> <p><i>For some settings the messages from research and the implementation of the CGFS are very challenging. Some of the staff in one of my settings said they did not sign-up for this and they weren't paid enough and they weren't teachers![19][20] I am not sure they really believed me that this was now legally their role!! A tricky discussion and a little heated. I will have to revisit it again once the shock goes.</i></p>	<p>17. settings own judgements on quality also Ofsted: staff leaving</p> <p>18. setting own judgement on quality</p> <p>19. CGFS; tricky and heated</p> <p>20. role: new responsibilities</p>
<p><i>. lots of good things as other have already said: better relationships and whole settings getting together is good[21][22]</i></p> <p><i>But also some bad: I have 2 difficult groups, there are a lot of part-timers who live relatively long ways from the setting so its difficult to get them into the training</i></p> <p><i>Also noticed some literacy difficulties which may be switching them off?[23]</i></p> <p><i>There are some practitioners who are under confident to take part in discussions and some people who often ignore what others are saying during discussions. They are beginning to take it on board, but I have had to stop people from talking and</i></p>	<p>21. positive relationships with RT</p> <p>22. whole staff support collaboration and team work</p> <p>23. skills and confidence of setting staff; literacy diffs, team involvement, discussion</p> <p>24. Leadership taken on by RT; support for collaboration and team work</p> <p>25. Delivery to whole setting</p>

<p>directly ask others.[24] Also, the timing of training has been difficult as they change the time between them and forget to tell me!</p> <p>There is something about the culture of the setting which comes out strongly too you can tell when they will be caring and receptive because they offer you a drink and cake!</p> <p>My overall impression is though that the whole setting training[25] is a hit and they definitely like it.</p>	
<p>. Very good experiences and staff attendance generally good[26]], discussion good and in between the activities have been done. Some nice creative touches too e.g. open ended questions posted above centres of learning around wall, six steps to conflict resolution on laminated feet shaped posters on wall too.[27]</p> <p>Where settings are poor more problematic as X said they are a bit wary of us as never had training before. Also, arrangements difficult.[28] changing time without letting us know, late to arrive, no heating locked doors, I've had. Then if it's the first time they have met together as a staff you are more of a mediator than a trainer with all sorts of issues being raised.[29] The importance of meeting being one,[30] the reason why you are working in a nursery another[31], the way they view their role as supporting learning and dev or just as providing space and service[32]. Relationships with each other [33]and receiving schools and perceptions of professionalism seem important.[34] Also, if not done earlier training [35]then nothing to build on...as you</p>	<p>26.attendance</p> <p>27. evidence of change and possible materials to share</p> <p>28. Relationships between setting staff and RT (not necessarily positive)</p> <p>29. leadership role in meetings</p> <p>30. collaboration and team work</p> <p>31. role</p> <p>32. understanding and interpretation of CGFS</p> <p>33. collaboration and team work</p> <p>34. working with outsiders e.g. receiving schools and visiting professionals</p> <p>35. views on training</p> <p>36. initial quality level</p> <p>37. importance of engagement to prove worth</p> <p>38. payment for attendance</p>

<p>know I had to go back to the basics of positive speaking with one group.[36] <i>There is some light though with the low qual group movement came when they tried something different in between sessions and it worked.[37] I did have the impressions though that they only came because they were being paid.[38]</i></p>	
<p><i>Again I had a varied experience but generally I had a nice time but there were too many evening sessions as I only had one setting that chose afternoons.[39]</i> <i>Interestingly I had a number of settings that did not want to see their individual ECERS results and just wanted a general overview.[40] So I said I would give examples and they picked up on obscure aspects to work on and I don't think they got the idea of self-evaluation properly I had two very good settings where they really got into the process and did lots of work in between [42]but unfortunately in both cases the manager/owners always added a 'but'[43] I also found that they did not understand what was meant by open-ended questions [44]as mine also put posters on the wall but their questions were 'have you been to the beach? Have you had chips? I loved having 2 hour sessions with the settings and the whole staff it supported my confidence and gave me the opportunity to boost staff who had confidence problems in front of the whole staff.[45][46]</i></p>	<p>39. delivery and practical aspect – sustainable training? 40. ECERS own scores: misunderstanding? Lack of confidence? 41. importance of engaging in self-evaluation 42. commitment to training and work in between 43. impact of poor management not on-board 44. skills and understanding of concepts in training/PD being able to put into practice effectively 45. RT team confidence 46. support for reticent or marginalised staff</p>

The following table includes the concepts taken from focus group 1 and 2 and gives a couple of examples showing how they were combined to form categories (Strauss and Corben, 1998). Not all of the combinations are shown but the categories and links to prompts used to support and deepen discussions in focus group 3 are also illustrated.

Concepts from focus group 1 and 2	Examples of some groupings	Categories or beginnings of categories
<ul style="list-style-type: none"> 1. Relationships between the trainer and setting staff 2. Motivation to attend training or not (including practical aspects such as agreeing times dates and impact of funding) 3. Judgements about quality of setting, mostly RT but also settings 4. Confidence of staff 1. Evidence of change useful materials for others to share 2. CGFS 3. their role 4. Effects of change and feedback 5. Personal relationships between setting and RT 6. Collaboration and team work 7. reflective practice asking questions admitting weakness 8 Delivery to whole group 9.Settings own judgements on quality 	<ul style="list-style-type: none"> 1. Relationships between the trainer and setting staff 5. Personal relationships between setting and RT 16. personal relationships between setting and RT 21. positive relationships with RT 28. Relationships between setting staff and RT (not necessarily positive) 1. Motivation to attend training or not (including practical aspects such as agreeing times dates and impact of funding) 1. Evidence of change useful materials for others to share 4. Effects of change and feedback 9. Settings own judgements on quality 11. Staff commitment 	<ul style="list-style-type: none"> Relationships between setting and RT Motivation to attend training and maintain motivation

<p>10. Collaboration and team work</p> <p>11. Staff commitment</p> <p>12. Settings own judgements on quality</p> <p>13. Views on training</p> <p>14. Leadership role taken on by RT</p> <p>15. views on training</p> <p>16. personal relationships between setting and RT</p> <p>17. settings own judgements on quality</p> <p>18. setting own judgement on quality</p> <p>19. CGFS</p> <p>20. role</p> <p>21. positive relationships with RT</p> <p>22. Collaboration and team work</p> <p>23. skills and confidence of setting staff</p> <p>24. Leadership taken on by RT</p> <p>25. Delivery to whole setting</p> <p>26.attendance</p> <p>27. evidence of change and possible materials to share</p> <p>28. Relationships between setting staff and RT (not necessarily positive)</p> <p>29. leadership role in meetings</p> <p>30. collaboration and team work</p>	<p>12. Settings own judgements on quality</p> <p>13. Views on training</p> <p>15. views on training</p> <p>17.settings own judgements on quality</p> <p>18. setting own judgement on quality</p> <p>26.attendance</p> <p>27. evidence of change and possible materials to share</p> <p>35. views on training</p> <p>38.payment for attendance</p> <p>42. commitment to training and work in between</p> <p>Other groups were identified that occasionally included the same concepts but with slightly different interpretation</p>	<p>Professional attitude towards training PD and outsiders? (Investigate further)</p> <p>Quality Improvement: willingness to change and reflect on practice. Engage in self-evaluation (investigate further)</p> <p>Leadership and team work: evidence of collaboration and good/poor leadership</p>
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<p>31. role</p> <p>32. understanding and interpretation of CGFS</p> <p>33. collaboration and team work</p> <p>34. working with outsiders e.g. receiving schools and visiting professionals</p> <p>35. views on training</p> <p>36. initial quality level</p> <p>37. importance of engagement to prove worth</p> <p>38. payment for attendance</p> <p>39. delivery and practical aspect – sustainable training?</p> <p>40. misunderstanding? Lack of confidence?</p> <p>41. importance of engaging in self-evaluation</p> <p>42. commitment to training and work in between</p> <p>43. impact of poor management not on board</p> <p>44. skills and understanding of concepts in training/PD being able to put into practice effectively</p> <p>45. RT team confidence</p> <p>46. support for reticent or marginalised staff</p>		<p>Practical aspects: setting up training attendance etc</p> <p>CGFS: understanding and implementation</p> <p>Perceived role of the EY practitioner – importance to children and families sometimes in opposition to original thoughts</p> <p>Suitability of content: to practitioners' levels of understanding (investigate further)</p>
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Appendix J: Questions and consent form used during interviews

1. Explain rationale for research including links with LA and Institute of Education
2. Explain the interview process. How long, being taped and what will do with recording
3. Show the consent form and explain that they will be asked to sign it at the end of the interview so that they will fully understand the process
4. (for those who had training) Include the headings of the 4 sessions of training so that we are sure that we are using the same language

Questions:

1. Can you describe your setting, size (number of children on role), intake of children links to other settings, hours of opening

2. Can you tell me a bit about your role in the setting?

(Management role? Leading practice? Staff meetings? Support for training attendance?)

3. Can you tell me about staff number qualifications length of time at setting? (attitude to staff meetings, attitude to training? Professionalism?)

4. Do you remember receiving the training with? OR

Can you think back over the last year to the time between the ECERS observations? (need positive response for confidence in rest)

5. Can you think of your practice before and after that time/training? Do you think your and your staffs practice with children and families and each other changed and if so in what way?

(hopefully will talk about training intervention and other aspects of CPD. If they do not and they had the training then

Do you think the training intervention (either intervention or other) had any effect on your and your staffs practice with the children and families in your setting? If yes what was this and why)

If YES go to 6 if NO 8

6. What was the most important factor in this change?

7. What do you think was the most effective part of the training?

8. Was there anything that you think should have been different in the training and/or support given at the time? ie that could have made it more effective?

9. What do you think would make further improvements for you and your staff in the future?

10. Is there anything that you think we have not covered or that you would like to add?

Thank you (read back notes and ask to sign consent form)

Measuring Improvement through ECERS: a case study of a training intervention in pre-school private, voluntary and independent settings in one local authority.

The researcher has explained to my satisfaction the purpose of the study and provided me with the background to her research. In addition, she has explained her previous link with the local authority and that this interview will form part of the research work she is doing at the Institute of Education, London University for her MPhil/PhD.

I understand the procedure that the interview will take (including that I will be taped throughout the conversation) and I am happy to proceed. However, I understand that I am free to withdraw from the research at any time.

I understand that if I am unclear about anything during the interview process that I may seek clarification at any time.

I understand that confidentiality will be given the highest possible priority.

I am happy for any data collected by Denise Kingston to be used in an anonymised form in her research.

Name (please print):

Signed:

Date: