“It’s like we are getting involved with their world”: an exploration of the environment that supports active learning with two to three year olds

By

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Overarching Abstract

Active learning opportunities are linked to characteristics of effective learning and enable progress and longer term outcomes. I conducted a quantitative systematic literature review asking the question, 'What key characteristics of the early years learning environment are effective in advancing active learning?' The studies acknowledged the importance of considering the environment provided for young children. The themes identified as contributory elements of effective learning environments were grouped and named as: 'configuration of children', 'physical environment,' and 'pedagogical approach'. I concluded that current knowledge is diverse and contradictory with gaps in need of further exploration, particularly for the under three population. The reviewed research focused on structured observations; individual views were not sufficiently represented. Consideration of the practitioner experiences in the construction of appropriate environments was needed, in order to provide a comprehensive overview with a focus on developmentally appropriate practice for discrete age groups.

Informed by gaps highlighted in the literature review, as well as the government directive to increase free nursery places for two year olds, my empirical research aim was to gain practitioner perception to generate a theory about effective learning environments for two to three year olds. Five early years professionals were asked questions, informed by Personal Construct Psychology theory, to discover their perceptions. Semi-structured interviews took place (with photograph elicitation in four out of five interviews). Data were analysed using a Grounded Theory approach, creating four thematic categories of 'responding in context', 'joining up thinking', 'perceiving the child's world', and 'facilitating child participation'. The practitioners' theory suggested that creating effective learning environments for two to three year olds involves a prerequisite of supporting emotional needs, along with perceiving the child's world via a reflective process of responding in context and joining up thinking. The following theory was created: The Toddler Telescope – perceiving the world of a two to three year old. The practitioners' theory has the potential to act as a guiding frame supporting practitioner metacognition when considering how to advance active learning opportunities.

Table of Contents

List of tables

List of figures

Chapter One: A systematic literature review

What key characteristics of the early years environment are effective in advancing active learning?

Abstract

Active learning opportunities are linked to characteristics of effective learning enabling progress and longer term outcomes. I conducted a quantitative systematic literature review asking the question, 'What key characteristics of the early years learning environment are effective in advancing active learning?' Most previous research had utilised observation schedules as the method of data collection; studies included for review used observation methods to explore environmental factors that advanced active engagement with learning experiences. I utilised a systematic review process outlined by Petticrew and Roberts to identify and review eight studies.

The studies acknowledged the importance of considering the environment provided for young children; themes identified as contributory elements of effective learning environments, for advancing active learning in the early years were grouped and named as, 'configuration of children', 'physical environment' and 'pedagogical approach'. This review highlighted that current knowledge is diverse and contradictory with gaps in need of further exploration, particularly for the under three population. Exploration of previous research suggested individual views was not sufficiently represented. Consideration of the practitioners' experiences in the construction of appropriate environments is needed, in order to provide a comprehensive overview with a focus on developmentally appropriate practice for discrete age groups.

Introduction

Stimulating and responsive experiences and environments affect progress socially and academically (Mathers, Eisenstadt, Sylva, Soukakou, & Ereky-Stevens, 2014; Stephen, 2006; Sylva, Melhuish, Sammons, Siraj-Blatchford, & Taggart, 2004). Active learning is viewed as a method for developing skills and dispositions for lifelong learning (Department for Education, 2012, 2014b; Drew & Mackie, 2011); and this is promoted across England, Scotland and Wales' education systems (Department for Children, 2008; Department for Education, 2014b; Scottish Executive, 2007).

Problematisation of active learning

Active learning could be considered a confusing concept. It is referred to broadly within previous literature, including as a theory of learning and a pedagogical strategy (Drew & Mackie, 2011; Watkins, Carnell, & Lodge, 2007). Within the early years active learning is viewed as one of the three characteristics of effective learning and has a focus on a child's motivation such as, 'Being involved and concentrating, Keeping trying, Enjoying achieving what they set out to do' (Early Education, 2012). This early years document, Developmental Matters, also describes potential relationship and environmental factors that may support active learning.

The salient aspect for me about active learning is the focus on the processes involved in learning. Active learning is about a child's inspiration to engage: active learning has a focus on skill development not the product of a learning experience.

Definitions and understanding of active learning

There is debate over how active learning is conceptualised (Drew & Mackie, 2011); it is often used in contrast to passive learning. This concept has been questioned by Drew and Mackie (2011), identifying it as improbable if learning is defined as a change in knowledge, understanding, skills or values. Furthermore, the term 'active learning', can be misconceptualised within the literature as a process where children are engaged in physical activity (Drew & Mackie, 2011; Watkins et al. 2007).

Watkins et al. (2007) described active learning as having three dimensions:

- Behavioural: the active employment and development of resources;
- Cognitive: active thought about experiences both to make sense of them and foster the construction of knowledge;

- Social: active interaction with others on both a collaborative and resource driven basis.

The behavioural aspect (being involved in an activity) of active learning first interested me, whilst reading I wondered if I too had a misconception of its definition. An explicit description of the components involved with active learning did highlight how my first interpretation was narrow.

Construction of active learning in the present study

In general, active learning is a pedagogical approach characterised by thinking about, and acting upon, a task. This is how active learning will be operationally defined throughout this review. It is based on a social constructivist perspective, where learners are not viewed as submissive and accepting of knowledge but involved in the process: building and extending their knowledge and skills through interaction with the environment and other persons (Brown & Patte, 2012; Piaget, 1962; Vygotsky, 1978). At this point in time I was interested in finding out what key environmental characteristics are effective in bringing about active learning: I aimed to explore this through the systematic review.

The importance of active learning in early years education

A fundamental purpose of early years education is to promote all aspects of development. Active learning can facilitate this with its emphasis on direct, whole bodied experiences (Manning-Morton, 2005; Manning-Morton & Thorp, 2007). Infants use their agency to explore with their bodies in order to further their learning. Play can also be considered a way of actively learning as its impact is multifaceted and supports social, emotional, cognitive and physical development (Brown & Patte, 2012; Hyvonen, 2011; Mathers et al., 2014; Piaget, 1947/2003). However, Hyvonen (2008) suggested that teachers see play and learning as dichotomous concepts that cannot be easily integrated, leading to teachers missing scaffolding (support and guidance) opportunities.

Within the Scottish Executive (2007) document active learning is linked to learning through play. Various terms within the literature could also fall under my definition of active learning. These include:

- Active play: this has been defined as any activity where an individual is exploring and discovering, taking a participatory rather than a passive role (Pica, 2008);
- Active involvement (Broström, Johansson, Sandberg, & Frøkjær, 2012; Bulunuz, 2012; Cote & Golbeck, 2007; DeRoma & Nida, 2004; Ebbeck et al., 2012), and active engagement (Bradford & Wyse, 2013; Cefai, 2007; Kemp, Kishida, Carter, & Sweller, 2013; Malmskog & McDonnell, 1999; Powell, Burchinal, File, & Kontos, 2008; Williford, Vick Whittaker, Vitiello, & Downer, 2013);
- Playful learning (Broadhead, 2009; Hyvonen, 2008, 2011).

These terms incorporate both thinking and doing in such activities.

This review

A systematic review has been described as a scientific tool (Petticrew & Roberts, 2008); this technique can answer specific questions as well as summarise, appraise, and communicate results and implications. The value of the systematic review in the current context was:

1. To provide an objective and comprehensive summary of the best evidence
2. To put my planned research into the context of other work in this field
3. To obtain an overview of the existing evidence and explore potential avenues for future research.

Systematic reviewing is 'a scientific process governed by a set of explicit and demanding rules oriented towards demonstrating comprehensiveness, immunity from bias, and transparency and accountability of technique and execution' (Dixon-Woods, 2011, p. 332). This systematic review employs the 7-stage model (Figure 1) described by Petticrew and Roberts (2008).

Figure 1: The 7 steps of the systematic review process

Searching	1	Formulate the research question
	2	Define relevance criteria and search terms

	3	Search for all relevant studies
	4	Screen studies using inclusion criteria
Mapping	5	Map out study findings and appraise studies for quality
Synthesis	6	Aggregate results
	7	Communicate outcomes

Searching stage 1: Formulate research question

The relevance and validity of the research question is important to consider (Petticrew & Roberts, 2008) and can indicate what makes the question important in the real world; this is explained in the Empirical research p.65.

The review was driven by the following research question:

1. What key characteristics of the early years learning environment are effective in advancing active learning?

Searching stage 2: Define relevance criteria and search terms

Search terms for the review were developed from the background reading of relevant previous studies. Search terms were kept as broad as possible, while ensuring the results were manageable. A process of widening out the search then reducing it took place (see Appendix A for further information on this process).

To locate relevant studies, electronic databases were used (described in Searching stage 3). Finalised search terms are reported below:

- Target population terms – Preschool*[1] OR "early years" OR nurser* OR kindergarden OR kindergarten

  AND
- Outcome terms – *"active play" OR "active learning" OR "active involvement" OR "active engagement" OR "play* learning"*

  AND

[1] An asterisk was used as a wildcard symbol to broaden the search, to retrieve variations on a word.

- Investigational terms – *Environment* OR pedagog* OR condition* OR opportunit* OR approach* OR values OR resource* or attitude**

The term ‘learning environment’ was interpreted broadly and extended beyond the physical characteristics of the learning space to include psychosocial and pedagogical features. This was because the research on physical environment was scarce; databases produced few to zero results when the investigational term was ‘physical environment’ only. From reading, I agreed with Moser and Martinsen (2010) that it is important to consider how space and resources are incorporated into purposeful activities. The few studies found with a focus on physical environment were limited to descriptions; broadening the interpretation ensured a comprehensive search and thus reduced researcher bias.

Searching stage 3: Search for all relevant studies

Systematic searches

The following electronic databases were searched using the above terms: Scopus (topic), Web of Knowledge (title and abstract and keywords), British Education Index (all fields and text), and Eric (all Fields and text). Further restrictions were put on the search in Eric to accommodate variability in options and ensure manageable results. The document type in Eric was limited to journal articles. This was because, on consideration of the available options, it was likely to include studies of empirical data while limiting book chapters, discussion or opinion papers. All databases were limited to papers in English language only.

Search of grey literature

In order to prevent a bias towards only published research being reviewed, the Index to Theses database was searched to find relevant unpublished theses for the current review. Using the above search criteria, no studies were found. The Boolean operator between measurement and outcome terms was changed to ‘OR’. This yielded 21 studies but none of these were deemed relevant to the current review.

Hand searches

The references of the included articles were searched as well as the journal that was most frequently cited within the papers, Early Childhood Research Quarterly. This

resulted in five more papers for in depth reading and screening against the inclusion/exclusion criteria.

Searching stage 4: Screen studies for inclusion criteria

The use of Population, Intervention, Comparison, Outcomes and Context (PICOC) has been described as a way of keeping the review focused (Petticrew & Roberts, 2008). Therefore, the inclusion criterion was developed using this approach. Articles included in the review had to meet the following criteria:

Population: Literature should relate to early years children aged 0-5 years (exceptions were made in the context of a preschool classroom where there was a range of different aged children, which was found to be typical in some of the studies from overseas where children do not tend to start formal school until aged 7 years).

Intervention: This might include a wide range of circumstances under investigation to identify a possible role in active learning. However, it must directly relate to the learning environment whether it is a physical, psychosocial or pedagogical approach.

Comparison: Not Applicable

Outcomes: Empirical data considering young children's active involvement with learning and/or play. The literature search into circumstances that advance active learning and/or play revealed that many studies had utilised observation as the method of data collection. Observational methods have been found to have ecological validity when used outside a laboratory setting (Ostrov & Hart, 2013) and, if rigorous checks are completed, observation as a method is valid (Cohen, 1988). Observational methods were added as an inclusion criterion to enhance the homogeneity and enable greater comparison of the studies. However, Petticrew and Roberts (2008) do rank observational studies lower in their hierarchy of evidence compared to designs such as randomised control trials: observational studies are more affected by bias and confounding. Susceptibility to bias and confounding will need to be considered when discussing the outcomes of the review (p.36).

Context: Early years setting

Exclusion Criteria

Exclusion criteria were applied to enhance the studies' relevance to the systematic review question. Studies which concentrated on supplementary factors were excluded because of potentially influencing the outcomes of active learning. Studies focusing on the following were excluded:

- If health benefits was a measure
- If the focus was not primarily active learning
- If the focus was the effect of active learning on a child's education rather than what circumstances encourage active learning.

I carried out the systematic search during October to December 2013. Articles were first judged against the inclusion/exclusion criteria with reference to their abstracts. A small number of studies were inaccessible due to university constraints. Possible articles were then subject to an in depth review and screened against the inclusion/exclusion criteria. The majority of the papers discounted at the in depth reading stage were not empirical studies; they were descriptions of the benefits of active play and/or learning or possible interventions. This highlights the need for further empirical research in this area.

Following the application of inclusion and exclusion criteria, eight suitable papers remained. The studies are a substantial representation of what is currently known, from observational method studies, about children's active learning in the early years.

Mapping stage 5: Map out study findings and appraise studies for quality

Eight studies were mapped for exploration, focusing on the aims and research question of the current review; the following information was extracted:

Participants: number, age;

Study context: educational context and country;

Study aim: research purpose or question;

Research design: methods or procedures;

Independent measure: comparison variables

Dependent measure: active learning/engagement

Method of data collection: tools used to collect data for analysis;

Findings: relevant findings to the present review summarised. Specific statistics are not included in the summary.

(Summary of studies presented in Table 2)

Assessing study quality and Weight of Evidence (WOE)

Each study was analysed to appraise quality, using the Weight of Evidence (WoE) tool (EPPI Centre, 2007). This step has been described as important for being clear and explicit about the nature of the evaluations given to each paper; aiding theoretical and empirical understanding of the assessment (Gough, 2007). Each study was appraised on twelve questions before being given an overall WoE rating of high, medium or low quality. The overall decision of quality of each paper was based on three dimensions, the generic method of the paper, the method specific to the current review and the focus and context specific to the current review (Table 1).

I acknowledged that weight of evidence rating is a subjective process and is open to researcher bias; however, the EPPI Centre guidance was followed and details of stages in applying a weight of evidence judgement are presented in Appendix B. The evidence discovered through this technique was subsequently used in the analysis stage of the systematic review to unpick the quality of the included studies and the relevance to the present review. This then informed the significance of any conclusions drawn p.36.

Table 1: Weight of Evidence

Study	**A Soundness of study in terms of research question**	**B Appropriate design and analysis for review question**	**C Relevance of focus to review question**	**D Overall weight in relation to review question**
Malmskog and McDonnell (1999)	High	Medium	Low	Low

Kemp et al. (2013)	High	Medium	Low	Low
Powell et al. (2008)	High	High	High	High
Storli and Hagen (2010)	Medium	Medium	Low	Medium/Low
Vitiello et al. (2012)	High	High	High	High
Ebbeck et al. (2012)	Medium	High	Medium	Medium
Booren, Downer, and Vitiello (2012)	High	High	High	High
Kontos and Keyes (1999)	High	High	High	High

Table 2: Summary of studies

Study	Participants		Context	Focus/ Research question	Design	Dependent measure	Independent/ explanatory measures	Method/ Source of evidence	characteristics of environment: Significant findings (p<0.05)
	N	Age							
Malmskog and McDonnell (1999)	Three children with developmental delay.	Four to five years old	One children's centre USA.	Do naturalistic intervention strategies increase levels of engagement?	Children displayed delays in a variety of developmental areas. Naturalistic intervention strategies included: 1. Gaining participant's attention, when needed, by physical proximity, eye contact or joint attention 2. Giving participant chance to do something independently then provide planned but delayed support 3.Providing access to natural reinforcers 4. Providing feedback, model or prompt and help in practicing the correct responses when errors were made 30 second interval coding to collect momentary time sampling (no more than two seconds) data. 30 minutes for	Engagement level.	Naturalistic intervention strategies. The Ecobehavioral System for Complex Assessment of Preschool Environments (ESCAPE). Data collected included changes in social grouping involving the child and their peers, changes in the level of teacher initiated activities versus child-initiated activities, and changes in the amount of teacher interaction with the target student and	Engagement level: Observation using codes for categories of behaviour.	Significant effects found for all 3 children for the use of naturalistic teacher mediated strategies.

					60 intervals per session Multiple probe baseline design		with other students in the class.		
Kemp et al. (2013)	37 children (27male 10 female) with a range of disabilities. Complete data set for 31 children.	13 months to 64 months	Eight different child care centres in Australia.	What activity types (free-play, group, and meal-routine) are children more actively engaged? In which activity type would children interact more with adults and peers?	All children had to have has a diagnosed cognitive, language, sensory, physical or emotional disability, or to have a diagnosis of ASD. Video data of the classrooms collected by two researchers. One researcher observed, and coded momentary time sampling 15seconds.	Active engagement and Interaction with peers or adults.	Activity type.	Engagement data measures using ICER-R.	Active engagement highest during free play and meal routines. Free play had lower active engagement than meal-routine activities. Significantly higher interaction with peers during free play than group activities and meal routines. No significant difference between activity type and adult interaction.

Powell et al. (2008)	138	4.65 to 6.12 years	Pre-kindergarden. 12 schools, 12 classrooms in USA. Three days, two morning observations, one afternoon	To identify group configurations or teacher behaviour occurrence with active child engagement.	Researchers observed 12 classrooms and recorded behaviour in four categories: Child behaviour, type of activity, type of group the child was in and teacher behaviour. Time sampling: 10second interval observation then 20 seconds to code and record	Child's behaviour (actively engaged).	Type of activity, type of group the child was in and teacher behaviour.	Eco-behavioural approach. Child observations (Instrument developed by (Kontos, Burchinal, Howes, Wisseh, & Galinsky, 2002).	During academic activities, active engagement was more likely, when children were involved in peer groups rather than the other group configurations. Children's active engagement was more likely to occur in academic activities when teachers offered affirmations (praise, social talk) or monitored children's behaviours than when teachers were not present. In play activities, active child engagement was more likely to co-occur with solitary settings and least likely to co-occur with child–teacher configurations and with a whole group than with a peer group. No significant correlations for active engagement for play activities with teacher behaviour.
Storli and Hagen (2010)	16	Three to five year olds	One pre-school in Norway. Three separate days over six months.	To understand how affordances in the outdoor play environment influence	Two people observed the children in outdoor play for three days. The observations took place while recording the accelerometer data.	Activity level.	Affordances in the environment.	Heft (1988) functional taxonomy of children's outdoor environments	Day 1: Traditional playground, spring Day 2: Traditional playground, winter Day 3:Natural environment, spring

				level of physically active play.	Heft (1988) functional taxonomy of children's outdoor environments evaluated the environment according to their potential for physically active play. Researchers noted the date and time as this made it possible to compare the accelerometer data with the observations.			Accelerometer data	No significant difference between level of physically active play and environment. (Traditional = flat and barren, often covered with tarmac and equipped with climbing bars, a swing, a sandpit, a seesaw, and a slide. Natural = environment produced by nature)
Vitiello et al. (2012)	283	34 to 63 months	40 pre-school classrooms in USA. 84 teachers, one visit to each classroom	To understand the sources of variability in preschool children's positive and negative engagement with teachers, peers, and tasks. And To examine how the variability is related to both classroom activity settings.	Researchers observed (use of inCLASS) each child then rated their behaviour on ten dimensions: Positive engagement with the teacher, teacher communication, peer sociability, peer assertiveness, peer communication, engagement with tasks, self-reliance, conflict with teacher, conflict with peers and behaviour control. The target child is rated on all ten dimensions after each 10 minute observation period.	Engagement with teacher peers and tasks.	Environment including activity.	The Individualized Classroom Assessment Scoring System (inCLASS); Downer, Booren, Lima, Luckner, and Pianta (2010).	Children engaged in more positive task behaviours during free choice and outdoor time compared to teacher structured activities, and were less engaged during routines/transition times compared to teacher structured activities. Children exhibited less positive engagement with teachers during free choice, outdoor time and routines/ transitions compared to teacher-structured activities.

					Five minutes to record. Each dimension is rated on a seven-point scale.				
Ebbeck et al. (2012)	81	18 months to six years olds.	One child care centre, Singapore.	To assess the strengths and weaknesses of an early childhood curriculum as measured by children's involvement	Children observed six times. Pre and post data collection using Laevers (1994) involvement scale, nine categories: Concentration, energy, complexity and creativity, facial expression and posture, persistence, precision, reaction time, verbal utterance/language, satisfaction) observed and rated. SACSA curriculum model for six months (teachers were trained).	Level of involvement.	Curriculum model based upon the South Australian Curriculum Standards and Accountability (SACSA). The curriculum sees the child as an active learner and emphasises the role of culture and language in facilitating children's learning.	Laevers (1994) involvement scale.	Significant difference post intervention on all categories of involvement except reaction time.

Booren et al. (2012)	164 complete dataset for 145	Three to five years old.	44 classrooms in USA.	Examined and described how activity settings related to children's interactions in the classroom with teachers, peers and tasks.	All individualised Classroom Assessment Scoring System (in CLASS), nine dimensions: positive engagement with teacher, teacher communication, teacher conflict, peer sociability, peer assertiveness, peer communication, peer conflict, engagement within task, self-reliance. Organised into four domains (teacher interactions, peer interactions, task orientation, and conflict interactions). Each child received a score on 7 point scale. Observers also recorded ecological factors, coded teacher behaviour and activity setting. Two observational visits to each classroom that lasted a morning. Each child observed for 15minutes (Ten minute observation and five minutes for coding). Average 16 observations, four per child.	Interactions with teachers, tasks, and peers.	Features of setting/ environmental conditions.	inCLASS. Observed and recorded activity setting and teacher behaviour.	Multivariate effect was significant for activity setting. Lower task orientated engagement behaviours when settings were more structured by the teacher, such as in a large group compared to recess. Less positive teacher interactions in child-directed activities such as recess and free choice compared to group activities. Children displayed more positive interaction with peers during all settings except large groups.

Kontos & Keyes (1999)	60	39 to 70 months	Three early childhood programmes in USA.	What are the classroom circumstances that accompany children's complex play with peers and objects? And Under what circumstances are children more likely to experience complex interactions from teachers in the classroom?	Researcher observed 10 classrooms and recorded behaviour in four categories: Child's behaviour with object and peers, the activity, social configuration and teacher interaction. Observations used scan sampling. Two seconds each child and then 15 seconds to code.	Children's competence with objects and peers.	The activity, social configuration and teacher interaction.	Eco behavioural approach. The definitions for each category of behaviour, in the observation schedule, was based on work by various previous researchers.	Children engaging in complex interactions with objects and peers was related to classroom factors. Significant effects found between dramatic play activity, social configuration and teacher activity (when she/he was present) on the child's interaction with objects. Art activities- similar among children playing alone or with others in the absence of a teacher. In the presence of a teacher probability increased roughly three-times for a single child and five-times for children in a group. Dramatic play activities- the probability of complex play for children playing in a group was higher than for children playing alone or with one other child. The presence of a teacher in a group cut the probability in half. Manipulatives -the probability of complex play decreased as the number of children playing increased.

Synthesis stage 6: Aggregate results

Effect size

Results reported in Table 2 suggest significance at the 5% level, proposing that there is an effect of aspects of the early years learning environment on active learning. However, this does not mean that the effects are meaningful or important. The use of only significance testing has been criticised as encouraging dichotomous thinking: either an effect is statistically significant or not (Kline, 2004); it gives no indication of the magnitude of findings. A solution is to measure the size of the effect, known as an effect size (Field, 2009). Effect sizes were calculated using Comprehensive Meta-Analysis software (Comprehensive Meta-Analysis, 2010). The software allowed me to work with data in different formats (a description of the data inputted and calculations performed can be found in Appendix C) providing formulae for converting to a common measure: standardised difference in means (Cohen's d) was calculated. Cohen (1988) defined benchmarks as follows: an effect size is small if near 0.2, medium if near 0.5, and large if near or larger than 0.8.

To support the aggregation of results across studies, findings were combined under common outcomes, with associated effect sizes (Table 3).

Table 3: Results according to outcome

Outcome Variable	Study	Association	Significance	Effect Size (95% confidence intervals)
Active Engagement with Tasks	Vitiello et al. (2012)	**Activity:** Free choice vs teacher structured Outdoors vs teacher structured Transition/routine vs teacher structured Meals vs teacher structured	 Y Y Y Y	 Small (0.30) Small (0.31) Small (-0.16) Small (-0.07)
	Kontos and Keyes (1999)	**Activity:** Dramatic Play activities Varied depending on group configuration	 Y Y	 NP NP
	Kemp et al. (2013)	**Activity:** Free play vs Group Routine vs Group	 Y Y	 Large (2.00) Large (2.19)

		Routine vs Free play	Y	Medium (0.49)
	Powell et al. (2008)	**Group configuration:** *Academic activities:* Solitary vs Peer group Teacher-child vs Peer group Small group vs Peer group Large group vs Peer group Whole group vs Peer group *Play activities:* Solitary vs Peer group Teacher-child vs Peer group Small group vs Peer group Large group vs Peer group Whole group vs Peer group	 Y Y Y Y Y Y Y Y Y Y	 Large (-0.73) Large (-1.06) Medium (-0.45) Medium (-0.50) Large (-1.62) Medium (0.56) Large (-1.04) Small (-0.006) Small (-0.30) Small (-0.06)
	Booren et al. (2012)	**Group configuration:** Large group vs recess	Y	Small (-0.35)
	Kontos and Keyes (1999)	**Group configuration:** Activity dependent	Y	NP
	Powell et al. (2008)	**Teacher behaviour:** *Academic activities:* Affirmations vs Teacher out of range Direct vs Teacher out of range Monitor vs Teacher out of range *Play activities* Affirmations vs Teacher out of range Direct vs Teacher out of range Monitor vs Teacher out of range	 Y Y Y N N N	 Small (0.36) Small (-0.20) Medium (0.49) Small (0.08) Small (-0.17) Small (0.08)
	Kontos and Keyes (1999)	**Teacher behaviour** Activity dependent	Y	NP

	Malmskog and McDonnell (1999)	**Use of strategies** - Teacher behaviour - Providing independent opportunities	 Y Y	 NP NP
Level of Involvement	Ebbeck et al. (2012)	Curriculum based on principles of social constructivism	Y	Medium (0.52)
Activity Level	Storli and Hagen (2010)	**Affordances in outdoor environment** Traditional Spring vs Traditional Winter Traditional Spring vs Natural Spring Traditional Winter vs Natural Spring	 N N N	 Medium (-0.47) Small (-0.12) Medium (-0.49)
Peer Interaction	Vitiello et al. (2012)	**Activity** Free choice vs teacher structured Outdoors vs teacher structured Transition/routine vs teacher structured Meals vs teacher structured	 Y Y Y Y	 Small (0.26) Medium (0.44) Small (0.10) Small (0.14)
	Kemp et al. (2013)	**Activity** Free play vs Group Routine vs Group Free play vs routine	 Y N Y	 Large (0.62) Small (0.16) Large (1.13)
	Booren et al. (2012)	**Group configuration** Large group vs Small group Large group vs free choice Large group vs recess Large group vs meals Large group vs routine Small group vs recess Free choice vs recess Recess vs meals Recess vs routines	 Y Y Y Y Y Y Y Y Y	 Medium (-0.48) Medium (-0.56) Large (-0.93) Medium (-0.47) Medium (-0.42) Medium (-0.44) Medium (-0.32) Medium (0.43) Medium (0.54)
Teacher Interaction	Vitiello et al. (2012)	**Activity** Free choice vs teacher structured Outdoor vs teacher structured	 Y Y	 Small (-0.24) Small (-0.30)

		Transition/routine vs teacher structured Meals vs teacher structured	Y Y	Small (-0.20) Small (-0.04)
	Kemp et al. (2013)	**Activity** Group vs free play Group vs routine Free play vs routine	 N N N	 Small (-0.15) Small (-0.01) Small (-0.17)
	Booren et al. (2012)	**Group Configuration** Large group vs free choice Large group vs recess Small group vs free choice Small group vs recess Recess vs meals Recess vs routine	 Y Y Y Y Y Y	 Medium (0.55) Large (0.83) Small (0.35) Medium (0.61) Medium (-0.55) Medium (-0.59)

*NP- Not possible to calculate

Effect size of outcomes

Despite studies indicating significant findings that practice within the learning environment can advance active learning, when results are reduced to effect sizes a number of issues arise. Firstly, some of the results are considered small based on Cohen (1988) benchmarks. For example, all the findings in Vitiello et al. (2012), (except the difference between outdoor activity and teacher structured activities on peer interaction), can be described as small and therefore not as important as the study construes.

Effect size interpretation

Best practice when reporting effect size data should provide an idea of how precise an estimate may be; this is usually via confidence interval data (Fritz, Morris, & Richler, 2012). Those studies that reported effect sizes failed to include confidence interval.

McGrath and Meyer (2006) also discussed complications in the use of effect sizes depending on the character of the variables. Although the formulae for calculating Cohen's d were available via the Comprehensive Meta-Analysis software when reflecting on the diversity of the variables and methods in the eight studies for review, it may not have been appropriate to convert to a common measure. This may have led to different conclusions with regard to the effect (McGrath & Meyer, 2006).

General characteristics of the studies

Due to the criteria, all studies were based in an early years setting and used observational methods for data collection. Beyond this, there are considerable differences between the studies. Five studies were based in the USA, one in Singapore, one in Norway and one in Australia. The range of countries, including the ethnicities (Hispanic, Chinese, Norwegian, Latino, Native American, African American, Asian American, European American, Latino, Malay, Indian and Australian) could raise concerns. Although active learning is universally recognised (captured by different wording), the learning environments that advance its presence may not be generalised across countries and cultures.

Participant age within this review was 0-5 years; although analysis of this highlights that all studies recruited participants from the upper limit. Participants were over three years old in all but three studies (Ebbeck et al., 2012; Kemp et al., 2013; Vitiello et al., 2012) (Table 4).

Table 4: Exploring the age distribution of participants

Study	**Mean age of participants (months)**	**Standard deviation**	**Range**	
			Youngest (months)	**Eldest (months)**
(Kemp et al., 2013)	45.03	Not reported	13	64
(Vitiello et al., 2012)	50.8	6.5	34	63
(Ebbeck et al., 2012)	45	Not reported	18	72

In these three studies, the mean age of participants was still over three years old, and none of the studies stated how many included children were under three; consequently, understanding the spread of participants is difficult. This could raise

questions of reliability and validity with regards to whether the practice observed was developmentally appropriate across the range of participants. Should the younger (13 months and 18 months) aged children have been observed and grouped with older children? It also highlights the gap in research with the younger early years population.

Research design of the studies

All studies used observational methods but the design varied between studies. All studies bar one (Storli & Hagen, 2010) could be described as systematic and behaviourist in approach. Storli and Hagen (2010) shifted away from behaviourist thinking and could be described as more anthropological examining the affordances[2] (Gibson, 1979; Heft, 1988) in the outdoor environment.

One study (Ebbeck et al., 2012) used a quasi-experimental research design utilising pre-post testing. This type of design has been criticised as it can pose threats to validity (Cohen, 1988), with events other than those of the experiment occurring between pre and post testing, and this may mean that difference is wrongly attributed to the experiment. It could be argued that the introduction of a control group to this research could have avoided the risk of over interpretation of the pre-test post-test difference. All studies had the common elements expected from observational systems (Stallings, 1980), although application varied (Table 5).

Table 5: Exploring the research designs

Design aspect	Description from studies
Training procedures and inter-rater agreement	• All studies except Storli and Hagen (2010) trained observers adequately and reported inter observer reliability. Storli and Hagen (2010) used accelerometers susceptible to error for example children swinging. • Powell et al. (2008) and Ebbeck et al. (2012) calculated percentage of observer agreement but this has been criticised since even when 100% agreement is obtained it would not necessarily mean that both observers saw the same behaviours occurring at the same time: it is not

[2] The environment's functionally significant properties considered in relation to an individual.

	trustworthy (Swinson & Harrop, 2012; Watkins & Pacheco, 2000). • Booren et al. (2012) and Vitiello et al.'s (2012) report of agreement has more rigour as it was calculated on specific instances, so the observers were seeing the behaviours at the same time, as with Malmskog and McDonnell (1999). • Cohen's Kappa statistic or making periodic checks can rectify weakness with percentage agreement such as in Kontos and Keyes (1999) and Kemp et al. (2013).
Units of time	• Time sampling does seem appropriate for the studies, as it allows multiple data points to be collected from a single participant in a short period of time and it is suited for measuring discrete behaviours (Ostrov & Hart, 2013), such as if a child is actively learning. All studies gave adequate time for each observation except Kontos and Keyes (1999), who used a scan of two seconds and this could have limited what was observed.
Operational definitions	• Structured observation studies must have clearly defined categories of behaviour (Bryman, 2008; Cohen, 1988). Kontos and Keyes (1999) and Vitiello et al. (2012) do not give as much detail as the other studies which may have contributed to observer error. • Conceptual understanding and method for investigating active learning varied. Six studies were similar and considered the extent to which each child was seeking opportunities, or is enthusiastically engaged with tasks and interacts with children and teachers (Booren et al., 2012; Kemp et al., 2013; Kontos & Keyes, 1999; Malmskog & McDonnell, 1999; Powell et al., 2008; Vitiello et al., 2012). Storli and Hagen (2010) measured active playing solely focusing on physical movement. • Ebbeck et al. (2012) theorised that active learning presented itself as the level to which the child was involved, including

	aspects such as concentration, precision and energy. This aspect seemed to have some parallels to Storli and Hagen (2010) notion of movement. However, Ebbeck et al. (2012) acknowledged that energy could also be applied to mental activities.

Petticrew and Roberts (2006) explained that observations are commonly used in reviews to explore etiological issues but cautioned that they are prone to bias and confounding (Egger, Schneider, & Smith, 1998). Methodological studies were considered to account for bias appropriately; all eight studies were rated medium to high in the trustworthiness and appropriateness of answering its own research questions, as explored by the WOE (Table 1).

Four studies (Booren et al., 2012; Kontos & Keyes, 1999; Powell et al., 2008; Vitiello et al., 2012) controlled for confounding in the analysis phase (Aschengrau & Seage, 2008; Bryman, 2012). However, within the designs of all eight reviewed studies, residual confounding can still remain due to uncontrolled factors, and within the complexity of early years settings I would argue that other factors may have been influencing the findings, such as social or psychological variables (Petticrew & Roberts, 2008).

Weight of Evidence

A summary of the WoE ratings can be found in Table 1. Four studies (Booren et al., 2012; Kontos & Keyes, 1999; Powell et al., 2008; Vitiello et al., 2012) were identified as high in overall WoE in relation to the current review and Ebbeck et al. (2012) was given a medium rating. The findings from these studies add significantly more to the outcomes of this review over the remaining three studies described below.

Malmskog and McDonnell (1999) and Kemp et al. (2013) worked with children identified as having disabilities or developmental delay. The restricted range in sampling could be producing inflated effect sizes, because the error variability is smaller than those studies that sample more widely; when calculating the effect size for Kemp et al. (2013), some of the outcomes were very large (Table 3).

Malmskog and McDonnell (1999) are not clear about whether the observation tool utilised within their research is valid for the population of children identified as having additional learning needs. This raises concerns with validity of the data collection tools. Kemp et al. (2013) had previously validated their measure of engagement. These two studies had a small sample size (three and 37 participants). Both studies used non-probability sampling as the chances of members of the wider population being selected are unknown: a low WoE rating was given to both.

Storli and Hagen (2010) received a medium/low rating due to its limited interpretation of active learning, in which the focus was on physical movement only. The researchers in all the other studies had a broader understanding of active learning. Ebbeck et al. (2012) considered active learning to include aspects such as concentration, energy, facial expressions and persistence. Three studies considered peer and adult interaction within the concept of active learning (Kontos & Keyes, 1999; Malmskog & McDonnell, 1999; Powell et al., 2008); the other three studies analysed interaction separately (Booren et al., 2012; Kemp et al., 2013; Vitiello et al., 2012). This represents a significant barrier to synthesising findings as in all eight studies researchers may have had different conceptual understandings of active learning. This raises questions about whether outcomes can be accurately compared across studies.

The studies (Booren et al., 2012; Kontos & Keyes, 1999; Powell et al., 2008; Vitiello et al., 2012) kept data analysis at the event level. This is because it would not be appropriate to sample behaviour across children and then collapse it, for example to give an average. This is because the characteristics to be observed, such as engagement with tasks or interaction with peers, are not constant and could vary across each within child observations. Storli and Hagen (2010) did not keep the analysis of data at the individual child level; this could question the reliability and validity of the data analysis.

Three studies could be described as using a probability approach with a random (Booren et al., 2012; Vitiello et al., 2012) and a stratified (Powell et al., 2008) sample. Three studies could be categorised as non-probability samples as they used purposive sampling (Kemp et al., 2013; Malmskog & McDonnell, 1999; Storli & Hagen, 2010). The remaining two studies did not report how the sample was chosen (Ebbeck et al., 2012; Kontos & Keyes, 1999).

Cohen (1988) explained how a study using probability sampling can be more generalizable because it seeks representativeness of the wider population. The three probability sample studies had the highest sample size (283, 164, 138). This could suggest that these studies are more valid and generalizable.

In summary, the reviewed research considered observation methods only. The observation schedules allowed pragmatic exploration of a complex construct: active learning, although caution must be taken when making implications as the method is susceptible to bias and confounding. The schedules excluded the possibility of factors that may not be overtly measurable.

Synthesis stage 7: Communicate outcomes

All eight studies have practical efficacy and highlight the complexity and importance of considering the environment provided by early years settings. There are weaknesses with regards to validity and the extent to which the methodologies capture all relevant contextual information. Moreover, there is a risk that the observation schedules applied could be irrelevant or produce fragmented data that do not provide the full picture (Bryman, 2008). Furthermore, all eight studies are limited to association outcomes only. Quantitative findings cannot be compared and inferences were made based on individual valuation.

The evidence highlighted key characteristics of the environments within early years that may contribute to the effective advancement of active learning; these fall into three themes: the physical environment, the pedagogical approach, and the configuration of the children.

- Configuration of the children, such as large or whole group formation, tended to have an adverse effect on active learning. Findings did overlap with the physical environment finding; the papers suggested that a negative effect linked to group size was dependent upon aspects such as type of activity (described below in bullet point two).

- Physical environment – Focussed and directed activities tended to have a negative effect on engagement, although large group structured activities promoted aspects of active learning, such as when taking part in more routine activities.

- A teacher's pedagogical approach, for example how a practitioner involved themselves also had an effect on a child's active engagement: monitoring and offering praise were useful techniques. Again, findings varied depending on the activity the child was engaged.

Effective Provision of Preschool Education (EPPE) project

These findings related to the outcomes of a longitudinal study, the Effective Provision of Preschool Education (EPPE) project (Sylva et al., 2003). This was not included in the review, as it did not meet the inclusion criteria. It was a mixed methods approach that looked at the effect the environment had on progress and developmental outcomes, such as scores on intellectual tests, rather than the effect it has on a child's learning experience (active learning). However, the EPPE project's contribution to early years practice cannot be overlooked and some aspects of the EPPE project do at times link to my research. The EPPE project's findings suggested the following processes are effective in supporting children's development:

- Providing a mixture of adult-initiated group work and free play activities.
    - This links to physical environment and configuration of children finding of the current review. Generally focussed, directed and large grouping tended to have a negative effect on active learning but this could vary depending on the activity. This could suggest a contextual influence, and similarly to the EPPE project finding provision of a combination of activities may be beneficial in early years settings.

- Adult interactions extending children's thinking in what the EPPE project called periods of sustained shared thinking, and providing formative feedback.
    - This linked to the pedagogical approach finding in the systematic review as the teacher needed to think carefully about their involvement.

Taken in synthesis, the evidence from this review suggests that an early years learning environment may have an effect on active learning. However, current research, at times, is diverse and contradictory; there are suggestions that advancing active learning is context dependent, for example teacher behaviour had a significant effect during academic activities, but not play activity (Powell et al., 2008). Perhaps the

debate about defining active learning explicitly is inconsequential as it may be more subjective than can be explicitly described - varying depending on context.

Critique of the review method including EPPI process (EPPI Centre, 2007)

A quantitative approach to the systematic review was taken and as discussed on p.18 observation as a method of data collection was added as an inclusion criteria, based on frequency and relevance to the research question after searching. However this meant that potentially useful research was overlooked or excluded from the review. In addition the EPPI review process is narrow in its quality criteria emphasising internal validity, repeatability as well as asking about generalisability. This could mean that when using the EPPI approach the usefulness of the method and findings may have been undervalued within the judgements made about each piece of research. The implications of the review process for my research approach is discussed further in sections 'My Research' p.41 and Development of the research focus Figure 2 p.44. Further limitations of the review are discussed below.

Limitations of this review

A single reviewer means this review lacks the verification process that multiple reviewers would offer, which has implications for decision making in identifying and coding key findings in the studies and comparing the weight of evidence presented. However, the use of a highly recognised process from Petticrew and Roberts (2008) was followed to support transparency.

The ability to generalise the conclusions of this systematic review to the UK population is limited. All studies were from overseas and, although active learning is commonly recognised, the learning environments that advance it may not be.

Observational studies were chosen for review because this was representative of the majority of studies within this area. The aim was to increase homogeneity for comparison; however, the final eight studies differ considerably in their use of tools for data collection and the way the results were reported. With the use of the Comprehensive Meta-Analysis (2010) software, where possible, effect sizes were calculated but the extent to which the studies were measuring the same concept is debateable.

Although the use of databases makes it possible to search a larger number of studies than by hand, the search is limited by the studies referenced within each database. Hand searching and a search of the grey literature were conducted but studies relevant for inclusion for this review may not have been identified.

Recommendations for further research

This review recommends that nursery practitioners are aware of the potential impact of increasing their meta-cognition in any given context. Consideration should be given to their pedagogical approach, the set-up of the physical environment, such as balancing freely chosen and more structured opportunity, and the configuration of children into groups.

This review recommends further research in the UK to develop a detailed understanding of the learning environment and factors that have the potential to mediate active learning. Further analysis that explores active learning beyond association data is recommended. It is suggested that the available evidence is potentially limited by its use of controlled methods to explore a construct that could be dynamic in what influences its manifestation.

The dynamic nature of actively learning should be central to further research acknowledging the complexity of potential influences. Consideration should be afforded to exploring how the physical setting, the early years practitioner, and individual differences (social and cultural forces) in children interact with one another to create the experienced learning environment.

Active learning seems to be a universal and fundamental concept to early years practice with grounding in developmental psychology, highlighting its importance as a theory for Educational Psychology. This review suggests a need for Educational Psychology as a field to develop greater understanding with a particular focus on applied characteristics of the environments that have the potential to support the advancement of active learning.

My Research

This literature review highlights a gap in the research that has focused on the provision of environments that support active learning for younger preschool children (aged three years and under). Therefore, it is paramount for Educational Psychologists (EPs)

to explore and aim to expand the evidence base in the area of environments that can advance active learning for under threes.

Pre-determined observation schedules may have been a limitation, by failing to consider other factors that might be contributing to active learning occurring. Booren et al. (2012) acknowledged that structured observational methods do not capture children's interests/motivations. It could be the more subjective aspects of the setting or content or nature of the task having an impact on children's active learning, for which structured observational methods do not account. Booren et al. (2012) recognised that understanding the environmental factors that can contribute to active learning and play, requires insight into teachers' perceptions of this phenomenon. EPs must seek to increase understanding of the factors that affect active learning of preschool children, with a focus on the under three population.

This has implications for my research and has led me to wish to develop the area of supporting active learning for under threes using a qualitative methodology. I aim to explore the environmental factors that practitioners' working in early education settings think affect two to three year old children's active learning.

Chapter Two: A bridging document

Exploring and explicating my research journey

Abstract

This bridging document links my systematic literature review to the empirical research in order to make my thinking and reasoning explicit to the reader. The journey of developing a research focus is explained and associations made between my particular interests. My epistemological stance is discussed, clarifying the kind of knowledge I aim to produce and providing justification for the methodology and chosen methods. Ethical considerations are outlined and a reflexive stance toward examining myself as a researcher is taken, culminating in a summary of the quality of the research and processes.

Developing the research focus

In this section, I explain the use of a quantitative systematic review with a focus on observation methods for exploring the early years learning environment. I then clarify how the literature review informed my empirical research (Figure 2). Finally, my personal impetus and interest is described.

Figure 2: Development of the research focus

Limitations of structured observational methods

I conducted a quantitative systematic review as at that time I was interested in identifying the effectiveness of key characteristics of the environment. Observation as a method was an inclusion criterion as most studies adopted it as a tool for exploring early years learning environments. Observational methods have been found to have high ecological validity when well designed (Cohen, 1988; Ostrov & Hart, 2013). In addition a focus on observation methods aimed to encourage homogeneity for comparison, though the individual researcher's classification of variables differed and therefore a meta-analysis was not possible.

Observational methods are susceptible to bias, error and confounding (Systematic review p.36). Measures of effect may have been inflated or not and are as accurate as each study understood. These limitations suggest structured observations should not be used in isolation.

Other methods I considered using to collect data

A variation of approaches to observation was considered from structured to unstructured. However, observation methods, whether structured or naturalistic in the nature focus of behaviour, and may fail to consider the experiential knowledge of those observed (Banister, Burman, Parker, Taylor, & Tindall, 1995).

A mixed methods approach or ethnography may have been helpful; however, observations are more reliable when completed with at least one other person (Banister et al., 1995). Additionally, explanations given to participants may impact the behaviour observed, and also raises complexity issues with regard to informed consent.

I wanted to work more collaboratively with participants and within the scope of this research qualitative interviewing was most suited to the research objectives and my beliefs as a researcher (p.44).

Summary of the approach taken

Findings from the systematic review suggest that the practitioners' are able to facilitate active learning through considering the 'configuration of children', the 'physical environment' and the 'pedagogical approach': practitioners should be acknowledged as an aspect of the environment. Consequently exploring their beliefs, understanding and behaviour is key. Collecting practitioner views can offer better empirical and theoretical understanding: a greater insight (Hyvonen, 2011; Stephen, Cope, Oberski, & Shand, 2008; Vitiello, Booren, Downer, & Williford, 2012).

Finalising the focus

Inferences from each study in the systematic review do suggest that the learning environment in which a child is located seems to generate a myriad of factors impacting on whether a child is actively engaged with learning. Current knowledge, at times, is diverse and contradictory with gaps in need of further exploration. Consideration of the practitioners' experiences in the construction of appropriate environments is limited particularly for children in the two to three year old population (Table 4).

There is a variance between what is developmentally appropriate for a two to three year old and what is appropriate for a four to five year old (Manning-Morton & Thorp, 2007, 2015). This may raise questions about the generalisability of previous research that has tended to group children aged 0-5 years; results may not be valid for all children across the early years age range; investigations that consider age groups discretely are necessary. This, theoretically, should inform developmentally appropriate practice, relevant to the current political context and to the contextual rationale (p.65).

Personal rationale

I was asked to think about my interests for completing this research at a progress panel. My motivations were further questioned when speaking with nursery staff. I was asked by one nursery manager why I had chosen to focus on exploring active learning rather than asking about all three characteristics of effective learning (playing and exploring, active learning, and creating and thinking critically) described by the Statutory Framework for the Early Years Foundation Stage (EYFS) (Department for Education, 2014b; Early Education, 2012).

I wondered about my reasons; initially, my answer to this was that from my previous reading, it suggested that for the two to three year olds being 'active', such as being involved on different levels (exposure to different activities, grouping structure, and physical participation) is important, and out of the three characteristics active learning captures this. However, as I dwelled on this more I thought back to my original impetus when exploring potential topics for my research.

I believe it is important for children to connect with education, having fun and enjoying learning. In my opinion active learning captures this with its focus on motivation and attitude towards gaining knowledge. I realised that it is this psychological aspect (motivation and attitude) that is fundamental to the active learning characteristic. Development of learning dispositions, via focusing on providing active learning experiences, have the potential to impact upon a child's developing assumptions about learning, supporting the child to construct a love for learning developing resilience and self-regulation skills (Claxton & Carr, 2004; Da Ros-Voseles & Fowler-Haughey, 2007; Katz, 1993a).

Rationale for my methodology (refining methodology)

In this section, I will justify the approach I took and explain how my ontological and epistemological stance led me to the methodology and method I adopted for the empirical research. The key components of the research are outlined in Figure 3.

Ontology and epistemology

At the present time, I maintain a social constructionist perspective. Without wanting to reduce the complexity of this theory of knowledge, I perceive social constructionism

as holding a belief that knowledge and understanding is achieved through interaction and is an iterative process of learning and gaining insights (Burr, 2004).

In my opinion, taking a social constructionist epistemological approach does not indicate an individual's ontological position, and to assume any social constructionist has an ontological stance of relativism only is naive and a misconception (Berger & Luckmann, 1991; Burningham & Cooper, 1999; Burr, 2004).

Realism vs relativism

Different forms of ontological stance could be visualised as a continuum with bipolar constructs of beliefs. At one end, realism assumes that there is an objective reality that can be observed and measured with causal statements made that are authentic clarifications of an independent reality (Willig, 2013). Relativism, at the other end of the continuum, asserts that there are multiple realities, with no interpretation more superior to another; individuals perceive then conceptualise their own reality (Pring, 2005), and we cannot know anything for certain (Willig, 2013).

My assumptions are that we can only ever have fluid accounts of knowledge that describe the co-constructed understanding of those individuals involved in the production. However, these descriptions have the potential to resonate with others by encouraging critical thinking about individual experiences (Holstein & Gubrium, 2008), and in the case of the present research inform practice through empowering others to experiment with different ways of working with two to three year olds; for me, research and knowledge is about the usefulness of the descriptions rather than their 'truth' (Witkin, 2011).

Therefore, my position as a social constructionist takes a critical view towards realism; I do not assume there is a unidimensional reality (Charmaz, 2000). In my opinion, constructing interpretations of the world with others is the best way to access knowledge (epistemology: social constructionism). Constructed knowledge is not a direct reflection of reality but a representation that may have the potential to correspond to the real world. However, I consciously remain suspicious of purely realist claims (ontology: critical approach to realism).

Intention of the research

The present research focused on how and why ways of working with two to three year olds is perceived to function. The intention was to catalyse critical thinking with regard to creating effective environments for two to three year olds, rather than establishing an accurate measure of effectiveness. Findings, such as the categories constructed, can potentially provide an experiential coherent frame to support practitioners with understanding findings from research and applying ideas reflectively in their own context. Individual context should be considered and the research is not assumed to access reality or provide a unitary explanation; some academics have specified this as contextual constructionism (Willig, 2013).

Methodology

A qualitative approach to this study was appropriate given the lack of prior research on this topic, the particular questions of interest (how, what and why questions), and the need for theory development (Willig, 2013). Grounded Theory has been found useful when there is little previous research (Birks & Mills, 2015) and therefore it was an appropriate choice of method for my study as there is a gap in empirical exploration of teaching and learning with the two to three year old population. My epistemological stance underpinned my choice of Constructivist Grounded Theory.

The next section will explore Grounded Theory and explain in more detail my choice of Constructivist Grounded Theory.

Basis of Grounded Theory

Grounded Theory revolutionised qualitative approaches to research, challenging the now outdated assumptions that they lacked rigour and outcomes were less trustworthy. Grounded Theory began to bridge the gap between theory and research, highlighting its capacity to create useful theory (Charmaz, 2014; Glaser & Strauss, 1967). Originally, Grounded Theory was an objectivist approach with its roots in positivism (Strauss & Corbin, 1990). Following the shift of social science towards postmodernism and post structuralism (late 20th century), different versions of Grounded Theory emerged that embraced interpretivism (Charmaz, 2014; Strauss & Corbin, 1990). Grounded Theory has been approached in many different ways depending on a researcher's epistemological view. The main phases of the Grounded Theory approach include (Birks & Mills, 2015):

- Constant comparison: analysing data in a non-linear pattern
- Coding
- Theoretical sampling to refine categories
- Writing analytical memos

The application of each of these phases is discussed on p.55.

A rationale for Constructivist Grounded Theory

Based on my epistemological beliefs, Constructivist Grounded Theory (Charmaz, 2014) was chosen as the methodology for my research. This approach is consistent with the way I hope to practise as an Educational Psychologist and researcher, from a post-modern standpoint, seeking to understand and work with others' perspectives. Constructivist Grounded Theory ensured a principled approach that allowed for a reciprocal relationship between participant and researcher (Charmaz, 2014). I believe Grounded Theory allowed for the exploration of concepts that could lead to an explanatory understanding of social processes over other interpretivist methods (Table 6).

Table 6: Exploration of different types of methods informed by Banister et al. (1995) and Starks and Brown Trinidad (2007)

Method	Description	Why it was not used
Interpretative Phenomenological Analysis	Explores how people make sense of the world. Similarly to Grounded Theory categories of meaning are produced via a systematic analytical coding process.	More of a focus on the lived experience and the way participants are describing their experiences rather than generating a theory about the experiences.
Discourse Analysis	Analysing how the story is told through looking closely at the words. Describes the language used and	Less flexibility to consider the transcripts as an insight into experience, the focus is on how the story is told and the use of language to provide meaning. I consider the learning environment to be more

	identifies how different discourses shaped identities and relationships.	dynamic in nature than a focus on text allows; Grounded Theory allows for follow up data including clarifying findings.

Justification of the Grounded Theory approach

The focus for the empirical research was to explore the practitioners' experiences and views of advancing active learning in their setting; so an inductive approach, which can explain the phenomenon being studied such as Grounded Theory was suitable (Birks & Mills, 2015). Grix (2010) describes how there are different types of theory, and within the small scale of the present research an exploratory substantive theory has been created, accounting for the interviewed practitioners' experience in the particular area of considering active learning with the two to three year old population. The type of theory created may be considered a limitation depending on one's ontological position (for further information about my ontological stance and research intention p.46 and p.48). For more formal theories one may perceive combining results from multiple studies to add value.

There is debate over when to conduct the literature review in Grounded Theory studies (Hallberg, 2010). Early literature review can be helpful to define and develop research questions with unique contribution potential (Hallberg, 2010). A quantitative systematic review was completed first, this was because I was interested in learning what was effective in advancing active learning, and I wanted to determine gaps in previous research to support with planning my empirical research. An early systematic review also satisfied the university's requirements. Further reading and review was completed throughout developing the emerging theory to support with writing up the results.

The main limitation to the Grounded Theory approach was ensuring reliability and validity of the developing theory. I did find it challenging to ensure my assumptions did not bias my approach to data collection and analysis. In addition, I needed to make sure that assumptions and opinions of the participants did not unjustifiably influence the developing understanding, or become the focus of the questions in following interviews. Table 7 considers how these points were met, signifying a quality approach to Grounded Theory in the present study.

Method

Sample size

This research was exploratory in the hope of opening up analytical discussion about early years practice and further research possibilities. It was not about providing generalisable results, definitive answers, or 'truths' about working with two to three year olds and therefore a small sample size of five participants was adequate for the purpose of this research (Silverman, 2010).

Findings from the pilot study

A small scale pilot studied was carried out with one nursery practitioner from a neighbouring Local Authority. The aim of the pilot study was to check the efficacy of questions and ensure my research methods were practically suitable and well planned (Sampson, 2004).

I drew the following conclusions:

- Questions were perceived by the participant as repetitive. I needed to collapse questions.
- That the philosophy of the nursery impacted on the way the practitioner thought about the setting and practice. I needed to add a question that had the potential to facilitate discussion about setting ethos.
- Use of language created a barrier to practitioner understanding. For example when I asked, 'What do you value most now? What do others value most?' the practitioner was unsure about my inquiry. I needed to be clearer in my questioning; adding probes and remembering to ask for clarification may be beneficial.
- At times it was not clear if the practitioner was discussing two to three year old children only. Adding this into the question more often may keep the focus on the research population.
- Following the interview, it was difficult to cross reference which photographs were being discussed in the recording. I needed to number them and ask participants to state the number before discussing.

Semi-structured Interviews

Willig (2013) discussed the importance of qualitative data collection techniques to find out about peoples' experiences. Willig (2013) explained that any qualitative method benefits from being open ended and flexible enough to enable discussion of new and unanticipated experiences. I chose semi-structured interviews to explore meanings with the practitioners and to hear about early years practice. The content was designed to gain an insight into practitioners' active learning experiences. The questions were focused on how the practitioners were working with two to three year olds and providing active learning experiences. Example questions given by Charmaz (2014, p. 66) were adapted to facilitate answers that would likely fulfil my research objectives. This guided the development of both the pilot schedule (Appendix D) and the final interview schedule (Appendix E).

Fundamental to the Grounded Theory design is the process of simultaneous data collection and analysis. This informed each interview. The format was kept the same but potential topics for discussion, based on analysis, were added to each interview schedule (see Appendix F). In interview five, the questions were aimed directly at the developing theory and sought to fill gaps in knowledge (theoretical sampling). The questions were open and flexible, with an emphasis on how the participants view issues and events (Beaver, 2011; Bryman, 2008; Kelly, 1955).

Use of Personal Construct Psychology theory

To support shared understanding of the information the nursery staff and I were sharing, it was important I did not assume I knew what they were referring to. Therefore, reflexivity during the interview discussion, not just after, was important (Schön, 1983). These reflections were informed by Personal Construct Psychology Theory (Beaver, 2011; Kelly, 1955) and involved me exploring with the participant exactly what was meant by a word or given description. Examples from the interviews:

- 'So am I right in hearing or interpreting that it's not just about the children's safety and sense of, like, security?'
- 'So when you say every child, could you tell me more about that? Is it that it is different for every child what you're adding, because you talked about adding things, or what would be happening?'
- 'So what is it about this spontaneous planning how does that work?'

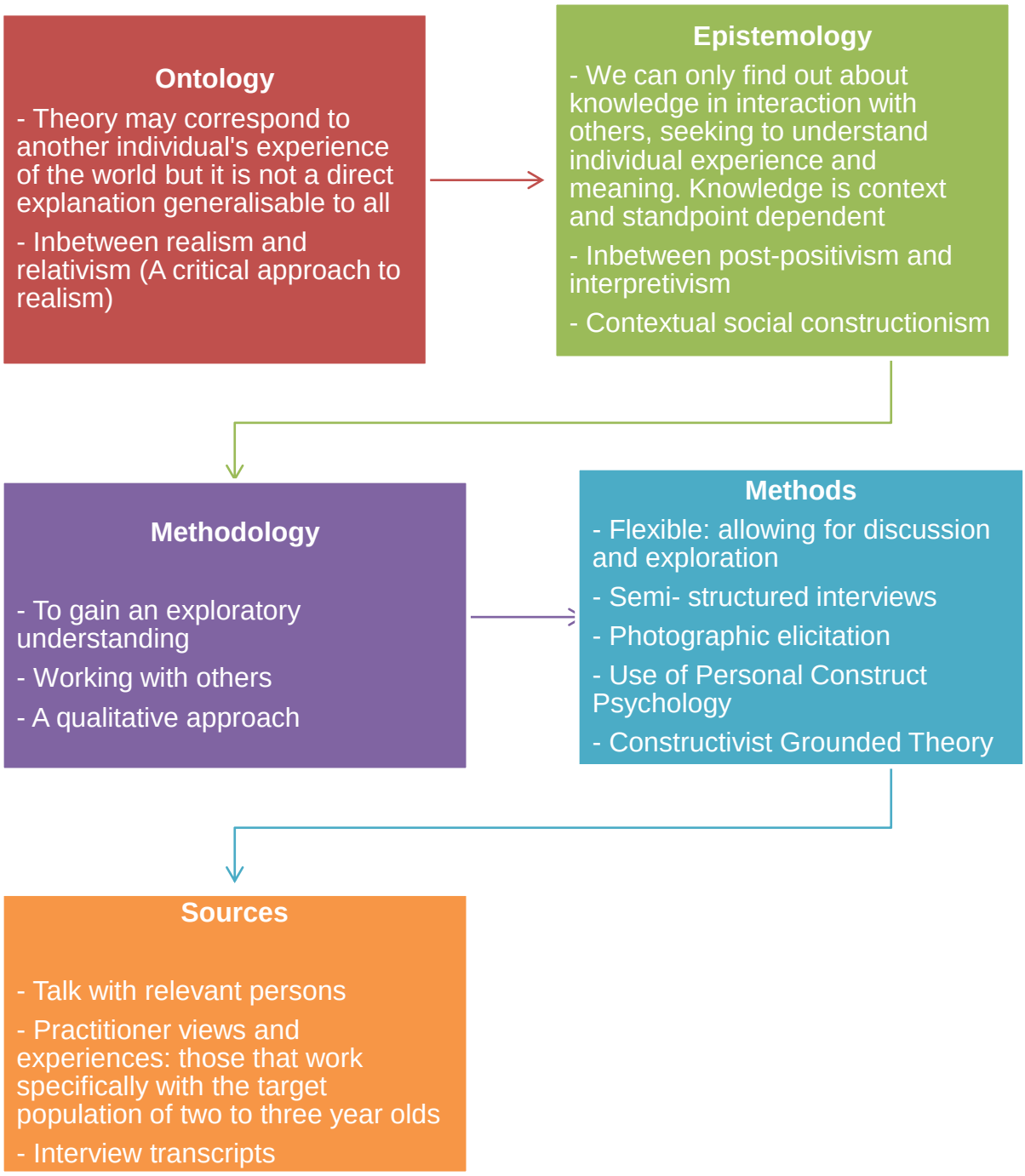
- ‘You mentioned they’re around child friendly spaces erm, what would you describe as a child friendly space if you had to describe it to me?’

The use of photographic elicitation

The photograph elicitation technique has been described as allowing for deep exploration, and facilitating vivid descriptions that bridge the gap between the worlds of the researcher and the researched (Clark, Laing, Tiplady, & Woolner, 2013; Harper, 2002; Woolner et al., 2010; Woolner, Hall, Wall, & Dennison, 2007; Woolner, McCarter, Wall, & Higgins, 2012). The photographs were from the Community Play Things free training resources (www.communityplaythings.co.uk/learning-library/training-resources/spaces).

Photographs (see Appendix G) were chosen based on the findings of the systematic review. It was hoped that photographic elicitation could potentially facilitate discussion, giving an indication or clarification of the findings relevant for two to three year olds.

Figure 3: A schematic representation of the key components of my research based on Grix (2010)



Process of analysis

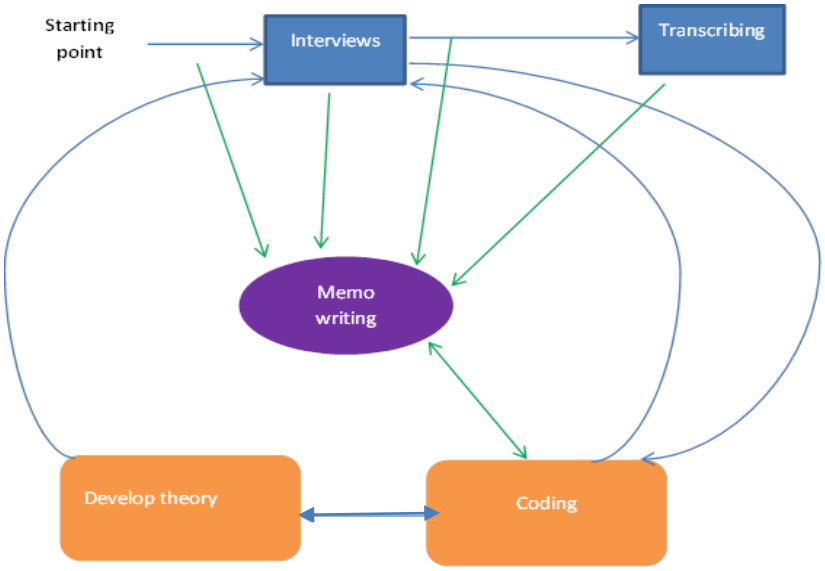
Initial Coding

All five interviews were line by line coded to ensure I stayed close to the data and open to theoretical directions. I coded for actions and processes using gerunds, as advised by Charmaz (2014), and this also facilitated theoretical sensitivity by allowing recognition of elements most relevant to the emerging theory (Birks & Mills, 2015). Asking questions of the data based on ideas from Charmaz (2014, p. 169), comparing data with data, codes with data and codes with codes, ensured the intensity and importance of what was happening could be captured.

Focused coding and theoretical sampling

The initial coding process meant focused codes emerged. Gaps in memos and information about the emerging properties of categories revealed information on the systemic influences was thin. This prompted theoretical sampling and recruitment of nursery managers. Sampling was continued until suitable and sufficient data were collected to represent action in constructing environments for two to three year olds: theoretical sufficiency (Charmaz, 2014; Dey, 1999) was reached. Sampling adequacy (i.e. theoretical sufficiency) was linked to consideration of my research objectives (Bowen, 2008; Charmaz, 2014). Figure 4 provides a visual representation of the process.

Figure 4: A diagram to show the Grounded Theory process



Use of software (NVivo)

Computer software NVivo (version 10) was used for data organisation and continued professional development purposes. Use of computer software in data analysis has been criticised as objectivist, providing a barrier to human interpretation and reflection (Charmaz, 2000; Hutchison, Johnston, & Breckon, 2009). I predominantly utilised its functions for the line by line coding and focused coding stages; use of handwritten memos and diagramming supported a reflexive approach.

However, when conceptualising data I did find using the software difficult, navigating between screens with different levels of data. I felt I was beginning to distance myself from the participants' experiences. I did not want to compromise my level of interaction with the data so I utilised hand sorting, comparing and integrating of memos facilitated by diagramming techniques (see Appendix H).

Ethical practice

In this final section of the Bridging document I outline the ethical considerations, and how my reflexive attitude to the research process shaped my interaction with participants and impacted on data collection and analysis. This is summarised when analysing the quality of the research.

Ethical procedures

The British Psychological Society (2009) guidelines suggest the following ethical issues need to be considered:

- Informed consent
- No participant deception
- Right to withdraw
- Debriefing
- Confidentiality.

To address the issues of informed consent and no participant deception, I provided information sheet (see Appendix I) that was sent to all nurseries and practitioners before they agreed to participate by email or in person. This stated the purpose, aims and structure of the research. It also outlined the steps to be taken to ensure anonymity

and confidentiality, including the storage of data. I took another copy with me on the day of the interview to brief the participant and answer any questions should there be any.

Consent forms were then filled in by both the nursery manager (see Appendix J) and the participating practitioner (see Appendix K); this form also stated their right to withdraw at any time, and I also repeated this verbally and ensured participants' knew that they could pause or stop the audio recording at any time.

Following the interview, each participant was debriefed, and their right to withdraw was reiterated and they were left contact details should they have further questions (see Appendix L).

Audio recordings were transferred to a password protected computer and deleted from the computer and Dictaphone once transcribed. Transcriptions were anonymous and the practitioner and nursery were not identifiable; pseudo names were used as necessary. All data were stored on a password protected computer.

Reflexivity and ethics

I found that throughout the interview conversations, approaches informed by constructionism enabled me to address the hidden ethical considerations, for example power (Willig, 2008, 2013). In one interview, the interviewee expressed her nervousness at the beginning. She seemed to think that she needed to know answers and I was there to decide if the way she was practising was right or wrong. However, within my constructionist approach to the research I was able to address this and we could share ideas and thoughts together. This, in turn, made the interviews feel less formal and more of an exploration by two professionals, enabling rapport and trust. However, I had to ensure I was not too leading with my contributions; it was imperative that I was reflexive throughout, and following our discussion. In practice, ethical decisions require critical thought over and above the following of guidelines (Teo, 2015).

The role of the researcher: personal reflexivity

Throughout the research process I have aimed to explain the impact of my assumptions and values. I have also endeavoured to report upon sampling and data collection decisions, analytical technique and interpretations explaining transparently

how they have shaped the research, and reciprocally how the research has altered them (Willig, 2013). The constructionist frame for this research (co-constructing interpretations of experiences) and the Constructivist Grounded Theory method (Charmaz, 2014) nurtured this. For example, the reflective memo writing process also doubled as a research diary space.

Quality of Constructivist Grounded Theory

There is a lack of consensus about appropriate criteria for reviewing quality in qualitative research (Dixon-Woods, Agarwal, Jones, Young, & Sutton, 2005). Processes for considering the quality of research appear to vary depending on the topic and purpose of the research (Mays & Pope, 2000), and its paradigmatic underpinnings (Morrow, 2005). From my position on the realist-relativist continuum, I do think that assessment of quality is feasible but requires different measurements to quantitative studies. From the social constructivist/ism paradigm, Charmaz (2014) gives the following criteria: credibility, originality, resonance, and usefulness, highlighting that the two former criteria enhance the latter. Mays and Pope (2000) describe how assessments of quality should attempt to represent that reality rather than to attain the truth.

This philosophy sat best with me as I wanted to explore the quality of my research with its context not with regard to positivistic views of generalisability, validity and reliability. Some of the other frameworks such as Critical Appraisal Skills Programme (2014) did not require in depth consideration and could be described as a checklist.

Mays and Pope (2000) propose a framework that fits my position based on relevance and validity and allows for consideration of the ideas proposed by Charmaz (2014). Table 7 records criteria and corresponding evidence based on inquiries from both researchers.

Table 7: Quality evaluation of the current study informed by Mays and Pope (2000) and Charmaz (2014)

Criterion	Definition of criterion, guidelines or questions to ask of the research	Evidence: how it was considered in the present study
Triangulation	**Mays and Pope (2000) -** Triangulation compares the results from two or more different methods of data collection or two or more data sources. The researcher looks for patterns of convergence to develop or corroborate an overall interpretation. **Charmaz (2014) – Credibility** Are the data sufficient to merit claims?	• Constant comparison used to check findings. • Findings from empirical research were compared with systematic review and existing literature reviews. Parallels to the current guiding principles in the Statutory Framework for the Early Years Foundation Stage framework were made.
Respondent validation	**Mays and Pope (2000) -** Respondent validation includes techniques in which the investigator's account is compared with those of the participants to establish the level of correspondence between the two sets. Study participants' reaction to the analyses is then incorporated into the study findings. **Charmaz (2014) – Credibility** Has the research achieved familiarity with the setting or topic? **Charmaz (2014) – Usefulness** Does your analysis offer interpretations that people can use in their everyday lives? **Charmaz (2014) – Resonance**	• The Grounded Theory approach of concurrent data collection and analysis fosters respondent validation. Use of memoing also ensured I recorded any ideas or questions I had throughout the research project, and I could incorporate ideas I wanted to follow up on in subsequent interviews. • Use of Personal Construct Psychology used as an approach to questioning, and the probes and clarification elements of the interview meant that a shared understanding was more likely to develop. • Once the theory had been developed, I listened back to each interview to check the framework corresponded and represented all interviews suitably. • As a practising Trainee Educational Psychologist I have been discussing some of the ideas as relevant in consultations, and found discussion of some of the categories within the proposed framework does open

	Does your Grounded Theory make sense to your participants or people who share their circumstances?	up discussions that enable problem solving within context.
Clear exposition of methods of data collection and analysis	**Mays and Pope (2000) -** Since the methods used in research unavoidably influence the objects of inquiry, a clear account of the process of data collection and analysis is important. By the end of the study, it should be possible to provide a clear account of how early, simpler systems of classification evolved into more sophisticated coding structures and hence into clearly defined concepts and explanations for the data collected. **Charmaz (2014) – Originality** Do your categories offer new insights? Are there strong logical links between gathered data and your argument and analysis? What is the social and theoretical significance of this work? How does your Grounded Theory challenge, extend, or refine current ideas, concepts and practices?	• The method is clearly described in the methodology section of the empirical research, with further information in the bridging document. Appendix M shows how focussed codes combined for tentative concepts and categories, and again further information on the conceptualisation process is given in the bridging document. There is also supporting evidence in the Appendix. • I have described how the proposed theory adds to current knowledge and discussed the significance and the value added by my research (Empirical research p.89).
Reflexivity	**Mays and Pope (2000) -** Sensitivity to the ways in which the researcher and the research process have shaped the collected data, including the role of prior assumptions and experience. **Charmaz (2014) – Resonance** Do the categories portray the fullness of the studied experience?	• Discussed throughout the bridging document. • My epistemological stance holds the belief that knowledge is a representation. Subsequently, the categories characterise the co-constructed understanding of the interviewed practitioners' perceptions of how they work and what is effective for them and the two to three year olds that attend their settings (Bridging document p.48).

Attention to negative cases	**Mays and Pope (2000) -** As well as exploration of alternative explanations for the data collected, a long established tactic for improving the quality of explanations in qualitative research is to search for, and discuss, elements in the data that contradict, or seem to contradict, the emerging explanation of the phenomena under study. **Charmaz (2014) – Credibility** Have you made systematic comparisons between observations and between categories? Has your research provided enough evidence for your claims to allow the reader to form an independent assessment?	• The line by line coding of all five interviews ensured I stayed close to the data and was open to other theoretical directions. • I am transparent about my methodological decisions, for example I describe my choice to use NVivo in the bridging document. I also explain my decision to merge the two categories 'providing opportunities' and 'giving children a voice' to form the category 'facilitating meaningful participation'. • Memoing at all stages of the project also ensured I was thinking critically about my research and the conceptualisation process. For example, I changed a code name from 'managing what is important for and to the children' to 'balancing what is important for and to the children'. The first code took away from what was happening and what was being represented, which was the shift in power towards the child. This was recorded as a memo.
Fair dealing	**Mays and Pope (2000) -** Ensure that the research design explicitly incorporates a wide range of different perspectives so that the viewpoint of one group is never presented as if it represents the sole truth about any situation. **Charmaz (2014) – Usefulness** Can the analysis spark further research in other substantive areas? How does your work contribute to knowledge?	• All five participants were from different early years settings, and were different ages with varying amounts of experience. • I endeavoured to empower participants throughout the process and Personal Construct Psychology and photograph elicitation facilitated this. • The research is not intended to be a representation of the truth and this is clearly stated throughout. How my work contributes to knowledge is explained in the 'what do my findings add?' and 'Implications for EPs' section of the empirical document. 'Ideas for further research' are also given in the empirical research document.

Chapter Three: Empirical research

"It's like we are getting involved with their world": Practitioner perceptions of the environment that supports active learning with two to three year olds.

Abstract

Government directives hope to provide more preschool placements for two year olds. Consequently, it is important that the capacity of the practitioners and appropriateness of the environment is considered. The systematic review identified a lack of research that considers the under three population. This empirical research aimed to gain practitioner perception to generate a theory about effective learning environments, for facilitating active learning, for two to three year olds in their settings. Five early years professionals were asked questions, informed by Personal Construct Psychology theory, to discover their perceptions. Semi-structured interviews took place (photograph elicitation used in four out of five interviews). Data were analysed using a Grounded Theory (GT) approach, creating four thematic categories of 'responding in context', 'joining up thinking', 'perceiving the child's world', and 'facilitating child participation'. The practitioners' theory suggested that creating effective learning environments for two to three year olds involves a prerequisite of supporting emotional needs, along with perceiving the child's world via a reflective process of responding in context and joining up thinking. The following theory was created: the Toddler Telescope – perceiving the world of a two to three year old. The practitioners' theory created has the potential to act as a guiding frame supporting practitioner metacognition when considering how to advance active learning opportunities.

Introduction

Historically effective environments for early years education has been discussed. Theorists such as Piaget (1947/2003) argued that development takes place in stages, and learning involves assimilating new knowledge to existing concepts (cognitive constructivist). Other theories recognised that early education was not one dimensional with an idiosyncratic focus but the characteristics of experiences were also influential (Dewey, 1916; Vygotsky, 1978). Vygotsky cited in Smith, Cowie, and Blades (2003/2011) discussed the importance of social and cultural context to the construction of knowledge (social constructivist).

Theories of early education

Theories about how children, learn such as the principles devised by Piaget and Vygotsky, have encouraged child-centred methods, promotion of autonomy, and learning through play and exploration. These findings have influenced educational approaches, for example Reggio Emilia, Montessori and High/Scope (Bertram & Pascal, 2002; Pound, 2005). Evidence from the systematic review found child engagement increased when a curriculum model was followed that emphasised the role of culture and language in facilitating children's learning (Ebbeck et al., 2012). Approaches to early years education continue to be widely discussed.

Combining evidence (from previous literature including the EPPE project) relating to the broader early years age range (0-5 years)

What classifies as a quality early education setting was explored by the EPPE project (Systematic review p.39) in a longitudinal study (Sylva et al., 2004). This research has been highly influential, including at a policy level, as the project also included an early years focus (Siraj-Blatchford, Sylva, Muttock, Gilden, & Bell, 2002; Sylva et al., 2003). Previous literature such as the theories, ideas and movements share common principles; these principles and the themes from the systematic review can be categorised into two areas of thinking described below:

- **Pedagogical characteristics:** This was an outcome of the systematic review which suggested a practitioner needs to consider how to involve themselves with children's learning. Reviews of early years pedagogy suggest that what is important is a play based approach providing for all aspects of learning (cognitive, social and physical development), responsive interactions between

adults, structuring opportunities which carefully consider adult involvement, and promoting child autonomy (Abbott & Langston 2007; Bertram & Pascal, 2002, 2014; Nutbrown, 2012; O'Sullivan & Chambers, 2014).

- **Logistical characteristics:** The outcomes of the systematic review themes named 'configuration of children' and 'physical environment' could be captured by the logistical characteristics concept. Evidence from the early years suggests that best practice includes play opportunities and first hand experiences, considering children's interests, thinking about opportunities for interaction, adult/child ratios (Munton et al., 2002) and working with parents (Abbott & Langston 2007; Bertram & Pascal, 2002, 2014; Nutbrown, 2012; O'Sullivan & Chambers, 2014).

Influence of previous research (including the EPPE project) for this thesis

It is likely that these ideas need an understanding of child development, such as what age and stage would best describe a child in order to choose beneficial experiences. Bredekamp (1987) constructed the term Developmentally Appropriate Practice (DAP) which requires knowing about child development and learning, knowing what is individually appropriate and knowing what is culturally important (Revised by Copple & Bredekamp, 2009).

DAP, reviews of the literature and the EPPE project (David, Goouch, Powell, & Abbott, 2003; Evangelou, Sylva, & Kyriacou, 2009) provide useful information about young children's learning and development, and have influenced the guiding principles of the Statutory Framework for the Early Years Foundation Stage (EYFS), with recognition that children develop and learn in different ways and at different rates (Abbott & Langston 2007; David et al., 2003; Tickell, 2011). The four principles that should shape early years practice in England are: a unique child, positive relationships, an enabling environment, and learning and developing (Department for Education, 2014b; Early Education, 2012).

A focus on two to three years old

In the light of the political context (p.65), an up to date review of the research proposed four dimensions of quality pedagogy for all children under three (Mathers et al., 2014):

- Stable relationships and interactions with sensitive and responsive adults

- A focus on play-based activities and routines which allow children to take the lead in their own learning
- Support for communication and language
- Opportunities to move and be physically active.

These findings suggest similarities in approaches to working with over threes with regard to ensuring developmentally appropriate opportunities. However, Mathers et al. (2014) have drawn on evidence from children aged three and over such as the EPPE project. Mathers et al. (2014) were transparent about the evidence informing the paper, explaining that research with under threes is scarce and that 'policy and practice cannot wait for perfect studies' but establish 'robust ways of building on the best available knowledge' p.29. This could be considered to be moving away from evidence based practice which could lead to variations in practice, although the extent to which 'gold standard' evidence (such as randomised control trials) is relevant, and considered the only form of quality evidence to Educational Psychology is debateable (Fox, 2003).

In my view knowledge can be co-created with others; this understanding and its relation to my ontological position is discussed in the Bridging document p.47. For me it is the utility of knowledge that is important, working with other to explore situations and problem solve solutions that work well and can potentially have a positive impact on research and professional practice, particularly when monitored and reviewed over time.

This leads to the rationale for the present study.

Rationale

Political context

As identified by the systematic review and discussion of previous literature, there is a lack of research that considers the under three population. Furthermore, government directives hope to provide preschool placements for two year olds (Department for Education, 2014a). OfSTED (2014) suggested that early education in suitable environments with skilled practitioners will bridge a gap in children facing disadvantage. Consequently, it is important that the capacity of the practitioners and

appropriateness of the environment is considered (Department for Education, 2014c; Mathers et al., 2014).

Contextual rationale

The consequences of the government directive were salient in the Local Authority (LA) I am based in as a Trainee Educational Psychologist (TEP). My second year placement was predominantly funded by money received to support the development of the LA's offer for two year old placements. Early years settings required training to ensure developmentally appropriate provision and practice for two year olds. Therefore, research within the early years setting was raised by my placement providers as a potential area.

Identifying a gap

Most existing UK empirical evidence has been produced by government-recruited researchers, dominated by the word 'quality'. The outcomes have been influential in the development of key ways of working in the early years (Department for Education, 2012, 2014b). However, I would argue that current evidence is diverse and contradictory; more information is needed to support practitioners with identifying *how* to create potentially effective environments, in their own settings, particularly for under threes.

Trials have been completed (Department for Education, 2013) with the aim of supporting practitioners to better understand two year olds, raising the quality of provision. However, outcomes focused on what LAs should be doing to accommodate the directive, with consideration of the physical capacity for provision and sustainability on a systems level. Training for staff was recommended but there was no suggestion of contents, such as practical knowledge and skills: again the *how* was missing.

Research question

The initial research questions were:

- What are practitioner perceptions of the environment characteristics effective in advancing active learning with two to three year olds in their settings? (this became the focus of the analysis)
- How are these environments created?

- Why do practitioners perceive these features to be effective in their setting? (Discussed briefly as part of the proposed theory p.85).

Methodology

Research paradigm

I approached this study using a social constructionist epistemology combined with a critical stance toward reality (Bridging document p.46). Personal Construct Psychology theory informed my practice (Bridging document p.52).

Participants

Three nursery practitioners took part. Contact was made with nurseries based on purposive sampling, linked to the LA I am located in as a TEP. The following criteria were used to identify potential nurseries and participants:

- A nursery setting within the Local Authority I am based in that has children aged two to three years enrolled.

- The practitioner to be interviewed must work directly with two to three year old children.

Two nursery managers were recruited following initial coding as part of the theoretical sampling step within a Grounded Theory approach. This was to support the development of theory. In total, five different settings were represented. During discussion of the findings, all participants will be referred to as practitioners.

Participants were all female and ranged between 23 years and 56 years. Experience working with two to threes ranged from 22 months to 25 years. Three participants had a degree in childhood studies and two had other relevant qualifications.

Ethics

Ethical approval was gained from Newcastle University's Ethical Committee. Information regarding the study and letters requesting manager and practitioner consent were issued. These outlined issues of confidentiality, anonymity and consent (Bridging document p.56).

Care was taken to work within the bodies of knowledge that inform Educational Psychology practice; relevant guidelines followed and paperwork completed (British

Psychological Society, 2009; HCPC, 2012). Throughout my journey as a TEP, the complexity of ethical practice has become more apparent and it is more than just following procedures and guidelines (Bridging document p.57).

Design

Semi-structured interviews took place facilitated by photographic elicitation (Bridging document p.53) in four out of five interviews, to gather individual early year professionals' views about their experience with active learning. The interview structure was piloted to support the development of appropriate questions and procedure for use of the photographs, and subsequent changes were made before commencing the research (Bridging document p.51).

I constructed the interview questions in line with a social constructionist approach to research meaning, so that the interaction between the researcher and participants and the researcher's perspective were acknowledged as being part of the process (Bridging document p.52). The photographs also had the potential to facilitate discussion that would draw upon the findings from the systematic review, should the participants also think these factors relevant for two to three year olds (Bridging document p.53).

All participants were individually interviewed August 2014 – February 2015 and our discussions were audio recorded.

Analysis

Nvivo was used for storage purposes and was used interactively with manual coding methods (Bridging document p.56). Methods of analysis were informed by Charmaz (2014) Constructivist approach to Grounded Theory. Methods were viewed as a set of principles and practices, not as prescriptions or packages.

Data coding was carried out in parallel to data collection so codes, concepts categories and analytical categories emerged as the research progressed. Coding included line by line (initial) coding and focussed (selective) coding. Constant comparison facilitated the coding process. Diagramming and memo writing also supported the construction of concepts and categories (Appendix H). Codes, concepts and categories informed lines of questioning throughout the data collection process. Tentative concepts were explored further (Bridging document p.52; Appendix F).

Findings

This section begins by explaining the four thematic categories that the early years professionals perceived to influence an effective environment for two to three year olds in their settings, giving examples from the original data. Appendix M shows how focussed codes were combined to form tentative concepts and categories. Categories are related together to form a theory within a constructionist intention (Bridging document p.48). Lastly, I explore the implications for EPs and future research.

Responding in context

Observing then planning the next steps for both the child and practitioner

Practitioners were thinking critically about the process of learning and the role of the teacher and learner (Stephen, Ellis, & Martlew, 2010). From the practitioners' perspective observation was important as "you can see more going on than when you are playing because I think that your daily routine becomes your daily routine, sometimes when you step back and you watch like what is going on in the corner you can see how they interact with each other, even if a child does not respond".

Practitioners discussed how observation was important for noticing children's achievements and planning within their level of progress. Practitioners explained that through observation "things that we might have missed in the past we are now cottoning on to". From these observations the practitioners were then able to "plan next steps" and make an "action plan" for both the child and themselves. The observations tended to be collaborative endeavours between a team of practitioners, and relatively informal. One practitioner discussed how, "it doesn't have to be their own key child I could go in and see a child do something and I will write an observation up and stick it on the board, so yeah observations are very important".

The practitioners believed that observation equipped them to support a child's progress more effectively: "challenge that thinking and taking the learning to the next level really". If as a practitioner you are not fully informed about a child's stage and interest there was a risk that a child could be "shut down before you have gone over".

Seeing opportunities everywhere

Practitioners discussed how seeing an opportunity everywhere within the early years environment is essential. The practitioners saw active learning as "seeing it as a process and not seeing just a product come out". Practitioners told me that "you can give examples of it anywhere" and it is important to value these times that may not be traditionally considered learning times. One practitioner described nappy changing as a "fantastic learning opportunity because there is that close interaction, you are building up that relationship with them; so that is although it might not be perceived as active learning that nappy changing routine is".

Following observation (discussed above) active learning opportunities can be planned for in advance or taken advantage of in a more impromptu manner. One practitioner referred to the idea of seeing opportunities everywhere as the "hidden curriculum"; the practitioner gave the example of getting ready to go into the garden. The active learning opportunity would involve "letting them pick their own coats up in the toddler room. It is not about just getting them in the garden [it is about] all that learning that they can have before they do that". Seeing [active learning] opportunities everywhere meant the practitioners "don't worry about getting them into the garden by a certain time [they] just lay the coats out [and] let them [the children] go and find the coats, let them have a go of putting it on, let them".

To take advantage of the hidden curriculum children needed "time and space, allow them to do things for themselves, yanno even if it took a lot longer". This incorporated not only cognitive aspects of learning, but what may be considered citizenship skills: promoting interaction, values and beliefs; "It is all the learning that takes place when you don't think they are learning, so it is even when they are tidying up, it is valuing the things that they are doing, everyday things that you take for granted that you tend to do for children, the learning that the children get out of those things is just brilliant."

Thinking outside of the box

How the practitioner utilised the environment and resources was central to this category. Practitioners were creative and imaginative: all practitioners discussed how anything can be used inventively:

- "everything here is kind of natural… you just buy scrap, it is scrap, it's ribbon, it's foil, it is cardboard tubing"

- “so, if it’s a funnel, is it just a funnel? Or can it be used for more than just being a funnel? So, then you can build with it, or it can be the top of a hat it can be anything”

- “ it’s anything from, one thing can change into a hundred things”

Creative use of resources overlapped with the ‘perceiving the child’s world’ category. For example, when one practitioner was talking about the photograph below she explained:

> *“I would say why not put it on the floor why not have the water in a lower thing instead of in a tray”.*

This was corroborated by another practitioner who described her experiences linked to the photograph below. She explained:

> *“Erm, it’s, we do, do a lot of sand. We’ve got these tables and you can adjust the legs, so we can squash the legs down and put the sand out, erm, or sometimes we will even put it onto the floor in the tub and just let them, again, take their socks and shoes off and walk through it”.*

The environment needed to be inviting curiosity, investigation and discovery (Sharp, 2015).

Impromptu Supporting (flexibility in outcomes)

Practitioners also discussed how for the two to three year olds advancing active learning is usually on an individual level though groupings, and/or activities may develop depending on interest and who wishes to be involved – children tend to be in

charge of the process. Group activities, and when children are playing with others, can also be a way of supporting their social and emotional development. Use of creative resources in the environment can support this process; an example given was milk crates. The children would create walkways “they will like all work together they will all carry the planks over, they’ll all do the milk crates in a certain way and then they will all follow each other around it, so it is quite nice for building that community spirit”.

Flexibility is needed with regard to planned outcomes: “we kind of know how the day is going to flow but it does change”; again, this meant noticing opportunities and taking advantage of them spontaneously. Practitioners needed to change or adapt the planning for active learning to happen, “being willing to change I think that is when active learning comes in because you are going for what they are choosing to do on that day”. This was imperative to active learning “because I think if it is relevant to the children, then they are interested and they are going to be keen to learn they are gonna be, yanno you are building on what they already know rather [than] plucking something out of the air that is alien to them, they have no idea had no experience and trying to expect them to understand that. Whereas if you just build on each experience I think their understanding becomes a lot clearer and their knowledge builds”.

The practitioners described this as spontaneous planning explaining that, “spontaneous planning is literally what happens on that morning or in that day, whether the Mum comes in or the Mum and Dad sends an email or a picture, or you are walking down and they say something like, I wanna do this chocolate playdough ok let’s go and make chocolate playdough”. Other examples the practitioners gave included:

- “They have been on an adventure and from it can change into we went on a welly walk to we ended up jumping in leaves, it’s just giving them that extra place to go”.
- “Yanno one of the children came in and they had seen a rainbow so they did a whole thing about rainbows. They were fascinated with this rainbow so we are very good at doing spontaneous planning as well on the moment yanno, cuz that is relevant and what the children know about. They [Practitioners] won’t just pluck something out yanno from just because it sounds like a good topic it will be based on what they [the children] already know”.

Observation and reflection in practice (Schön, 1995) was key to successfully responding in context. Practitioners discussed skills such as, *stepping back, watching and thinking how to extend… if at all*. Practitioners found it helpful to include the feelings and emotions of the child to inform their thinking. The practitioners' own feelings and behaviours were also described as having the potential to impact on a child. There was a bidirectional relationship between child and practitioner. Information received would inform planning for the child as well as inform ideas for practitioner involvement or environmental adjustments that may advance a child's active learning.

Facilitating child participation

Creating child initiated spaces and activities (control)

The physical aspects of the environment were important for advancing active learning. This included creating child initiated spaces ensuring approachability from the child's point of view. The methods utilised included accessibility, such as having resources at the child's level to aid independence and thinking critically about the experiences the children were getting from the resources. One practitioner described what a child had said to her, "why have they got plastic food, food isn't plastic, and they were like I can't eat this food. We were like yeah I know it is pretend, and they were like oh". Following this the setting have now changed and the practitioner explained, "we have introduced like having corn flakes in there or real apples, they do get eaten cuz on a regular basis you go like, where are the potatoes and they are just like munched into but it is like having that thing to say this is real, this is what we do with it and everything like that".

There were clearly defined places in each setting and practitioners mentioned that "making sure there is a space for them to go to for one, for three and on their own" was important. This was so the children could be solitary when needed. One practitioner explained that this space could "even if it is a cot turned on its side with material over but they've got the choice to pull that material down and hide or have that time, or leave it up so everyone can see them".

Each early years setting had routines with a degree of flexibility led by the child's interests. All practitioners discussed how two to three years old like to climb, explaining that "twos are just doing what they naturally want to do they are driven, they are whole bodied learners aren't they, they are driven to climb". One practitioner talked about the toddle box resource telling me, "not just climbing they can turn upside down and

become a bed or a boat or one of them moves a see saw. I've noticed someone use one and they've changed it into a car, and the children have put poles into the gaps and made like pointy things".

Another practitioner described this as the physical environment allowing children to engage in "child initiated play". This was encouraged by having "open ended resources" such as, "in the garden we give the children fabric and pegs and planks of wood and they will go off and make their own den rather than yanno put a pop up tent up, and give them some equipment to play with. We do like them [the children] to use their imagination. We have just created a big mud kitchen in our garden so they are able to go in, there's herbs there lots of utensils, access to water yanno they are able to provide their own play rather than rely on the adult all the time to yanno show them what to do and direct the play to engage and use their own imagination."

Key responsive relationships and supporting a child to communicate was important; practitioners found using visuals powerful. A practitioner explained that, "we use visual timetables anyway for different reasons just as standard good practice, but like we have got little ones some are going home for lunch and some are staying, well that is really confusing for them, like why is he getting his coat on, the visuals just make a massive difference to us. At lunchtime every child has their own visual so they know it is lunchtime and also it is something tangible to hold". For the practitioners the visuals supported all children to understand, as it was important to recognise that the two to three year olds, "they are all at different levels with their understanding".

These combined strategies also reduced child anxiety. The environment constructed collectively met basic psychological needs proposed by the self-determination theory: relatedness, autonomy and competence (Deci & Ryan, 1985, 2000).

Managing risk but providing experiences

Practitioners expressed concern for managing risk appropriately; they wanted to ensure that the probability of risk did not limit possible experiences. Practitioners did not want children to miss out on an opportunity due to an adult's (practitioner or parent) view of suitability. For the two to three year olds, a frequent example given was with regard to climbing, which is possibly linked to knowledge and understanding that children are whole bodied learners at this age (Manning-Morton, 2005; Manning-Morton & Thorp, 2007). Practitioners wanted to facilitate the child's access to their

activity of interest and would find appropriate ways to accommodate it (see creating child initiated spaces and activities (control) descriptions p.73).

During the photograph elicitation all practitioners commented on the photograph of a child running outside barefoot and the following quote illustrates the practitioners perspective, “I really like this because there’s just a look of joy on this, number 5 [link to photograph see Appendix G], the look of joy on this child’s face is just absolutely gorgeous and I love this, I love it that practitioners will take a risk and let them run around bare foot because in this world that we live in now it’s all about, we wrap our children in cotton wool don’t we and yanno you can get sucked in to that, and obviously with rules and regulations yanno ya get sucked into that, to see a child being able to run around in the open air, doesn’t look like a particularly sunny day, no coat on, no shoes and socks on having a fantastic time is just what like childhood is, really.”

Participating meaningfully: Balancing what is important for and to children

The practitioners were all open and honest and willing to learn and adapt their practice in order to promote child agency. It was apparent from listening to the practitioners that critical thinking was key to this process. Constructing meaning from the practitioners’ insights, it would appear that they were drawing upon person-centred thinking, considering what was important for and important to a child (Sanderson, 2010) to experience in their early years. This provided an environment and experiences that were able to facilitate a child’s meaningful participation.

A theme running through this category appeared to be a shift in power dynamics in favour of the child referring to the role of both the practitioner and environment as facilitative to the child’s meaningful participation and active learning. The environment needed to offer opportunities for different forms of participation (Hart, 1992, 2008). This finding has much is common with the EPPE project finding that recommends a balance between teacher-led and child-led activities. Research suggests that there can be a tension between assuming children lack capacity and motivation, leading to adults taking an expert approach, and holding a belief that promotion of autonomy and less adult mediation promotes participation (Reid, Jensen, Nikel, & Simovska, 2008).

Practitioner self-awareness of how their actions can facilitate or create barriers to meaningful participation and active learning was required. One practitioner explained that, “If your face looks like you’re not interested why would they be interested? When

you're expressing through words some children will be like I don't understand but if you're just like WOW and your mouth moves and your eyes lights up they're going to be like just engaged into what is going on... if you are not willing to give things a go or show that you wanna do it, you are there for them then, they are not going to".

Another example given was a setting that had "cous cous out and it was dry and we were mark making in it and one of the children added water so it went gooey. So I could see that some of the children were like oh no I'm not going in that it feels funny, so I went for it first and showed them it was ok I didn't like it, I didn't like the texture but showing them that I was ok giving that facial expression to show them its ok have a little try".

Further examples of the techniques practitioners utilised are provided on p.84.

Joining up thinking

Connecting across systems and merging perspectives together

Connecting across systems was central to gaining the most from 'joining up thinking'. One aspect related to working with parents: "Parents are not separate; they're part of the learning, a huge part of the learning process, because sometimes it's like the missing link to the picture". Practitioners would share information and offer ideas to parents and ask questions to find out about a child's life outside of nursery; systems thinking (Bronfenbrenner, 1979, 2005). This allowed practitioners to perceive the child's world and use information to support a child effectively within the early years environment. One practitioner referred to this as, "we are getting involved with their world outside so they will send pictures in they've been with their cousins, or they will come in and say oh my aunty has had a baby, or I'm going away on holidays...so it's just being able to use what you are told and use it in the right way".

One setting thought it was helpful to also share information about their own families with parents and the children. The setting was "making sure it is family orientated and that they feel like part of our family and they we feel part of theirs". The setting did this through each practitioner wearing "lanyards but they've got our family pictures on so they know we are part of a family as well".

The practitioners hoped to develop a positive relationship with parents so that parents feel secure leaving a child in nursery and this also appeared to transfer to their child,

having a positive effect on the child's sense of safety (Maslow, 1943). Maternal sensitivity and autonomy support can mediate how secure a child feels (Whipple, Bernier, & Mageau, 2011; Whipple, Bernier, Mageau, & Hunsley, 2009). Characteristics of the adult-child relationship such as positive responses to needs and moods are important to support a child with regulating behaviour and exploring the environment effectively (Bowlby, 1969). Some of the techniques practitioners used to keep in touch with parents included: "we send photos out during the day cuz we have got IPads in the room which we send photos out". An early years setting explained that "we have all the parents emails they've all signed a consent form". Practitioners also "sent them [parents] daily updates just to say they are fine or if they haven't come in very well, we can take pictures look I'm having my breakfast now or I'm playing with so and so".

Some settings collected information from parents, one setting told me that, "every month parent partnership forms go out, we give them out by, we used to give them out by a form but when we introduced the email we now do both, you get to know which parent would want the piece of paper and which parent would rather email just depends which is quicker. Or we will ask them do you want to receive it in paper this month or email it out? And just say it comes like a little bit of a joke just a bit of homework for yourselves". Another setting has what they called "daily chit chat forms and, "if we have had a conversation with Mum we would write down what was said then that goes into the children's file for the end of the year for the parent".

Balancing aspects of supervision

Another aspect to 'joining up thinking' included reflection on practice (Schön, 1995) and settings utilised supervision. Practitioners discussed how it was important that supervision was not used only as a tool for judging practice but as a helpful process. The functions of supervision tend to be captured by three concepts (Hawkins & Shohet, 2012):

1. Development – Develop the skills, understanding and capacity of supervisee
2. Resourcing – Emotional support
3. Qualitative – A quality control function.

From my interpretation of the discussions, the balance between the functions within the interviewed settings may not always have been ideal. At times, supervision could

feel more like an appraisal system for practitioners. Those that supervised also linked supervision to appraisal. Practitioners felt empowered and capable when supported at an organisational level with team dynamics nurtured. The culture of an organisation can assist with moving beyond judging practice to giving support and focusing on learning development (Davys & Beddoe, 2010; Hawkins & Shohet, 2012). Supervision was a recommended practice and it should attend to all dimensions, advocating a learning development culture.

Evolving and implementing ideas to inform practice (experimenting)

The team of practitioners in setting would discuss the physical environment, the experiences and the opportunities being provided. One setting explained that they had a "wonder board". The practitioner explained that the wonder board was used "so if we do change something in the nursery it is what do you think before it happens, and then we review and say what do you think is happening now? So at the minute we have got do we all know what we are offering? I wonder if we all know what we are offering to a child in their environment? And so that has gone up so people will put up well I am just providing them with activities or I am providing them with a safe place or somewhere to feel comfortable it's just that is what we want as a setting".

The evolving and implementing ideas to inform practice process facilitated a critical and context specific approach to reflection in and on practice (Boud & Walker, 1998; Eraut, 1995). Practitioners explained that you would be "asking yourself questions all the time". For example, "so as in environment should it be like that or should it be like this? Should it be an open space or should it be a closed space? Should I tell that child that they can or teach them to do better or should I just let them be the way they want what they are doing for now, or introduce something to push them a little bit further?" Listening to each team member helped the success, "listen to what the girls think, is it a good idea to go and do that right now or should we do it later? Is it the right time? And then I think just listening and having that ability to listen to what people have got to say even if you don't agree with it, it makes you think as well [about] what [the] outcomes [are] gonna be before it happens".

Attunement (between practitioners)

As part of 'joining up thinking' negotiation of roles took place, and knowing what each practitioner did well; working with strengths supported this process. Fundamental to

this process was attuned interactions (Kennedy, Landor, & Todd, 2011) between practitioners: collective action. For example, this means recognising when one person would be best suited to work with a group of children over another, to provide an environment that was optimal for the two to three year olds. Inherent to this process appeared to be a level of intersubjectivity (Bruner, 1996): the ability to connect to other people (Teunissen, 2014). In one setting each practitioner had a "key interest that we quite like so that actually comes into it as well, where yanno if we are not so strong at that one then we have got a member of staff who is".

Cascading Learning (learning every day from yourself- practitioner characteristics- and others)

Observing at an organisational level (via supervision or informally sharing observations between the team) supported 'joining up thinking'. One practitioner labelled this as developing a "shared picture"; telling me "it is like all practitioners work together isn't it, its joined up thinking it's the only way ya can work so any information you can have. So we will liaise with other settings or yanno outside agencies without that shared picture you can't support the child properly, so you have to have positive relationships with anybody who's in contact with the child really".

Practitioners had an attitude of curiosity, and a commitment to growing their own practice and learning from their own experiences. One practitioner informed me that, "still even now if you have been working with children ten years I think you always something changes every day and you will learn something new from someone who is younger than you, some who is older than you, someone who has been in the job five minutes to someone who has been in the job for years".

Dialogue with others supported positive change and outcomes. One practitioner told me that it "helps us as a room especially my room because it is such a big room, if we've got that confidence to speak to each other and confront each other about oh don't put that there may be just put over here this is more enclosed, this might work better over here. It gives the two year olds the chance to go into those areas and we will be able to extend their learning then because we are all on board."

Perceiving the child's world

Supporting the child's emotional needs

Overarching practice with two to three year olds was the requirement to ensure their emotional needs were met (Maslow, 1943). Practitioners explained that it was important for all (the child, parents and practitioners) that a child felt securely attached to a key person and safe within the nursery setting before any learning could take place (Bowlby, 1969). One practitioner described that, "you know yourself if there is something you are not sure about it makes you feel a little bit wobbly and even as an adult you can kind of go, well I feel really confident at this this and this. You step out of your comfort zone and you lose that confidence. So it is about making them trust you so that they believe everything they do is fabulous…I think one of the most important things is the relationship with their adult that secure attachment, because then you can move on to them building relationships with children which then supports their language development, their social development, their physical development and sets them up for life basically because they are the skills you need to be a whole person".

Settings were flexible, from changing keyworkers if required to personalising a settling in plan dependant on need. In one setting a practitioner explained how they "went back to square one with the settling in, and I asked Mum to come and sit with key group time with the symbol of key group time and explained to the little one this is her key group so she sat for that time, and we just did key group and then home time. This and then you are going to go home and she took the visual home with her. And then we increased it so it was erm key group, choosing, and then home and Mum would stay with her choosing and we would only do it like ten minutes then it was home, and we just increased that, and that took like a week and now she bounces in. So erm because I said to Mum we have got to break up that day for her because to a little one saying your Mum will be back in five minutes well that could be five weeks couldn't it yanno, so it is a case of breaking it down yanno".

Practitioners validated a child's feelings no matter what – having an understanding of the developmental level a two to three year old is at with regulating emotions. One practitioners told me how "two year olds can be very complex and they are just learning to yanno how to manage all their emotions so they can be great one minute and then

a great big melt down over yanno nothing, what we think is nothing but to them it is very important". All practitioners were "mindful" and thought carefully about "some of the challenges they [the children] face as little people, erm it is not about them wanting their own way being spoilt it is about them managing to share and yanno managing their own emotions, and being allowed to be grumpy and being allowed to be upset, being allowed to be all those things because everyone gets like that and the staff are very aware of that ".

It was also important that the relationship was authentic and practitioners would share information about their own feelings and families and discuss pictures from the child's home. Practitioners endeavoured to create a "home from home" environment. The early years environment for a two to three year old was described as providing a "package of care". Practitioners explained how, "we treat the children in this setting like they are our own and that is all I can say really, so when they come through the door they are like our children so we treat them like they are ours. Erm they are all little people they are all individual they have all got their own cultures, they have all got yanno some children need extra support the children and the staff we all treat each other with respect".

Access and work with the child's interpretation: Considering the necessity of involvement

Supporting a two to three year old emotionally then allowed a practitioner to access and work with the child's interpretation. Practitioners informed me that having an "understanding of what their needs are if there are and what their interests are; erm just so that we can develop on those and make the children's experiences in nursery as beneficial as possible". Practitioners discussed the skill involved telling me that perceiving the child's world was about, "tuning into what is quality learning. I mean interacting is about knowing when to get in there and interact and when to sit back, not to be firing questions kind of it is very much on the spot, you have to know how to support that learning". Another practitioner described the skill as not being "too over powering, again let the children lead and intervene when necessary".

The environments created for the two to three year olds met the psychological needs proposed by Self-Determination Theory (Deci & Ryan, 1985, 2000). Practitioners met the relatedness need as they were responsive to, and accommodating of, the

children's varying emotional needs. Competence and autonomy needs are important to consider and Ryan and Deci (2000) caution that rewards and threats can undermine the development of intrinsic motivation. Practitioners were reflective and thought carefully about how to support but challenge learning experiences which led to participation and active learning.

There is limited research on this theory in the early years but the relatedness construct has much in common with Attachment Theory (Bowlby, 1969). Consideration of the competence and autonomy parallels Developmentally Appropriate Practice (Copple & Bredekamp, 2009).

Potential theory

The practitioners suggested perceiving the world of the two to three year old to be effective in advancing active learning. Our conversations revealed that, when considering the early years environment for advancement of active learning, practitioners are "seeing it as a [ongoing] process and not seeing just a product".

Systemic (through joining up thinking) and individual level (responding in context) thinking is needed to gain access and understanding (perception) of the two to three year old's world, so that this population can be effectively supported. Attention to these processes created an enabling environment that is facilitating the two to three year olds' meaningful participation and active learning within the settings interviewed (see Appendix N).

Furthermore, practitioners suggested that a prerequisite of an environment that is effective for two to three year olds is considering and supporting their emotional needs. Hence, the following theory was created: The Toddler Telescope – perceiving the two to three year olds' world (Figure 5).

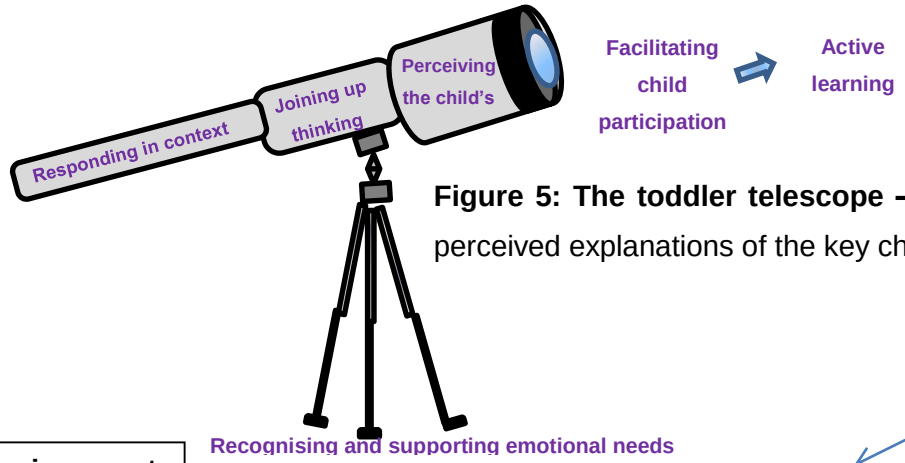


Figure 5: The toddler telescope – perceiving the world of a two to three year old: A theory of practitioner perceived explanations of the key characteristics effective for advancing active learning with two to three year olds

Discussion

How the categories relate to each other

Practitioners described how within their respective settings a foundation to advancing the active learning of two to three year olds is supporting their emotional needs (adding an affective dimension to the concept of active learning); providing well for all aspects of personal, social and emotional development meant other aspects of learning could then be supported (Manning-Morton & Thorp, 2015).

Perceiving the child's world was fundamental to all categories, and this category is linked to joining up thinking. Information is exchanged and gathered to gain access and perceive a child's view more accurately, so that this information can then be utilised. Perceiving the child's world also informed responding in context. Practitioners were continually considering the necessity of involvement, depending on a child's perception. A practitioner is making decisions between which techniques may be most helpful at that time. This included:

- Does the child want or need you to join in?
- What is the best way of advancing the learning experience? The adult would be thinking critically about the points below, progressively increasing or decreasing input depending upon factors such as the child's developmental level and the child's objective:
    - Become fully involved, or play next to, such as by mirroring?
    - Model or allow children to explore independently?
    - Ask questions or not over-powering with questions and just commenting on play?
    - Immerse the child with language – extending their current skill, or reduce language keeping it simple?
    - To add ideas or not?
- What mediation is most appropriate: verbal, gestural or physical prompt?
- How can you connect learning to the child's world – using what you know about them and their life experiences?

Joining up thinking and responding in context interlinked: for the whole process to work effectively, practitioners discussed how reflection needed to happen both in

(responding in context) and on (joining up thinking) practice (Boud & Walker, 1998; Eraut, 1995; Schön, 1995). Practitioners would be experimental in the approach: evolving and implementing ideas to inform practice and environmental accommodations. Facilitating child participation was linked to all categories, as a consequence of a practitioner effectively considering the environment for two to three year olds in their setting.

There is complexity, with multiple processes involved in creating environments effective in supporting active learning in the early years. The practitioners' theory provides a framework in response to the first research question. 'What are the key characteristics of the early years environment that are effective in advancing the active learning with two to three year olds in their setting?'

Whilst discussing the theory, it was also helpful to consider research question two. Why do practitioners perceive these features to be effective in their setting? Considering this also gave an insight into how the practitioners had defined and operationalised the concept active learning. From listening and talking with practitioners, creating effective environments and supporting active learning for two to three year olds in their settings is about empowering and fostering a "can do" attitude. The "can do" attitude was also important for the practitioner to have, but also so that the child could:

- *"feel like they are special because every child should feel like they are special so providing that, and that security and new things to do new ways of learning. I just think it builds them and makes them stronger, watching some of them as a student from being in the baby room which are now going into preschool or going to school you can see that the way they have been here and with the parents they just change, and become who they want to be even at the age of three, two or four".*

- *"It is playing with them but it is teaching them to be that person that they are going to be because that foundation for the first five years is so important".*

One practitioner explained the consequence of creating active learning opportunities as "the beauty of working here". What is the beauty about your provision and practice?

Relating the theory to literature and systematic review findings

The purpose of this study was to explore how practitioners perceived the effectiveness of their early years environment in advancing active learning with two to three year olds. Previous findings suggest that active learning emerges within a developmentally appropriate learning context (Bredekamp, 1987; Copple & Bredekamp, 2009) with consideration to pedagogical and logistical factors (see p.63). The environment the practitioners perceived to be effective for the two to three year olds in their settings had much in common with previous findings and the current Statutory Framework for the EYFS (Department for Education, 2014b) discussed in Table 8.

Table 8: How my research links to the guiding principles shaping early years practice

Principle	Description
A unique child	The systematic review findings suggested that how a practitioner involved themselves impacted on a child's engagement with active learning (pedagogical approach theme). The unique child principle also recognises the need for child centred practice. Pedagogy was also fundamental to the practitioners in the present study as practitioners worked with a child responding in context to their needs. Practitioners adapted their practice as necessary, balancing what was important for and to a child to maximise agency and participation. The unique child principle is also about valuing and respecting all children and families with a focus on promoting a child's sense of identity and culture. This parallels with the systemic practice approach (joining up thinking) described in the present study, working with colleagues and parents for perceiving the child's world (Bronfenbrenner, 1979). Observation is recommended as a way of assessing and planning next steps for each child in the statutory EYFS framework (Department for Education, 2014b). The present study outlined the usefulness of observation as an ongoing method that informed practitioner actions. It was important to notice and record emotions and feelings as part of the

	observation process, including the practitioners supporting a holistic approach. Observing reactions moved practitioners' focus away from just noting what a child can and cannot do. This could suggest observation approaches that consider the child's whole experience are likely to be beneficial (Abbott & Langston 2007; Manning-Morton & Thorp, 2015).
Positive relationships	Historically, relationships are recognised as vital for healthy development (Bowlby, 1958). Previous research suggested that positive relationships are integral to early years practice internationally (Bertram & Pascal, 2002, 2014; Mathers et al., 2014; Nutbrown, 2012; O'Sullivan & Chambers, 2014; Walsh, Sproule, McGuinness, Trew, & Ingram, 2010). The findings of the present study also emphasise the importance of responsive interactions and practitioners thinking critically, considering a two year old's developmental level and emotional requirements (Manning-Morton & Thorp, 2015). Practitioners repeatedly acknowledge and support the emotional needs of each child they provide care for, as well as give opportunities for solitude and/or play with another(s) (Culpepper, 1998), as appropriate.
Enabling environments	The 'Physical environment' theme from the systematic review suggested that focussed, directed and large groupings have negative effect on active learning, but that this could vary depending on the activity and context: a mixture of activities is likely to be beneficial. The focus in the EYFS framework (2014b) is provision of experiences that meet individual needs, stimulating resources and learning opportunities through play and supporting children to take risks. All these aspects were considered important by the practitioners working with two to three year olds. However, the purpose and structure of pedagogy and the physical environment for a two to three year old required continuous flexibility and personalisation, creating what one practitioner named a "home from home" atmosphere (Tassoni, 2014).

	Previous research including the theme 'configuration of the children' from the systematic review, has suggested that consideration of group size can facilitate active learning (Booren et al., 2012; Kemp et al., 2013; Powell et al., 2008; Vitiello et al., 2012). A ratio of one adult to four children is stipulated in the EYFS framework (2014b) linked to ensuring appropriate responses (Munton et al., 2002). Practitioners were considerate of this and created spaces as relevant; practitioners also explained that smaller spaces could reduce anxiety. Mathers et al. (2014) discussed the importance of opportunities to be physically active for the under threes. Practitioners in the present study identified that an effective environment for two year olds in their settings needs to facilitate and accommodate physical movement.
Learning and development	The EYFS framework (2014b) suggests that an early years environment should ensure challenging and playful opportunities across all areas of learning. Planning for a child should be developmentally appropriate and practitioners should aim to work within a child's Zone of Proximal Development (Vygotsky, 1978). Previous findings recognise the importance of both teacher-led and child-led activity (Sylva et al., 2004). The current findings extend these ideas, and suggest that for the two to three year olds in the settings in this research, any teacher-led activity would be in response to a child's initiation; power and control was afforded to the child and any decisions were made with the child's perspective in mind (Arnstein, 1969; Lundy, 2007). Practitioners were continuously applying the processes described within the proposed theory to perceive the two to three year old's world, then utilising what they know about the child to maximise the experiences and opportunities provided in nursery.

What do my findings add?

This study provides empirical evidence on how practitioners working with two to three year olds supported active learning within their settings. This research clarifies the importance of recognising and supporting emotional needs as a prerequisite for this age group; a child will then be what the practitioners labelled as “ready to learn”; participating and embracing the active learning opportunities. Findings add to the well-recognised principles of early years practice, however the practitioners’ conceptualisation of active learning may suggest that there is also an affective dimension that needs to be considered; the systematic review failed to acknowledge this.

The practitioners perceived that establishing effective environments, with a focus on active learning opportunities, for two to three year olds in their settings involved a shift in practice that goes beyond current guidance for best practice. Practice considered principles of previous research (I categorised this into two areas of thinking pedagogical and logistical characteristics see p.63), as well as the three themes identified in the systematic review ‘configuration of the children’, ‘physical environment’ and ‘pedagogical approach’ but also involved practitioners immersing themselves within each child’s socio-cultural context to inform approach, the active learning opportunities co-created with the children, and relevant adaptions to practice and provision. The current research makes explicit the importance of ‘perceiving the child’s world’: knowing the child across systems and utilising information generated to inform practice and provision. The practitioners argued that fundamental to offering an environment that supports active learning was time for themselves to reflect, individually and collectively with key stakeholders (i.e. other staff members or a child’s family members).

Practitioners interviewed were reflective and although informally they could take advantage of thinking about their own practice individually and collectively this tended to be throughout the working day, whilst children were present. Practitioners did not always appear to have the time particularly to problems solve ideas with others in a formal forum, and as described on p.77 the goal of supervision could sometimes be appraisal. Perhaps the leadership teams within settings need to recognise the potential importance of time to reflect together more formally; prioritising this as a team activity. Perhaps the theory described and represented by the model (Figure 5) could

provide a frame, for early years teams, in which to consider the diverse and sometimes contradictory advice offered by current research, such as that explored in the systematic review. The model offered has the potential to empower other practitioners to reflect and think critically about their own practice with creating effective environments for active learning for two to three year olds.

Limitations

One of the strengths of the EPPE project was that a full range of early years provision was covered within the sample e.g. a children's centre, private day nurseries and integrated centres. This was not considered within the sample of the present study. Secondly, no differentiation was made between the arrangement of children within the setting, for example if two year olds had their own room or were in mixed aged groupings. This may have impacted on the findings, and it may be interesting to complete future research exploring whether the creation of such an environment or practice would produce different results depending on room arrangement (Nutbrown & Page, 2008).

It is possible that limiting this study to speaking only with early years professionals may have restricted the findings. Understanding what generates an effective environment is likely to differ from each perceiver, for example what one individual may define as supportive, another may find unhelpful. Therefore, expanding the sample to include parents and policy makers and a way to try and explore the two to three year old's view may have added value (Katz, 1993b, 1993c).

The study may have benefited from a narrower focus. For example, just focusing on continuous provision or how practitioners support effective interaction with children. This may have provided richer information within each process generated from the proposed theory, such as detailed strategies utilised for interaction or activities, or specifics about supervision and leadership.

The results of this research need to be interpreted within the context of the small sample and single researcher.

Implications for EP practice

There is a shift towards Educational Psychologists (EPs) moving away from assessments and more reactive ways of working toward a focus on preventative

approaches that can empower others to experiment and solve problems (Reschly, 2008; Wagner, 2008). More frequently, EPs are involved with systems thinking (Beaver, 2011; Kelly, Woolfson, & Boyle, 2008) and this can take the form of consultation with relevant individuals such as nursery practitioners and families for advancement of positive teaching and learning outcomes.

Consultation involves sharing and receiving information through collaborative discussion, developing supportive relationships, shared understanding and goals to facilitate the problem solving process (Wagner, 2008) with sensitivity. This approach is becoming a widely used tool and the skills needed are recognised as necessary for an Educational Psychologist (Farrell et al., 2006; HCPC, 2012; Scottish Executive, 2002). Consultation with nursery staff and parents is developing, particularly in the Local Authority in which I am based. An EP is now linked to a group of nurseries within the city and offers consultations throughout the academic year.

Therefore, working with others and having an understanding of the potential experiences of nursery practitioners is important for EPs. The model could be used to engage with learning conversations to explore and when necessary challenge current prominent discourse, and ways of practice, and ultimately to co-construct new knowledge that may empower practitioners to experiment with change in the contexts they are part of. This has the potential to build capacity, and support practitioners with continued professional development, by engaging with critical thinking to advance learning experiences for children.

The translation of research into practical action is important for application and usability purposes (Black & Wiliam, 1998; Ratcliffe et al., 2005; Siraj-Blatchford, Taggart, Sylva, Sammons, & Melhuish, 2008). Practical strategies linked to the theory could be shared and/or created with practitioners. Early years settings can take ideas from the constructed theory to apply and adapt as relevant in their own context. Arguably, this is a distinctive function of any Applied Educational Psychologist (Farrell et al., 2006).

Implications for research

The ideas constructed by exploring the practitioners' perspectives could continue, and be used as a framework to help bring a critical perspective to everyday practice, organising thinking and supporting the development of environments for two to three

year olds. This may increase the value of the findings, and act as a stimulus for applying the findings in practice. Frameworks have been found useful for guiding Educational Psychology practice and creating positive change (Kelly et al., 2008) and are often used as a method to inform practice such as the EYFS framework (Department for Education, 2014b).

It may also be interesting to follow up information referred to by practitioners that could not be explored within the scope of the present research:

- Benefits and challenges depending on whether two to three years olds are in a mixed age group environment or within a separate room

- Leadership and prioritising time for reflection and using supervision resourcefully in the early years.

General conclusions

Exploration of relevant literature and the practitioners' perceptions suggested that there are multiple processes involved with creating effective environments for two to three year olds. The findings from this research suggest a starting point is perceiving the child's world. Reflecting in and on practice and environment via observation and critical discussion with key persons will mean the child's world can be accessed. Creative and imaginative environments and ways of working will evolve that are more likely to be appropriate for the two to three year olds in any given context (facilitating participation and active learning). Creating effective environments to facilitate active learning is an ongoing problem solving process, and the proposed theory has the potential to serve as an interpretive frame which guides practitioner reflection in their own environments.

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Appendix A: The searching process

The Searching Process

<table>
<tr><td colspan="3">Systematic review question:
What key characteristics of the early year's environment are effective in advancing active learning?</td></tr>
<tr><td>Measurement Terms. Independent Variable (x):

Environment</td><td>Outcome terms. Dependent Variable (y):
Active Learning

(active play also 0 Web Of Knowledge Active play 1 in Scopus)</td><td>Population:

Early years</td></tr>
<tr><td colspan="3">Firstly the above terms were searched, no articles were found in Web of Knowledge or Scopus, at this stage, this could be interpreted as there being a gap in the literature for study in to this area.

This table was then used to record synonyms of the independent, dependent and population based on reading. I engaged in a process of trialling these terms. Further search terms were added based on words used in titles of relevant articles. Unnecessary terms were also removed. A brief description next to each tried search term is given.</td></tr>
<tr><td>attitudes (search term kept if removed possible relevant studies lost)
environment (search term kept, covers more specific terms, if removed relevant studies lost)</td><td>active play (articles worthy of further exploration, particularly in ERIC search)
active experience (similar amount of studies, doesn't add any studies of value to the question)</td><td>Preschool
Early Years
nurser*
kindergarden
kindergarten (spelling difference noted while reading and searching)</td></tr>
</table>

• community (similar amount of studies, doesn't add any studies of value to the question) • project (similar amount of studies, doesn't add any studies of value to the question) • curriculum (similar amount of studies, doesn't add any studies of value to the question) • skills (similar amount of studies, doesn't add any studies of value to the question) • attributes (does not add any studies) • pedagogy (search term kept, if removed possible relevant articles lost) • conditions (search term kept, if removed possible relevant studies lost) • ecosystem (does not add any studies) • ethos (similar amount of studies, doesn't add any studies of value to the question)	• active NEAR learning (too broad, too many results) • active learning (relevant studies ensures manageable amount of results) • active involvement (articles worthy of further exploration) • active engagement (articles worthy of further exploration) • active participation (increases results found could be seen as unmanageable, when looked at the extra added not relevant) • play* learning (doesn't increase results by many but those found are worth of further exploration) • NOT physical activity (added to remove those studies focusing on health benefit however, it also removed studies that may be relevant to the current systematic review therefore it was decided to exclude these via	Terms for Early Years context noted through reading and searching were included. Originally young child, toddler and infant were used as search terms however identifying the context rather than type of child resulted in more relevant studies that focused on education.

• approaches(search term kept if removed possible relevant studies lost) • school environments (included through the term environment) • values (search term kept if removed possible relevant studies lost) • disposition (does not add any studies) • technology (does not add any studies) • classroom (similar amount of studies, doesn't add any studies of value to question) • play space (similar amount of studies- not relevant) • organisation of learning (does not add any studies) • opportunit* (search term kept if removed possible relevant studies lost) • programme* (similar amount of studies, doesn't add any studies of value to the question) • inquiry based learning (does not add any studies)	reading through the abstracts) • Sedentary (Added, as this term seemed to arise within searches, however, it was later removed as it tended to add more studies where the focus was on health benefits)	

• **physical environment (included through the term environment)** • **social environment (included through the term environment)** • **outdoor environment (included through the term environment)** • **indoor environment (included through the term environment)** • **play based approach*** • **child directed** • **playful environments (included through the term environment)** • **resource (search term kept if removed possible relevant studies lost)**		
Through engaging in the process of widening out then reducing the search as necessary, the following search terms were found to produce articles with what seemed like relevant titles or abstracts for my systematic review question. **Final Search Terms:**		
Environment* OR pedagog* OR condition* OR opportunit* OR approach* OR values OR resource* or attitude*	"active play" or "active learning" or "active involvement" or "active engagement" or "play* learning"	Preschool* or "early years" or nurser* or kindergarden or kindergarten

Appendix B: Weight of evidence judgements

EPPI Centre Weight of Evidence (WoE) tool: (Malmskog & McDonnell, 1999)	
N.1 Are there ethical concerns about the way the study was done? *Consider consent, funding, privacy, etc.*	N.1.1 Yes, some concerns. No details given on neither how the children were selected nor the consent procedure.
N.2 Were students and/or parents appropriately involved in the design or conduct of the study? *Consider your answer to the appropriate question in module B.1*	N.2.1 Yes, a lot. Each child considered individually and parents were asked their views on the intervention package.
N.3 Is there sufficient justification for why the study was done the way it was? *Consider answers to questions B1, B2, B3, B4*	N.3.1 Yes. Purpose clearly explained. Use of multiple probe baselines explained; all seem justified.
N.4 Was the choice of research design appropriate for addressing the research question(s) posed?	N.4.1 yes, completely, explains each phase and the design seems appropriate for the intervention.
N.5 Have sufficient attempts been made to establish the repeatability or reliability of data collection methods or tools? *Consider your answers to previous questions:* *Do the authors describe any ways they have addressed the reliability or repeatability of their data collection tools and methods (K7)*	N.5.1 Yes, good. Researcher were trained on use of tools in a non-target classroom. Inter observer agreement established prior to data collection. During the study one of the trained observers was the primary observer second observer recorded simultaneously to assess observer agreement.
N.6 Have sufficient attempts been made to establish the validity or trustworthiness of data collection tools and methods? *Consider your answers to previous questions:* *Do the authors describe any ways they have addressed the validity or trustworthiness of their data collection tools/ methods (K6)*	N.6.2 Yes, some attempt. Categories of behaviours defined. Use of Ecobehavioural System for Complex Assessment of pre-school Environments (ESCAPE). Established tool however does not state if valid on the current population.

N.7 Have sufficient attempts been made to establish the repeatability or reliability of data analysis? *Consider your answer to the previous question:* *Do the authors describe any ways they have addressed the repeatability or reliability of data analysis? (L7)*	N.7.1 Yes. Clearly explained in terms of each child and phase.
N.8 Have sufficient attempts been made to establish the validity or trustworthiness of data analysis? *Consider your answer to the previous question:* *Do the authors describe any ways they have addressed the validity or trustworthiness of data analysis? (L8, L9, L10, L11)*	N.8.1 Yes, good. Mean percentages of engagement given, with the ranges. However, data analysis is limited to percentages in each phase, no statistical test completed.
N.9 To what extent is the research design and methods employed able to rule out any other sources of error/bias which would lead to alternative explanations for the findings of the study? *e.g. (1) In an evaluation, was the process by which participants were allocated to, or otherwise received the factor being evaluated, concealed and not predictable in advance? If not, were sufficient substitute procedures employed with adequate rigour to rule out any alternative explanations of the findings which arise as a result?* *e.g. (2) Was the attrition rate low and, if applicable, similar between different groups?*	N.9.1 A lot. Different phases. Systematic approach. Baseline gathered for each individual child. Three phases of intervention and maintenance probes every one-two weeks for the rest of school year. Validity was also checked using parent and teacher checklists both teachers and parents felt the intervention supported engagement.
N.10 How generalisable is the study results?	N.10.1 A little. Very small sample, similar children in a similar context.
N.11 In light of the above, do the reviewers differ from the authors over the findings or conclusions of the study? *Please state what any difference is.*	N/A
N.12 Have sufficient attempts been made to justify the conclusions drawn from the findings, so that the conclusions are trustworthy?	N.12.2 High trustworthiness Conclusions discussed in terms of the scope of the paper and limitations acknowledged.

N.13 Weight of evidence A: Taking account of all quality assessment issues, can the study findings be trusted in answering the study question(s)? ***In some studies it is difficult to distinguish between the findings of the study and the conclusions. In those cases, please code the trustworthiness of these combined results/conclusions.***	N.13.1 High trustworthiness
N.14 Weight of evidence B: Appropriateness of research design and analysis for addressing the question, or sub-questions, of this specific systematic review.	N.14.2 Medium
N.15 Weight of evidence C: Relevance of particular focus of the study (including conceptual focus, context, sample and measures) for addressing the question of this specific systematic review	N.15.3 Low
N.16 Weight of evidence D: Overall weight of evidence ***Taking into account quality of execution, appropriateness of design and relevance of focus, what is the overall weight of evidence this study provides to answer the question of this specific systematic review?***	N.16.3 Low
EPPI Centre Weight of Evidence (WoE) tool: (Kemp et al., 2013)	
N.1 Are there ethical concerns about the way the study was done? *Consider consent, funding, privacy, etc.*	N.1.2 No, permission gained by parents of participants, passive consent gained for those children that could also have been on video cameras. Those that did not have consent were moved to another area. Teachers also gave consent.
N.2 Were students and/or parents appropriately involved in the design or conduct of the study? *Consider your answer to the appropriate question in module B.1*	N.2.1 Yes, a lot. Permission gained and children accustomed to being videoed beforehand.

N.3 Is there sufficient justification for why the study was done the way it was? *Consider answers to questions B1, B2, B3, B4*	N.3.1 Yes, clear and appropriate research aims. Explained that children with ASD chosen as a criteria to investigate differences in available opportunities for engagement.
N.4 Was the choice of research design appropriate for addressing the research question(s) posed?	N.4.1 yes, completely. Design appropriate and reason video data taken and period of data collection explained; because the children started the programme at different times.
N.5 Have sufficient attempts been made to establish the repeatability or reliability of data collection methods or tools? *Consider your answers to previous questions:* *Do the authors describe any ways they have addressed the reliability or repeatability of their data collection tools and methods (K7)*	N.5.1 Yes, good. Clearly explained definitions and length of observation periods. Inter observer reliability established. This was also done over activity types to ensure reliability in coding in all aspects.
N.6 Have sufficient attempts been made to establish the validity or trustworthiness of data collection tools and methods? *Consider your answers to previous questions:* *Do the authors describe any ways they have addressed the validity or trustworthiness of their data collection tools/ methods (K6)*	N.6.1 Yes, good. The ICER-R used to collect data had been previously tested and validated. Has also been previously used with children with ASD. All codes explained with examples.
N.7 Have sufficient attempts been made to establish the repeatability or reliability of data analysis? *Consider your answer to the previous question:* *Do the authors describe any ways they have addressed the repeatability or reliability of data analysis? (L7)*	N.7.1 Yes, clear ANOVA, steps taken explained and results under sub headings corresponding to research questions.
N.8 Have sufficient attempts been made to establish the validity or trustworthiness of data analysis? *Consider your answer to the previous question:* *Do the authors describe any ways they have*	N.8.1 Yes, clearly explained the treatment of data, limitations discussed such as it not being possible to isolate level of disability.

addressed the validity or trustworthiness of data analysis? (L8, L9, L10, L11)	
N.9 To what extent is the research design and methods employed able to rule out any other sources of error/bias which would lead to alternative explanations for the findings of the study? *e.g. (1) In an evaluation, was the process by which participants were allocated to, or otherwise received the factor being evaluated, concealed and not predictable in advance? If not, were sufficient substitute procedures employed with adequate rigour to rule out any alternative explanations of the findings which arise as a result?* *e.g. (2) Was the attrition rate low and, if applicable, similar between different groups?*	N.9.2 A little. Intra Class correlation rules out variance between centres. Joined active and passive engagement together for one of the analysis which does not fit my definition of engagement. All children analysed together so individual children with differing disabilities may have made progress individually in terms of engagement that may not have been noticed within the coding system.
N.10 How generalisable is the study results?	N.10.1 A little. Difficult to say as children with a variety of disabilities included and analysed together, depending on the presentation or susceptibility or accessibility to the environment results may have been inflated or deflated, or more generalizable to one population than another which is difficult to determine from this study.
N.11 In light of the above, do the reviewers differ from the authors over the findings or conclusions of the study? *Please state what any difference is.*	N/A
N.12 Have sufficient attempts been made to justify the conclusions drawn from the findings, so that the conclusions are trustworthy?	N.12.2 High trustworthiness Results explained within constraints of the research and linked as much as possible to previous research. Limitations acknowledged and shared openly.
N.13 Weight of evidence A: Taking account of all quality assessment issues, can the study findings be trusted in answering the study question(s)? ***In some studies it is difficult to distinguish***	N.13.1 High trustworthiness

between the findings of the study and the conclusions. In those cases, please code the trustworthiness of these combined results/conclusions.	
N.14 Weight of evidence B: Appropriateness of research design and analysis for addressing the question, or sub-questions, of this specific systematic review.	N.14.2 Medium
N.15 Weight of evidence C: Relevance of particular focus of the study (including conceptual focus, context, sample and measures) for addressing the question of this specific systematic review	N.15.3 Low
N.16 Weight of evidence D: Overall weight of evidence ***Taking into account quality of execution, appropriateness of design and relevance of focus, what is the overall weight of evidence this study provides to answer the question of this specific systematic review?***	N.16.3 Low
EPPI Centre Weight of Evidence (WoE) tool: (Powell, Burchinal, File, & Kontos, 2008)	
N.1 Are there ethical concerns about the way the study was done? *Consider consent, funding, privacy, etc.*	N.1.2 No. Identified schools (offered a general curriculum not a specific one i.e. Montessori) were stratified into three categories based on the students racial/ethnic characteristics. Schools were then randomly chosen to approximate the racial/ethnic characteristics of the students in the area. The policy within the area was followed; school principals were contacted first to gain permission for the pre-kindergartens to participate. Once granted pre-kindergarten teachers were presented information about the study orally and in writing. Recruitment continued until 12

	classrooms consented to participate.
N.2 Were students and/or parents appropriately involved in the design or conduct of the study? *Consider your answer to the appropriate question in module B.1*	N.2.1 Yes, a lot. One of the focuses of the study was to examine the classrooms from a child's perspective. Children were only observed if parents had provided informed consent for their child's participation in the study.
N.3 Is there sufficient justification for why the study was done the way it was? *Consider answers to questions B1, B2, B3, B4*	N.3.1 Yes. Explanation of the eco-behavioural approach to examine the co-occurrence of active child engagement with different types of groupings and teacher behaviours. The authors stated that they pursued child's perspective on classrooms by observing individual children's behaviours and their classroom contexts, explained that this focus on children's experience meant that teacher involvement was only pertinent if they were in close proximity. Explained that each covariate was included based on evidence from previous research.
N.4 Was the choice of research design appropriate for addressing the research question(s) posed?	N.4.1 yes, completely. The observation tool captured data in four categories: the child's behaviour, they type of activity, the grouping, the behaviour. These categories seem appropriate for addressing the research questions. Teacher behaviour coding is explained with a justification (this configuration affords clear opportunity for the child teacher and child(ren) to engage in a verbal exchange) as to why being within 3ft proximity of the child.

	Observations 3 different days at 3 different times to capture stream of activities across the school day (other studies mornings). 10 second intervals, 20 seconds to code repeated until approximately 20 data points per child (different to other studies). ECERS-R was used to assess classroom quality 1-7 point scale/
N.5 Have sufficient attempts been made to establish the repeatability or reliability of data collection methods or tools? *Consider your answers to previous questions:* *Do the authors describe any ways they have addressed the reliability or repeatability of their data collection tools and methods (K7)*	N.5.1 Yes, good. Detailed definition of each code, in each category, for the observation tool. Data collectors were also trained before data collection and inter observer reliability established: 82% for engagement, 90% for activity, 85% for group setting, and 85% for teacher behaviour. Reliability was established through observations conducted in a pre-kindergarten classroom not associated with the study (not videos). The ECERS-R has been shown to be a reliable indicator of quality. Observed achieved 90% inter-observer reliability (agreement within one point on the scale) through training prior to the data collection.
N.6 Have sufficient attempts been made to establish the validity or trustworthiness of data collection tools and methods? *Consider your answers to previous questions:* *Do the authors describe any ways they have addressed the validity or trustworthiness of their data collection tools/ methods (K6)*	N.6.2 Yes, some attempt. Clear codes, described in detail. Explained that certain codes were collapsed to form different variables (however, no internal consistency measure as in the other studies). ECERS-R previously has been found to be a valid indictor of classroom quality. However, this was done five months before observations, which is a long time. Reflections on practice and accommodations to improve

	quality could have been made within this time.
N.7 Have sufficient attempts been made to establish the repeatability or reliability of data analysis? *Consider your answer to the previous question:* *Do the authors describe any ways they have addressed the repeatability or reliability of data analysis? (L7)*	N.7.1 Yes. Explained the steps taken. Such as what codes were combined to form similar variables. The data was analysed at the event level by examining multiple time sampled data points for each child, this was to preserve the co-occurrence of child behaviour and contextual factors. Clear regression analysis.
N.8 Have sufficient attempts been made to establish the validity or trustworthiness of data analysis? *Consider your answer to the previous question:* *Do the authors describe any ways they have addressed the validity or trustworthiness of data analysis? (L8, L9, L10, L11)*	N.8.1 Yes, good. Authors explained the use of generalised estimating equations (because it accommodates repeated assessments in categorical outcomes). Explains the use of models as these accounted for variation due to nested factors (within models that describe individual patterns of behaviour) and variation due to factors that may influence all individuals similarly (between models that predict individual differences in behaviour patterns from selected child and classroom factors).
N.9 To what extent is the research design and methods employed able to rule out any other sources of error/bias which would lead to alternative explanations for the findings of the study? *e.g. (1) In an evaluation, was the process by which participants were allocated to, or otherwise received the factor being evaluated, concealed and not predictable in advance? If not, were sufficient substitute procedures employed with adequate rigour to rule out any alternative explanations of the findings which arise as a result?* *e.g. (2) Was the attrition rate low and, if applicable, similar between different groups?*	N.9.2 A little. Sample stratified to be representative of the ethnic/racial characteristics of the area. Robust and clearly defined coding system with adequate observer reliability. Observations took place across the school day on three different occasions. All children (with consent observed). Due to interval times children were being observed relatively frequently, as children in preschool do tend to change activities frequently, every 5-8 minutes. A total of 20 data points.

	All 138 children participated throughout. Notes that correlational research can identify variables that warrant further exploration.
N.10 How generalisable is the study results?	N.10.1 OK/Good. Each child observed frequently, 20 data points per day. Observation schedule had clearly defined categories and took place in child's naturalistic setting. Sample from one USA area and stratified to represent the ethnic/racial characteristics of that one area.
N.11 In light of the above, do the reviewers differ from the authors over the findings or conclusions of the study? *Please state what any difference is.*	N.11.1 Not applicable
N.12 Have sufficient attempts been made to justify the conclusions drawn from the findings, so that the conclusions are trustworthy?	N.12.2 High trustworthiness Results supported previous concerns that whole group setting promoted passive modes of child participation and learning activities. Implications section that described the type of curriculum these results support. Interpretations of findings were backed up by previous research.
N.13 Weight of evidence A: Taking account of all quality assessment issues, can the study findings be trusted in answering the study question(s)? ***In some studies it is difficult to distinguish between the findings of the study and the conclusions. In those cases, please code the trustworthiness of these combined results/conclusions.***	N.13.1 High trustworthiness
N.14 Weight of evidence B: Appropriateness of research design and analysis for addressing the question, or	N.14.1 High

sub-questions, of this specific systematic review.	
N.15 Weight of evidence C: Relevance of particular focus of the study (including conceptual focus, context, sample and measures) for addressing the question of this specific systematic review	N.15.1 High
N.16 Weight of evidence D: Overall weight of evidence ***Taking into account quality of execution, appropriateness of design and relevance of focus, what is the overall weight of evidence this study provides to answer the question of this specific systematic review?***	N.16.1 High
EPPI Centre Weight of Evidence (WoE) tool: (Storli & Hagen, 2010)	
N.1 Are there ethical concerns about the way the study was done? *Consider consent, funding, privacy, etc.*	N.1.1 Yes, some concerns, the authors do not mention if or how consent was gained or go into detail on the recruitment process. The accelerometers were described as small, light and resilient so they were suitable for children without constricting their natural movements.
N.2 Were students and/or parents appropriately involved in the design or conduct of the study? *Consider your answer to the appropriate question in module B.1*	N.2.3 No, no details given
N.3 Is there sufficient justification for why the study was done the way it was? *Consider answers to questions B1, B2, B3, B4*	N.3.1 Yes, purpose of article explained, to explore children's physically active play linked to previous studies and the ecological perceptual psychology view.
N.4 Was the choice of research design appropriate for addressing the research question(s) posed?	N.4.1 yes, explained the use of Heft's (1988) taxonomy to evaluate the play environments and the use of accelerometers to

	measure physically active play. This seems appropriate.
N.5 Have sufficient attempts been made to establish the repeatability or reliability of data collection methods or tools? *Consider your answers to previous questions:* *Do the authors describe any ways they have addressed the reliability or repeatability of their data collection tools and methods (K7)*	N.5.2 Yes, some attempt. The authors state that the reliability of the accelerometers is tested and evaluated to give a good estimate of total physical activity. No attempts at establishing repeatability or reliability for the Heft's functional taxonomy have been noted.
N.6 Have sufficient attempts been made to establish the validity or trustworthiness of data collection tools and methods? *Consider your answers to previous questions:* *Do the authors describe any ways they have addressed the validity or trustworthiness of their data collection tools/ methods (K6)*	N.6.2 Yes, some attempt. The authors state that the validity of the accelerometers is tested and evaluated to give a good estimate of total physical activity. Authors also acknowledge that the accelerometers does not record activities executed by the upper body. Therefore, in relation to the definition of active play in the present systematic review children could have been activity involved and playing and the accelerometers may not have recorded it.
N.7 Have sufficient attempts been made to establish the repeatability or reliability of data analysis? *Consider your answer to the previous question:* *Do the authors describe any ways they have addressed the repeatability or reliability of data analysis? (L7)*	N.7.2 No, authors do explain that the swing represented a source of error increasing the counts per minute. The article states that procedures for cut points and data reduction for accelerometer derived measures was considered but the process and justifications are nit described. The SPSS data is clear but no details on the steps taken or tests conducted on the data.

N.8 Have sufficient attempts been made to establish the validity or trustworthiness of data analysis? *Consider your answer to the previous question:* *Do the authors describe any ways they have addressed the validity or trustworthiness of data analysis? (L8, L9, L10, L11)*	N.8.3 No. Explains that data was analysed in SPSS and that observations, videos and photos were analysed but does not give any further information. The study would benefit from a description of how and what this was done and if a certain framework for analysis was used.
N.9 To what extent is the research design and methods employed able to rule out any other sources of error/bias which would lead to alternative explanations for the findings of the study? *e.g. (1) In an evaluation, was the process by which participants were allocated to, or otherwise received the factor being evaluated, concealed and not predictable in advance? If not, were sufficient substitute procedures employed with adequate rigour to rule out any alternative explanations of the findings which arise as a result?* *e.g. (2) Was the attrition rate low and, if applicable, similar between different groups?*	N.9.3 Not at all. Not kept to the individual child level of observation and data analysis. A small sample size and the preschool was selected on the basis of its location and playground. Sources of error found within the accelerometer recordings. The accelerometers only registered vertical motion leaving one to question the extent to which they were truly capturing a child's physically active play.
N.10 How generalisable is the study results?	N.10.1 Poor, relatively small sample sized from one child care centre from one city. Does not support previous research finding, further research needed.
N.11 In light of the above, do the reviewers differ from the authors over the findings or conclusions of the study? *Please state what any difference is.*	N.11.1 Not applicable
N.12 Have sufficient attempts been made to justify the conclusions drawn from the findings, so that the conclusions are trustworthy?	N.12.3 Medium trustworthiness Although no significant differences were found between play environments strong correlations for active play were found on an individual level. This finding is

	explained with reference to research as well as suggestions made such as constraints in the individual, and in the physical and sociocultural environment determine how and if an affordance is perceived and if it becomes utilised, and the findings do warrant discussion and further exploration.
N.13 Weight of evidence A: Taking account of all quality assessment issues, can the study findings be trusted in answering the study question(s)? ***In some studies it is difficult to distinguish between the findings of the study and the conclusions. In those cases, please code the trustworthiness of these combined results/conclusions.***	N.13.2 Medium trustworthiness
N.14 Weight of evidence B: Appropriateness of research design and analysis for addressing the question, or sub-questions, of this specific systematic review.	N.14.2 Medium
N.15 Weight of evidence C: Relevance of particular focus of the study (including conceptual focus, context, sample and measures) for addressing the question of this specific systematic review	N.15.3 Low
N.16 Weight of evidence D: Overall weight of evidence ***Taking into account quality of execution, appropriateness of design and relevance of focus, what is the overall weight of evidence this study provides to answer the question of this specific systematic review?***	N.16.2 Medium
EPPI Centre Weight of Evidence (WoE) tool: (Vitiello, Booren, Downer, & Williford, 2012)	
N.1 Are there ethical concerns about the way the study was done? *Consider consent, funding, privacy, etc.*	N.1.2 No. Schools within reasonable driving distance from the research office were

	approached (78). 28 declined and 10 did not respond. After permission from the director of each preschool, teachers were then invited to participate. 110 were invited, 84 consented. Parental consent was then sought.
N.2 Were students and/or parents appropriately involved in the design or conduct of the study? *Consider your answer to the appropriate question in module B.1*	N.2.1 Yes, a lot. All parents or guardians of participating classrooms were given an informational consent letter and demographic survey. Four children in each preschool randomly selected from those parents that had given consent.
N.3 Is there sufficient justification for why the study was done the way it was? *Consider answers to questions B1, B2, B3, B4*	N.3.1 Yes. Clear purpose to understand sources of variation in children's positive and negative engagement with teachers, peers, tasks and to examine the associations of classroom activity and setting. Explains that observations methods were used to capture associations and to extend previous research by utilising multilevel models for a larger more diverse sample. Aims clearly set out with links to previous research.
N.4 Was the choice of research design appropriate for addressing the research question(s) posed?	N.4.1 yes, completely. The dimensions of the too (inCLASS) captured data that seems appropriate for addressing the research question. The checklists also captured ecological factors (teacher behaviour and activity setting) that linked well to the research questions and aims. 15 minute cycles (10minute observation, 5 minute coding), for a target of four observation cycles per child. One visit to each classroom within a four month

	period. The design seems appropriate. Definitions for the coding of the checklist categories adapted from Richie, Howes, Kraft-Sayre and Weiser, 2001). Observation only took place in the morning and afternoon sessions.
N.5 Have sufficient attempts been made to establish the repeatability or reliability of data collection methods or tools? *Consider your answers to previous questions:* *Do the authors describe any ways they have addressed the reliability or repeatability of their data collection tools and methods (K7)*	N.5.1 Yes, good. Data collectors attended training and were required to reliability code 5 video clips before observing live. The team were within one point of the master coder an average of 90% of the time, with the lowest score in the range not falling below the 80% pass mark. Master coders were a group of researchers, educators and designers of the inCLASS observation system. Authors note that the variability in children's inCLASS scores from cycle to cycle may indicate low cycle level reliability, although scores show high inter rate reliability authors suggest that for future use it is important think how variable classroom factors affect children's behaviours when designing studies.
N.6 Have sufficient attempts been made to establish the validity or trustworthiness of data collection tools and methods? *Consider your answers to previous questions:* *Do the authors describe any ways they have addressed the validity or trustworthiness of their data collection tools/ methods (K6)*	N.6.1 Yes, good. The ten dimensions were organised into four domains and internal consistencies by Cronbach's alpha were as follows: Positive engagement with teachers (.73), positive engagement with peers (.86), positive engagement with tasks (.65) and negative classroom engagement (.67). These fall within the acceptable and good descriptors. Authors acknowledge that the rating of behaviour may miss important variations of behaviour that occur within a single day. They also note

	that the observation protocol is not designed to give detailed descriptions of teacher behaviour.
N.7 Have sufficient attempts been made to establish the repeatability or reliability of data analysis? *Consider your answer to the previous question:* *Do the authors describe any ways they have addressed the repeatability or reliability of data analysis? (L7)*	N.7.1 Yes. Detailed description of Multi level models were ran to address the nested nature of the data. Four models were run to test the associations of interest. Three levels level cycle level, child level and classroom level.
N.8 Have sufficient attempts been made to establish the validity or trustworthiness of data analysis? *Consider your answer to the previous question:* *Do the authors describe any ways they have addressed the validity or trustworthiness of data analysis? (L8, L9, L10, L11)*	N.8.1 Yes, good. Modelling of variance components followed recommendations of Radenbush and Bryk (2002). Authors explicitly state their treatment of the data. Limitations are acknowledged such as the models they presented only accounted for 7-23% of the cycle level variance in engagement which does leave a substantial amount of variance unexplained.
N.9 To what extent is the research design and methods employed able to rule out any other sources of error/bias which would lead to alternative explanations for the findings of the study? *e.g. (1) In an evaluation, was the process by which participants were allocated to, or otherwise received the factor being evaluated, concealed and not predictable in advance? If not, were sufficient substitute procedures employed with adequate rigour to rule out any alternative explanations of the findings which arise as a result?* *e.g. (2) Was the attrition rate low and, if applicable, similar between different groups?*	N.9.2 A little Data collectors were trained, used of a robust observational measure and observations were in children's naturalistic settings. Authors noted that a limitation of the study was that activity setting code assigned to each cycle was the setting that predominated but it may not have been the only setting observed within the ten minutes. Data collectors did not record the content of activities nor the number of children involved in each activity setting which may have added important information.
N.10 How generalisable is the study results?	N.10.1 OK. Relatively large sample size from different

	preschool classrooms. High proportion of Hispanic participant
N.11 In light of the above, do the reviewers differ from the authors over the findings or conclusions of the study? *Please state what any difference is.*	N.11.1 Not applicable
N.12 Have sufficient attempts been made to justify the conclusions drawn from the findings, so that the conclusions are trustworthy?	N.12.2 High trustworthiness Yes each result and association is discussed separately, possible explanations given and linked to previous research and perspectives.
N.13 Weight of evidence A: Taking account of all quality assessment issues, can the study findings be trusted in answering the study question(s)? ***In some studies it is difficult to distinguish between the findings of the study and the conclusions. In those cases, please code the trustworthiness of these combined results/conclusions.***	N.13.1 High trustworthiness
N.14 Weight of evidence B: Appropriateness of research design and analysis for addressing the question, or sub-questions, of this specific systematic review.	N.14.1 High
N.15 Weight of evidence C: Relevance of particular focus of the study (including conceptual focus, context, sample and measures) for addressing the question of this specific systematic review	N.15.1 High
N.16 Weight of evidence D: Overall weight of evidence ***Taking into account quality of execution, appropriateness of design and relevance of focus, what is the overall weight of evidence this study provides to answer the question of this specific systematic review?***	N.16.1 High
EPPI Centre Weight of Evidence (WoE) tool: (Ebbeck et al., 2012)	

N.1 Are there ethical concerns about the way the study was done? *Consider consent, funding, privacy, etc.*	N.1.1 Yes, some concerns, the authors do not mention if or how consent was gained or go into detail on the recruitment process
N.2 Were students and/or parents appropriately involved in the design or conduct of the study? *Consider your answer to the appropriate question in module B.1*	N.2.3 No, no details given
N.3 Is there sufficient justification for why the study was done the way it was? *Consider answers to questions B1, B2, B3, B4*	N.3.1 Yes. Authors explained the aim of assessing the curriculum for strengths and weaknesses and linked this to literature on the importance of early childhood experiences and theories of learning.
N.4 Was the choice of research design appropriate for addressing the research question(s) posed?	N.4.1 Yes, evaluation of the curriculum and reason why pre and post chosen was explained (to measure change in a situation). Seems justified and appropriate.
N.5 Have sufficient attempts been made to establish the repeatability or reliability of data collection methods or tools? *Consider your answers to previous questions:* *Do the authors describe any ways they have addressed the reliability or repeatability of their data collection tools and methods (K7)*	N.5.1 Yes, good. Prior to data collection researchers were trained in the use of the Leavers' Involvement Scale. Inter observer reliability checks agreement level 90% and above.
N.6 Have sufficient attempts been made to establish the validity or trustworthiness of data collection tools and methods? *Consider your answers to previous questions:* *Do the authors describe any ways they have addressed the validity or trustworthiness of their data collection tools/ methods (K6)*	N.6.1 Yes, good. A trial of the involvement scale was conducted to assess the efficacy in a Singaporean context. It was found to be culturally appropriate and well suited to the age population. However, the authors do not go into any further detail on the process or outcomes.

N.7 Have sufficient attempts been made to establish the repeatability or reliability of data analysis? *Consider your answer to the previous question:* *Do the authors describe any ways they have addressed the repeatability or reliability of data analysis? (L7)*	N.7.1 Yes, clear analysis using ANOVA
N.8 Have sufficient attempts been made to establish the validity or trustworthiness of data analysis? *Consider your answer to the previous question:* *Do the authors describe any ways they have addressed the validity or trustworthiness of data analysis? (L8, L9, L10, L11)*	N.8.2 Yes, analysis is justified and valid. Authors acknowledged that curriculum effectiveness was based on only one observation scale. However, no limitations are discussed or alternatives ways of analysis explored or explained.
N.9 To what extent is the research design and methods employed able to rule out any other sources of error/bias which would lead to alternative explanations for the findings of the study? *e.g. (1) In an evaluation, was the process by which participants were allocated to, or otherwise received the factor being evaluated, concealed and not predictable in advance? If not, were sufficient substitute procedures employed with adequate rigour to rule out any alternative explanations of the findings which arise as a result?* *e.g. (2) Was the attrition rate low and, if applicable, similar between different groups?*	N.9.3 Not at all. Pre and post evaluation does have limitations. Variables other than the curriculum and the areas the involvement scale was measuring, that mat have also accounted for an improvement over the evaluation period, were not acknowledged nor accounted for.
N.10 How generalisable is the study results?	N.10.1 Poor, relatively small sample sized from one child care centre from one city with 95.1% of children of national race (Chinese).
N.11 In light of the above, do the reviewers differ from the authors over the findings or	N.11.1 Not applicable

conclusions of the study? *Please state what any difference is.*	
N.12 Have sufficient attempts been made to justify the conclusions drawn from the findings, so that the conclusions are trustworthy?	N.12.2 High trustworthiness Linked findings and conclusions to socio-constructivist approach that underpinned the curriculum and has been advocated by researchers as a successful way of facilitating children's learning.
N.13 Weight of evidence A: Taking account of all quality assessment issues, can the study findings be trusted in answering the study question(s)? ***In some studies it is difficult to distinguish between the findings of the study and the conclusions. In those cases, please code the trustworthiness of these combined results/conclusions.***	N.13.2 Medium trustworthiness
N.14 Weight of evidence B: Appropriateness of research design and analysis for addressing the question, or sub-questions, of this specific systematic review.	N.14.1 High
N.15 Weight of evidence C: Relevance of particular focus of the study (including conceptual focus, context, sample and measures) for addressing the question of this specific systematic review	N.15.2 Medium
N.16 Weight of evidence D: Overall weight of evidence ***Taking into account quality of execution, appropriateness of design and relevance of focus, what is the overall weight of evidence this study provides to answer the question of this specific systematic review?***	N.16.2 Medium/Low
EPPI Centre Weight of Evidence (WoE): (Booren, Downer, & Vitiello, 2012)	
N.1 Are there ethical concerns about the way the study was done? *Consider consent, funding, privacy, etc.*	N.1.2 No. Permission granted from director, and then teachers were invited to participate. Children selected from those

	parents that had given informed consent. Teachers were offered a choice of a payment or a new video camera for their participation.
N.2 Were students and/or parents appropriately involved in the design or conduct of the study? *Consider your answer to the appropriate question in module B.1*	N.2.1 Yes, a lot, all parents or guardians in each participating classroom were given an informational consent letter. Children selected from those that had given consent.
N.3 Is there sufficient justification for why the study was done the way it was? *Consider answers to questions B1, B2, B3, B4*	N.3.1 Yes, aims explained to examine a complete picture of young children's interactions in the classroom, providing descriptions of contextual factors alongside ratings of behaviour. Choice of observational approach and design explained; it allowed multiple observations of each child in order to examine patterns of behaviour across and within classroom activities and how these relate to teacher behaviour.
N.4 Was the choice of research design appropriate for addressing the research question(s) posed?	N.4.1 yes, completely. The dimensions of the too (inCLASS) captured data that seems appropriate for addressing the research question. The checklists also captured ecological factors (teacher behaviour and activity setting) that linked well to the research questions and aims. 15 min cycles (10mins observation, 5 min coding), same children observed in the first and second visits, seems appropriate. Observation only took place in the morning sessions (what about coding if child was observed in more than on type of setting or activity in the ten minutes? Where

	definitions of coding for the checklist given as in Viltello?).
N.5 Have sufficient attempts been made to establish the repeatability or reliability of data collection methods or tools? *Consider your answers to previous questions:* *Do the authors describe any ways they have addressed the reliability or repeatability of their data collection tools and methods (K7)*	N.5.1 Yes, good. Authors explained that the researchers attended training and were required to reliably code video before embarking on live observations. The team were within 1 point of the master coder 85% of the time. Also, the intraclass correlation was .65, this has been described as good for observational assessments (Cicchetti and Sparrow, 1981).
N.6 Have sufficient attempts been made to establish the validity or trustworthiness of data collection tools and methods? *Consider your answers to previous questions:* *Do the authors describe any ways they have addressed the validity or trustworthiness of their data collection tools/ methods (K6)*	N.6.1 Yes, good. The dimensions of inCLASS were organised into domains internal consistencies given by Cronbach's alpha: Teacher interactions (.80), Peer Interactions (.92), Task orientation (.72) and Conflict Interaction (.71). All within the good or excellent range. Acknowledges that the method does not solely capture the children's experience for example personal interests and motivations (GAP: Is this where my research could extend. Interviews that also capture the experiences qualitatively explore the role of the teacher and how they manage the setting). Explains that children may have been observed to be less engaged in some settings because of the topic being taught and not because of setting, so further information on content and nature of a task would be helpful. Acknowledges that they only observed two teacher variables of the role of the teacher. Additional information that looks more directly at the demands on the child by examining how the

	teachers manage the setting is also needed.
N.7 Have sufficient attempts been made to establish the repeatability or reliability of data analysis? *Consider your answer to the previous question:* *Do the authors describe any ways they have addressed the repeatability or reliability of data analysis? (L7)*	N.7.1 Yes. Explained that the data remained at the cycle level to preserve the co-occurrence of child behaviour and setting information. A multivariate analysis of variance conducted to examine the patterns of children's interactions for each dimension on the inCLASS. This was significant. Authors then conducted a univariate analysis of variance.
N.8 Have sufficient attempts been made to establish the validity or trustworthiness of data analysis? *Consider your answer to the previous question:* *Do the authors describe any ways they have addressed the validity or trustworthiness of data analysis? (L8, L9, L10, L11)*	N.8.1 Yes, good. Limitations are acknowledged such as the correlational nature of the research and explanations for the findings discussed
N.9 To what extent is the research design and methods employed able to rule out any other sources of error/bias which would lead to alternative explanations for the findings of the study? *e.g. (1) In an evaluation, was the process by which participants were allocated to, or otherwise received the factor being evaluated, concealed and not predictable in advance? If not, were sufficient substitute procedures employed with adequate rigour to rule out any alternative explanations of the findings which arise as a result?* *e.g. (2) Was the attrition rate low and, if applicable, similar between different groups?*	N.9.2 A little (please specify) Children were observed on two separate occasions. Robust coding mechanism and in a naturalistic setting. Limitations of correlational finding acknowledged. 164 children down to 145 children for data analysis; this still equated to 1001 observations.
N.10 How generalisable is the study results?	N.10.1 Good. Relatively large sample size, taken from 44 different classrooms across the USA. Good generalizability to explain connections within the

	parameters of the dimensions controlled and coded.
N.11 In light of the above, do the reviewers differ from the authors over the findings or conclusions of the study? *Please state what any difference is.*	N.11.1 Not applicable
N.12 Have sufficient attempts been made to justify the conclusions drawn from the findings, so that the conclusions are trustworthy?	N.12.2 High trustworthiness Yes each dimension is discussed separately, possible explanations given and linked to previous research and perspectives.
N.13 Weight of evidence A: Taking account of all quality assessment issues, can the study findings be trusted in answering the study question(s)? ***In some studies it is difficult to distinguish between the findings of the study and the conclusions. In those cases, please code the trustworthiness of these combined results/conclusions.***	N.13.1 High trustworthiness
N.14 Weight of evidence B: Appropriateness of research design and analysis for addressing the question, or sub-questions, of this specific systematic review.	N.14.1 High
N.15 Weight of evidence C: Relevance of particular focus of the study (including conceptual focus, context, sample and measures) for addressing the question of this specific systematic review	N.15.1 High
N.16 Weight of evidence D: Overall weight of evidence ***Taking into account quality of execution, appropriateness of design and relevance of focus, what is the overall weight of evidence this study provides to answer the question of this specific systematic review?***	N.16.1 High

EPPI Centre Weight of Evidence (WoE) tool: (Kontos & Keyes, 1999)	
N.1 Are there ethical concerns about the way the study was done? *Consider consent, funding, privacy, etc.*	N.1.1 Yes, no details given
N.2 Were students and/or parents appropriately involved in the design or conduct of the study? *Consider your answer to the appropriate question in module B.1*	N.2.3 No, no details given
N.3 Is there sufficient justification for why the study was done the way it was? *Consider answers to questions B1, B2, B3, B4*	N.3.1 Yes. Detailed description of the eco-behavioural approach; by understanding how children interact with the environment and persons within that environment, we can understand how the environment promotes Children's learning and development.
N.4 Was the choice of research design appropriate for addressing the research question(s) posed?	N.4.1 yes, completely. The eco-behavioural approach to observation described in detail and fits the research questions; what child and classroom characteristics typically accompany complex interactions with objects and peers? And (2) under what circumstances are children more likely to experience complex interactions from teachers in the classroom? The measured observed also appropriately address the research questions. Scan sampling described as a useful way for observing behaviours in small social settings. Each child was observed for two seconds, does leave one to question if this is enough time to consider all contextual features.
N.5 Have sufficient attempts been made to establish the repeatability or reliability of data collection methods or tools?	N.5.1 Yes, good. Two trained graduate students collected data. Prior to data collection inter-

Consider your answers to previous questions: *Do the authors describe any ways they have addressed the reliability or repeatability of their data collection tools and methods (K7)*	observer agreement was obtained when 90% was reached. Periodic checks (every tenth) were also made throughout the study this ranged from between 80-100%. Cohen's Kappa was computed for observational components: Interactions with peers (.60), interactions with objects (.60), ignore (1.0), involved (1.0), teacher responsive involvement (1.0), activity (1.0,) and social configuration (1.0).
N.6 Have sufficient attempts been made to establish the validity or trustworthiness of data collection tools and methods? *Consider your answers to previous questions:* *Do the authors describe any ways they have addressed the validity or trustworthiness of their data collection tools/ methods (K6)*	N.6.1 Yes, good. Explained how definitions for the observation tool derived. The interaction with objects were compiled from previous researchers Howes (1990), Howes and Stewart 1987), and Smilansky (1968). The interactions with peers definitions were a compilation of work by Howes (1988; 1990) and Parten (1932). The interaction with objects categories were retained in the original forms Howes and Smilansky identified. All other measured were also described. Teacher interactions measured using Howes involvement scale (Howes and Stewart, 1987). 6 levels clearly defined and only coded on the 6 levels if teacher was within 3ft.
N.7 Have sufficient attempts been made to establish the repeatability or reliability of data analysis? *Consider your answer to the previous question:* *Do the authors describe any ways they have addressed the repeatability or reliability of data analysis? (L7)*	N.7.1 Yes. Steps taken clearly and explicitly reported. General estimating equation methods were used to model the log-odds of complex interactions with objects and peers, and complex interactions with teachers, as a function of child and classroom variables.
N.8 Have sufficient attempts been made to establish the validity or trustworthiness of data	N.8.1 Yes, good. Clearly explained why data should not be

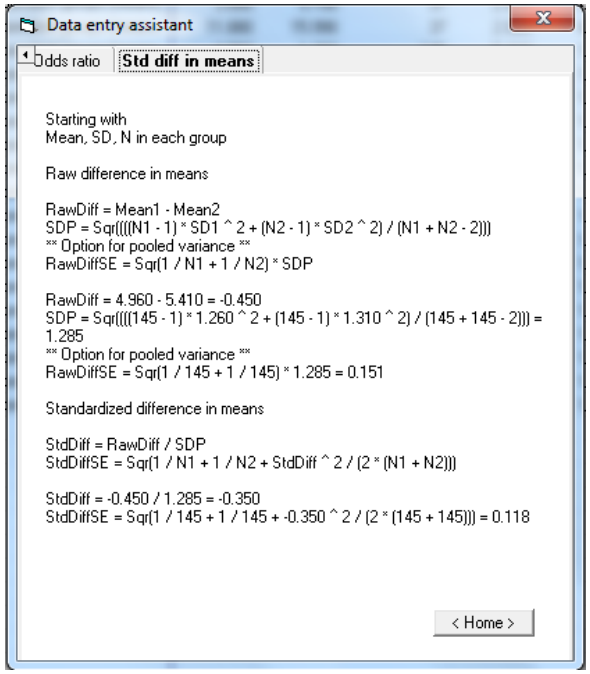
analysis? *Consider your answer to the previous question:* *Do the authors describe any ways they have addressed the validity or trustworthiness of data analysis? (L8, L9, L10, L11)*	collapsed within child when analysing co-occurrence and factors that may vary within child observations. Explicitly discusses the processes researchers took to decide the type of data analysis Use of generalised estimating equations (GEE). GEE is a method that can be used appropriately for fitting generalised linear models when data are correlated. In this study, data were correlated because repeated measures were collected on the same individuals. Also, GEE requires no distributional assumptions regarding the dependent variables.
N.9 To what extent is the research design and methods employed able to rule out any other sources of error/bias which would lead to alternative explanations for the findings of the study? *e.g. (1) In an evaluation, was the process by which participants were allocated to, or otherwise received the factor being evaluated, concealed and not predictable in advance? If not, were sufficient substitute procedures employed with adequate rigour to rule out any alternative explanations of the findings which arise as a result?* *e.g. (2) Was the attrition rate low and, if applicable, similar between different groups?*	N.9.2 A little. Explains differences in finding may be because most previous studies have not controlled for the nested nature of data, using GEE in this study did. Acknowledges that 2 seconds time sampling is shorter than previous studies and this could have limited what was observed but no investigation has been completed on how a two second observation interval may affect the ability to identify co-occurrence of teacher child behaviour. Explains that the data is correlational and does not allow for causal inferences.
N.10 How generalisable is the study results?	N.10.1 OK. Small sample from 3 child care centres that were linked to universities meaning children were from educated, affluent families. Average of 54 data points per child however the extent to which information may have been missed because of the 2 sec

	intervals for observation is unknown.
N.11 In light of the above, do the reviewers differ from the authors over the findings or conclusions of the study? *Please state what any difference is.*	N.11.1 Not applicable
N.12 Have sufficient attempts been made to justify the conclusions drawn from the findings, so that the conclusions are trustworthy?	N.12.2 High trustworthiness Although some of the results are contrary to previous research in terms of teacher behaviour and the effects on children's interactions with objects and peers, valid explanations are given such as the reflection on the time sampling and analysis. However, new method of analysis (GEE, controlling for the nested nature of data) within this research seem valid of further exploration. It enables researchers to examine behaviours at the event level thus enhancing one's ability to identify specific classroom conditions that support children's competence. The study does highlight the importance of other contextual factors for child behaviour and the authors discuss the evidence these results have the potential to add too such as the growing evidence that activities in which children engage play a crucial role in eliciting complex interactions with objects.
N.13 Weight of evidence A: Taking account of all quality assessment issues, can the study findings be trusted in answering the study question(s)? ***In some studies it is difficult to distinguish between the findings of the study and the conclusions. In those cases, please code the trustworthiness of these combined results/conclusions.***	N.13.1 High trustworthiness
N.14 Weight of evidence B: Appropriateness of research design and	N.14.1 High

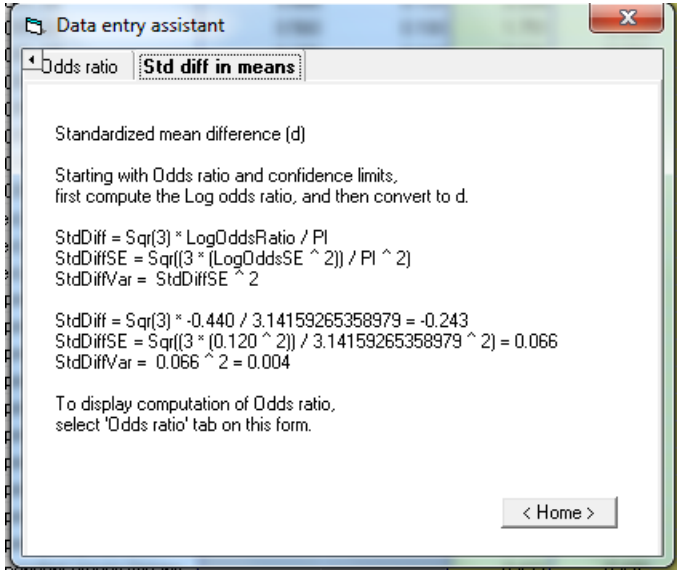
analysis for addressing the question, or sub-questions, of this specific systematic review.	
N.15 Weight of evidence C: Relevance of particular focus of the study (including conceptual focus, context, sample and measures) for addressing the question of this specific systematic review	N.15.1 High
N.16 Weight of evidence D: Overall weight of evidence ***Taking into account quality of execution, appropriateness of design and relevance of focus, what is the overall weight of evidence this study provides to answer the question of this specific systematic review?***	N.16.1 High

Appendix C: Examples from the Comprehensive Meta-Analysis software

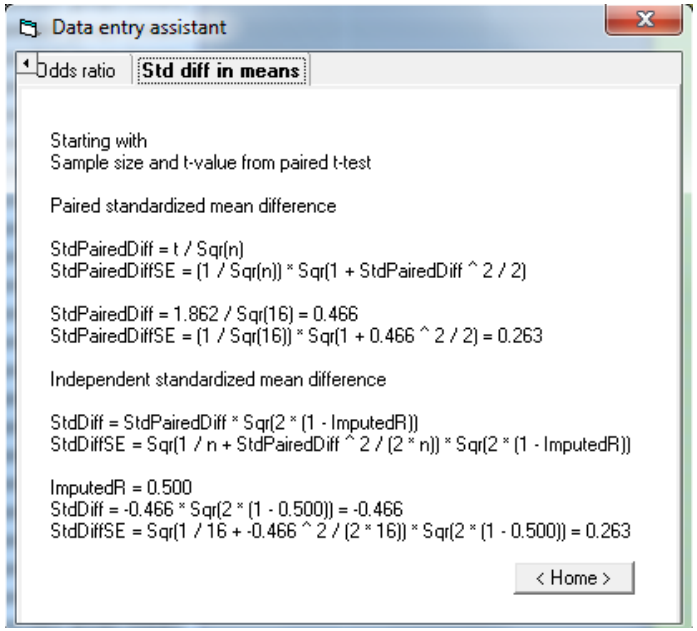
53	Booren	Task engagement: Large group Vs recess	Independent groups (means,	4.960	1.260	145	5.410	1.310	145	Auto	0.530	-0.350	0.118
54	Booren	Peer Interaction: Large group Vs small group	Independent groups (means,	3.710	1.150	145	4.320	1.400	145	Auto	0.422	-0.476	0.119
55	Booren	Peer Interaction: Large group Vs free choice	Independent groups (means,	3.710	1.150	145	4.470	1.520	145	Auto	0.360	-0.564	0.120
56	Booren	Peer Interaction: Large group Vs recess	Independent groups (means,	3.710	1.150	145	4.950	1.490	145	Auto	0.185	-0.932	0.124
57	Booren	Peer Interaction: large group Vs meals	Independent groups (means,	3.710	1.150	145	4.320	1.430	145	Auto	0.426	-0.470	0.119
58	Booren	Perr Interaction: Large group Vs routine	Independent groups (means,	3.710	1.150	145	4.210	1.250	145	Auto	0.470	-0.416	0.119
59	Booren	Peer interaction: small group Vs recess	Independent groups (means,	4.320	1.400	145	4.950	1.490	145	Auto	0.454	-0.436	0.119
60	Booren	Peer Interaction: free choice Vs recess	Independent groups (means,	4.470	1.520	145	4.950	1.490	145	Auto	0.561	-0.319	0.118
61	Booren	Peer Interaction: recess vs meals	Independent groups (means,	4.950	1.490	145	4.320	1.430	145	Auto	2.187	0.431	0.119
62	Booren	Peer Interaction: recess vs routine	Independent groups (means,	4.950	1.490	145	4.210	1.250	145	Auto	2.654	0.538	0.120
63	Booren	Teacher Interaction:large group vs free choice	Independent groups (means,	4.070	1.250	145	3.300	1.530	145	Auto	2.717	0.551	0.120
64	Booren	Teacher Interactiob: large group Vs recess	Independent groups (means,	4.070	1.250	145	2.910	1.540	145	Auto	4.482	0.827	0.122
65	Booren	Teacher Interaction: small group Vs free choice	Independent groups (means,	3.880	1.660	145	3.300	1.660	145	Auto	1.885	0.349	0.118
66	Booren	Teacher Interaction: small group vs recess	Independent groups (means,	3.880	1.660	145	2.910	1.540	145	Auto	3.001	0.606	0.120
67	Booren	Teacher Interaction: recess vs meals	Independent groups (means,	2.910	1.540	145	3.710	1.390	145	Auto	0.372	-0.545	0.120
68	Booren	Teacher Interaction: recess vs routine	Independent groups (means,	2.910	1.540	145	3.730	1.220	145	Auto	0.343	-0.590	0.120



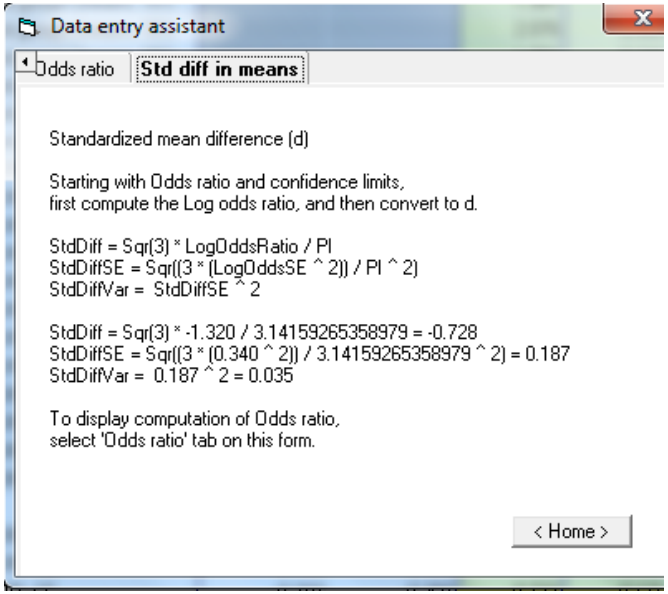
	Study name	Comparison	Data format	Odds ratio (log)	Std error (log)	Odds ratio	Std diff in means	Std Err
29	Vitello	Free choice Vs Engagement teachers	Log OR, SE	-0.440	0.120	0.644	-0.243	0.066
30	Vitello	Free choice Vs Engagement peers	Log OR, SE	0.470	0.140	1.600	0.259	0.077
31	Vitello	Free choice Vs Engagement tasks	Log OR, SE	0.550	0.100	1.733	0.303	0.055
32	Vitello	Outdoor Vs Engagement teacher	Log OR, SE	-0.540	0.100	0.583	-0.298	0.055
33	Vitello	Outdoor Vs Engagement peers	Log OR, SE	0.800	0.120	2.226	0.441	0.066
34	Vitello	Outdoors Vs engagemenr tasks	Log OR, SE	0.560	0.100	1.751	0.309	0.055
35	Vitello	Transition/routine Vs engagement teachers	Log OR, SE	-0.370	0.110	0.691	-0.204	0.061
36	Vitello	Transition/routine Vs engagement peers	Log OR, SE	0.180	0.110	1.197	0.099	0.061
37	Vitello	Transition/routine Vs enagement tasks	Log OR, SE	-0.290	0.100	0.748	-0.160	0.055
38	Vitello	Meal Vs engagement teachers	Log OR, SE	-0.080	0.100	0.923	-0.044	0.055
39	Vitello	Meal Vs engagement peers	Log OR, SE	0.260	0.110	1.297	0.143	0.061
40	Vitello	Meals Vs enagaement tasks	Log OR, SE	-0.130	0.100	0.878	-0.072	0.055



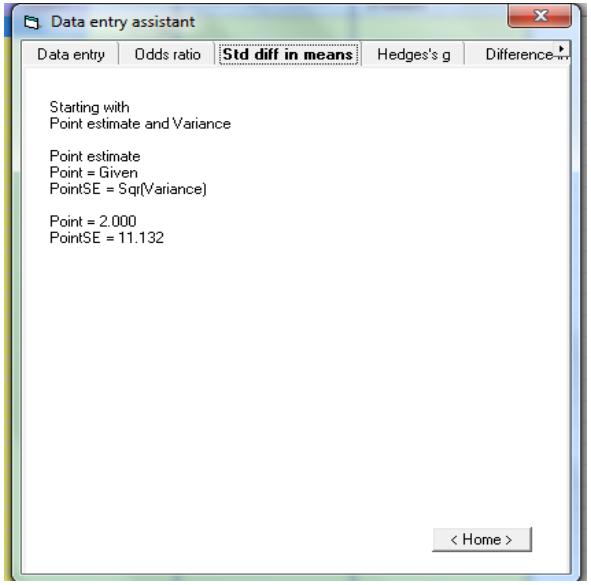
	Study name	Comparison	Data format	Paired sample size	t-value (paired t-test)	Effect direction	Odds ratio	Std diff in means	Std Err
41	Storli	D1(traditional sping) Vs D2(traditional winter)	Paired groups (N, t-value)	16	1.862	Negative	0.430	-0.466	0.263
42	Storli	D1 (traditional spring Vs D3(natural spring)	Paired groups (N, t-value)	16	0.496	Negative	0.799	-0.124	0.251
43	Storli	D2(traditional winter) VsD3 (Naturalspring)	Paired groups (N, t-value)	16	1.944	Positive	2.415	0.486	0.264



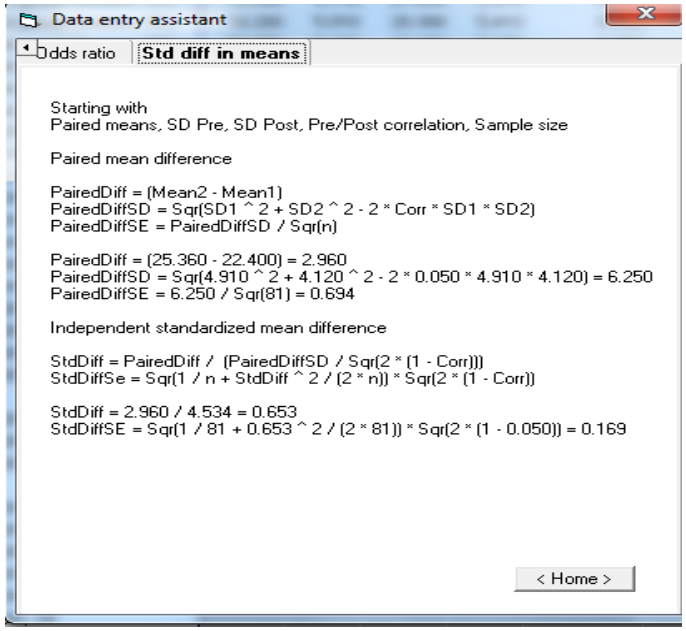
	Study name	Comparison	Data format	Odds ratio (log)	Std error (log)	Odds ratio	Std diff in means	Std Err
11	Powell	Academic: Solitary Vs Peer only	Log OR, SE	-1.320	0.340	0.267	-0.728	0.187
12	Powell	Academic: Teacher-child Vs Peer only	Log OR, SE	-1.920	0.390	0.147	-1.059	0.215
13	Powell	Academic: Small group Vs Peer only	Log OR, SE	-0.810	0.260	0.445	-0.447	0.143
14	Powell	Academic: Large group Vs Peer only	Log OR, SE	-0.910	0.210	0.403	-0.502	0.116
15	Powell	Academic: Whole group Vs Peer only	Log OR, SE	-2.940	0.200	0.053	-1.621	0.110
16	Powell	Play: Solitary Vs Peer only	Log OR, SE	1.020	0.420	2.773	0.562	0.232
17	Powell	Play: Teacher-child Vs Peer only	Log OR, SE	-1.880	0.620	0.153	-1.036	0.342
18	Powell	Play: Small group Vs Peer only	Log OR, SE	-0.010	0.410	0.990	-0.006	0.226
19	Powell	Play: Large group Vs Peer only	Log OR, SE	-0.550	0.150	0.577	-0.303	0.083
20	Powell	Play: Whole group Vs peer only	Log OR, SE	-0.100	0.210	0.905	-0.055	0.116
21	Powell	Academic: Affrim Vs T out range	Log OR, SE	0.630	0.250	1.878	0.347	0.138
22	Powell	Academic: Direct Vs T out range	Log OR, SE	-0.370	0.150	0.691	-0.204	0.083
23	Powell	Academc; Question Vs T out range						
24	Powell	Academic: Mointor Vs T out range	Log OR, SE	0.890	0.230	2.435	0.491	0.127
25	Powell	Play: Affirm Vs Tout range	Log OR, SE	0.150	0.550	1.162	0.083	0.303
26	Powell	Play: Direct Vs T out range	Log OR, SE	-0.310	0.260	0.733	-0.171	0.143
27	Powell	Play: Quetsion Vs T out range						
28	Powell	Play: Monitor Vs T out range	Log OR, SE	0.140	0.410	1.150	0.077	0.226



	Study name	Comparison	Std diff in means	Variance	Group-A N (Optional)	Group-B N (Optional)	Effect direction	Odds ratio	Std diff in means	Std Err
1	Kemp	Active engagement: group vs freeplay	2.000	123.920			Auto	37.622	2.000	11.132
2	Kemp	Active engagement: group vs meal	2.190	151.910			Auto	53.102	2.190	12.325
3	Kemp	Active engagement: free play vs meal	0.490	8.350			Auto	2.432	0.490	2.890
4	Kemp	Adult interaction: group vs free play								
5	Kemp	Adult interaction: group vs routine								
6	Kemp	Adult interaction: free play routine								
7	Kemp	Peer interaction: group vs free play	0.620	10.680			Auto	3.079	0.620	3.268
8	Kemp	Peer interaction: group vs routine	1.130	18.700			Auto	7.765	1.130	4.324
9	Kemp	Peer interaction: free play vs routine	0.160	0.350			Auto	1.337	0.160	0.592



	Study name	Comparison	Data format	Pre Mean	Pre SD	Post Mean	Post SD	Pre Post Correlation	Sample size	Effect direction	Odds ratio	Std diff in means	Std Err
1	Ebbeck	Concentration1 Vs 2	Paired groups (means, SD)	22.400	4.910	25.360	4.120	0.050	81	Auto	3.268	0.653	0.169
2	Ebbeck	Energy1 Vs 2	Paired groups (means, SD)	20.570	4.830	24.370	3.950	0.050	81	Auto	4.765	0.861	0.179
3	Ebbeck	Complexitity/Creativity 1 Vs 2	Paired groups (means, SD)	17.280	5.230	21.060	5.420	0.050	81	Auto	3.623	0.710	0.171
4	Ebbeck	Facial expression/posture 1 Vs 2	Paired groups (means, SD)	22.860	4.740	26.420	3.430	0.050	81	Auto	4.753	0.859	0.179
5	Ebbeck	Persistence 1 Vs 2	Paired groups (means, SD)	19.900	5.170	21.830	5.070	0.050	81	Auto	1.981	0.377	0.159
6	Ebbeck	Precision 1 Vs 2	Paired groups (means, SD)	18.200	5.010	20.300	5.410	0.050	81	Auto	2.076	0.403	0.159
7	Ebbeck	Reaction time 1 Vs 2	Paired groups (means, SD)	18.850	5.230	20.150	5.440	0.050	81	Auto	1.556	0.244	0.155
8	Ebbeck	Verbal utterance/languge 1 Vs 2	Paired groups (means, SD)	20.810	5.490	24.120	4.520	0.050	81	Auto	3.298	0.658	0.169
9	Ebbeck	Satisfaction 1 Vs 2	Paired groups (means, SD)	21.420	4.850	23.830	4.990	0.050	81	Auto	2.431	0.490	0.162
10	Ebbeck	Time1 Vs Time2	Paired groups (means, SD)	21.120	4.430	23.310	4.040	0.050	81	Auto	2.552	0.517	0.163



Appendix D: Interview schedule for the pilot study

Open questions

1. What, if any, is your experience with active learning, with two –three year olds, in your setting? [Have you ever noticed active learning happening?]

2. Would you encourage active learning and how?

3. What would happen prior to _____? What would happen after _____?

4. Is there anything in particular about the environment that helps? Spaces/resources/people?

    a. Is there anything that needs to be done/ organised /provided?
    b. When do you think about these things? With whom?

5. What would you describe as the essential features of the learning environment for supporting active learning?

6. Can you describe the layout and organisation of your setting?

7. What does this mean the children will experience? Why is that useful/ helpful?

8. What is important for the children to experience? What is important to the children?

9. As you look back on your experiences with the two –three year olds are there any events that stand out in your mind? Could you describe [each one] it? What was happening? How did you or others respond?

Use of photograph elicitation- open invitation

- Critique the photos: are there any you wish to discuss. Do any images provoke any ideas?

Intermediate questions

(The practitioner)

- What were the aims/hopes for this space/area?
- Is anything key to this process?
- What are the adults doing?
- What would you/others be thinking about and paying attention to?
- What skills are important for this?

(The children)

- How do you want the children to feel?

- How will the children be engaged?
- What do you hope they will do?

(Details)

- Where would this happen? Why?
- When would this take place?
- How is that used? How could that be used?
- What kind of things would I see/hear happening?
- What would you be thinking about?
- What were you considering at that time?
- What would be informing this action?

Ending questions

1. What do you think are the most important ways to support active learning? How did you discover or create them?

2. How have you grown as a practitioner? Tell me about your strengths that you discovered and developed? What do you value most now? What do others value most?

3. After having these experiences what advice would you give to someone who is thinking about trying to support the active learning of two-three year olds?

4. Is there anything that you may not have thought about before that occurred to you during this interview?

5. Is there anything else you think I should know to understand?

6. Is there anything you would like to ask me?

Appendix E: Interview schedule used for the research

Open questions

What is important for two – three year old children to experience? What is important to the children?

What, if any, is your experience active learning, with two –three year olds, in your setting? [having you ever noticed active learning happening]

a. If so what was is like? What were you considering at that time
b. What was happening? How did this happen to?
c. Who or what, if anything influenced action? Tell me about this…
d. Could you describe the events that led up to_____ preceded it?

Would you encourage active learning and how?

a. How/what are the children learning? What is being developed?
b. What were the aims/hopes for this [space/area/layout]?
c. How will the children be engaged?
d. How do you want the children to feel?
e. What does this mean the children will experience? Is that useful/ helpful, why?

Is there any thinking or organisation prior, if so what is it that is key to supporting active learning?

a. When do you think about these things? With whom?
b. How would you go about that?
c. Can you describe the space/ action of yourself, others and children

What would you describe as the essential features of an environment, for two-three year olds, for supporting active learning?

a. Is there anything in particular about the environment that helps? Resources/people/layout?
b. What helps? Hinders?

As you look back on your experiences with the two-three year olds are there any examples of when active learning has been supported well that stand out in your mind? Could you describe [each one] it? What was happening? How did others respond?

a. Where/when would this happen? Why?
b. What is being developed?
c. What kind of things would I see/hear happening?
d. What are the adults doing?
e. What would you be thinking about or paying attention to?
f. What informed this action?

What are the values or ethos of the setting, do you think this has any impact on how or if active learning in supported or encouraged?

a. Does the setting have hopes in terms of values for the children, does this make any difference?

Use of photograph elicitation- open invitation

- **Critique the photos: are there any you wish to discuss. Do any images provoke any ideas?**

Ending questions

What do you think are the most important ways to support active learning? How did you discover or create them?

How have you grown as a practitioner whilst working with two –three year olds? Tell me about your strengths that you discovered and developed?

What skills are important for working with two-three year olds?

After having these experiences what advice would you give to someone who is thinking about trying to support the active learning of two-three year olds?

Is there anything that you may not have thought about before that occurred to you during this interview?

Is there anything else you think I should know to understand?

Is there anything you would like to ask me?

Probes (Use when I don't fully understand)

1. **Can you tell me more about this idea of X you talked about?**
2. **I wondered…**
3. **Can you tell me what you mean by [challenge]**
4. **What did that look like?**
5. **How would you go about that?**

Keep the focus

1. **I was interested when you talked about_____**
2. **I wondered what your thoughts are about photo X?**
3. **What strikes you about photo X?**
4. **Is there anything happening in this photo that resonates/ relates to your practice?**

Remember

Clarify:

When you say, [term or phrase], what are you actually doing?

It sounds like you are saying,_____Is that a fair summary?

Appendix F: Topics for discussion based on analysis

Interview 1:

- Interview schedule used flexibly

Interview 2:

- Interview schedule used flexibility
- Ideas from interview One:
    - Safety and making the child feel comfortable (emotional needs)
    - Idea of nursery being like home
    - Involvement/attitude of the practitioner
    - Use of planning 'spontaneous'
    - Working with parents
    - Supervision/leadership
    - The experiences provided
    - Use of natural resources; Practitioner was imaginative.

Interview 3:

- Interview schedule used flexibility
- Ideas from previous interviews:
    - Experiences linked to what the practitioners know about a child
    - Techniques, what is the practitioner doing and use of visuals
    - Gathering information from parents
    - Use of space
    - Managing risk
    - Social and emotional needs
    - Staff helping each other

Interview 4:

- Interview schedule used flexibility
- Ideas from previous interviews:
    - Recognising and supporting emotional needs
    - Supporting children to understand
    - Use of spaces, cosy and defined

- Facilitation (environment and practitioner)
- Opportunities everywhere
- Sharing knowledge (co-coaching)

Interview 5:

- Use of the questions below

- ***How do you make sure the children feel safe and secure in your environment?***
  - *Why is this important to 2-3 year olds?*
  - *Is there anything different about how this is created specifically for 2-3 year olds?*
  - *Is there anything that happens at an organisational level?*

- ***Do you see a role of the learning environment as facilitative to children's learning? If so how is this created in your setting?***
  - *Use of the space*

- ***How is a practitioner responsive to the active learning of 2-3 year olds?***
  - *What pedagogy is informing action?*
  - *What techniques/action using?*
  - *How would opportunities be found or created to meet goals or targets you are working on with a child?*
  - *Practitioners have discussed intervening, and talked about involvement 'when necessary' what are your views, can you tell me more about this?*

- ***Why does following the child's interest work so well?***

- ***Are observations important to your setting, if so, how are observations used?***

- ***Is there advice or pressure from anywhere about what early years setting should be providing for 2-3 year old children? What does your early years setting do the manage or work with this?***
  - *Is good practice or ideas shared between settings? Each other? how?*

- ***Does the culture or ethos of the setting support practitioners in reflecting on practice and creating an effective learning environment for 2-3year olds?***
  - *How is the supported at an organisational level?*

- ***What does 'change' practice mean to you and your team?***
  - *How would you and the practitioners for 2-3 year olds go about problem solving supporting active learning for 2-3 year olds?*

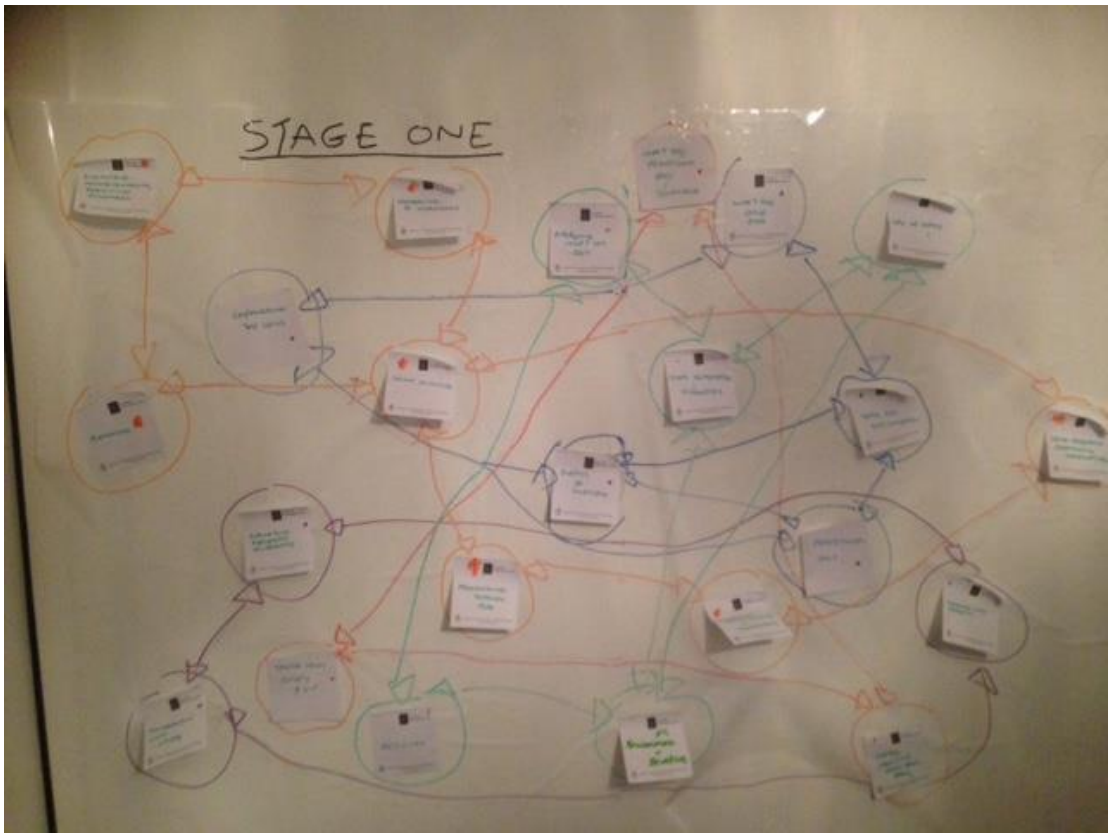
Appendix G: Photograph elicitation

Photograph number	Image	Systematic review link
1		Pedagogical approach and Physical environment
2		Configuration of children
3		Pedagogical approach and physical environment
4		Physical environment and pedagogical approach

5		Physical environment and pedagogical approach
6		Physical environment
7		Configuration of children, physical environment and pedagogical approach
8		Pedagogical approach and physical environment
9		Physical environment

10		Configuration of children and physical environment (freely chosen and teacher structured activities)
11		Configuration of children, pedagogical approach and physical environment
12		Pedagogical approach and physical environment
13		Configuration of children and physical environment
14		Physical environment

Appendix H: Sample of analysis methods



Appendix I: Sample information sheet

Information Sheet

I currently work as part of the team at [redacted] Educational Psychology Service with a large proportion of my time allocation specifically for Early Years work. I am also in the process of completing my Doctorate with Newcastle University. I am writing to provide you with some background information and details of my research proposal, and invite you to take part. I hope that you will be able to see the benefits the research may provide for the early years population and that you will be able to support me.

My research looks at how practitioners understand active learning within their setting and how they create the environment to advance the active learning of two to three year olds. I am particularly interested in the views of those practitioners that have experience working with the younger early years population; those children aged two – three years.

The research highlights the benefits of fostering positive learning environments and providing developmentally appropriate settings. Having a greater understanding of practitioner experiences, views of active learning and how the environment supports this, may help us to work towards a richer understanding of active learning, and give in depth descriptions to ensure effective provision for the two to three year old population.

I intend to work with nursery practitioners who have a wealth of experience working with the two-three year old population, using photographs that I will bring along, to facilitate one to one interviews. I will only require 30 minutes - 1 hour of your time for the interview.

Each interview will be audio recorded and transcribed. All participants and nursery settings will remain anonymous. Transcriptions be kept on a password secured computer and all data will destroyed following completion of the research (no later than September 2015).

The research paper can be presented to each nursery should staff wish to be informed of the findings once this is complete.

Thank you

Hannah Nicholls

h.nicholls@newcastle.ac.uk (Supervisor, Pamela Woolner- Pamela.woolner@newcastle.ac.uk)

Appendix J: Sample nursery manager consent form

Dear Nursery Manager,

I am a Trainee Educational Psychologist, from Newcastle University who works with [redacted] Educational Psychology Service and the [redacted] Early Years Team ([redacted]). As part of my training I am doing some research and want to look at how practitioners understand active learning in their setting and how they construct the environment to advance its presence.

I wish to work with nursery settings who have two to three year old children on role, and work with a member of your staff that is experienced with working with two-three year old children. I wish engage in a discussion, mediated by photographs of spaces that I will bring along, with a member of staff about their experiences in their setting.

So I do not miss anything that is said, I will use a voice recorder so I can listen back to the conversation and type it up. The interview data will be stored on a password protected computer and it will be deleted following completion of the research project (no later than September 2015).

Your nursery and the practitioner willing to take part will not be identifiable within the research. The only people who will see this is those who need to because of my research. As the nursery manager you or the practitioner taking part can withdraw from the research at any time up until the date of my submission approximately April 2015. If you are happy for a member of your staff to take part please fill in the form below, tick the box provided and return to following address. I will then contact the practitioner to arrange a suitable date and time for interview:

Hannah Nicholls
[redacted]

Alternatively, send me an email at hannah.nicholls@[redacted] or call [redacted] with potential dates for interview and I can collect the form on the day.

Please contact me or my Supervisor if you have any questions at h.nicholls@newcastle.ac.uk / Pamela.woolner@newcastle.ac.uk or School of Education, Communication and Language Sciences Newcastle University, King George VI Building, Queen Victoria Road, Newcastle,NE1 7RU.

Thank you,

Hannah Nicholls (Trainee Educational Psychologist)

Please note: There is a limitation on the number of participant due to the time constraints of the research, should I receive your consent reply after this number has been reached I will contact you to inform you.

I give my consent to participate in the research regarding practitioner's understanding of active learning and how they construct the environment to advance its presence.

☐ Please tick to show you have understood the information provided and give your consent

Manager's name…….. Signature…….

Nursery setting……. Date…….

Appendix K: Sample practitioner consent form

Dear Practitioner,

I am a Trainee Educational Psychologist, from Newcastle University who works with [redacted] Educational Psychology Service and the [redacted] Early Years Team ([redacted]). As part of my training I am doing some research and want to look at how practitioners understand active learning in their setting and how they construct the environment to advance its presence.

Together we will explore some photographs that I will bring along, of nursery spaces and discuss what you think supports the children's engagement with active learning.

So I do not miss anything that is said, I will use a voice recorder so I can listen back to the conversation and type it up. The interview data will be stored on a password protected computer and it will be deleted following completion of the research project (no later than September 2015).

You and the nursery will not be identifiable within the research. The only people who will see this is those who need to because of my research. You or the nursery can withdraw from the research at any time up until the date of my submission approximately April 2015. If you are happy to take part please fill in the form below, tick the box provided and return to following address. I will then contact you to arrange a suitable date and time for interview:

Hannah Nicholls
[redacted]

Alternatively, send me an email at hannah.nicholls@[redacted] or call [redacted] with potential dates for interview and I can collect the form on the day.

Please contact me or my Supervisor if you have any questions at h.nicholls@newcastle.ac.uk / Pamela.woolner@newcastle.ac.uk or School of Education, Communication and Language Sciences Newcastle University, King George VI Building, Queen Victoria Road, Newcastle,NE1 7RU.
Thank you,

Hannah Nicholls
Trainee Educational Psychologist

Please note: There is a limitation on the number of participant due to the time constraints of the research, should I receive your consent reply after this number has been reached I will contact you to inform you.

I give my consent to participate in the research regarding practitioner's understanding of active learning and how they construct the environment to advance its presence.

☐ Please tick to show you have understood the information provided and give your consent

Practitioner's name…….. Signature…….
Nursery setting……. Date…….

Appendix L: Sample practitioner consent form

Thank you for participating in this study.

One of the main aims of the study was to explore early years practitioners understanding of active learning in their daily practices and how early years practitioners construct their environments to advance the active learning of two to three year olds. I used semi-structured interviews to gather individual practitioner views about their experience in the early years setting.

One of the reasons for studying this is due to the variations of the term active learning within the current literature and the lack of research with the two-three year old population. It is hoped that that practitioner views can begin to provide a richer description.

Your contribution to this study is valuable and very much appreciated.

You are reminded that you are free to withdraw at any time up until the point of submission of the research (April 2015). If you would like more information, or have any further questions about any aspect of this study, or would like to read the final research paper, then please do not hesitate to contact me or my supervisor at:

h.nicholls@newcastle.ac.uk
Pamela.woolner@newcastle.ac.uk

Or

Hannah Nicholls/ Pamela Woolner
School of Education, Communication and Language Sciences
Newcastle University,
King George VI Building,
Queen Victoria Road,
Newcastle,
NE1 7RU.

Appendix M: Codes, concepts and categories created during the analysis process

Number of initial codes	Focused codes	Concepts	Categories
20	Noticing children's achievements and planning within their level of progress	Observing then planning the next steps for both the child and practitioner	**Responding in context**
21	Group activities		
57	Supporting active learning; be spontaneous	Seeing opportunities everywhere	
26	Observing is important	Impromptu Supporting (flexibility in outcomes)	
36	Using resources creatively and imaginatively		
23	Planning	Thinking outside of the box	
8	Progressing through play		
44	Activities	Creating child initiated spaces and activities (control)	**Facilitating child participation*** (relating to environment and experiences) **This category formed from two categories 'providing opportunities for children' and 'giving children a voice'*
14	Experiences they may not otherwise get		
88	Environment_structure	Managing risk but providing experiences	
24	Real experiences and resources		
48	Use of space	*Originally categorised as: 'Providing opportunities for children'*	
74	Practitioner role	Participating meaningfully Balancing what is important for and to children	
66	Empowering the child		
21	What the child does		
10	Purpose of nursery		

20	Hopes for the children	*Originally categorised as: 'giving children a voice'*	
90	Working with parents	Merging perspectives together Connecting across systems Evolving and implementing ideas to inform practice (experimenting) Balancing aspects of supervision Attunement (between practitioners) Cascading Learning (learning every day from yourself- practitioner characteristics- and others)	**Joining up thinking**
51	Evaluating and reflecting in and on practice		
84	Collaborating with the other practitioners		
70	Seeing things from the child's point of view	Considering the necessity of involvement Accessing and working with the child's interpretation Supporting the child's emotional needs (package of care: validating/authenticity)	**Perceiving the child's world**
132	What the practitioner does – techniques		
66	Safety - creating a home from home		

Appendix N: Visual map of developing theory