

Researching pedagogy in English pre-schools

Iram Siraj-Blatchford^{*a} and Kathy Sylva^b

^aUniversity of London, UK; ^bUniversity of Oxford, UK

This article summarizes and reflects on the findings related to pedagogy of two closely associated Department for Education and Skills (DfES) funded research projects: the *Effective Provision of Pre-school Education* (EPPE) and the *Researching Effective Pedagogy in the Early Years* (REPEY) projects.¹ The EPPE research project was a five-year longitudinal study funded by the DfES to follow the progress of approximately 3000 children, aged three plus, in 141 pre-schools across England. In addition to the range of quantitative data collected about children, their families and their pre-school centres, 12 effective pre-school settings (selection based on child developmental outcomes) were identified in the EPPE multilevel analysis for intensive, in-depth qualitative case study. The REPEY study provided an opportunity to extend this qualitative analysis further with both naturalistic and systematic observations, interviews and focus group discussions, and allowed the addition of two reception classes (selection based on professional judgement). Together, the studies provide a large-scale, sequential and explanatory mixed method research design investigating pedagogy in 14 Foundation Stage (the key stage for children 3–5) settings. The REPEY research has shown that the most effective pre-school settings (in terms of intellectual, social and dispositional outcomes) achieve a balance between the opportunities provided for children to benefit from teacher-initiated group work, and in the provision of freely chosen yet potentially instructive play activities. The analysis also shows an association between curriculum differentiation and matching in terms of cognitive challenge, and ‘sustained shared thinking’. The evidence suggests that the better a setting does on each of these dimensions of pedagogic practice the more effective it will be. The most effective settings also adopt social/behaviour policies that involve staff in supporting children in rationalizing and talking through their conflicts.

Introduction

The five-year longitudinal *Effective Provision for Pre-school Education* (EPPE) study has followed the progress of 3000 children in 141 pre-schools in England and it has shown that pre-schools are having a significant impact on children’s development (Sammons *et al.*, 2002, 2003; Siraj-Blatchford *et al.*, 2003). EPPE has also shown that pre-school education can help to alleviate the effects of social disadvantage and can provide

^{*}Corresponding author. Room 401, Institute of Education, University of London, 20 Bedford Way, London WC1H 0AL, UK. Email: i.siraj-blatchford@ioe.ac.uk

children with a better start to school. These findings have had a considerable impact on government policy, where it is now recognized that investment in good quality pre-school provision provides an effective means of reducing social exclusion and of breaking cycles of disadvantage.

But, while the benefits of good quality pre-school programmes have now been widely acknowledged, there has still been a need for studies which identify the particular pedagogical strategies which are being applied to support the development of the skills, knowledge and attitudes that enable children to make a good start at school. It was with this in mind that an extension of the EPPE study was developed, titled: *Researching Effective Pedagogy in the Early Years* (REPEY; for a full description of the project please refer to Department for Education and Skills [DfES] Research Report 356 [Siraj-Blatchford *et al.*, 2002] and EPPE Technical Paper 10 [Siraj-Blatchford *et al.*, 2003]). Our review of the literature on effective pedagogy suggested the need to identify the pedagogic models and practices being applied by the most effective settings and to find out how these were realized in practice. Given the possibility that some of the success of the celebrated US *High Scope Perry Pre-school Programme* (Weikart, 2000) might have been in part the result of an emphasis on outreach and parent involvement, there was also a need to identify any association between the most effective settings and parent participation.

The REPEY investigation drew upon the findings of EPPE's multilevel analysis to identify specific settings that have a range of moderate to large 'value added' impact on the academic, social and dispositional learning of the young children in their care. The child assessments applied in identifying the children's development on entry to pre-school included the *British Ability Scales* (BASII) tasks on verbal comprehension, naming vocabulary, knowledge of similarities seen in pictures, and block building. Profiles of each child's social and emotional adjustment were also completed by the pre-school educator who knew them best using the *Adaptive Social Behavioural Inventory* (ASBI). At school these assessments were extended further to include knowledge of the alphabet and rhyme/alliteration, and standardized tests of reading and mathematics (for the full research design, see Sylva *et al.*, 1999).

Intensive case studies: sample and data collection

EPPE controlled for the influence of the family and child characteristics and was able to establish the 'effectiveness' of each of the 141 early years settings in its sample. The analysis showed that none of the settings performed statistically significantly either above or below expectations across all of the outcomes. But some settings were found to have particular strengths and others areas of apparent weakness. A stratified random sample of 12 settings² was therefore selected to include those classified by EPPE as having 'good' (above 68% confidence level) to 'excellent' (95% confidence level) practice in terms of the children's developmental progress in one or more *cognitive* (Pre-reading, Non-verbal reasoning, Language, Number concepts), or *Social/behavioural* outcomes (Independence and concentration, Cooperation and

conformity, Less anti-social, worried and upset, Peer sociability). The sample thus provided a number of contrasting profiles and a good basis for in-depth comparison.

It was considered important to include the full range of pre-school providers; the 12 pre-school settings therefore included: one playgroup, one local authority day care setting, three private day nurseries, two nursery schools run by the local education authority (LEA), three nursery classes attached to primary schools, and two early excellence centres/combined centres.³ The selection of centres was made by a member of the EPPE central team who was not involved in the fieldwork or the qualitative analysis. This allowed the researchers to go in 'blind', without knowing the developmental outcomes of the children in any particular setting. Since the EPPE children had left the centres by the time the case studies were conducted, we also needed to adopt criteria for the selection of centres to ensure that they had not changed too much in the intervening period. All the centres were therefore selected for in-depth case study only after we had reassured ourselves that:

- (a) no significant change in management had taken place since the EPPE children attended;
- (b) there was a similar or better score in the Early Childhood Environment Rating Scale: Extension (ECERS-E), assessed previously in EPPE;
- (c) there were no difficult circumstances (e.g. pending/recent Office for Standards in Education [Ofsted] inspection).

In order to identify the pedagogical practices that were being employed to achieve the specific learning outcomes that had been identified, documentary analysis of inspection reports, policy statements etc., systematic and naturalistic observations of children and staff, staff and parent interviews, and focus group discussions were carried out within each of the case study settings (see EPPE Technical Paper 10, Siraj-Blatchford *et al.*, 2003).

EPPE was also able to provide data on each of the settings from the application of the Early Childhood Environment Rating Scale: Revised (ECERS-R) (Harms *et al.*, 1998) and an extension to this scale that was developed to collect environmental data focused on the English Early Learning Goals (ECERS—Extension or ECERS-E; Sylva *et al.*, 2003). The ECERS-R rating scale consists of seven subscales which provide an overview of the quality of the pre-school environment, covering aspects of the setting from furnishing to individuality of care and the quality of social interactions. The ECERS-E consists of four subscales that describe the quality of curriculum within the pre-school, and includes the areas of mathematics, science, language/literacy and diversity. Each subscale is comprised of a range of items describing the 'quality' of the specific type of provision and each item is rated 1 (inadequate) to 7 (excellent) (see EPPE Technical Paper 6, Sylva *et al.*, 1999).

The researchers who worked on the EPPE project and had visited the centres for 1–3 years to conduct child assessments and obtain the ECERS ratings were trained to collect qualitative data. They received intensive training to conduct naturalistic observations of pedagogy, to engage in semi-structured interviewing of staff and

parents and to collect and analyse documents. Each researcher was therefore familiar with the 12 centres under study, with some having made up to 40 visits to their case study centre during the EPPE assessment period. Each researcher spent two whole weeks in each of the settings collecting the qualitative data. This was supplemented by a further one-week visit to carry out child observations using a systematic 'target child observation' procedure.

Systematic target child observations

The REPEY project allowed us to devise and conduct 254 Target Child Observations (Sylva, 1997), which were carried out in each setting, of 10 boys and 10 girls, identified by practitioners to provide a range of ability and age. These systematic observations allowed us to focus on individual children within a setting and record their social grouping and participation, their activity, curriculum experience and interactions with adults. These events were sampled every 30 seconds, for a total of 20 minutes on each occasion. We were especially eager to investigate how children experienced the six areas of learning in the Curriculum Guidance for the Foundation Stage (Qualifications and Curriculum Authority [QCA]/Department for Education and Employment [DfEE], 2000), and the ways in which adults supported the target child. The deliberate sampling of children at different ages and abilities allowed us to investigate different pedagogical strategies for children who were very capable learners and children who were struggling, as well as the different experience of boys and girls and younger and older children. Careful recording of the qualifications of staff also allowed us to explore possible differences in pedagogy related to different training.

The training and piloting of the Target Child Observation system took place in a range of Foundation Stage settings which were unrelated to the REPEY case study settings. This phase lasted for two months, beginning in January 2002. The target child observations were then collected from visits to case study settings between March and June 2002. Inter-rater reliability of the Target Child Observation system was calculated using Kappa, and the results for all codes ranged between 0.572 and 0.841.

Of the 254 target child observations, 141 were then randomly selected for more fine-grained qualitative analysis. The 20-minute target child observation was first divided into learning episodes. The learning episodes recorded in this detailed way were continuous, coherent activities which were initiated either by children or adults, which lasted for at least one minute. The episodes were examined to provide an analysis that included who initiated and chose each activity (staff member or child), and the cognitive challenge involved (see Sylva *et al.*, 1980).

Qualitative data analysis

The qualitative data collected during the two weeks of intensive case study in each of the 14 settings were transcribed, 'cleaned' (anonymized and the terminology

standardized), and then entered into a QSR N-Vivo database, to aid the coding and data reduction. This large (over one million word) data set includes:

- a documentary analysis of each of the 14 settings;
- transcripts of the interviews conducted with staff members and managers;
- 204 (approx 400 hours) observations of two practitioners followed for two days in each setting and selected vignettes and ‘critical incidents’ observed by the researcher over the two-week period;
- 107 interviews of parents;
- 14 centre ‘floor plans’ showing the inside and outdoor learning and play environment.

The N-Vivo software provided an advanced system for organizing and analysing the data, and creating subsets of the data (Tesch, 1990). It also provided a means by which preliminary hypotheses were modelled and tested. In these initial analyses, through coding transcripts, we gradually amended our models and codes using both *anticipatory* and procedural *data reduction* techniques (Miles & Huberman 1994), and theory building. This was a systematic, iterative, and ‘grounded’ process, but it was also one that sought more than mere description (Glaser, 2002). From the quantitative findings of the EPPE study we wanted to explore the associations between the outcome findings and the practices observed. A systematic approach was therefore taken to analyse the qualitative data collected in the observations and interviews through seeking triangulation from:

1. the EPPE quantitative data sources (i.e. results of child standardized assessments and the ECERS environmental quality ratings on each centre);
2. the data that were collected from different sources applying different qualitative methodologies.

This systematic (although non-linear) process of iterative triangulation characterizes the general approach that we took in adopting a *sequential explanatory mixed method approach* to the research (Creswell, 2003). Apart from exploiting the usual benefits of triangulation in achieving greater internal validity, we were therefore concerned to reflect more closely the process of working ‘back and forth between inductive and deductive models of thinking’ (Creswell, 1994, p. 178).

The analytic codes that were initially derived, in a process of grounded induction from the observational data, were therefore continually reworked and adapted through the subsequent analyses of data, and in consideration of the finding of other studies identified in the literature review of early years pedagogy (see Strauss & Corbin, 1990, p. 56). As soon as the first phase of this process was complete, and all of the qualitative data had been initially coded, these ‘reduced data’ were interrogated further in the hope of finding pedagogic, process explanations for the cognitive and social outcomes provided by the EPPE multilevel analysis. Where the pedagogic findings appeared to provide explanatory support for any particular EPPE outcome, theoretical sampling was employed to investigate more closely the settings achieving

the best results in those terms. Hypotheses were also developed to be tested in further deductive analysis of the EPPE project quantitative data. A number of significant correlations were in this way identified between particular subscales and items in the Early Childhood Environmental Rating Scales (ECERS), and the setting residuals (the complex value-added multilevel model) analysis for each outcome (see Sammons *et al.*, 2002, 2003). For logistical reasons, the identification of the case study settings was carried out at the point when approximately 80% of the EPPE pre-school data had been prepared. Five general patterns of associations were identified using Pearson product-moment correlation and each of these remain significant in an analysis of the full data set:

(i) Pre-reading and Early Number concepts were found to be weakly yet significantly correlated with the ECERS-E literacy subscale ($r=0.17$, $p < .05$). Early Number concepts were also correlated with the ECERS-R interaction subscale ($r=0.26$, $p < .005$). In-depth analysis of the case study observations of 28 practitioners led us to identify the specific qualities of adult-child interaction, and 'sustained shared thinking' (Wells, 1985; Siraj-Blatchford *et al.*, 2002) that are associated strongly with children's developmental progress. Sustained shared thinking is defined here as an interaction where two or more individuals 'work together' in an intellectual way to solve a problem, clarify a concept, evaluate activities, or extend a narrative. In the final analysis high scores on the ECERS-R Interaction subscale were also found to be correlated with 'Cooperation and conformity' ($r=0.25$, $p < .005$), and 'Independence and concentration' ($r=0.19$, $p < .05$).

(ii) Patterns of association were found between the ECERS-E subscale for Diversity and children's outcomes in Early Number ($r=0.18$, $p < .05$) and Picture Similarities ($r=0.27$, $p < .001$). The ECERS-E Diversity subscale includes items focused on the differentiation of provision for individuals and groups, for gender and race equality, meeting individual needs, record keeping and ability grouping. While any association to be found between these outcomes and ability grouping was unclear, a good deal of the qualitative evidence confirmed the importance of formative assessment to meet children's particular needs. In the final analysis high scores on the Diversity subscale were also found to be weakly correlated with 'Independence' ($r=0.16$, $p < .05$), and (not quite significantly) with 'Cooperation and conformity' ($r=0.16$, $p < .06$).

(iii) The ECERS-R item on 'Discipline' (on the Interaction subscale) was found to be negatively loosely correlated with 'Anti-social, worried, upset' ($r=-0.17$, $p < .05$) (i.e. making children *less* anti-social, worried, upset), and positively moderately correlated with 'Cooperation and conformity' ($r=0.36$, $p < .0001$), 'Independence and concentration' ($r=0.29$, $p < .001$), and 'Peer sociability' ($r=0.21$, $p < .05$). 'Cooperation and conformity' was also found to be correlated with the Language Reasoning subscale of ECERS-R ($r=0.20$, $p < .05$), and the 'Staff-child interactions' item of the ECERS-R Interaction subscale ($r=0.18$, $p < .05$).

High scores are given on the ECERS-R Discipline item when a non-punitive approach is applied, where staff help the children to talk through their problems and think of solutions while being sensitive to the feelings of others. It also scores highly where staff are consistent and pro-active in supporting the children in developing their

social skills through, for example, using 'story books and group discussions to work through common conflicts'. The 'Staff-Child interactions' item (ECERS-R Interaction subscale) receives a high score when adult-child relations are warm, caring and respectful, and where the adults are sympathetic in response to any children being hurt, upset or angry.

Peer sociability was also found to be negatively correlated with the ECERS-R programme structure subscale item 'Group Time' ($r = -0.18$, $p < .05$). This item scores settings highly where the children are only gathered together as a whole group for short periods and they remain interested and involved. While it is conceivable that the practice of grouping very young children together for long periods inappropriately is detrimental to peer sociability, it is equally plausible that their restlessness at these times may actually have led to the negative outcome. It may also be relevant that the only case study setting to achieve a relatively negative score on this outcome was the local authority day care centre where the children generally attend for a whole day. However, this centre also contributed to making the children less worried and anxious. An interesting negative correlation has also now been found between the 'Indoor space' item on the ECERS-R Space and Furnishings subscale and 'Anti-social, worried and upset'.

(iv) The 'Indoor space' item in the ECERS-R Space and Furnishings subscale was found to be negatively correlated with 'Anti-social, worried and upset' ($r = -0.17$, $p < .05$). The item has also a modest positive correlation with 'Cooperation and conformity' ($r = 0.18$, $p < .05$). Settings are scored highly on the 'Indoor space' item where there is ample indoor space and children are allowed to move around freely.

(v) The EPPE findings clearly showed that in the home learning environment where children who were taken to the library, who read with their parents, who played with letters and numbers and who sang songs and rhymes at home had a head start even at age three on cognitive scores.

We therefore expected our more effective settings to reveal a home education more in line with these behaviours; it was what the settings did with the parents and children to encourage these behaviours that was of greater interest to us in this study.

Findings

In reporting the findings of the study each of the areas of analytical focus (i-v above) will be considered in turn:

(i) Sustained shared thinking

The REPEY case studies suggest that the educational performance of pre-school settings does not relate entirely (or even mainly) to differences in philosophy or to curriculum priorities (see EPPE Technical Paper 10, Siraj-Blatchford *et al.*, 2003). All of the settings in the study had sound leadership, long-serving staff, good communications, and shared and consistent ways of working amongst the staff. Most of the case study settings combined both programmed, teacher-initiated group

work and open-framework, teacher supported free choice provision. Most of the pedagogic episodes that we observed were within a wide range satisfactory or good while some were excellent and fewer were poor. We found that some of these episodes were planned but also that many arose naturally as an opportunity presented itself.

Throughout our analysis we distinguished between ‘pedagogical interactions’ (specific behaviours on the part of adults) and ‘pedagogical framing’ (the behind-the-scenes aspects of pedagogy which include planning, resources, and establishment of routines). Our findings suggest that the most effective (excellent) settings (for enhancing child development) provide both, and achieve a balance between the opportunities provided for children to benefit from teacher-initiated group work and in the provision of freely chosen, yet potentially instructive, play activities. The evidence actually suggests that there is no *one* ‘effective’ pedagogy. Instead the effective pedagogue orchestrates learning by making interventions (scaffolding, discussing, monitoring, allocating tasks) which are sensitive to the curriculum concept or skill being ‘taught’, taking into account the child’s ‘zone of proximal development’ (Vygotsky, 1978), or at least that assumed in the particular social grouping.

The evidence also suggests that the achievements of settings as evidenced by their cognitive outcomes appear to be directly related to the quantity and quality of the teacher/adult planned and initiated focused group work that is provided. While it is clear that an instructive free play environment may be provided that involves the child and encourages their cognitive construction or co-construction, there remains little research evidence to suggest that this is commonly achieved (Bennett & Kell, 1989).

If we consider learning to be the result of a process of cognitive *construction*, this will only be achieved when the child is motivated and *involved*, and it seems entirely consistent to treat the part played by the effective educator in precisely the same way. The cognitive *construction* in this case would be mutual where each party engages with the understanding of the other and learning is achieved through a process of reflexive ‘co-construction’. A necessary condition for this would be that both parties were *involved*, and, for the resultant learning to be worthwhile, that the content should be in some way *instructive* (Siraj-Blatchford, 1998, 1999a). Our research has shown that positive cognitive outcomes are closely associated with adult–child interactions of this kind that involve some element of ‘sustained shared thinking’. The following extracts provide examples of what this involves in practice.

Example 1

Girl 7: We found a coconut Teacher 1!

Teacher 1: Well done! Oh it’s an acorn, if we planted it what do you think would grow?

Girl 3: A flower

Teacher 1: Not quite, if it came off that tree what would grow?

Child: Don't know!

Teacher 1: OK, lets get a pot, some stones and soil and plant it to see [*Off with 5 children*] Which way up do you think? I think on its side it will have the most chance. What do you think it will grow into [*Using opportunity presented by children to model growth/wonder and to investigate: Children now have investment in it.*]

Child: A tree

Example 2

Teacher 1: Mmmm, I wonder what kind? (Centre 106 NC obs 6)

Girl 1 (4:2) picks up a fir cone and hands it to Nursery Officer 1: Look at the fir cone.

Nursery Officer 1, pointing to the scales: What's happening to these bits?

Girl 1 (4:2): They're opening.

Nursery Officer 1: I think they're closing ... [*putting it back in the water*] Let's leave it floating in the water a bit longer and watch what happens. [9.40, *She picks up a yogurt pot and floats it on the water*] I wonder will the yogurt pot work? Yes it floats ... [*putting the Duplo figure into the pot. The pot over balances and sinks*]

Girl 2E (4:9) hands her a plastic lid: Try this.

Nursery Officer 1 stands the figure on the lid floating on the water: Will it balance?

The lid starts to sink.

...

Girl 2E (4:9) lays the figure down.

Nursery Officer 1: Yes, it works now he's lying down.

Boy 8 (4:1), who has been watching: Look at the fir cone. There's bubbles of air coming out.

Nursery Officer 1: It's spinning round.

Boy 8 (4:1): That's 'cos it's got air in it.

Nursery Officer 1 picks up the fir cone and shows the children how the scales go round the fir cone in a spiral, turning the fir cone round with a winding action: When the air comes out in bubbles it makes the fir cone spin around.

Girl 2E (4:9) uses a plastic tube to blow into the water: Look bubbles.

Nursery Officer 1: What are you putting into the water to make bubbles? ... What's coming out of the tube?

Girl 2E (4:9): Air.

9.45 *Nursery Officer 1:* Air is making the bubbles ... Where did the air come from?

Girl 2E (4:9): My body.

Nursery Officer 1 to Girl 1 (4:2) who also has a length of plastic tubing: Girl 1 (4:2), can you put air in the water to make bubbles? [*Girl 1 (4:2) blows some bubbles.*]

Nursery Officer 1: Boy 2 (4:5), what's in the bubbles?

Boy 2 (4:5): Air.

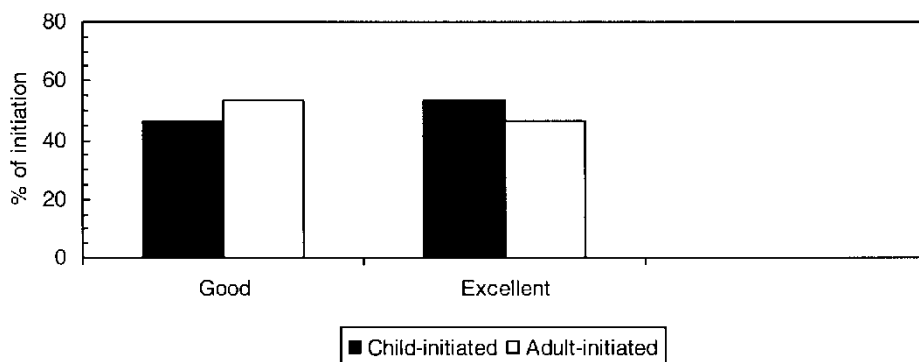


Figure 1. Proportion of all learning episodes which were adult or child-initiated

Boy 2 (4:5) is standing at the table with Boy 7 (4:5). They have filled a variety of containers with water and placed them on the table. Boy 2 (4:5) has put plastic spoons into one of the jugs of water and is whisking them round with the rotary whisk.

10.05 Nursery Officer 1: Girl 4E (4:9), have you checked the fir cone? [Girl 4E (4:9) picks the fir cone from the water] ...What's happened?

Girl 4E (4:9): It's closed up.

Nursery Officer 1: Right it's nearly completely closed up ... (Centre 421 NS obs 4)

While it seems clear that these sustained cognitive engagements make a real difference to children's cognitive progress achieved by the settings, this does not suggest that most of the children's time needs to be dominated or led by adults. In the most effective settings the children spent around half of their time engaged in freely chosen play activities. What it does suggest, however, is that adults should use their involvement with children in a planned and focused way to encourage shared thinking. In achieving this, the provision of worksheets and/or overdirected or didactic teaching was observed to be unhelpful. The socio-dramatic play of the 'home corner' provides a particularly useful context for such interactions.

But many opportunities were also missed and interactions sometimes involved very little cognitive challenge. We found that in the settings where sustained shared thinking was most encouraged, a substantial proportion of interactions were child-initiated and they provided a better basis for learning right across the curriculum. We also found many incidents of staff getting directly involved in children's play and stimulating children's imagination by open questioning.

The analysis of randomly selected learning episodes from the target-child observations allowed further analysis of classroom pedagogy; these analyses included considering the initiation of episodes (by either child or staff member), the level of 'cognitive challenge' each episode provided for the child, and the staff's most important contribution to the learning episode. Figure 1 provides, from all learning episodes, the proportion of adult- or child-initiated learning episodes, and shows that in good and excellent settings a similar ratio of child-initiated episodes to adult-initiated episodes occurred.

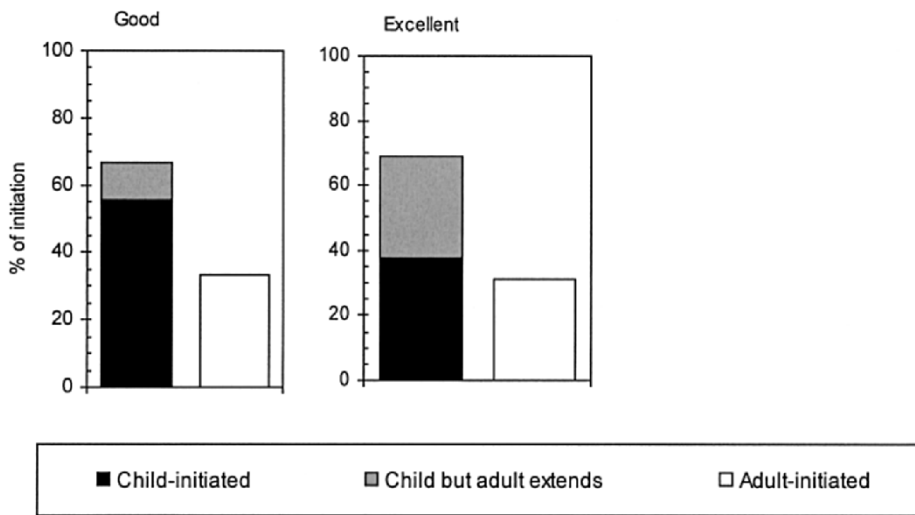


Figure 2. Initiation of high cognitive challenge activities within each type

When the initiation of the activities identified as constituting ‘high cognitive challenge’ is considered, an interesting picture emerges (Figure 2). In excellent settings the importance of staff members extending child-initiated episodes is very clear; just under half of child-initiated episodes observed as high challenge involved interventions from a staff member which extended the child’s activities. The preponderance of staff extension in child-initiated activities appeared to be unique to the three highest performing (‘excellent’) settings. While the percentages of child-initiated, high cognitive challenge episodes may look similar, it must be remembered that these graphs are showing who initiated the high cognitive challenge episodes in each type of setting.

Our analysis of the target-child observation episodes revealed how and why the ‘critical moments’ of learning episodes influenced and developed an idea or skill substantially. Analysis showed that the most common critical point (‘lifting the level of thinking’) occurred when a practitioner ‘extended’ a child-initiated episode by scaffolding, thematic conversation or instruction. Analysis of all the ‘critical moments’ revealed that 23% of the critical moments in excellent settings were extended by adults, dropping to just 15% in good settings. This reveals the proactive pedagogical nature of the adult’s role in the settings where children made the most developmental progress.

When considering the high challenge episodes it can be seen in Figure 3 that the highest proportions of high challenge episodes occur in the excellent settings. Conversely, the good settings have the highest proportion of low–medium challenge episodes.

(ii) Diversity and differentiation

Citing a wide range of evidence, Sadler (1998), Askew *et al.* (1997), Medwell *et al.* (1998), Black and William (1998) and Gipps *et al.* (2000) have all argued that

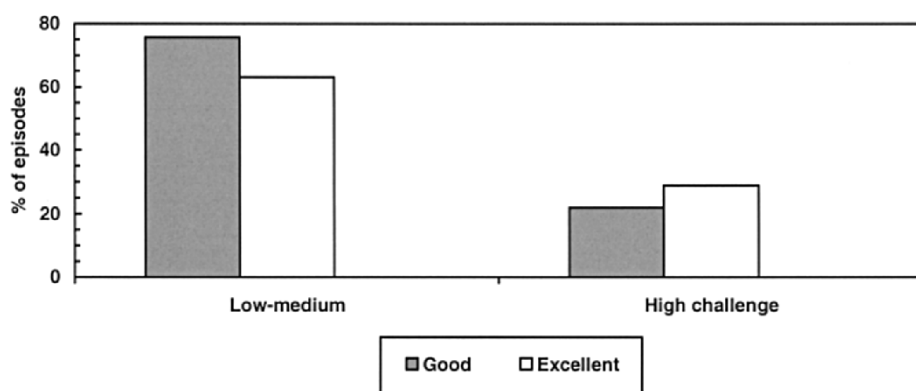


Figure 3. Occurrence of challenge episodes within each setting type

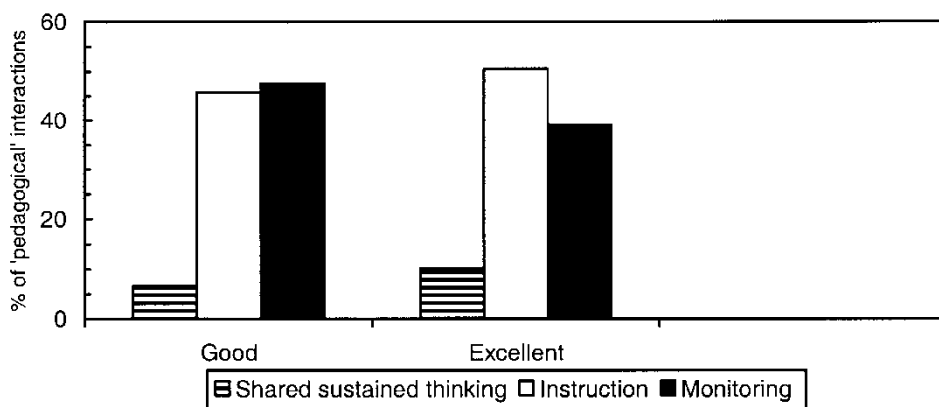


Figure 4. Proportion of adults' cognitive pedagogical interactions in settings varying in effectiveness

assessment and the provision of feedback to learners are especially important pedagogical strategies. It was therefore unsurprising to find the significant correlation between the ECERS-E subscale for diversity and children's progress in pre-reading, early number concepts and picture similarities. Our analysis of the observation data showed a very clear association between curriculum differentiation and matching in terms of cognitive challenge and 'sustained shared thinking'. The qualitative evidence also suggested that the higher the amount of good pedagogic practice, the greater was the effect on children's cognitive progress.

Figure 4 shows the different patterns of cognitive pedagogical interactions which children experienced with practitioners in the excellent compared to the good settings. The children and practitioners in excellent centres engaged in the highest proportion of sustained shared thinking interactions, suggesting that the excellent settings promote intellectual gains in children through conversations in which the adult and child co-construct an idea or activity. For the practitioners in the good

settings the most commonly used interaction was monitoring, as opposed to the more active pedagogy observed in the excellent settings.

In the majority of settings there is a need to provide more of what Stremmel (1993) has referred to as 'responsive teaching'. This occurs when a sharing of purpose between child and teacher is established within a joint activity. To achieve this, the adult must understand the cognitive, cultural and social perspective of the learner so that they can 'build bridges' between what the child knows and what she/he is capable of knowing. In this context it may well be important that in terms of social/behavioural development the most effective settings also adopt rigorous 'discipline/behaviour' policies; these involve staff seeing children's conflicts as a pedagogical opportunity for the adult to support children in rationalizing and talking through their conflicts. Less effective centres in this respect usually separated children or simply told them to stop or reprimanded them.

(iii) Discipline

The quality of adult-child interactions in the most effective (excellent) settings in terms of the cognitive outcomes was particularly striking. The quality of interaction in one setting in particular (an inner-city nursery school), for example, was very high. The ECERS-R Adult/Child Interaction Scale showed a high degree of consistency in staff behaviour with a strong emphasis on positive responses to children and their emotional and learning needs. The staff clearly enjoyed being with the children and engaged with them in a respectful, caring way, without criticism or harshness. They encouraged the children to try new experiences and were very enthusiastic about their efforts. The staff appeared to be constantly aware of looking out for opportunities to scaffold children's learning by inviting children to say what they thought in order to assess their levels of knowledge and understanding. They intervened to 'model' when they thought it appropriate but also allowed the children time to explore for themselves. The adult interventions were most often in the form of open-ended questions that provoke speculation and extend the imagination.

A great deal of concern has been expressed about the need to respond further to the behaviour and emotional problems of young children growing up in disadvantaged areas. Some longitudinal studies have shown us that children provided with predominantly direct or 'programmed' instruction sometimes do better academically than those provided with other forms of pedagogy in the short term (e.g. Miller & Bizzell, 1983; Karnes *et al.*, 1983; Marcon, 2002). But the studies also suggest that, when apparent, these gains are short-lived, with all significant differences having 'washed out' within a year of the provision ending. Highly structured, didactic teaching has also been found to result in young children showing significantly increased stress/anxiety behaviour (Burts *et al.*, 1990). A longitudinal and rigorous study conducted by Schweinhart and Weikart (1997) showed little difference in the academic performance of young children provided exclusively with direct instruction, but they did find significantly more emotional impairment and disturbance leading to greater need for special educational provision.

Other studies have also shown that an exclusively didactic and 'formal' approach to teaching young children is counterproductive (Sylva & Nabuco, 1996), and can hinder young children's learning, generating higher anxiety and lower self-esteem. We have found that the most effective settings combine the provision of open-framework, free play opportunities with more focused group work involving direct instruction. This more balanced approach would therefore appear to be the most desirable model to promote. Direct instruction is not harmful; it is the balance that is important.

(iv) Indoor space

It seems that children achieve better social and behavioural outcomes when there is ample indoor space where they are allowed to move around freely. But given the positive performance of each of the case study settings on this outcome, further qualitative analysis on this particular association was not considered appropriate. However, further study of this matter would appear to be justified, especially given the resource and space constraints experienced by reception classes.

(v) Home educational provision

As suggested in (ii) above, we have found that the better the setting does in terms of curriculum differentiation, matching in terms of cognitive challenge, and 'sustained shared thinking', the more cognitively effective it is. Only one setting contradicted this tendency where our research showed relatively little day-to-day preparation and organization, poor scaffolding and little 'sustained shared thinking'. Of course, the fact that, despite these limitations, the setting was achieving significant cognitive outcomes needed to be accounted for: We have come to believe that the explanation lies in the special relationship that some (mainly private) settings have developed with their (normally upper middle-class) parents. In these case study settings (notably the private day nurseries), it was less the staff's interventions and more the parents' proactive behaviour towards their children's learning in the embedded, cultural context of the home, that provided a good basis for sustained shared thinking. This hypothesis has now been supported further in subsequent multilevel analysis. Due to the very frequent feedback from staff to parents in the private provision, normally weekly, the parents prepared themselves to provide a 'potent home-based pedagogy' on a daily basis!

Conclusions

There is a great deal of corroborating evidence that young children actively construct their understandings within a social and physical environment. Hohmann and Weikart (1995) have called this 'active learning' and define it as 'learning in which the child, by acting on objects and interacting with people, ideas and events, constructs new understandings'. Young children require direct and immediate experiences that will enable them to derive meaning from these experiences based on their previous

ones. The learning environment must, therefore, provide very young children with opportunities to be active and to take the initiative to learn. The primary role of the adult is to provide these opportunities and experiences through setting the physical *and intellectual* environment and through consistent planning and rigorous assessment so that appropriate opportunities may be given. ‘Sustained shared thinking’ may therefore be seen as a necessary prerequisite for the most effective pedagogy; and this can be defined in terms of:

- (a) the teacher/adult having an awareness of, and responding to the child’s understanding or capability vis-à-vis the particular subject/activity in question;
- (b) the child’s awareness of what is to be learnt (i.e. what is in the teacher’s mind)
- (c) the active co-construction of an idea or skill.

Both participants contribute to the learning process, although not necessarily in equal terms, or to an equal extent. This formulation provides the basis for understanding the value of the sort of dialogue that we sometimes found involved in ‘sustained shared thinking’ and it also gives us a good basis to apply the literature on metacognition in early childhood.

Also, from this perspective ‘scaffolding’ as a pedagogy can be seen to be successful in practice because the teacher/adult, through providing the support that is needed for the child to achieve a successful outcome (or understanding) has been required to first identify (assess) what the child’s current (unaided) capability/understanding is, and then, in the process, and as a result of their provision of the appropriate support they ensure the child has a good grasp of what a successful outcome actually is (i.e. what it is that they will later be aiming to achieve on their own). The adult then gradually withdraws or reduces the support and allows the child to develop confidence in their independent performance.

From this perspective the provision of exploratory play environments (e.g. sand/water play) will only be ‘effective’ if the materials/apparatus are chosen carefully to provide cognitive challenge within the zone of proximal development *and* positive outcomes for the activity are either modelled, demonstrated, explained or otherwise identified in the children’s experiences and actions, and encouraged. Of course, that doesn’t mean that these activities would only be justified if they were structured to make them pedagogically effective in terms of learning—they might, for example, be intended to provide opportunities for the children to ‘express themselves’ or for free discovery and ‘exploration’.

Our systematic observations and analysis of the case study data suggest that in the most effective settings practitioners modelling appropriate language, behaviour, skills and attitudes are also often combined with sustained periods of shared thinking.

Acknowledgement

We are grateful to the other EPPE research team members, Edward Melhuish, Pam Sammons, Brenda Taggart, Sharon Sadler, Katie Lewis, Ann Dobson, Maria

Morahan, Marj Jeavons, Margaret Kehoe and Isabella Hughes, and the REPEY research team, Stella Muttock, Bet McCallum, Rose Gilden and Danny Bell, for their contribution to the projects. We are particularly grateful to the staff, children and heads of the settings we worked in for their consistent support and generous donation of time and effort. We are grateful to the DfES for funding both projects. The findings and views expressed in this article are those of the authors and do not necessarily reflect those of the DfES.

Notes

1. Concerns that have been expressed regarding the potential for bias in contract research, e.g. Norris (1994) and Hockey, (2002), suggest that it may be important to clarify both the circumstances of initial funding and the academic freedoms associated with the conduct and final reporting of this study. As in the case of its 'big sister' project, EPPE, the DfES funded the project following competitive tender. In addition to the expert advice provided by the DfES research unit, both projects also employed external peer review. Both projects have also benefited from the involvement of independent steering committees that would have been more than capable of supporting the team in the event of any dispute over publication or intellectual property.
2. For the purposes of this article (focused mainly on the pre-school provision) the findings from the two comparison reception classes, and from the childminders included in the REPEY study are not included, and a number of other aspects of the study cannot, out of brevity, be reported here. These relate to the literature review carried out for the study, the detailed discussion of organizational structures, curriculum content, teacher subject knowledge, training and their use of questioning, parental partnership, and the specific progress being made by early years practitioners in applying the Curriculum Guidance for the Foundation Stage (CGFS), and in responding to the challenges of information and communications technologies (ICTs) education in the early years. Readers are therefore encouraged to refer to the full project report (Siraj-Blatchford *et al.*, 2002).
3. The following table provides details of each of the case study settings; further detail is excluded to ensure anonymity.

Table 1. Profile of centres selected for in-depth case studies (plus two reception classes)

Centre no.	Type of provision	No. on roll	Some under 3s
017	Nursery class	approx. 50	–
106	Nursery class	approx. 40	–
214	Local authority day care	approx. 60	yes
219	Private day nursery	approx. 50	yes
225	Early excellence centre	approx. 120	yes
306	Private day nursery	approx. 90	yes
324	Nursery school	approx. 120	–
401	Play group	approx. 40	–
413	Private day nursery	approx. 120	yes
417	Nursery class	approx. 50	–
421	Nursery school	approx. 100	–
426	Early excellence centre	approx. 200	yes

References

- Askew, M., Brown, M., Rhodes, V., William, D. & Johnson, D. (1997) Effective teachers of numeracy in primary schools: teachers' beliefs, practices and children's learning, paper presented at the *Annual Conference of the British Educational Research Association*, University of York.
- Bennett, N. & Kell, J. (1989) *A good start? Four year olds in infant schools* (Oxford, Blackwell).
- Black, P. & Wiliam, D. (1998) Assessment and classroom learning, *Assessment in Education*, 5(1), 7–73.
- Burts, D., Hart, C., Charlesworth, R. & Kirk, L. (1990) A comparison of frequency of stress behaviours observed in kindergarten children in classrooms with developmentally appropriate versus developmentally inappropriate instructional practices, *Early Childhood Research Quarterly*, 5, 407–423.
- Creswell, J. W. (1994) *Research design qualitative and quantitative approaches* (London, Sage).
- Creswell, J. W. (2003) *Research design qualitative and quantitative approaches* (2nd edn) (London, Sage).
- Gipps, C., McCallum, B. & Hargreaves, E. (2000) *What makes a good primary school teacher? Expert classroom strategies* (London, Falmer Press).
- Glaser, B. (2002) Constructivist grounded theory? *Forum Qualitative Social Research*, 3(3). Available online at: <http://www.Qualitative-Research.net/fqs/>
- Harms, T., Clifford, M. & Cryer, D. (1998) *Early Childhood Environment Rating Scale, revised edition (ECERS-R)* (Boston, MA, Teachers College Press).
- Hockey, J. (2002) Occupational time: the case of UK social science contract researchers, *Research Papers in Education*, 17(3), 323–342.
- Hohmann, M. & Weikart, D. P. (1995) *Educating young children* (Ypsilanti, MI, High/Scope Educational Research Foundation).
- Karnes, M., Schwedel, A. & Williams, M. (1983) A comparison of five different approaches for educating young children from low-income homes, in: Consortium for Longitudinal Studies *As the twig is bent ... Lasting effects of pre-school programmes* (Hillsdale, NJ, Erlbaum), 133–170.
- Marcon, R. (2002) Moving up the grades: relationship between pre-school model and later school success, *Early Childhood Research and Practice*, 4(1). Available online at: <http://ecrp.uiuc.edu/v4nl/marcon.html>.
- Medwell, J., Wray, D., Poulson, L. & Fox, R. (1998) *Effective teachers of literacy*. Final Report to Teacher Training Agency (Exeter, School of Education, Exeter University).
- Miles, M. & Huberman, A. (1994) *Qualitative data analysis* (London, Sage).
- Miller, R. & Bizzell, R. (1983) The Louisville experiment: a comparison of four programmes, in: Consortium for Longitudinal Studies, *As the twig is bent ... Lasting effects of pre-school programmes* (Hillsdale, NJ, Erlbaum), 171–199.
- Norris, N. (1994) *Evaluation work and the profession of research*. End of Award Report (Norwich, CARE, University of East Anglia).
- Qualifications and Curriculum Authority (QCA)/Department for Education and Employment (DfEE) (2000) *Curriculum guidance for the foundation stage—Stepping stones* (London, QCA/DfEE).
- Sadler, R. (1998) Formative assessment: revisiting the territory, *Assessment in Education*, 5(1), 77–84.
- Sammons, P., Sylva, K., Melhuish, E. C., Siraj-Blatchford, I., Taggart, B. & Elliot, K. (2002) *The Effective Provision of Pre-School Education (EPPE) project: Technical paper 8a—Measuring the impact of pre-school on children's cognitive development over the pre-school period* (London, Department for Education and Skills [DfES]/Institute of Education, University of London).
- Sammons, P., Sylva, K., Melhuish, E. C., Siraj-Blatchford, I., Taggart, B. & Elliot, K. (2003) *The Effective Provision of Pre-School Education (EPPE) project: Technical paper 8b—Measuring the impact of pre-school on children's social/behavioral development over the pre-school period* (London, Department for Education and Skills/Institute of Education, University of London).

- Schweinhart, L. J. & Weikart, D. P. (1997) The High/Scope preschool curriculum comparison through age 23, *Early Childhood Research Quarterly*, 12, 117–143.
- Siraj-Blatchford, I. (Ed.) (1998) *A curriculum development handbook for early childhood educators* (Stoke-on-Trent, Trentham Books).
- Siraj-Blatchford, I. (1999a) Early childhood pedagogy, practice, principles and research, in: P. Mortimore (Ed.) *Understanding pedagogy and its impact on learning* (London, Paul Chapman).
- Siraj-Blatchford, I., Sylva, K., Melhuish, E., Sammons, P. & Taggart, B. (1999b) *The Effective Provision of Pre-School Education (EPPE) project: Technical paper 3—Contextualising the EPPE project* (London, Institute of Education, University of London/Department for Education and Employment).
- Siraj-Blatchford, I., Sylva, K., Muttock, S., Gilden, R. & Bell, D. (2002) *Researching effective pedagogy in the early years* (London, Department for Education and Skills, Research Report 356).
- Siraj-Blatchford, I., Sylva, K., Taggart, B., Sammons, P. & Melhuish, E. (2003) *The EPPE case studies. Technical paper 10* (London, Institute of Education, University of London/Department for Education and Employment).
- Strauss, A. & Corbin, J. (1990) *Basics of qualitative research: grounded theory procedures and techniques* (Newbury Park, CA, Sage).
- Stremmel, A. J. (1993) Responsive teaching: a culturally appropriate approach, in: V. R. Fu, A. J. Stremmel & C. Treppe (Eds) *Papers from the European Forum for Child Welfare and NAEYC Conferences*, Hamburg and Denver 1991 and 1992.
- Sylva, K. (1997) The target child observation, in: K. Sylva & J. Stevenson (Eds) *Child psychology portfolio: social behaviour and competence in childhood* (Windsor, NFER-Nelson).
- Sylva, K., Siraj-Blatchford, I., Sammons, P., Melhuish, E. & Taggart, B. (1999) *EPPE Technical Paper 6* (London, Institute of Education, University of London, DFES).
- Sylva, K., Siraj-Blatchford, I. & Taggart, B. (2003) *The Early Childhood Environmental Rating Scale: 4 curricular subscales* (Stoke-on-Trent, Trentham Books).
- Sylva, K., Roy, D. & Painter, M. (1980) *Childwatching at playgroup and nursery school* (Oxford, Blackwell).
- Sylva, K., Hurry, J., Mirelman, H., Burrell, A. & Riley, J. (1999) Evaluation of a focused literacy teaching programme in Year 1 reception classes: classroom observations, *British Educational Research Journal*, 25(5), 617–635.
- Sylva, K. & Nabuco, M. (1996) Research on quality in the curriculum, *International Journal of Early Childhood*, 28(2), 1–6.
- Tesch, R. (1990) *Qualitative research: analysis types and software tools* (London, Falmer Press).
- Vygotsky, L. (1978) *Mind in society* (Cambridge, MA, Harvard University Press).
- Wells, G. (1985) *Language, learning and education* (Windsor, NFER-Nelson).
- Weikart, D. (2000) *Early childhood education: needs and opportunity* (Paris, UNESCO, International Institute for Educational Planning).

Copyright of British Educational Research Journal is the property of Carfax Publishing Company and its content may not be copied or emailed to multiple sites or posted to a listserv without the copyright holder's express written permission. However, users may print, download, or email articles for individual use.