International Journal of Early Years Education, Vol. X, No. X, Month 200X, pp. 000–000

Curricular Quality and Day-to-day Learning Activities in Pre-School

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The purpose of this paper is to show how curricular quality is related to the day-to-day activities experienced by children and the pedagogical activities of staff, both coded through systematic target child observations. Data were drawn from the Effective Provision of Pre-School Education (EPPE) and the Researching Effective Pedagogy in the Early Years Project (REPEY) studies. Curricular quality was measured by coding the ECERS-E, an English curricular extension to the well known ECERS-R. In centres scoring high on the ECERS-E, staff engaged in pedagogical practices that included more 'sustained shared thinking' and more 'direct teaching' such as questioning or modeling. In high scoring centres, children were also observed participating in more activities associated with early reading, emergent writing and active listening. Children in centres assessed as 'adequate' spent more time in activities associated with the 'Physical Development' and 'Creative' curriculum. Thus the ECERS-E gives higher scores to pedagogical practices and activities where staff take a more active role in children's learning, including scaffolding young children's play, especially in the communication and literacy domains of the curriculum.

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Introduction

Children's early education provides them with daily learning and play opportunities aimed at enhancing their cognitive and social development. A vast array of research has demonstrated that good quality education and care can enrich children's development. The most compelling evidence for the potential of good quality pre-school education and care comes from randomised control trials (e.g. Campbell, Pungello, Miller-Johnson, Burchinal, & Ramey, 2001; Schweinhart, 2002) and large scale longitudinal studies (Peisner-Feinberg, & Burchinal, 1997; NICHD, 2005), mostly carried out in the US. In the UK, the *Effective Provision of Pre-School Education* (EPPE) project (Sylva, Melhuish, Sammons, Siraj-Blatchford, & Taggart, 2004) investigated child care effects through a large, longitudinal English study that employed a school-effectiveness design (Robertson & Sammons, 2001). Through longitudinal tracking of children, EPPE was able to demonstrate the effects of early education and care on children's cognitive and socio-behavioural development at ages 5 and 7, after taking background factors (such as family characteristics etc.) into account. An additional grant from the Government in 2000 enabled a supplementary study: *Researching Effective Pedagogy in the Early Years* (REPEY) to be conducted. This sub-study enabled more in-depth observations and analyses to be conducted on settings with differing 'quality' profiles. Using data from the EPPE and REPEY study, this paper aims to explore the day-to-day activities experienced by children in a range of settings with different scores on the Early Childhood Environment Rating Scale-Extension (Sylva, Siraj-Blatchford and Taggart 2005).

Studies relating quality to adults' pedagogical practices and children's experiences

It is a common assumption that good quality child care and education enhance children's development because they engage children in stimulating and cognitively facilitating activities. Within child care settings, children are usually offered a rich variety of experiences, ranging

from creative activities involving dramatic play or art to manipulative activities involving blocks and puzzles, to literacy and numeracy activities involving number concepts or reading and emergent writing. In contact with their peers and adults they can experience rich, cognitive and social interactions. While a number of studies have linked measures of classroom quality to developmental outcomes, there is very little research linking the overall quality of early educational provision to specific pedagogic practices or to specific learning activities on the part of children. Where researchers have sought to make links between rating scales and child/adult behaviour, they have often used target/focus child observations to measure children's activity and engagement in their pre-school classroom. A common methodology would be to use a quality measure (such as the Early Childhood Environment Rating Scale-Revised – ECERS-E; Harms, Clifford & Cryer, 1998) and to related the overall quality scores to observations of children's activities throughout the day.

An early study carried out by Vandell and Powers (1983) found that children in the better quality programmes (in terms of teacher training, group size, adult-child ratio and equipment) were observed in more positive interactions with their teachers, while children in poorer quality programmes spent more time in unoccupied behaviours and in solitary play. A few years later, Howes and Stewart (1987) demonstrated that in higher quality child care (rated on the Family Day Care Rating Scale; Harms & Clifford, 1989), children were observed more often in competent play with adults, peers and objects. A more recent study carried out target child observations with a large sample of 840 children in 150 child care programmes in the US (Howes and Smith 1995). The aim was to examine the effect of child care quality measured by the ECERS (Harms, Clifford 1980) and ITERS (Harms, Clifford, Cryer 1988) on (1) teachers' behaviours, (2) children's play activities, and (3) children's cognitive activity in child care. The

findings showed that compared to infant and toddlers in lower quality programmes, those in higher quality care spent more time in creative play (painting, colouring, block activities and fantasy play – not directed by adults); in addition, African American children spent also more time in language and less time in gross motor activities. At children's pre-school age however (3 – 5 yrs), a relationship between children's play activities and ECERS ratings could only be found for European Americans; if they were in programmes scoring higher on the ECERS, they spent more time in creative activities and less time in manipulative play (lego, puzzle, shape sorters).

A later study by Toyan and Howes (2003) observed approximately 2200 target children in 191 centres, and produced similar results with children in higher quality programmes (measured on the ECERS-R)spending more time in cognitively enriching activities (creative, language/art or activities with high level adult involvement) than in gross motor activities or non-engaged. These differences were most pronounced when comparing the programmes with the highest ECERS scores with programmes with the lowest scores, and only one of these findings held significant when comparing between medium high and high quality centres (high level adult involvement versus gross motor/non-involvement).

Finally, Wiltz & Klein (2001) carried out a study based on observations and interviews to investigate children's perceptions of their experiences in child care settings that scored high or low on the ECERS (Harms & Clifford, 1980) and on the Classroom Practices Inventory scale (CPI; Hyson, Hirsh-Pasek, & Rescorla, 1990). They found that children in low scoring classrooms engaged predominantly in large group and teacher directed activities, while in high scoring centres active participation was encouraged and children had more opportunities to

choose their own activities and materials. Furthermore, children in high scoring settings were observed more often engaged in literacy activities.

To summarise, several studies have attempted to link ratings of quality to direct observation of children's experiences in pre-school classrooms with the aim of finding out what the quality assessments really measure. The ECERS rating scale has become a popular international tool for measuring quality in early childcare settings by offering descriptions against which activities can be scored for quality. So far, research using ECERS has shown that children in low quality programmes spent more time either in solitary play or in large group teacher directed activities. Children in good quality provisions on the other hand spend more time highly involved with teachers. While they are more involved in creative and language activities, children in low quality care spent more time unoccupied. In terms of children's physical activities, findings are inconclusive and in two large scale studies using the original ECERS instrument to measure classroom quality (Howes and Smith 1995; Toyan and Howes 2003) no relationships were found between quality scores and how much time children were involved in didactic activities. Furthermore, children in higher quality classrooms as measured by the ECERS were found to spend more time in creative and art activities *as well as* more language and literacy activities. Thus, the ECERS ratings did not differentiate classrooms in terms of how much time children spent in creative and art activities as compared to involvement in more academic activities.

Context of the study

Information for the current study was drawn from the Effective Provision of Pre-School Education (EPPE) project (Sylva, Sammons, Melhuish, Siraj-Blatchford, & Taggart, 1999) and its sub-study, the Researching Effective Pedagogy in the Early Years Project (REPEY). EPPE was commissioned in 1997 by the English Department for Education and Skills (DfES) to

investigate the impact of pre-schooling on children development. The EPPE data sets are vast, spanning some 3000 children, their families, and the 141 pre-school centres they attended. It is representative of England's socio-demographic diversity, as well as the considerable spectrum of types of centres found across the country. In each centre, quality was assessed for both structural characteristics (e.g. ratios) and process characterisitcs (e.g. interactions, curriculum). For each of the 141 centres, a comprehensive profile was created which contained information on staff qualifications, child-adult ratios, in-service training, and curriculum. Three assessments of process quality were used in the EPPE study: the *Early Childhood Environment Rating Scale – Revised* (ECERS-R; Harms et al., 1998); the English extension of the ECERS-R – the *Early Childhood Environment Rating Scale – Extension* (Sylva et al., 2006); and the *Caregiver Interaction Scale* (CIS; Arnett, 1989). All three were found to be important 'predictors' of children's developmental progress over the pre-school period (Sammons, Sylva, Melhuish, Siraj-Blatchford, Taggart, & Elliot, 2002; 2003) and up to age 7 (Sylva et al., 2004). However, the ECERS-E was particularly sensitive to later progress in cognitive development (Sylva et al., 2006).

The ECERS-E was specifically developed by the EPPE team to accompany the ECERS-R and to provide an overall quality assessment of the curriculum and pedagogy which supports children's early learning. The content of the ECERS-E reflects the increasing emphasis that the English educational system now places on a national curriculum as specified in the English Curriculum Guidance for the Foundation Stage (CGFS, DfEE /QCA, 2000), for children of 3-5 years. Table 1 lists the subscales of both the ECERS-R and the ECERS–E, and invites comparison of the breadth of the ECERS-R with the curriculum specificity of the ECERS-E.

(Insert Table 1 about here)

An additional grant from the DfES in 2000 enabled a supplementary study: Researching Effective Pedagogy in the Early Years (REPEY) to be conducted. This study enabled more in-depth observations and analyses to be conducted in settings with differing 'quality' profiles (as measured by the ECERS-E). Observations schedules have been used in many studies that have sought to associate 'quality' with observed behaviour and practice. In the REPEY study Sylva and colleagues adapted earlier work (Target Child Observations –TCO; Sylva 1997) to create a scale that focused on a single child and coded his/her activity at 30 second intervals, using time sampled and event sampled categories. At each interval, the child's behaviour was coded simultaneously into four broad domains: the *Curriculum Area* (DfES/QCA, 2000) the child experiences (e.g. Mathematics or Creative Development), the *Social Grouping* of the child (e.g. alone, small group), the L*earning Activity* the child is involved in (e.g. games, pretend, art, reading/writing/listening), any *Staff-Child Interactions* taking place (e.g. direct teaching, physical caring). The systematic child observations which were carried out as part of the REPEY study are the focus of this paper. Note that they include adult behaviours also as all adult behaviour when interacting with the target child was coded.

Goal of the study

The goal of the current study was to explore the ECERS-E in terms of the kind of the day-to-day activities experienced by children and the pedagogical activities of staff most common in high scoring settings or in lower scoring ones. Analyses revealed how curricular quality measured by the ECERS-E related to pedagogical practices and the children's experiences measured by systematic target-child observations. It was expected that, in comparison to previous studies, the differentiation of classrooms in terms of their ECERS-E scores would show variations in how

much time children spent in creative/art activities versus more academically oriented activities. Three issues should be emphasised: First, the original ECERS and the ECERS-R do not put a strong emphasis on assessing quality that might lead to the development of academic achievement, e.g. children's literacy, numeracy and scientific thinking (Sylva et al., 2003). However, in line with the English curriculum for early education, the more recently devised ECERS-E places a much stronger emphasis on pedagogical practices and children's learning activities designed to foster cognitive development. Second, when coding the systematic child adult observations, particular attention was given when coding the teacher behaviour with the target child. While previous studies (Howes and Smith 1995; Toyan and Howes 2003) rated the teacher's level of involvement with the target child (from 'ignoring the child' to 'intense caregiving'), this study captures the specific activities the teacher is engaged in when with the target child, for example: sustained shred thinking, direct teaching (e.g. questioning), or physical caring. Finally, the definition of pedagogy used in this paper is the practice (or art/science/craft) of and creating a stimulating environment for play and exploration in which children will learn without adult guidance. This focuses on planned interactions and extending child-initiated activities in a purposefully designed learning context rather than merely reacting to spontaneous activities in an unthought-of or ad hoc manner (see Siraj-Blatchford, Sylva, Muttock, Gilden and Bell, 2002).

Methodology

Sample

From the original sample of 141 centres in the EPPE project, 10 effective centres (i.e. with positive child outcomes) were selected for case study and systematic observation. The 10 selected centres catered mainly for 3- and 4-year-old children. The ECERS-E total quality scores of the 10 centres were used to create two groups: centres with 'adequate' quality (n=4)

and centres with 'good' quality (*n*=6). Mean quality scores according to the ECERS-E in the 'good' centres was 4.61 (sd: 0.69) and in the 'adequate' ones 2.78 (sd: 0.6). Table 2 presents the types of centres in the two groups. (For more details on the sample see Siraj-Blatchford et al., 2002)

(Insert Table 2 about here)

Measures

Curricular quality. As part of the EPPE study, each pre-school included in the current study had been observed and coded on the ECERS-E, a new measurement of curricular quality. The ECERS-E consists of 15 items, which are grouped within four curriculum subscales: *Literacy*, *Mathematics*, *Science*/*Environment,* and *Diversity*. Similar to the ECERS-R, each item is scored on a scale from 1 to 7 with 1 indicating inadequate quality and 7 indicating excellent. The ECERS-E has good psychometric properties (Sylva et al., 2006). Most importantly, the ECERS-E scores of the 141 individual pre-school centres included in EPPE study significantly predicted children's cognitive progress over the pre-school period in areas such as pre-reading (phonological awareness, letter recognition), numeracy and non-verbal reasoning (Sylva et al., 2006).

The ECERS-E has been shown to correlate highly with the ECERS-R (r= 0.78; Sylva et al., 2003). The strength of this relationship, alongside other measurements, allowed EPPE researchers to establish the construct validity of the new instrument. Important differences found in the predictive relationship between the two instruments and children's developmental progress suggest a certain differentiation of focus, with the ECERS-E more sensitive to those aspects of the pre-school environment that support children's developmental progress in cognition and

language, and the ECERS-R more sensitive to those aspects of centre quality that support social development (Sammons et al., 2003, Sylva et al., 2006). An overall measurement of quality in pre-school classrooms requires the use of both instruments. Exclusive use of one over the other would lead to an unbalanced profile of quality in education and care.

Day-to-day activities and staff interactions. As part of the REPEY study, child and adult behaviour had been observed systematically through target child observations in the centres. The procedures were as follows: Trained researchers spent a week in each centre to carry out systematic target child observations. They were unaware ('blind') to the ECERS-E score of each centre. Children from the 10 centres were stratified by gender (110 girls and 109 boys) and ability (able, typical and 'struggling' learners; *n*s = 65, 98, 56 respectively). Stratified random sampling (balanced across gender and ability) led to approximately 20 children (Mean = 22 children, *SD* = 2.02) with a mean age of 3 years and 6 months (*SD* = 0.55), randomly selected in each centre for the observation. Across the 10 centres this yielded a total of 219 children suitable for target child observations.

Each target child observation lasted 20 minutes; observations were conducted randomly throughout the day (morning-afternoon, indoors-outdoors, etc). Thus during a 20-minute period, a total of 120 pieces of information are recorded (40, 30-second intervals, each coded for Curriculum, Social grouping, Learning Activity, and Staff-child interactions [if the teacher is in proximity of the child]).

When the Target Child (TC) was involved in an activity such as pretend play for most of the 30 sec interval, this unit was coded as *pretend* for the child's play/learning activity. If at the same

time the child was in a pair, the interval was coded as *child pair* for social grouping. In rare cases where the child was involved in two activities in which one was not discernibly dominant, a 0.5 count was given to each code. Consider the example of a child asked to "draw two ladybirds on the small leaf, and four on the large one". This might be coded as 0.5 *creative development* and 0.5 for *mathematics* if the child was giving particular attention to the artistic element of the activity while carefully counting ladybirds. If the adult questioned the child during ladybird drawing, the interaction was also coded as *direct teaching*.

The possible codings for each of the four domains are presented in Table 3. In total, approximately 9,000 30-second observations were collected across the pre-school centres of differing quality.

(Insert Table 3 about here)

Inter-rater reliability. Good inter-rater reliability was established both for the ECERS-E and the Target Child Observations at separate instances and by different researchers. The ECERS-E inter-rater agreement was established on 18% randomly selected centres and was calculated through weighted kappas (mean kappa=0.88; range across regions: 0.83 to 0.97). The reliability of the target-child observational coding scheme was established using Cohen's kappa; two raters independently coded 17.4% of the sample and their agreement ranged from 0.54 to 0.89 (mean kappa=0.79).

Results

Analysis strategy

The specific approach adopted for the analysis of the observational data was to take each single 30-second observation as the unit of analysis. Coding short units of observations independently was chosen as the most appropriate method because the main focus of the observational coding was not the learning of individual children (see Kontos & Keyes, 1999), but a description of the most common activities taking place across the day in the pre-schools.

Having taken into account any gender, ability and age effects by selecting a stratified and balanced sample, the amount of time that children spend in different learning and social activities was compared in good versus adequate quality provisions. An observational approach was used to discover whether children in centres rated as 'good' on the ECERS-E tend to play and learn in different ways from those in centres rated as 'adequate'. Differences between staff behaviour in good versus adequate settings were investigated for the instances where a staff member interacted with a target child.

The frequencies of activities were turned into percentages to account for the different sample sizes between centres of adequate quality and those of good quality. Analysis of the percentages was done by chi-square tests applying Yate's correction for continuity. The level of significance was set at 99% to account for the large number of pairwise comparisons being tested.

Findings

Cognitive and Social Interactions with Staff. All three types of cognitive, social and pedagogical interactions showed highly significant differences between adequate and good quality settings (Table 4 and Figure1). In good quality centres children spent a significantly

greater proportion of time in sustained shared thinking with staff ($\chi^2_{(1)} = 13.50$, $p<.001$) and experiencing direct teaching from staff ($\chi^2_{(1)} = 50.34$, $p<.001$). In adequate quality pre-schools children experienced significantly more monitoring in which staff observed but did not interact with children ($\chi^2_{(1)} = 82.71$, $p<.001$). Interactions focused on social talk were less frequent than cognitive pedagogical interactions in both types of quality. Comparisons showed that there was less physical caring in good quality settings ($\chi^2_{(1)} = 10.99$, $p=.001$) than in adequate ones. However, social conversation took place more often in good quality centres ($\chi^2_{(1)} = 9.26$, $p<.01$) than adequate ones.

(Insert Table 4 about here)

Social Grouping. The most common social grouping in *all* centres was the small group, but children tended to play in small groups significantly more often in good quality provision ($\chi^2_{(1)} = 11.03$, $p=.001$, Table 5 and Figure 1). On the other hand, children were observed in pairs significantly more often in centres of adequate quality ($\chi^2_{(1)} = 17.45$, $p<.001$). There were no differences between the two groups in children's participation in lone/solo activity or in large groups.

(Insert Table 5 about here)

Curriculum Domains. The comparison of the curriculum areas experienced by children shows that there are important differences between the two groups in four out of the six areas (Table 6 and Figure 1). Children who attended good quality pre-schools spent significantly more time experiencing *Communication, Language and Literacy* activities ($\chi^2_{(1)} = 42.70$, p<.001) and

Knowledge and Understanding of the World curriculum ($\chi^2_{(1)} = 94.50$, p<.001). On the other hand, children in centres of adequate quality spent more time experiencing *Physical Development* and *Creative Development* ($\chi^2_{(1)} = 26.41$ and $\chi^2_{(1)} = 69.01$ respectively, p<.001). Interestingly, there was no difference in the amount of time spent in the *Personal, Social and* Emotional Development across the two levels of quality.

(Insert Table 6 about here)

(Insert Figure 1 about here)

Child learning activities. In good quality centres, children spent more time participating in games, reading / writing / listening and adult-led activities than in centres of adequate quality ($\chi^2_{(1)} = 6.74$, p<.01, $\chi^2_{(1)} = 33.31$ and $\chi^2_{(1)} = 50.14$, *p*<.001, respectively). Two interesting trends were also observed: children in good quality centres were observed to engage more often and in activities involving examining, exploring and investigating. In centres where ECERS-E total ratings were only of adequate curricular quality, children were observed to spend more time in pretend play ($\chi^2_{(1)} = 53.68$, *p*<.001), in activities that involve puzzle / construction ($\chi^2_{(1)} = 31$, *p*<.001) and in art or music activities ($\chi^2_{(1)} = 49.33$, *p*<.001). In addition, children in adequate centres on the ECERS-E tended to stand around gazing or waiting (empty activity) more often than in the good ones.

Figure 2 presents the percentages of occurrence for every child activity observation code. It is interesting to note that while pretend, manipulation and art and music were not observed as often in good quality centres as in adequate ones, they were still clearly the 'staple diet' of young children's play in good quality centres. Although children in centres with high ECERS-E scores

had less art or music, pretend, and manipulation when compared to children in adequate quality, they still spent a great part of their day enjoying these free play activities.

(Insert Figure 2 about here)

Discussion

This paper has presented the differences observed in the daily activities of pre-school children and staff in centres with different quality scores on the ECERS-E. This observational rating scale is based on the six domains of the English national curriculum for children 3 – 5+ years. The EPPE study found that quality ratings in the ECERS-E were good predictors of children's developmental outcomes at school entry; in particular the ECERS-E predicted cognitive and linguistic development (Sylva *et al*., 2006).

The observational data suggested that, depending on high or adequate scores on ECERS-E quality, practitioners and children are behaving in different ways. In the centres with the highest scores on the ECERS-E, teachers engaged the children more in sustained shared thinking and in social conversations. Furthermore they used more direct teaching which included modelling, questioning and demonstrating. In centres with adequate quality on the other hand, teachers spent more time monitoring children's play but not participating in it; when engaging with children they carried out more physical care rather than explaining or questioning, or extending and scaffolding children's learning.

As a result, children in high quality care spent more time in adult-led activities, and in activities involving numeracy, reading, writing and listening. They spent more time experiencing academic curriculum areas such *Communication, Language and Literacy* and *Knowledge and*

Understanding of the World. While this might seem contradictory to Wiltz and Klein (2001) who found that the *low* quality centres put a stronger focus on direct teaching, one has to bear in mind that direct teaching in Wiltz and Klein's study took place mostly in the context of the whole group and was 'instruction'. In the current study direct teaching was more varied and included questioning and modelling. Also, there were no differences in the amount of time children spent in large group activities, but compared to children in adequate pre-school settings, children in high quality settings spent more time in small groups. The additional amount of direct teaching and learning therefore took place in the context of small groups where children had more frequent access to informal teaching. This is an important new finding, particularly as previous research using the original ECERS to differentiate between classrooms of varying quality failed to report differences in time spent in 'teaching' activities.

A second important finding which emerged was that children in high quality pre-schools devoted *less* time to creative and physical development activities than children in adequate quality centres. They spent less times in pairs, engaging in pretend play, puzzle or construction activities, or in art and music. At the first sight this might seem contradictory to previous research (Howes & Smith 1995; Toyan & Howes 2003), but in fact it extends previous findings. First, findings from the current study might indicate that slightly older pre-schoolers express their creativity in another form; for example creative activities such as 'gluing' may be replaced by creativity within a literacy activity (e.g. a puppet show) rather than being subsumed under the umbrella creative curriculum. Second, the current study demonstrates differences between centres of medium and high quality, not between low and high quality as done by previous research (which included only few centres of excellent quality; Howes & Smith 1995). It has to be stressed that, in comparison to centres scoring on the *medium* range of quality, the teachers in

the highest quality centres encouraged more structured play and the more academic side of the curriculum through careful choice of materials and planned group activity. Importantly, it has to be added that children in good quality centres also engaged in creative activities - they did so frequently - however, they did so less often than children in the adequate settings. It appears that in the good quality centres, the time devoted to such free play activities is somewhat less, allowing more time for activities related to literacy and mathematics.

Combining the present study with previous research extends our knowledge of children's experiences in pre-school settings of differing quality. Children in low quality settings spend more time unoccupied (Vandell & Powers 1983; Toyan & Howes 2003), in solitary play (Howes & Stewart 1987) or in large group teacher-directed activities, where little time is given to activities of children's free choice (Wiltz & Klein, 2001). Higher (or good) quality settings on the other hand offer more free choice; as a result children spend more time in cognitively enriching activities such as creative play, language or science activities. They are more engaged with their peers and spend more time in one-to-one interactions with their teachers.

In addition, teachers working in centres with high ECERS-E scores focus more on challenging activities, take an active role in teaching through pedagogical practices that included scaffolding children's learning through play, modelling activities/interactions, and questioning rather than monitoring children's play or engaging in care activities. Thus, the systematic observation carried out in the current study has revealed differences in balance between structured and free-form activities, between 'active' teaching versus 'monitoring' roles for adults. What distinguishes good from adequate quality is the relative balance between structured and free-form play. The EPPE/REPEY studies have shown that a more thoughtfully, structured approach

to everyday activities (derived from sound pedagogical practices) in pre-schools leads to better cognitive and linguistic outcomes for children. It may be that the kind of 'academic' and 'structured play' activities which get higher ratings in the ECERS-E are those activities that stimulate children's cognitive and linguistic development. In this study, these more structured activities complemented free-play ones; they did not banish them from the early childhood centre.

Acknowledgements

The data in this study reported here are drawn from the Effective Provision of Pre-school Education (EPPE) project, whose principal investigators include Kathy Sylva, Edward Melhuish, Pam Sammons, Iram Siraj-Blatchford and Brenda Taggart. Data are also drawn from the Researching Effective Pedagogy in the Early Years (Siraj-Blatchford, Sylva, Muttock, Gilden & Bell, 2002) study. Both were funded by the UK Department for Education and Skills. The authors are grateful to Thelma Harms, Debby Cryer and Dick Clifford who gave advice on the development of the extension rating scale and encouraged the EPPE Team to devise an English supplement to reflect the English national curriculum.

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Table 1. ECERS-R and ECERS-E Subscales

ECERS-R Subscales	ECERS-E Subscales
Space and Furnishings	Literacy
Personal Care Routines	Mathematics
Language Reasoning	Science and Environment
Activities	Diversity
Interaction	
Programme Structur	
Parents and Staff	

Table 2. Quality rating and type of centre in the two groups.

Quality level based on ECERS	
Good	Adequate
Local government centre, combining care with education	Nursery class in a primary school
Private day nursery (for profit)	Nursery class in a primary school
Early Excellence centre combining care with education	Playgroup run by parents
Nursery school run by local government	Private day nursery (for profit)
Nursery school run by local government	
Early Excellence centre combining care with education	

Table 3. Target Child (TC) Observation: curriculum and activities coded in each 30 sec. interval

Area	Domain/Activity coded	Description
Curriculum Area experienced	Communication, language and literacy	These 6 curriculum areas form the basis of the foundation stage curriculum
	Mathematical development	
	Knowledge and understanding of the world	
	Physical development	
	Creative development	
	Personal, social and emotional Development	
Social Grouping	Alone	TC is alone
	Pair	TC is working with another child
	Small group	TC is in group of 3-8 children
	Whole class	TC is in group of 9 or more children
Child Activity	Games	Informal games, games with rules
	Pretend	Pretend game: transformation of objects, people, events so that their meaning takes precedence over reality
	Movement/Gross motor activity	Large muscle movement, purposeful movement and cruising
	Manipulation	Mastering and refining of manual skills that require coordination of the hand/arm and the senses
	Puzzle / construction	Use of materials with design constraints (eg puzzles), large- and small-scale construction
	Empty	TC stands around gazing with no interest in any activity or waiting for an adult or another child or roaming
	Domestic activity	Lunch and snack time activities, use of the bathroom, changing shoes, etc.
	Observation	Task related and non-task related observation
	Art & music	Singing songs, painting, cut and pasting, dancing and movement, drawing, playing instruments
	Numeracy activities	Activities involving calculations, number symbols and number concepts
	Reading / writing / listening	Reading: looking at books, reading sounds, reading words, reading text. Writing: pretend writing, copying letters, witting individual letters independently, writing individual words. Active listening: adult reading, listening to a form of media with a literacy focus, other child reading
	Examining / exploring /	Examining objects, computing or problem-solving

	investigating	
	Adult-led activities	Adult-led unison activities when the TC is part of a group of children under leadership of adult, also includes cooking
	Social talk	TC interacts with another child or adult in a social conversation or a conversation unrelated to the activity which the child is engaged
Cognitive Pedagogical Interactions	Sustained shared thinking	Interactions that include scaffolding, extending, discussing, modelling and playing
	Direct teaching	Interactions that include questioning, modelling, instruction, task management, reading to the TC, organising and allocation of tasks
	Monitoring	Practitioner is observing the TC and was available to the TC in their social context
Social Pedagogical Interactions	Encouragement	Includes positive praise
	Behaviour management	Instructions such ‘sit still’ and reprimanding the TC
	Physical caring	Includes physical contact such as cuddles and sitting on knees
	Social conversation	Practitioner engaged in conversation with the TC which is not related to the activity which the child is part of

Table 4. Cognitive and social interactions in the two types of pre-schools

		Good quality	Adequate quality	Difference	p
Cognitive Interactions	Sustained shared thinking	8.73%	6.01%	2.72%	<0.001
	Direct teaching	50.96%	41.23%	9.73%	<0.001
	Monitoring	40.31%	52.73%	12.42%	<0.001
	Total	100.00%	100.00%		
	Total *n* observations	3493	2162		
Social Interactions	Encouragement	31.43%	32.78%	1.35%	0.731
	Behaviour management	33.67%	34.16%	0.49%	0.939
	Physical caring	7.55%	14.88%	7.33%	0.002
	Social conversation	27.35%	18.18%	9.17%	0.001
	Total	100.00%	100.00%		
	Total *n* observations	490	363		

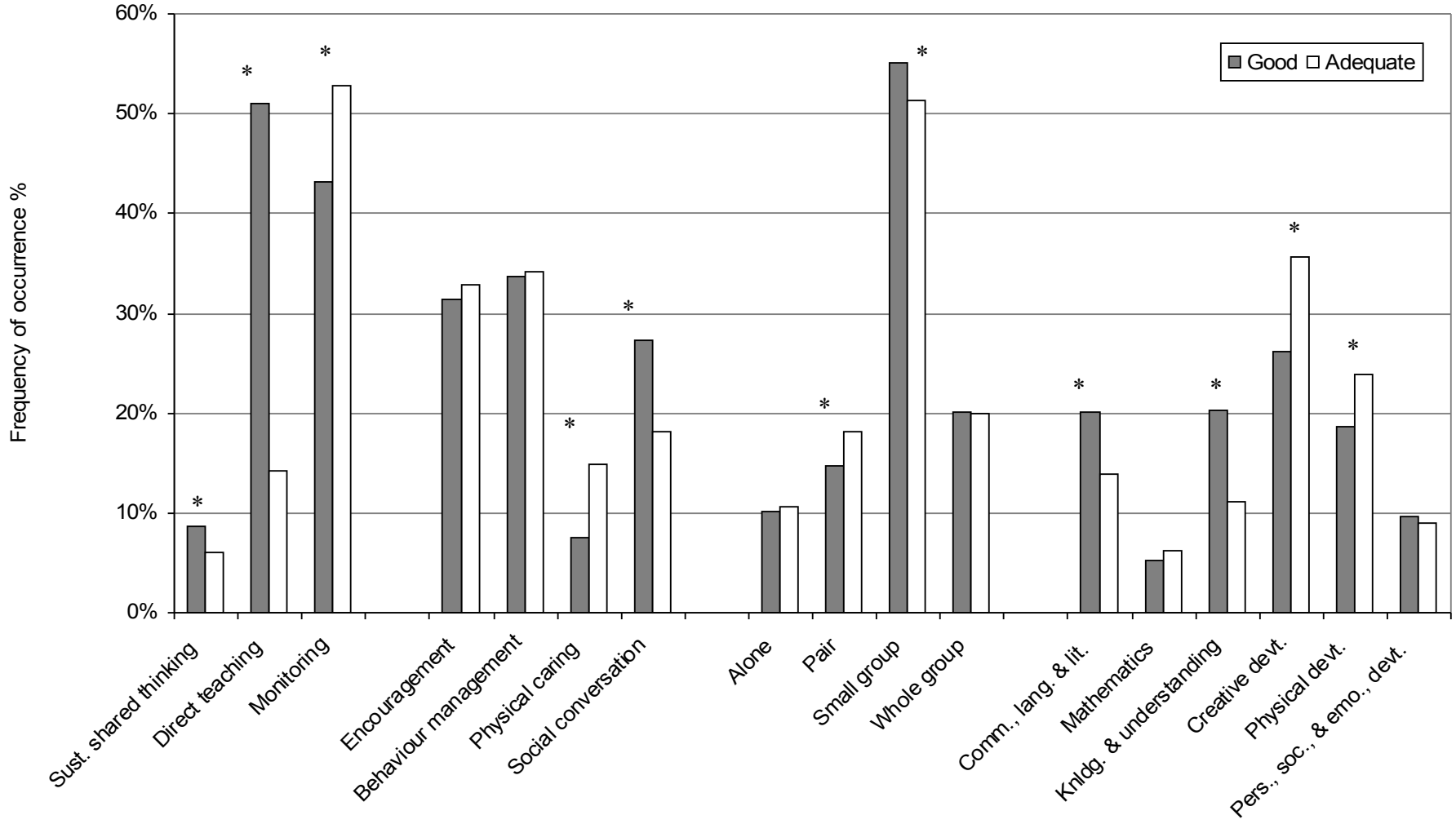
Table 5. Social grouping of children by pre-school quality

Social Grouping	Good quality	Adequate quality	Difference (%)	*p*
Alone	10.11%	10.61%	0.5%	0.47
Pair	14.75%	18.11%	3.36%	<0.001
Small group	55.02%	51.40%	3.62%	0.001
Whole group	20.12%	19.88%	0.24%	0.80
Total	100.00%	100.00%		
Total *n* observations	5160	3600		

Table 6. Curriculum areas experienced by children in the two types of pre-schools

Curriculum areas	Good quality	Adequate quality	Difference	*p*
Communication, Language, Literacy	20.19%	13.93%	6.26%	<0.001
Mathematics	5.2%	6.28%	1.08%	0.069
Knowledge and Understanding of the World	20.22%	11.16%	9.06%	<0.001
Creative Development	26.14%	35.7%	9.56%	<0.001
Physical Development	18.66%	23.91%	5.25%	<0.001
Personal, Social, Emotional Development	9.58%	9.02%	0.56%	0.467
Total	100.00%	100.00%		
Total *n* observations	3902	2706		

Figure 1. Overview of adult interactions and curriculum coverage by pre-school quality



* statistically significant difference between good and adequate centres