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# Effective Pre-school and Primary Education 3-11 project (EPPE 3-11): Variations in teacher and pupil behaviours in year 5 classes

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# Effective Pre-school and Primary Education 3-11 project (EPPE 3-11): Variations in teacher and pupil behaviours in year 5 classes

## **Abstract**

The EPPE 3-11 Project builds on the work of the earlier Effective Provision of Pre-School Education (EPPE) project, which was the first major longitudinal study in Europe to investigate the impact of pre-school provision on a national sample of young children, tracing their development between the ages of 3 and 7 years. EPPE 3-11 follows the same sample of 2500 plus children to age 11 years, the end of Key Stage 2 (KS2). This research brief reports the results of detailed observations of practice conducted in 125 Year 5 classes attended by EPPE children, and measures the variation in teachers' organisation and pedagogy and in pupils' responses. The brief describes patterns of association between indicators of primary school effectiveness (measured using value added approaches and national assessment results) and quality (measured by Ofsted inspection grades) and differences between Year 5 classes in observed practice and behaviour. The observations were conducted in a range of lessons with a particular emphasis on the core subjects.

## **Keywords**

education, effective, 3, pre, 11, project, eppe, variations, teacher, pupil, behaviours, year, 5, classes, school, primary

## **Disciplines**

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EFFECTIVE PRE-SCHOOL AND PRIMARY EDUCATION 3-11 PROJECT (EPPE 3-11)  
 VARIATIONS IN TEACHER AND PUPIL BEHAVIOURS IN YEAR 5 CLASSES

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The EPPE 3-11 Project builds on the work of the earlier Effective Provision of Pre-School Education (EPPE) project, which was the first major longitudinal study in Europe to investigate the impact of pre-school provision on a national sample of young children, tracing their development between the ages of 3 and 7 years. EPPE 3-11 follows the same sample of 2500 plus children to age 11 years, the end of Key Stage 2 (KS2). This research brief reports the results of detailed observations of practice conducted in 125 Year 5 classes attended by EPPE children, and measures the variation in teachers' organisation and pedagogy and in pupils' responses. The brief describes patterns of association between indicators of primary school effectiveness (measured using value added approaches and national assessment results) and quality (measured by Ofsted inspection grades) and differences between Year 5 classes in observed practice and behaviour. The observations were conducted in a range of lessons with a particular emphasis on the core subjects.

### Key findings

#### *Pedagogy*

- There was significant variation in both teachers' classroom practice and pupils' behaviour in different Year 5 classes.
- Levels of student engagement were found to be relatively high and classroom climates were generally positive. Teacher detachment and levels of pupil 'off task' behaviour were generally low.
- There was considerable variation in the quality of the educational experiences of children in different classes, indicating that some children attend poorer quality settings, which has implications for the promotion of greater equality of educational opportunities.
- Most teachers broadly followed the format of the National Strategies (Literacy and Maths) except for the use of the plenary which was not observed in nearly half of classes.
- The quality of teaching and pupil response was found to be consistently higher in classes where a plenary was used in both literacy and numeracy lessons and lowest in classes where no plenary was used in either subject.

#### *The impact of school context*

- The incidence of poor pupil behaviour and classroom disorganisation was observed to be greater in schools with higher levels of social disadvantage, measured by the percentage of pupils eligible for free school meals (FSM). The quality of pedagogy was also found to be poorer in schools with higher levels of social disadvantage.

#### *Associations between classroom practice and measures of 'effectiveness'*

- Observed practice was found to be better in schools that had been rated more positively by Ofsted Inspectors in earlier inspections (particularly in schools rated more highly on overall leadership and school effectiveness). This suggests that the practice of Year 5 teachers in more effective schools is related to the overall quality of the school and its leadership.
- Significant positive associations were also found between Ofsted judgements of school effectiveness and improvement since the last inspection and teachers' use of a plenary in literacy and numeracy lessons.
- Several aspects of observed practice were also found to be weakly related to better value added outcomes in English and Maths.

## The Aims of EPPE 3-11

This Research Brief focuses on the results of detailed observation of 125 Year 5 classes in a purposive sample of 125 primary schools with a range of effectiveness and from different geographical areas. Here we identify the extent of variations in classroom practice and pupil behaviour and patterns of association with measures of school effectiveness and quality, and with indicators of the social disadvantage of school context.

EPPE 3-11 uses a number of measures of primary school 'effectiveness' and 'quality'. The 'effectiveness' of a school was estimated by comparing linked Key Stage 1 (KS1) to Key Stage 2 (KS2) national assessment results using multilevel 'value added' analyses. The analysis made comparisons between classroom observations, value added measures, and Ofsted judgements of 'effectiveness', 'improvement', 'leadership' and 'quality of teaching and learning' etc., as well as linking contextual information about social disadvantage (% of pupils' eligible for free school meals [FSM]).

The research tested the applicability, to a large sample of Year 5 classes in England, of two observation instruments designed to measure the quality of practice and range of teacher and pupil behaviours. This allows comparisons with other international research. Observations using the Classroom Observation Schedule (Pianta) instrument were conducted at the start of the morning and afternoon, with a particular focus on literacy and numeracy lessons, although science and other social science (e.g. history or geography) lessons were also observed. A total of 153, 20 minute literacy and 149 numeracy sessions were observed. A second instrument, the Instructional Effectiveness Instrument (Stipek) was used in 93 classes to observe complete literacy and numeracy lessons (approx. one hour each).

The two instruments identified important differences in observed practice and behaviour and were found to distinguish between better and poorer quality classroom experiences for Year 5 pupils.

## Key Findings explored:

### Pedagogical practices and classroom organisation

Classroom observations showed considerable variation in the quality of learning experiences. The extent of the variation indicates that pupils in different Year 5 classes can have quite different educational experiences. Despite evidence of rising standards across primary schools associated with the National Strategies, it appears that quality remains uneven. This was particularly evident in important domains such as: 'Richness of instructional methods', 'Using basic skills in the context of problem solving' and the 'Development of higher order thinking skills'. Characteristics of classroom that were rated more highly in these areas were: 'thought provoking' reciprocal discussions, children using hypothesis to experiment with a range of ways of tackling a problem and teachers modelling problem solving. In around a fifth of classes relatively little use of evaluative feedback was seen, while approximately 17% of classes had very low ratings for 'Richness of instruction'. Pupils in such classes therefore had poorer learning environments than those in typical classes.

*Teaching analytic skills* - There was little or none of this pedagogical practice observed in around 30% of Year 5 classes in the sample. 'Analysis' in this context includes 'higher order' critical thinking skills of analysis, inference, application, interpretation, problem solving, and planning.

*Student engagement* - Generally, levels of student engagement were found to be relatively high and classroom climates positive, although in a small minority of classes this was not the case. Teacher detachment was usually low and encouragingly little 'off task' pupil behaviour was observed. The levels of 'off task' behaviour observed were lower than those reported in findings from classroom studies conducted in the 1980s.

*Organisation of teaching* - Overall the time spent in different groupings (e.g. whole class, individual etc.) was found to accord with the National Strategies (Literacy/Numeracy) recommendations for daily lessons, with the exception of the use of the plenary session (see below). More time in whole class (56%) than individual work (36%) was observed, and group work was found to be less common (9%). These findings differ from earlier

primary school studies where individual work tended to be more common than whole class work, but differences in definitions in different observation instruments make direct comparisons difficult (Galton et al. 1999). Teachers appear to be making more use of 'interactive whole class teaching' as recommended in the National Strategies.

However, some authors, such as Smith et al. (2004), have argued that 'interactive whole class' teaching strategies have not dramatically transformed traditional patterns of whole class interaction. Furthermore, Alexander (2004) suggests that the benefits of 'Dialogic Teaching'<sup>1</sup> will only be realised when teachers recognise that it: "...demands both pupil engagement and teacher intervention. And the principle means by which pupils actively engage and constructively intervene is through talk" (Alexander, 2004, authors emphasis).

*'Group work'* - Observations of pupils in large and small groups were very rare (except in Science where 11% of observations were in groups). Teachers varied in the extent to which they encouraged pupil co-operation in both the type of tasks they assigned and the level of co-operation they encouraged. The SPRinG study (Blatchford et al, 2004) is an intervention study which promotes positive teacher and pupil interactions. This research indicates that there can be benefits from collaborative group work at KS2 as pupils engage in more (and more sustained) interactions with other pupils. Our research indicates that in many of the Year 5 classes observed such group work was uncommon.

### *The Plenary*

Most schools broadly followed the format of the National Strategies (Literacy and Maths) except for the use of plenary. Around a third of classes observed used a plenary in both literacy and numeracy. In half the classes a plenary was observed in one but not the other subject. In approximately a quarter no plenary was observed in either lesson. The quality of teaching was found to be significantly higher in classes where plenaries were used for both literacy and numeracy, and lowest in classes where plenaries were absent. The

absence of the plenary in around half of literacy and numeracy lessons observed (51% Literacy, 49% numeracy) is of particular concern as this part of the lesson is intended to give opportunities for feedback for improvement and consolidation of learning. Black and Wiliam (1998) argue that 'informative' feedback is 'an essential component of classroom work' (1998 p9) that can lead to raised standards of achievement. By missing this part of the lesson some teachers may be reducing the opportunity to provide consolidation. In particular the use of more demanding higher order communication is typically more common in plenary and other whole class activities.

### Disadvantaged groups

The quality of teaching tends to be poorer in schools with higher levels of social disadvantage and this has implications for the social inclusion and raising standards agenda. In such schools, Year 5 classes scored significantly lower on particular aspects of the 'quality' of teaching. In mathematics, there were fewer opportunities for pupils to practice basic skills in the context of problem solving (which encourages higher order thinking). There was also less 'social support for learning' characterised by everyone's contribution being taken seriously and pupil errors being used as opportunities to explore learning. There were also fewer opportunities for children to demonstrate their subject knowledge.

In literacy, pupils in schools serving more disadvantaged intakes spent more time in 'off task' talk (student engagement) and their classrooms were less likely to be well organised, with transitions between activities being poorly managed. In addition, the classroom climate (extent to which pupils are respected and have autonomy) and social support for learning (high expectations) were significantly and negatively associated with the level of social disadvantage (measured by % of pupils eligible for FSM).

The classroom observations that identified disruptive behaviour, discipline episodes and class 'chaos' suggest that pupil behaviour was generally good in the large majority of classes. However, behaviour tended to be worse in schools where there were relatively more children eligible for free school meals (% FSM). The results also indicated that poor organisation of work and classes

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<sup>1</sup> Broadly equivalent conceptions include 'mutualist and dialectical pedagogy' (Bruner), 'dialogic enquiry' (Wells), 'interthinking' (Mercer), 'dialogue of enquiry' (Lindfor), and in the early years, 'sustained shared thinking' (Siraj-Blatchford, *et al*, (2002)

by some Year 5 teachers was associated with level of social disadvantage (e.g. on the item 'chaos').

These results warrant further investigation, given concerns about the gap in attainment related to pupil background which has been shown to increase as children progress through school. Our findings may reflect the influence of lower teacher expectations or the recruitment of less experienced or poorly performing teachers in schools serving more disadvantaged communities. They may also link to difficulties relating to pupil behaviour, attitudes and attendance. In fact it may be all of these, 'expectations' do not have to be 'self-fulfilling' to constitute a problem, as Good and Brophy (1997) have argued: "Expectations tend to be self-sustaining. They affect both *perception*, by causing teachers to be alert for what they expect and less likely to notice what they do not expect, and *interpretation*, by causing teachers to interpret (and perhaps distort) what they see so that it is consistent with their expectations. Some expectations persist even though they do not coincide with the facts (Good & Brophy, 1990, p441).

#### Associations between classroom practice and measure of 'effectiveness'

One method used in the EPPE research to explore the 'effectiveness' of all primary schools (over 16,000) in England was to analyse matched pupil national assessment scores from KS1 to KS2 taking account of the background characteristics of the child and the school (a form of contextualised value added based on data for 2002-4). The analysis is therefore based on the 'residual' scores for each school in the three core subjects (English, maths and science calculated separately). The value added results were then extracted and compared with the observation sample of 125 focal schools. This identified schools where children generally made progress 'as expected', 'better than' or 'less well' than predicted by their prior attainment and background.

Moderately strong 'between-subject' statistical results were identified indicating schools that were more effective in one core subject tend to be more effective in others, while those that are less effective in one area also tend to be less effective in others. In addition the extent of stability in school effectiveness was investigated across years. Several aspects of teachers' observed practices

were found to be significantly associated with the value added analyses of progress in Maths and English in KS2.

Although only weak to moderate, such associations show some interesting links between overall school effectiveness and specific features of classroom practices. Thus they provide some helpful insights into what features of effective practice and pedagogical approaches may promote better pupil progress.

In English three aspects of pedagogy were noteworthy: having a positive classroom climate (safe and respectful, opportunities for collaboration, sensitive discipline); good classroom routines (maximised use of instructional time, well prepared materials) and the developing of higher order thinking skills in the context of 'reading as meaning making'. This involved teachers encouraging children when reading to go beyond decoding text, and teachers drawing on pupils' previous knowledge and reasoning to encourage pupils to evaluate critically their comprehension.

In Maths, as well as having good classroom routines, three other areas of mathematical pedagogical knowledge were associated with better outcomes in the value added measures: 'use of maths analyses', 'depth of knowledge' and 'locus of maths authority'. In 'use of maths analyses' higher ratings were associated with children being given opportunities to construct original ways to solve maths problems and being allowed to make conjectures with justifications. 'Depth of knowledge' focused on the depth to which maths knowledge is treated in class. This was evident when teachers structured their lessons so that most children were engaged in one or more of the following: demonstrating their understanding of the problematic nature of information or ideas, demonstrating complex understandings by arriving at a reasoned, supported conclusion or explaining how they solved a *complex* problem. The 'locus of maths authority' is the extent to which the teacher and the pupil hold each other accountable for convincing themselves and each other that their reasoning is sound. In classrooms where this occurred the teacher often answered a question with a question or offered instrumental help (good scaffolding), pushing pupils to make their own decisions.

The second method of exploring 'effectiveness' and its relationship to classroom practices was to

compare the observations of our 125 'focal' schools with Ofsted judgements of quality of provision from the most recent inspection reports (conducted prior to the observation data collection). Classroom observations were matched with Ofsted global judgements on overall school 'effectiveness', 'improvement since last inspection', 'leadership', 'quality of teaching and learning' and inspectors' ratings of pupil outcomes (attendance, attitudes and behaviour). The results indicated significant, though modest positive associations with a number of our observational measures of teacher pedagogy and teacher and pupil behaviour. We found that teachers' observed practice in Y5 classes tended to be 'better' in those schools that had previously been rated more positively in the professional judgement of inspectors. Of particular note were the positive associations between Ofsted judgements and higher observed ratings of 'productive use of instructional time' (smooth transitions, good planning, efficient routines for when pupils finish work), 'pupil self reliance' (where pupils display autonomy, initiative and are self directed), 'richness of instructional methods' (intellectually engaging and thought provoking lessons which contain reciprocal discussions) and 'positive classroom climate' (where the emotional and social tone of the classroom was respectful, safe and welcoming).

The positive associations between the quality of overall school leadership and better classroom practice identified by observations supports the view that overall school influences can affect classroom practice and the conclusion that good school leadership tends to promote better teaching and learning and thus better outcomes for children. Generally the findings indicate links between more global constructs of school effectiveness, as defined by inspectors and more specific aspects of observed classroom practice related to the quality of teaching. The classroom practices of individual teachers appear to be positively influenced directly or indirectly by the overall effectiveness and leadership of their school.

The correlations between Ofsted ratings of quality and the 'value added' indicators with the classroom level observations indicate that the classroom observation schedules used by researchers in the 125 'focal' schools allow important features of classroom practice associated with better outcomes for children in English primary schools to be identified. These analyses improve understanding

of the extent of variation in school and classroom processes in Year 5, and provides insights into more effective practices and pedagogical approaches.

## **Conclusions and Key Messages**

This research brief highlights new findings on the quality of teaching and learning in Year 5 English primary classes. The results are relevant to policy makers and practitioners concerned with improving practice and promoting greater equity by closing the attainment gap associated with social disadvantage. There are implications for the further development of the National Strategies and the results highlight areas of possible weakness in the teaching in some classes that could benefit from further guidance and professional development. The findings are of relevance to the Excellence and Enjoyment (DfES, 2003) agenda and the promotion of personalised learning. They should also be of interest to Ofsted inspectors and to schools' approaches to the improvement of classroom practice through self evaluation and review.

### *Key messages*

- There is wide variation in teachers' practice and children's responses in Year 5 classes and this is likely to affect pupils' educational outcomes.
- The quality of classroom practice is associated with the use of plenary sessions in literacy and numeracy lessons. Practice was found to be better in classes that used plenaries in both of these subjects and poorer in classes where no plenary was observed in either. Plenaries were present in only approximately half of the literacy and numeracy lessons observed.
- The quality of Year 5 pedagogy and organisation and pupil behaviour is poorer in schools with higher levels of social disadvantage in their pupil intakes. This may reflect lower expectations, difficulties in recruiting/retaining good/ experienced teachers and the greater behavioural difficulties associated with teaching in more challenging contexts. The quality of Year 5 practice observed was better in schools that had been rated more highly in terms of overall school leadership, effectiveness and improvement on the previous inspection. Such schools appear to provide a more positive context for teaching and learning.

- The use of well researched classroom observation instruments may provide valuable evidence for teachers' professional development and support a school's self evaluation and review process. This is particularly relevant where they identify quality across a range of features of teaching and learning that are linked with better outcomes for children.

## Methodology

The EPPE 3-11 project contains a series of three 'nested' studies or 'tiers' which help answer specific research questions ([www.ioe.ac.uk/projects/eppe](http://www.ioe.ac.uk/projects/eppe)).

Tier 1 helps answer the research question about the effectiveness of the 800+ primary schools the EPPE3-11 children attend. It uses statistical data (KS1 and KS2 national assessment results) derived from every primary school in the country (over three consecutive years 2002-2004) for English and Maths so that schools can be studied in various 'effectiveness' bands (the 'value-added' analyses). Further information on Tier 1 can be found in Melhuish et al (2006). Tier 3, the focus of this Research Brief, explores classroom practice through two different but complementary classroom observations. This addresses the question of what constitutes good classroom practice in Year 5 and what makes for an effective primary school experience.

Informed by the Tier 1 analyses, this stage of the project links observations of classroom practice to a range of ratings of effectiveness and quality. A sample of 125 'focal' schools were selected from the Tier 1 analyses. The schools were chosen across the range of 'effectiveness' scores for English and Maths and in different LEAs across the country from amongst those attended by children in the EPPE3-11 sample. Trained researchers conducted detailed classroom observations in each school in 2004 and 2005. Classroom observations were conducted using schedules developed in the USA for the NICHD study. These two schedules (Pianta NICHD 2001 and Stipek 1999, named after their authors) covered a wide range of pedagogical practices and pupil behaviours. The frequency of different behaviours was observed for individual pupils as well as more global rating of general classroom quality. For further description of the research instruments see Sammons et al. (2006a &

b). In addition to the value added analyses described above, the classroom observations were also compared to Ofsted inspection judgements on effectiveness, improvement since last inspection, leadership, quality of teaching and learning and inspectors' ratings of a number of pupil outcomes (attendance, attitudes and behaviour) using numeric judgements matched to 107 of the focal schools.

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