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THE EFFECTIVE PROVISION OF PRE-SCHOOL EDUCATION (EPPE) PROJECT: FINDINGS FROM THE PRE-SCHOOL PERIOD

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What is EPPE?

The Effective Provision of Pre-School Education (EPPE) project is the first major European longitudinal study of a national sample of young children's development (intellectual and social/behavioural) between the ages of 3 and 7 years. To investigate the effects of pre-school¹ education for 3 and 4 year olds, the EPPE team collected a wide range of information on over 3,000 children, their parents, their home environments and the pre-school settings they attended. Settings (141) were drawn from a range of providers (local authority day nursery, integrated² centres, playgroups, private day nurseries, maintained nursery schools and maintained nursery classes). A sample of 'home' children (who had no or minimal pre-school experience) was recruited to the study at entry to school for comparison with the pre-school group. In addition to investigating the effects of pre-school provision on young children's development, EPPE explores the characteristics of effective practice (and the pedagogy which underpin them) through twelve intensive case studies of settings with positive child outcomes. EPPE has demonstrated the positive effects of high quality provision on children's intellectual and social/behavioural development. This brief on the main findings of the research related to the pre-school period (for children aged 3 or 4 years of age to entry into primary school).

Key findings

Impact of attending a *pre-school centre*

- Pre-school experience, compared to none, enhances children's development.
- The duration of attendance is important with an earlier start being related to better intellectual development and improved independence, concentration and sociability.
- Full time attendance led to no better gains for children than part-time provision.
- Disadvantaged children in particular can benefit significantly from good quality pre-school experiences, especially if they attend centres that cater for a mixture of children from different social backgrounds.

¹ Pre-school centres in this document means those centres that included 3 and 4 year olds.

² 'Integrated' settings fully combines education and care and is referred to as 'combined' centres in EPPE Technical Papers.

The quality and practices in *pre-school centres*

- The quality of pre-school centres is directly related to better intellectual/cognitive and social/behavioural development in children.
- Good quality can be found across all types of early years settings. However quality was higher overall in integrated settings, nursery schools and nursery classes.
- Settings which have staff with higher qualifications, especially with good proportion of trained teachers on the staff, show higher quality and their children make more progress.
- Where settings view educational and social development as complementary and equal in importance, children make better all round progress.
- Effective pedagogy includes interaction traditionally associated with the term "teaching", the provision of instructive learning environments and 'sustained shared thinking' to extend children's learning.

Type of pre-school

- There are significant differences between individual pre-school settings in their impact on children. Some settings are more effective than other in promoting positive child outcomes.
- Children tend to make better intellectual progress in fully integrated centres and nursery schools.

The importance of home learning.

- The quality of the learning environment of the home (where parents are actively engaged in activities with children) promoted intellectual and social development in all children. Although parent's social class and levels of education were related to child outcomes the quality of the home learning environment was more important. The home learning environment is only moderately associated with social class. What parents do is more important than who they are.

The Aims of EPPE

EPPE set out to investigate:

What is the impact of pre-school on young children's intellectual and social/behavioural development? Can the pre-school experience reduce social inequalities?

Are some pre-schools more effective than others in promoting children's development?

What are the characteristics of an effective pre-school setting?

What is the impact of the home and childcare history (before aged 3) on children's intellectual and behavioural development?

EPPE studied a range of different types of pre-school settings and 3,000 children from differing social backgrounds. An important element in the study has been to ensure that fair comparisons can be made between individual settings and types of provision. To do this, full account needs to be taken of differences in the characteristics of the children attending different settings and types of provision. Similarly, the study has taken into account the contribution to children's progress and development of background factors such as birth weight, gender, parental qualifications/occupations, home language and the home learning environment. The pre-school effects reported in this paper are therefore net of child and family factors. Only by using such 'value added' methods can appropriate comparisons be made across settings.

The impact of pre-school provision

EPPE researchers assessed children individually at three/four years old when they joined the study. Assessments were undertaken to create a profile of each child's intellectual and social/behavioural development (their attainment) using standardised assessments and reports from the pre-school worker who knew the child best. Children were assessed again at entry to primary school (usually reception) and analyses were carried out to compare children's progress, taking into account the range of background factors referred to above. Many EPPE findings point to the importance of attending pre-school centres for 3 and 4 year olds.

From analyses of children's development during pre-school compared with 'home' children, EPPE found that pre-school attendance improves all children's cognitive development and aspects of social behaviour, such as independence, concentration, cooperation, conformity and relationships with other children (peer sociability). Moreover, individual settings vary in their effectiveness with some settings fostering better child outcomes than others.

Children with no (or limited) pre-school experience (the 'home group') had poorer cognitive attainment, sociability and concentration when they start school. These differences show even when we take account of differences between the pre-school and home groups in child, family and home environment characteristics.

A number of factors associated with attendance at pre-school were also explored. EPPE shows that how long a child attended pre-school (duration measured in months from entry to the study to the start of primary school) was related to positive intellectual gains. An early start at pre-school (under 3 years) was also linked with better intellectual attainment and children having better relationships with other children (peer sociability) at age 3 years. These benefits continue when children start primary school. However, there was no evidence that full day attendance led to better development than half-day attendance.

In addition to studying the overall impact on all children's development the research explored whether pre-school had an impact on the progress of different kinds of children. For instance, was pre-school particularly beneficial to children who are more disadvantaged? EPPE shows that one in three children were 'at risk' of developing learning difficulties at the start of pre-school. However, this proportion fell to one in five by the time they started primary school³. This suggests that pre-school can be an effective intervention for the reduction of special educational needs (SEN), especially for the most disadvantaged and vulnerable children.

Disadvantaged children are more likely to have adverse social profiles at age 3 and school entry. The increased risk of anti-social/worried behaviour can be reduced by high quality pre-school when they were aged 3 and 4.

Different groups of children have different needs. Results imply that specialised support in pre-schools, especially for language and pre-reading skills, can benefit children from disadvantaged backgrounds and those for whom English is an additional language.

It is also interesting to note that there is evidence of significant gender differences in young children's intellectual and social behavioural development. At entry to pre-school, girls generally show better social development than boys, especially in co-operation/conformity and independence and concentration. Girls also show higher attainment on all cognitive outcomes. These differences persist to the start of primary school.

EPPE has shown that pre-school has an important impact on children's development. Whilst not eliminating disadvantage, it can help to ameliorate the effects of social disadvantage and can provide children with a better start to school. Investing in good quality pre-

school provision is therefore likely to be an effective means of achieving targets concerning social exclusion and breaking cycles of disadvantage.

Are some pre-schools more effective than others in promoting children's development?

Even after taking account of a child's background and prior intellectual skills, the type of pre-school a child attends has an important effect on their developmental progress.

It was found that integrated centres (these are centres that fully combine education with care) and nursery schools tend to promote better intellectual outcomes for children. Similarly, integrated centres and nursery classes tend to promote better social development even after taking account of children's backgrounds and prior social behaviour.

Disadvantaged children do better in settings with a mixture of children from different social backgrounds rather than in settings containing largely disadvantaged groups. This has implications for the siting of centres in areas of social disadvantage.

What are the characteristics of an effective pre-school?

Statistical analysis of the progress of children during the pre-school period enabled the researchers to identify settings which promoted children's developmental outcomes beyond what could be expected given the child's overall profile and social background. These were the most 'effective' centres; settings where children made more progress than could be expected given their intellectual and social/behavioural assessments at entry to pre-school.

A focus on effective centres illustrated some key characteristics that seemed to promote developmental gains in children. These clustered around the **quality** of the centres and the **practices** within the centres. Although there was significant variation between the types of centres in the study, there was no tendency for centres that were more effective in promoting children's intellectual development to be less effective at promoting social/behavioural development (or vice versa). In other words the most effective centres promoted both.

Pre-school 'Quality'

An important question for the EPPE research was whether higher quality pre-school provision makes a difference to the intellectual and social behavioural development of young children, and if so, what is essential in ensuring quality?

³ See the Early Transition and Special Education Needs (EYTSSEN) Report for more detail on SEN in the early years. Published by Institute of Education

Information from observations to assess the quality of each setting, using standardised rating scales⁴ showed a significant links between higher quality and better child outcomes. Children in pre-school centres of high quality show reduced anti-social/worried behaviour by the time they get to school.

EPPE findings on quality are consistent with other large-scale longitudinal research including the NICHD (National Institute of Child Health and Development) and CQO (Childcare Quality and Outcomes) studies in the US.

Good quality pre-school education can be found in all kinds of settings irrespective of type of provider. However, the EPPE data indicates that integrated centres and nursery school provision have the highest scores on pre-school quality, while playgroups, private day nurseries and local authority centres have lower scores.

The quality of the interactions between children and staff were particularly important; where staff showed warmth and were responsive to the individual needs of children, children showed better social behavioural outcomes. Several features of the quality rating scale were also related to increased intellectual progress and attainment at entry to school.

What improves 'quality'?

There was a significant relationship between the quality of a centre and improved outcomes for children. There was also a positive relationship between the qualification levels of the staff and ratings of centre quality. The higher the qualification of staff, particularly the manager of the centre, the more progress children made. Having qualified trained teachers working with children in pre-school settings (for a substantial proportion of time, and most importantly as the pedagogical leader) had the greatest impact on quality, and was linked specifically with better outcomes in pre-reading and social development.

Pre-school 'Practices'

The rating scales used to assess quality showed an impact on children's development. For instance, centres which put particular emphasis (as described in the rating scale) on the development of literacy, maths and catering for children's individual needs promoted better outcomes for children in the subsequent development of reading and mathematics. Similarly, high scores on some aspects of the rating scale which focus on promoting

positive 'social interactions' were linked with better sociability in children.

In addition to the rating scale measurements of quality, EPPE conducted individual intensive case studies in 12 centres identified in the upper range of effectiveness based on the amount of progress their children made while attending them. The purpose of the case studies was to explore the practices in these centres that might help explain their greater effectiveness. This has important implications for all those working directly with young children as it describes practices linked to children making better progress.

The case studies identified five areas that are particularly important when working with children aged 3 to 5 years. These were the quality of adult-child verbal interactions; staff knowledge and understanding of the curriculum; knowledge of how young children learn; adult's skill in supporting children in resolving conflicts and helping parents to support children's learning in the home.

The quality of adult-child verbal interactions

'Sustained shared thinking' is where two or more individuals 'work together' in an intellectual way to solve a problem, clarify a concept, evaluate an activity, extend a narrative etc. Both parties must contribute to the thinking and it must develop and extend the understanding. It was found that the most effective settings encourage 'sustained shared thinking' which was most likely to occur when children were interacting 1:1 with an adult or with a single peer partner. It would appear that periods of 'sustained shared thinking' are a necessary pre-requisite for the most effective early years practice.

Interestingly, information from interviews with parents suggests that in some of the very middle class case study settings (notably the private day nurseries), parents who were pro-active towards their children's learning engaged in 'sustained shared thinking' with their children at home. In more disadvantaged settings staff had to be pro-active in supporting parents to develop the home learning environment.

Knowledge and understanding of the curriculum

Pre-school workers' knowledge of the particular curriculum area that is being addressed is vital. A good grasp of the appropriate curriculum content linked to strategies for promoting learning in that content area is a vital component of pedagogy and it is shown to be just as important in the early years as at any later stage of education. The research found that, even in these effective settings, there were examples of inadequate knowledge and understanding of curriculum areas,

⁴ The Early Childhood Environment rating scales: Revised (ECERS-R) and Extension (ECERS-E)

especially in the teaching of the sound patterns of word e.g. rhymes. The study shows that early years staff may need support in developing their knowledge of curriculum content and ways of introducing it to children especially in the domains of the Early Learning Goals.

Knowledge on how young children learn

There has been a long debate about the extent to which pre-school education should be formal or informal, often summarised by the extent to which the curriculum is or is not 'play' based. EPPE concludes that in the most effective centres, 'play' environments were used to provide the basis of instructive learning. The most effective pedagogy is both 'teaching' and providing freely chosen yet potentially instructive play activities.

In effective settings, the balance of who initiated the activities, staff or child, was about equal, Children were encouraged to initiate activities as often as the staff. Similarly in effective settings the extent to which staff extended child-initiated interactions was important. Almost half of the child-initiated episodes which contained intellectual challenge, included interventions from a staff member to extend the child's thinking. The evidence also suggests that adult 'modelling' is often combined with sustained periods of shared thinking, and that open-ended questioning is also associated with better cognitive achievement. However, open-ended questions made up only around 5% of the questioning used in even the 'effective' settings. Greater use of such open ended questions by staff is likely to benefit better intellectual and social development for pre-school children.

In all of the case study settings, the research found that the children spent most of their time in small groups. Freely chosen play activities often provided the best opportunities for adults to extend children's thinking. It may be that extending child-initiated play, coupled with the provision of teacher-initiated group work, improves opportunities for learning.

Qualified staff in the most effective settings provided children with more experience of curriculum-related activities (especially language and mathematics) and they encouraged children to engage in activities with higher intellectual challenges. While the research found that the most highly qualified staff also provided the most direct teaching, they were also the most effective in their interactions with the children, using the most sustained shared thinking. Further, the research found that less qualified staff were significantly better as pedagogues when they worked with qualified teachers.

How adults support children in resolve conflicts

The most effective settings adopted discipline/behaviour policies in which staff supported children in being assertive, while simultaneously rationalising and talking through their conflicts. In settings that were less effective in this respect, observations showed that there was often no follow up on children's misbehaviour and, on many occasions, children were 'distracted' or simply told to stop.

Supporting children's learning at home.

The most effective settings shared child-related information between parents and staff, and parents were often involved in decision making about their child's learning programme. There were more intellectual gains for children in centres that encouraged high levels of parental involvement. More particularly, children did better where the centre shared its educational aims with parents. This enabled parents to support children at home with strategies that complemented those being undertaken in the pre-school. In more disadvantaged areas, staff in effective settings had to be proactive in influencing and supporting the home learning with the kind of activities described later in this briefing.

What improves 'practice'?

The case studies reveal the practices that appear to contribute to better outcomes for children. The following factors should be considered when trying to improve the pre-school experiences of very young children.

The settings that view cognitive and social development as complementary achieve the best all round outcomes.

Pre-school workers need good curriculum knowledge as well as knowledge and understanding of child development. In addition, increasing formative feedback to children during activities will aid a child's understanding.

The most effective settings provide both adult-initiated group work and freely chosen yet potentially instructive play activities. Children's cognitive outcomes appear to be directly related to the quantity and quality of the teacher/adult planned and initiated focused group work for supporting children's learning.

Behaviour policies in which staff support children in being assertive, at the same time as rationalising and talking through their conflicts lead to better socialisation for children.

Improving practices in sharing educational aims with parents would benefit children.

Trained teachers were most effective in their interactions with children, engaging more often in sustained shared thinking. Less well-qualified staff demonstrated significantly better practices when they were led by qualified teachers. The research findings support the general approach taken in Curriculum Guidance for the Foundation Stage (CGFS).

What is the impact of the home and childcare history on children's development?

In addition to the child assessments and pre-school centre information, interviews were conducted with parents when their child entered the study (with follow-up questionnaires when the children were in school). These were used to collect detailed information about childcare histories, characteristics of children, their families and home environments. This wealth of information has enabled the research study to investigate some of the influences affecting young children that have a significant relationship with their intellectual and social/behavioural development. These factors clustered around demographic influences, patterns of childcare before entering the study and the home learning environment.

Demographic influences

Research has consistently indicated that there are strong associations between certain factors (such as low socio-economic status [SES], low income, mother's educational levels) and children's poor intellectual attainment at school. However, relatively few large-scale research studies have been able to explore the range of background factors considered in the EPPE study.

The parent, family and home characteristics of children are inter-related and causal attributions cannot be made. For instance the higher incidence of lower attainment amongst children with young mothers is also likely to reflect other factors, including lower qualification levels and reduced employment levels for this group. Bearing this in mind, the findings indicate that there is a strong relationship between a child's intellectual skills and their family background characteristics at entry to pre-school. However, this reduces (though is still strong) by the time children enter primary school. This indicates that pre-school whilst not eliminating differences in social backgrounds, can help to promote better development and can thus help to combat social exclusion.

These findings are consistent with findings from the NICHD study, where family characteristics have a greater impact on outcomes for children than pre-school factors. However, the effect of attending pre-school

(versus not) on developmental progress is greater than the effect of measure of social disadvantage (qualification level of family, SES etc.). In addition, for children attending pre-school, the effect of attending a specific centre is about half that of all social background factors (bearing in mind individual settings vary in their impact).

Patterns of childcare before entering the study

Our parental interviews discussed with parents the 'history' of their children before they entered the study. Data were collected on the number of hours and type of childcare before aged three but not on the quality of the childcare before aged three. This revealed that non-parental child care before three years of age had several effects:

High levels of 'group care' before the age of three (and particularly before the age of two) were associated with higher levels of anti-social behaviour at age 3. This effect was largely restricted to children attending Local Authority and Private Day nurseries where substantial numbers of children attended from infancy onwards. When children who show anti-social behaviour at age 3, attend a high quality setting between the ages of 3 and 5 years, their level of anti-social behaviour decreased. Children with high levels of group care before the age of three, by contrast, showed better cognitive attainment.

Where there was substantial individual care from a relative (usually grandmothers) there was less anti-social behaviour in children. Although moderate levels of childminder care were not associated with increased anti-social behaviour, extremely high levels were.

The home learning environment.

What parents and carers do makes a real difference to young children's development. The EPPE project developed an index to measure the quality of the home learning environment (HLE). This measures a range of activities that parents undertake with pre-school children that are related to improvements in children's learning and have a positive affect on their development. For example, reading to child, teaching songs and nursery rhymes, painting and drawing, playing with letters and numbers, visiting the library, teaching alphabet, teaching numbers, taking children on visits and creating regular opportunities for them to play with their friends at home were all associated with higher intellectual and social/behavioural scores.

The HLE can be viewed as a 'protective' factor in reducing incidence of SEN. It is interesting to note that the HLE was only moderately associated with mother's educational level. In other words what parents do with

their children is more important than who parents are. Young mothers, with few qualifications can improve their children's progress, and give them a better start at school by engaging in those activities at home that foster children's learning. This has important implications for programmes such as Sure Start (local programmes) that target areas of high social exclusion.

Methodology

EPPE used the following sources of information: standardised child assessments taken over time, child profiles completed by pre-school staff, parental interviews, interviews with pre-school centre staff, quality rating scales and case study observations and interviews. The case studies included detailed documentation of naturalistic observations of staff pedagogy, and systematic structured target child observations of children's learning. Information was also gathered and analysed using interviews with parents, staff and managers and through intensive and wide ranging documentary analysis and a literature review of pedagogy in the early years.

These sources of data have been used in statistical analyses including multilevel modelling to explore the 'value added' by pre-school after taking account of a range of child, parent and home background factors to produce rigorous and persuasive data for policy makers and provided practical guidance on quality for practitioners.

Summary

This study has demonstrated the positive effects of high quality pre-school provision on children's intellectual and social behavioural development up to entry to primary school. The EPPE research indicates that pre-school can play an important part in combating social exclusion and promoting inclusion by offering disadvantaged children, in particular, a better start to primary school. The findings indicate pre-school has a positive impact on children's progress over and above important family influences. The quality of the pre-school experience as well as the quantity (more terms but not necessarily more hours per day) are both influential. The results show that individual pre-school centres vary in their effectiveness in promoting intellectual progress over the pre-school period, and indicate that better outcomes are associated with some forms of provision. Likewise, the research points to the separate and significant influence of the home learning environment. These aspects (quality and quantity of pre-school and home learning environment) can be seen as more susceptible to change through policy and practitioner initiatives than other child or family

characteristics, such as SES. Further analyses will explore the progress of the children who attended a pre-school centre as well as the home group over Key Stage 1. Such analyses will help to establish whether the positive impact of pre-school on young children's development remains significant as children progress through their first years at primary school.

References:

Harms, T., Clifford, R.M., & Cryer, D. (1998) *Early Childhood Environmental Rating Scale*, Revised Edition (ECERS-R), Teachers College Press.

NICHD (National Institute for Child Health and Human Development) (2002) *Early Child Care and Children's Development Prior to School Entry: Results from the NICHS Study of Early Child Care*. American Educational Research Journal, 39, (1): 133-164.

Sylva, K., Melhuish, E., Sammons, P., Siraj-Blatchford, I., and Taggart B. (1999), *Technical Paper 1 - An Introduction to the EPPE Project*. Institute of Education, University of London. London.

Sammons, P., Sylva, K., Melhuish, E., Siraj-Blatchford, I., Taggart B. and Elliot, K. (2002), *Technical Paper 8a - Measuring the Impact of Pre-school on Children's Cognitive Progress*. Institute of Education, University of London. London.

Sammons, P., Sylva, K., Melhuish, E., Siraj-Blatchford, I., Taggart B. and Elliot, K. (2003) *Technical Paper 8b - Measuring the Impact of Pre-school on Children's Social/behavioural Development*. Institute of Education, University of London. London.

Siraj-Blatchford, I., Sylva, K., Muttock, S., Gilden, R. and Bell, D. (2002) *Researching Effective Pedagogy in the Early Years* DfES Research Report 365

Sammons, P., Smees, R., Taggart, B., Sylva, K., Melhuish, E., Siraj-Blatchford, I., and Elliot, K. (2002) *Early Years Transition and Special Educational Needs (EYTSN) Project : Technical Paper 1 : Special Educational Needs across the Pre-school Period*. Institute of Education, University of London. London.

Sylva, K., Siraj-Blatchford, I., and Taggart B. (2003) *Assessing Quality in the Early Years, Early Childhood Environment Rating Scale Extension (ECERS-E): Four Curricular Subscales*. Trentham Books London.

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Additional Information

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