RESEARCH FOR
TEACHERS

Research for Teachers

Researching effective pedagogy in the early years

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What do we know about effective practice in the pre-school years?
For this feature, the TLA research team selected research undertaken by the 'Researching effective pedagogy in the early years' (REPEY) project. We hope that this summary will offer all teachers the opportunity to find out about effective practice for laying the foundation for learning upon which all teachers and learners build.

The early years of children's learning has traditionally been an under-researched area. The availability of this rigorous and far-reaching stream of evidence is an important step forward. This study stresses the importance of 'conceptual knowledge', which is concerned with principles and ideas rather than the more factually based 'procedural knowledge'. The researchers suggest that whilst the latter can be imparted by a number of teaching strategies, including direct teaching, the development of 'conceptual knowledge' requires a constructive process. Such a process, they infer, offers the child the opportunity to reflect on and to take responsibility for his/her own thinking. It requires the kind of sustained shared thinking that can be brought about by open questioning.

The research design for the project set out to capture the many different aspects of children's learning during these formative years. It also set out to reflect the range of teaching and learning environments they encounter.

Professors Iram Siraj-Blatchford and Kathy Silva led the research (Department for Education and Skills, Research Report RR356).

You may also like to read our summaries of the researchers' subsequent reports about the impact of quality pre-school experiences at Key Stages 1 and 2.

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Overview

Why is the issue important?

There is widespread agreement that the early years are a key period in which to lay the foundation for learning on which all teachers and learners build. It is important to know what effective practice looks like at this critical time.

What did the research show?

Teaching and learning was most effective in early years centres where practice included:

- frequent use of questioning techniques by adults, particularly those which lead to sustained shared thinking
- discipline and behaviour policies based on talking through conflicts
- home involvement in learning activities.

How was this achieved?

Excellent centres combined the following features:

- teacher-directed learning
- children's play
- a stimulating environment.

Giving young children free choice to play in a learning environment allowed greater opportunity for effective adult intervention. Practitioners in excellent settings extended and built on child-initiated interactions more than in other centres. The level of cognitive outcome seemed to be directly related to the quantity and quality of the group work planned and initiated by the practitioner.

How was the research designed to be trustworthy?

The REPEY study used a range of complementary approaches to data collection, including:

- a longitudinal study of outcomes from the Effective Provision in Pre-school Education (EPPE) study
- systematic observation of 254 children and practitioners in twelve of the fourteen settings (ie. excluding reception classes)
- interviews with parents, managers and staff
- documentation about the provision in the centres.

What are the implications?

The research showed the importance of:

- parents and practitioners working together
- a balance of activities planned by adults and those the children may initiate themselves
- adults building on unexpected and unforeseen opportunities for children's learning that arise from everyday events and routines
- practitioners making systematic observations and assessments of each child in order to be able to respond appropriately to their learning needs.

What do the case studies illustrate?

The case studies show:

- the extra value that 'dramatic incidents' can bring to enhance children's learning through role-play
- the potential for learning literacy through a broad range of curriculum experiences based on well-planned and resourced play

- how parents can become effectively involved in their young children's education
- how teachers identified and used effective challenging strategies through action research.

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Study

What did the researchers set out to discover about early years education?
The study was designed to identify and investigate those pedagogical strategies in early years settings that seemed to be particularly effective in supporting the development of young children's skills, knowledge and attitudes.

In setting out to explore the pedagogy of early years provision the researchers selected a number of specific areas of practice for investigation in the case study settings, including exploring:

- adult-child verbal interactions
- differentiation and formative assessment
- parental partnership and the home education environment
- discipline and adult support in talking through conflicts.

The case study sites selected by the Research Team were chosen from those identified in a large-scale sister project Effective provision for pre-school education (EPPE).

Based on this existing research, the REPEY researchers selected 12 pre-school settings, which they classified as either excellent (3 sites) or good (9 sites). The selection criteria explored both cognitive and social/behavioural outcomes.

Children in excellent settings had achieved social and/or cognitive outcomes showing that they made substantially better progress than predicted, whereas in good centres the children's outcomes were within the range predicted by family background and pre-test assessment.

In addition, the researchers analysed data from two reception classes, which were identified as effective settings based on professional judgment. This brought the total number of case study sites to 14.

Thus, the research covered both pre-school and childminder settings, in order to be applicable in the context of the Curriculum guidance for the foundation stage, QCA, 2000.

What do the researchers mean by 'pedagogy'?
In this study, the researchers use the term 'pedagogy' to mean the instructional techniques and strategies that enable learning to take place. Whilst their definition refers mainly to the explicit and structured interactive process between the teacher/practitioner and the learner, it also includes the day-to-day learning environment and the actions of the family and community where they affect learning.

The researchers suggest that whilst the term 'teaching' may imply too restrictive a notion in the context of early childhood settings, effective early childhood pedagogy should nonetheless be in some way instructional. The researchers included the element of play as an instructional component of early childhood pedagogy to reflect the emphasis placed on play in the QCA's Curriculum guidance for the foundation stage:

"Practitioners need to plan learning experiences of the highest quality, considering both children's needs and achievements and the range of learning experiences that will help make them progress. Well-planned play is a key way in which children learn with enjoyment and challenge during the foundation stage."

In their working definition of pedagogy, the researchers included the learning environment, which, they

suggest, should provide children with the opportunity to be active and to begin to take the initiative to learn. They propose that the role of the adult is critical in working with the child to construct new understandings. In this role, the adult is providing 'scaffolding' for learning. This means that the practitioner is drawing the child from their position of present understanding into the area or zone just beyond what the child could achieve alone. This zone is called the 'zone of proximal development' and is where the child, when supported by others, can make the most rapid progress.

The zone of proximal development is a concept that derives from the work of the Russian developmental psychologist Lev Vygotsky.

What did the researchers find out about the pedagogy of early childhood?
The Research Team reported a number of findings from their analysis of practice in the pre-school and the childminder settings. They reported that teaching and learning was most effective in centres where practice was characterised by:

- cognitive interactions including those which lead to sustained shared thinking
- sound teacher knowledge and understanding of subject matter
- frequent use of questioning techniques by adults especially in the context of children's play
- discipline and behaviour policies based on talking through conflicts
- pedagogic environments which encourage children's development
- home involvement in learning activities.

These qualitative findings are all drawn from data collected from the 14 case study sites, covering the excellent and good centres and the reception classes.

What are cognitive interactions and how do they help promote young children's thinking?
The researchers classified pedagogical interactions into two groups - cognitive and social. Cognitive pedagogical interactions were characterised by sustained shared and explicit thinking, direct teaching and monitoring. Social pedagogical interactions included encouragement, behaviour management, social talk and care.

Evidence from the study showed that:

- in excellent settings practitioners used cognitive pedagogical interactions more than social pedagogical interactions
- the most common pedagogical interactions were engaging in direct teaching and monitoring of children's activities
- although activities that engendered shared thinking were relatively rare, it was observed to be very effective in extending children's thinking
- the highest proportion of sustained shared thinking and direct teaching took place during children's literacy and mathematics activities
- in reception classes most learning episodes were initiated by adults whereas in other pre-school settings there was a near even split between adult and child initiated learning episodes.

In pre-school settings other than reception, the most effective learning took place when adults took advantage of child initiated activity to promote sustained shared thinking, for example, as this illustration of an adult-child interaction shows:

BOY, who has been watching various items floating on water:
"Look at the fir cone. There's bubbles of air coming out."
NURSERY OFFICER, modelling curiosity and the desire to go further: "It's spinning round".
BOY: "That's 'cos it's got air in it."
NURSERY OFFICER, picking up fir cone and showing the children how the scales go round the fir cone in a spiral, then turning the fir cone round with a winding action: "When the air comes out in bubbles it makes the fir cone spin around."
GIRL, using a plastic tube to blow into the water: "Look, bubbles."

NURSERY OFFICER: "What are you putting into the water to make bubbles?...what's coming out of the tube?"
GIRL: "Air".

Children and practitioners in the 'excellent' centres engaged in the highest proportion of sustained shared thinking interactions. The researchers suggest that these episodes promote intellectual gains in children by offering the opportunity for the child and adult to construct an idea or activity together. In the good centres, by contrast, the most commonly used interaction was direct teaching and monitoring.

Cognitive challenge was most demanding in reception classes and cognitively challenging interactions were more frequently observed in the 'excellent' pre-school settings than in the 'good' settings.

Activities involving high cognitive challenge are those which pose demands that the child can only achieve with structured support. They are characterised, for example, by creative or imaginative activities that are cognitively complex, structured and goal-directed.

Case study 4 demonstrates how one pre-school setting used action research to promote challenge in children's learning.

How does teacher knowledge and understanding contribute to creating cognitive interaction?
The research highlighted the importance of practitioners' knowledge and understanding of the curriculum being taught by them. The researchers stress the point that sound pedagogical knowledge is just as important in the early years as in later education. They reported a number of findings, including:

- in all settings, including those classified as 'excellent', there were instances of inadequate knowledge and understanding of the curriculum
- qualified staff provided children with more experience of academic activities (especially language and mathematics)
- qualified staff were more likely to encourage children to engage in activities with higher cognitive challenge, leading in some cases to sustained shared explicit thinking
- less qualified staff benefited from supervision by qualified teachers in pedagogic activities.

The study reports a number of observed classroom activities in which the practitioner's lack of knowledge limited the cognitive effectiveness of the activities. In one of these activities, science, the children tested various materials and objects to see if they floated or sank in water. At the end of the activity, the Nursery Officer asked the children to make separate lists of those that floated and those that sank. Whilst the children had been asked to make predictions, no attempt had been made to explore their thinking about floating and sinking. The researchers suggest that this failure to include an investigative or exploratory dimension meant that an opportunity to develop children's understanding was missed.

In contrast, the Research Team highlight another science session from a nursery class in which the practitioner did incorporate an investigative element:

GIRL 1: "We found a coconut, teacher."
TEACHER: "Well done! Oh it's an acorn, if we planted it what do you think it would grow?"
GIRL 2: "A flower."
TEACHER: "If it came from that tree what would it grow?"
ANOTHER CHILD: "Don't know!"
TEACHER: "OK, let's get a pot, some stones and soil and plant it to see".
(Goes off with five children.) "Which way up do you think? I think on its side it will have the most chance. What do you think it will grow into?" (Using opportunity presented by children to model wonder and to investigate, so that children can now have investment in the experiment.)
OTHER CHILD: "A tree."
TEACHER: "Mmmmm, I wonder what kind?"

How can teachers' use of questioning techniques stimulate young children's thinking?

The researchers investigated the questioning strategies used in the pre-school centres. Evidence gathered from all the case study centres showed that of the questions observed:

- 34.1% were closed
- 5.1% were open
- 60.8% were not directly related to pedagogy.

Whilst recognising that the use of open questioning is limited, the researchers reported that in the excellent settings the quality of adult-child interactions is very high. In these centres, staff encourage the children to try new experiences and were themselves alert for opportunities to scaffold children's learning. Effective interventions were usually in the form of questions that provoked speculation and extended the imagination. The following example illustrates such an intervention:

The children and a NNEB qualified colleague are seated at a table working with play dough. BOY has taken 5 minutes to make a play dough cake and now he is sticking plastic cutlery into it.
NNEB: "Would you like something else to use as candles on your cake?"
(Turning round to boxes placed on shelf behind her) "Would you like match sticks or lolly sticks?"
BOY opts for lolly sticks and NNEB passes the box to him.
He removes the cutlery and starts to replace it with lollipop sticks...
Five more minutes pass.
BOY has finished his cake and starts to sing 'Happy Birthday' to the NNEB who pretends to blow out the candles. "Do I have a present?"
BOY hands her a ball of play dough.
NNEB: "I wonder what's inside. I'll unwrap it."
NNEB quickly makes the ball into a thumb pot and holds it out, "It's empty!"
BOY takes a pinch of play dough and drops it into the thumb pot: "It's an egg."
NNEB picks it out gingerly, "It's a strange shape".
(Another child tries to take the 'egg')
NNEB: "Be very, very careful. It's an egg."
The conversation continues for several more interchanges between the adult and child.

Here the practitioner stimulated the child by asking him to make choices and by making suggestions that served to encourage him to think imaginatively.

The researchers suggest that effective learning environments must provide opportunities for children to be active and to take the initiative to learn. The adult's role is pivotal in providing the physical and intellectual environment the child needs.

The study distinguishes between 'procedural knowledge', which is based on learning facts about the world and how to deal with them, and 'conceptual knowledge', which is concerned with principles and ideas. The researchers suggest that whereas the former can be imparted by a number of different teaching strategies, including direct teaching, the development of 'conceptual knowledge' requires a constructive process. Such a process, they infer, offers the child the opportunity to reflect on and to take responsibility for their own thinking and requires the kind of sustained shared explicit thinking that can be brought about by open questioning.

What can teachers learn about effective discipline and behaviour policies in the early years?

Across the case study settings observers noted differences in the way staff dealt with instances of misbehaviour. Effective responses by staff were not confined to the excellent centres only.

In the most effective settings, staff adopted discipline policies aimed at encouraging children to be assertive while also talking through their conflicts. Less effective settings tended not to follow up on misbehaviour after initially distracting the miscreants or simply telling them to stop.

In addition to their pedagogic strength, staff in excellent settings believed in following up incidents of misbehaviour, as the following example shows:

BOY 1 points to BOY 2: "He hit me."
TEACHER: "Well you say to him, ask him, why did he do it. Say don't hit me."
TEACHER: "BOY 1, BOY 2, come here. Can you hear what BOY 1 is saying? He doesn't like that. Only play it with children who want to play that game."

Sometimes a great deal of persistence in following up incidents of misbehaviour was called for, as the following reported observation from an early excellence centre illustrates. The observer remarked on the perseverance shown by the teacher, who also, it was noted, spoke in a friendly, warm tone throughout:

A boy had left his coat lying on the floor and a teacher draws his attention to the fact.
TEACHER: "Guess what I found, I found it on the floor, can you put it on the peg and I'll look after the computer for you."
BOY: "No, I'm busy at the moment."
TEACHER: "Well, if you don't you can't play on the computer".
BOY: "I don't want to, OK?"
TEACHER: "You will have to come off the computer." (Spoken in a friendly, fun tone.)
After a minute or two:
TEACHER: "OK, can you go and put your coat away?"
BOY: "No".
TEACHER: "Did you enjoy your lunch today?"
BOY: "Yes".
TEACHER: "What did you have?"
BOY: "Soup".
TEACHER: "Ok, one second and then go and hang your coat up."
BOY: "I want to load the game."
TEACHER: "OK, but I want you to do good listening. If you don't put your coat away, you'll have to come off the computer and then you'll be sad."
BOY: "Well set up the colours then".
TEACHER: "OK, I'll set up the colours while you hang your coat up."
The boy did as he was asked.

In addition to specific approaches to behaviour and its management, all centres made efforts to develop children's social skills. Personal and social education (PSE) was observed to feature more strongly in the curriculum for the youngest children, a reflection of the need to establish rules and routines at an early stage in the children's development.

The researchers also observed that the type of social pedagogical interaction between adults and children tended to differ according to the ability level of the child as a learner. So, for example, children who were 'struggling' learners were involved in more behaviour management interactions with adults than other children who were more capable learners.

What are the characteristics of successful pedagogic environments?
The researchers observed that excellent centres combined the following features:

- teacher-directed learning
- children's play
- a stimulating environment.

They suggest that, where young children have freely chosen to play in a learning environment, there is a greater opportunity for effective adult intervention. Case study analysis showed that while excellent and good settings achieved an almost equal balance between adult-led and child-initiated learning episodes, practitioners in excellent settings were observed to extend the duration of more child-initiated interactions

(about 50% of interactions) than the good centres (about 15% of interactions).

Case study 1 illustrates the significant effect dramatic episodes set in a children's play environment can have on the thinking and language development of young children.

The Researching effective pedagogy in the early years study frequently mentions the home corner as an environment that both stimulates children's play and gives practitioners the chance to extend the children's play. In this example, the researchers show how staff can get directly involved in children's play, whilst also illustrating the value of one-to-one situations to foster and sustain challenge. Here the teacher used an appropriate question to stimulate further thinking on the part of the child and to keep the interaction going:

TEACHER (Goes to home corner): "What's this?"
CHILD: "Teatime".
TEACHER: "Can I join in?"
CHILD: "Yes".
TEACHER: "What's for dinner?"
CHILD: "Spaghetti".
TEACHER: "What kind - long or short? (Encouraging descriptive language)
CHILD: "Short".
TEACHER: "Well, I'll have a little bit."
CHILD: "Would you like a yellow plate? What else would you like?"
TEACHER: "An egg please."

The study also reported that the level of cognitive outcome based on assessment data and on observation seemed to be directly related to the quantity and quality of the group work planned and initiated by the practitioner, which was provided in the settings.

Case study 2 demonstrates the potentially stimulating effect of pedagogic environment on children's literacy skills.

How can teachers and parents work together to improve children's learning?
From comments made by parents and the reported experiences of parents and practitioners in pre-school settings, key messages are that children benefit most when centres:

- suggest things parents can do at home with their children
- let parents take home books
- make weekly reports to parents about their children's progress.

The researchers conducted interviews with over 100 parents from the 14 case study sites. Whilst all the settings encouraged parents to read with their children, those settings that encouraged continuity of learning at home had consistently achieved better development of children's thinking. The research stresses the importance of the active involvement of parents in their children's learning at home.

Interestingly, the evidence indicated that where staff and parents shared educational aims and where parents supported their children through pedagogic efforts at home, effective learning took place even when pedagogic practice was not well developed at the centre. This was particularly so in middle-class settings, such as the private day nurseries, where it was the pro-active learning behaviour that the parents showed towards their children's learning at home that was the main factor in their children's development:

"She'd been looking at numbers at school then I'd do that at home. If she mentioned she liked a particular book at school, we'd find that in the library and we do letters at home...I think her particular project at the moment is 'woodland'. When we go out we try and do woodland things."

Parents particularly appreciated the efforts made by staff in some centres to share educational aims and in some cases weekly reports of children's progress with them as these comments show:

"They suggest things you can do at home and you take home books. You've got the library and they suggest how to talk to them..."

and

"The weekly report has a section on what activities the group has been doing - we have talked about squirrels this week - and things like that. Then 'S' has mostly played this week with this type of material and she's learned the letter P and R and she now knows numbers 1 to 4... and the last bit is what she has enjoyed most. The end of the report is... much more detailed and goes to cognitive and social development of the child. What she has learned in terms of letters, drawing and ballet and French."

Case study 3 shows how one group of parents became involved in their children's education.

How did the study findings relate to the Government's Curriculum guidance for the foundation stage?
Throughout the study, the researchers took as the context for practice in pre-school settings the contents and recommendations of the Curriculum guidance for the foundation stage (DfES/QCA, 2000), which they include as part of their literature survey.

Whilst the researchers did not aim to test the extent to which the curriculum guidance was being implemented in pre-school settings, their report highlights parts of the guidance for comparison with their findings.

For example, they note that the guidance refers to principles for early years education in terms of:

- parents and practitioners should work together
- there should be opportunities for children to engage in activities planned by adults and also those they may initiate themselves
- practitioners must be able to observe and respond appropriately to children.

Whilst the guidance does not talk about 'pedagogy', it advises practitioners to:

- make effective use of unexpected and unforeseen opportunities for children's learning that arise from everyday events and routines
- make systematic observations and assessments of each child's achievements interests and learning styles
- use these observations and assessments to identify learning priorities and plan relevant and motivating learning experiences for each child
- help children to see the purpose of activities
- accommodate the different ways children learn by planning for the same learning objective in a range of different ways.

The guidance makes pedagogic recommendations that the research subsequently identified as excellent practice in the pre-school settings. However, the researchers also draw readers' attention to the relatively high number of recommendations it contains that refer to modelling and direct teaching when compared to more collaborative forms of child/adult interaction. It was these latter processes that emerged as being strongly present in excellent centres.

What sort of curriculum did pre-school children experience?
Observations revealed that whilst children received the same curriculum elements, there were differences in the curriculum balance across pre-school settings. The researchers reported a number of findings including:

- perhaps unsurprisingly, the greatest proportions of literacy, mathematics and physical activities were provided in reception classes
- other pre-school centres, ie, not reception classes, provided more curriculumbased knowledge, and creative and PSE activities
- children in excellent centres experienced a greater proportion of literacy, mathematics and physical activities than

those in good centres

- children in good centres experienced more activities related to knowledge and understanding of the world and to creative development than children in excellent settings
- younger children (three year olds) received the most PSE and creative activities, the amount declining as the children get older
- the proportion of literacy and mathematics teaching almost doubled between the ages of three and five
- across all centres children who were described as 'struggling to learn' experienced more creative and PSE activities than those described as 'very capable' and 'as expected'
- there was less direct teaching and shared thinking in physical development and creative activities, in which staff tended to place greater emphasis on observing and monitoring children.

To the extent that excellent settings placed much greater emphasis on literacy and mathematics than the good centres, excellent settings resembled reception classes. They differed, however, in the relatively greater amount of PSE provided in excellent settings (also greater than in the good settings), which may reflect parental wishes for social skills development for their children in addition to academic development.

The researchers remarked on the different activities experienced by struggling learners compared to more capable learners. They noted that struggling learners tended to experience proportionately more creative activities and fewer conceptual activities than the other children. These observations tend to reinforce the emerging picture that only more capable learners are given the opportunity to engage in activities that develop their thinking skills.

A further point noted by the Research Team was that practitioners adopted different pedagogic styles in different curriculum areas. For example, in knowledge and understanding of the world, physical development, creative development and PSE, the main approach to learning was child-initiated play. In these curriculum areas, children were observed engaging in pretend play, manipulating objects and materials, and large muscle play. By contrast, in literacy and mathematics the favoured pedagogic style was structured activity, often led by staff.

What were the views and experiences of childminders?
The researchers interviewed 46 childminders recommended to them by local authorities. A high proportion, over 70%, had formal qualifications. Nearly all those interviewed, including those without formal qualifications, were positive about undertaking continuing professional development. The findings suggest that the present training provision for childminders is having a positive effect, although only 24% of the childminders felt they had fair or better knowledge of the Curriculum guidance for the foundation stage. The researchers remark that training aimed at implementing the Curriculum guidance for the foundation stage had yet to make a major impact even on effective childminders.

Those with better knowledge of the Curriculum guidance for the foundation stage felt it had helped them become more conscious of the pedagogical implications of their practice. One childminder commented:

"...it has made me understand more about what I am doing and made me more aware of how I can provide for the next steps."

Whatever the level of training received, the childminders in the study believed that 'play' was central to learning in the Foundation Stage and this was a key element in their daily and weekly routines. However, there was little evidence to suggest that the opportunities presented by play for extending children's learning were followed up.

Perhaps not surprisingly, many childminders tended to emphasise the personal, social and emotional, rather than the educational, dimensions of children's development. As one childminder put it:

"To socialise, to play together, to be rounded individuals, know right from wrong and to be tolerant and to work out conflict."

A minority of childminders had aims with explicit educational features:

"...helping them to learn from where they are and from what they can do."

and

"to enhance their skills and present little goals for them through schemes of work."

All the childminders felt that their role in preparing children for school was especially important. Analysis of the data showed that there were three separate strands in this process of preparation. They were:

- familiarising pre-school children with the school buildings, playground and route, when older children were taken to school
- teaching children basic routines in preparation for school, such as managing fasteners, opening lunchboxes and going to the toilet
- teaching basic knowledge, such as knowing the names of the colours and counting, holding a pencil correctly and writing their name.

How did practitioners in pre-school centres respond to the process of transfer to reception classes?

Evidence from the centres provided helpful insights into how practitioners regarded transfer. The researchers observed:

- the priorities of most early years practitioners lay in developing children's positive disposition to learning, self-confidence and independence
- in most pre-school settings the practice of introducing children to more formal activities such as carpet and circle time were felt to be more important than specific curriculum work
- some settings provided visits to local primary schools or invited primary staff to visit the children in the pre-school setting
- some pre-school staff were concerned about lack of curriculum continuity between the two phases
- some settings provided special learning activities for pre-school children about to enter reception classes
- many practitioners were critical of the practice of primary schools only taking one cohort of pre-school children a year rather than taking children into reception throughout the year.

Where special learning activities for children prior to transfer were provided, there was no common pattern of approach or content. One centre was concerned to provide the children with basic skills:

"...Even though all the children can spell their names we're doing a bit extra with those ones. We'll be going into the days of the week for the older ones. It's mainly a bit of number work, just a very few simple bits but it's mainly pencil control."

In some cases pre-school staff felt that the Curriculum guidance for the foundation stage was helping to create stronger links between early years centres and reception classes. One headteacher in a pre-school setting remarked that:

"Some of the reception classes have come over to us for advice, for support about the possibility of mixing. The guidance is there...I think it's good. I think for reception particularly, because they've been in no-man's land."

One private nursery informed the Research Team that all their children were already familiar with letters, writing and early grammar by the time of transfer.

There was also clear evidence of the reticence some pre-school centres felt about entering areas of the curriculum prior to transfer:

"Again, I have been very wary in the past about ...taking the children too far down the curriculum so that when they reach reception class, they're sitting there bored because they've done too much with us."

Concerns raised by teachers about the transfer of pupils from pre-school to reception class echo those of teachers about primary to secondary transfer. For a summary of the issues of primary to secondary transfer based on the study 'Transfer from the primary classroom 20 years on' by Linda Hargreaves and Maurice Galton, see the previous Research for Teachers topic of the same name.

Did pre-school centres use ICT and if so how?

How did pre-school settings rate in the use of ICT?
Only one centre did not have at least one computer available for children's use. Using an instrument designed for the IBM KidSmart initiative and the Developmentally Appropriate Technology in Early Childhood (DATEC) project, the researchers analysed children's skills in the following areas:

- information handling and communication skill
- access and control of ICT tools
- learning about the uses of ICT.

On a 7-point scale, pre-school settings together averaged an overall figure of 2.08, which is comparable to the score achieved by the settings included in the KidSmart project at the start of that initiative. The Research Team found that the performance of centres rated low on ICT did not reflect practice with regard to support for children's cognitive and social development, which in many cases was good or excellent.
How was ICT used?

Evidence from the centres highlighted observations both about the use of computers and about staff perceptions of their use including:

- computers were mainly used for creative development and reading
- when using computers the children mostly did so in the absence of an adult
- many staff saw the main value of computers in pre-school settings in terms of familiarising children with ICT prior to transfer to reception
- staff had concerns about equality of access
- some staff were concerned that computers inhibited children from moving around and interacting with other children
- many staff referred to children's development of hand-eye co-ordination through using computers.

The researchers observed that most computer use involved creative activity, split almost equally between art, on the one hand, and music and dance programs on the other. A particularly popular activity was on-screen painting. The second most frequent curriculum activity was reading, although this was the only literacy activity engaged in by the children using the computer.

Staff perceptions about the value of computers varied considerably. Many comments referred to development of hand-eye co-ordination and fine motor skills. A minority of staff highlighted the potential of computers in motivating children in early literacy:

"...Then this little boy started writing 'Mum' then he wrote his name...just very simple words but I said 'Look at all this writing you're doing!' ... He didn't want to do it with his pencil, but now he writes brilliantly." (Reception teacher)

There was little evidence to suggest that practitioners used ICT to engage in scaffolding or interactions that promoted sustained shared thinking. It appeared to observers that children were generally allowed to discover for themselves, while staff limited their role to encouragement, questions and management, if appropriate.

To find out how teachers in primary schools successfully used ICT in their teaching and to develop learning,

see the earlier Research for Teachers topic ICT for teaching and learning.

How did the REPEY researchers select the pre-school settings for their study?
The Researching effective pedagogy in early years study drew on the findings of the separate study the Effective provision of pre-school education (EPPE) project. This was in order to identify pedagogical strategies in pre-school settings that support the development of the skills, knowledge and attitudes that enable children to make a good start at school.

From among the 141 centres identified in the EPPE study, the REPEY researchers selected 12 settings, which ranged from average, with some good practice, to very effective centres. The centres were selected based on the following outcomes:

Cognitive	Social/behavioural
Pre-reading	Independence & concentration
Non-verbal	Co-operation & conformity
Laguage	Less anti-social, worried & upset
Number concepts	Peer sociability

A 'centre profile' was created for each pre-school setting through systematic observation and questions to staff. The Early Childhood Environment Rating Scales, multi-level statistical instruments relating to all aspects of a centre's provision including both social and cognitive details, were applied to each pre-school setting.

Two good reception classes were added to the 12 selected centres. The total sample therefore consisted of 14 Foundation Stage settings:

- 1 playgroup
- 1 local authority day nursery/combined centre
- 3 private day nurseries
- 2 nursery schools run by the LEA
- 3 nursery classes in primary schools
- 2 early excellence/combined centres
- 2 reception classes.

How was the research designed?
By extending the research undertaken by EPPE, the researchers were able to compare the findings from their case study analysis with the outcomes contained in the EPPE work.

The research methods used in the REPEY study included:

- review of the international literature on pedagogy
- longitudinal study of outcomes from the EPPE study
- detailed case studies of the 14 settings
- systematic observation of children and practitioners in 12 of the 14 settings (ie, excluding reception classes)
- survey of childminders
- interviews with parents, managers and staff
- documentation about the provision in the centres

- focus group discussions with user groups.

Systematic observation of 254 children was undertaken (about 20 children in each setting). A further selection of 141 children was subsequently made for observations of longer episodes. In addition, the researchers carried out two days of observations of two practitioners in each setting.

Development aspects of the study included collaborating with practitioners through focus groups to adapt and implement the strategies in local settings.

In selecting the pre-school centres for the study, the researchers were aware that in addition to the fact that the children originally sampled (in the EPPE study) had by now left the centre, other changes may have taken place, such as change of managers. To overcome this potential problem the researchers adopted criteria to ensure that the centres chosen had not changed in any essential detail since the EPPE study.

What was the EPPE project?
The Researching education provision in the early years (REPEY) research used findings from the work of the Effective provision for pre-school education (EPPE) project, a five year longitudinal study that collected data relating on over 3000 children who entered early years settings at the age of 3+. The EPPE study controlled for family background and child factors such as gender and health in order to isolate the pedagogic and social features of children's progress. Specifically the EPPE researchers sought to report on centres in which the children make more developmental progress than would have been expected from their assessments at entry to pre-school.

141 pre-school centres were identified as meeting the criterion for effectiveness. 20 to 25 children were randomly sampled in each of the centres and their progress was followed from their time of entry until the end of Key Stage 1. At entry to reception class, pupil data was analysed using a multi-level method to identify the pre-school centre effect.

Implications for practice
Headteachers and senior staff may wish to consider the following implications:

- The researchers found that it was important for parents and teachers to share the same educational aims. In excellent settings parents were given suggestions of things they could do at home and were allowed to take home books. They were also provided with weekly reports about their child's progress. Would it be useful to obtain feedback from parents on how you might work together better?

- The researchers found some successful approaches being used to promote good behaviour. Staff took time to establish rules and routines, particularly with younger children. Sometimes a great deal of persistence was needed. Staff encouraged children to be assertive and to talk through their conflicts. Would it be helpful to review your behaviour policy and personal and social education programme to ensure that staff are focused on these issues and have a consistent approach?

Teachers of early years wanting to improve pedagogy may wish to consider the following implications of the findings of this research review.

- The researchers found that in successful settings cognitive interactions were more frequent, involved shared thinking between adults and children and were most effective when initiated by children and sustained by teachers. Would it be helpful to monitor such interactions in your own setting and evaluate their effectiveness?

- In pre-school settings the researchers described as 'excellent' they found that interactions between adults and children were very high. For example, adults encouraged children to try new experiences, asked questions that provoked speculation and looked for opportunities to support their learning and extend their imaginations. Could you do more to promote more and better interactions between children and adults?

- In 'excellent' pre-school settings teacher-directed learning was combined with children's play and a stimulating environment. Around half of interactions were child initiated compared with about 15% in 'good' settings. Would it be useful to consider the balance of activity in your own environment and how you might increase the opportunity for more child-initiated interactions?

Your feedback

Have you found this study to be useful? Have you used any aspect of this research in your own classroom teaching practice? We would like to hear your feedback on this study. To share your views with us email: research@gtce.org.uk

Case studies

The main report *Researching effective pedagogy in the early years* was published before the detailed case study reports on which the main study draws. We hope to add new case studies as these appear.

The following case studies are currently available and we present them to illustrate some of the main findings of the study.

Using role play to improve nusery children's language

This study highlights the extra value that 'dramatic incidents' can bring to enhance children's learning through role-play.

Different role-play situations were created over a six-week period and the children's use of language was audio-taped. The nursery staff involved found that the usual type of role-play they employed did not produce good language development, nor did it even bring out of children the level of conversation they showed at home. On the other hand, when staff involved other adults from real life settings they found that children were highly stimulated and able to initiate and maintain prolonged verbal interactions.

The most effective intervention was the staging of a burglary in the nursery play shop involving a real police officer and a shop assistant.

The children were very affected by this and excited conversations took place following the 'burglary' as this example shows:

"It was a tip."
"It was a tip."
"All food were off t'shelves"
"All were off t'shelves."
"They'd left some money; they'd broken the till."
Teacher: "We phoned the policeman. What did we tell him?"
"Yeh, a burglar came and a bad man should have done it!"
"Came through t'window."
..."I think there were 10. Anyway, do you know why I said 10? Coz, coz they didn't, coz they, ...coz they, coz they can't at once. Coz one can't carry at once."

The dramatic real life simulation and the presence of people the children knew from their experience before school seemed to produce many more verbal interactions, particularly in the forms of statements, explanations and elaborations.

Reference: McManus, J. (1996/7), Using role-play to improve nursery children's language, Westwood Primary School, Bodmin Garth, Leeds LS10 4NU, Teacher Training Association (TTA), Teacher Research Grant Scheme publication

Play as a foundation for learning

This case study the illustrates the potential for learning shown by approaching literacy, not as a separate subject, but as part of a broad range of curriculum experiences based on well-planned and resourced play.

The setting is an old village school providing for 39 three- and four-year-olds. As the children enter, the nursery music is playing. The children then take part in a number of activities including:

- drawing and writing messages, then talking about them
- 'Monty the Bear', who goes home with a different child each day, is returned with his suitcase and diary. Later with the help of an adult, a group of children read his diary
- children jump on to letters on a big alphabet map while a teacher says the letter sounds as they land.

The school has made a special area for writing. Here the children can find paper, envelopes, forms and writing implements. By providing access to the necessary equipment including a computer, the children are supported in making their own books.

Staff avoided putting overt pressure on children to meet literacy goals. Instead, they guided the children towards the same goals using a supporting and scaffolding approach to children's learning. This approach involved providing models for literacy through the use and making of books; reading and writing labels and messages; filling in forms and by staff reading with children using material from a variety of sources.

The observer watched children engage creatively with literacy through a role-playing exercise involving air travel. She reported how the play activities led into a range of literacy skills such as making passports, filling in forms, making posters, writing menus and so on. The observer also relates how adults developed the initial activity into structured exercises involving the design of aeroplanes and the weights of suitcases. The children were clearly stimulated by the activities.

Reference: Miller, L., (1996), Book chapter Play as a foundation for learning in *Towards reading: Literacy development in the pre-school years*, Buckingham: Open University Press.

Parental involvement in education

This case study shows how parents can become effectively involved in their young children's education. The research was based in a centre for under-5's in the East Midlands.

The nursery staff aimed to:

- find more effective ways of improving home/school dialogue in the early years
- raise parental expectations
- find out how and what children are learning at home
- to build on this in the nursery.

In an interesting and unique approach, staff and parents participated in a pilot project in which they produced a CD-Rom of video clips. The video clips showed parents working with their children at home and at nursery, and of nursery staff involving parents and children in the nursery. The CD-Rom was subsequently used as part of a training programme with 20 nursery parents.

During the project, the parents took part in a number of activities including:

- completing questionnaires
- maintaining research diaries

- exchanging information with nursery staff.

The video clips produced in the children's homes - together with those made in the nursery - were used by staff and parents in extended discussion groups. After detailed analysis of the clips, the researchers identified a number of effective adult teaching strategies including:

- subtle intervention
- knowledge of the child's embedded context and the ability to recall the child's previous experience
- encouraging children to make choices and decisions
- adults demonstrating learning as a partnership.

From further observations of parents' behaviour with their children some key features emerged among which were:

- mirroring experience through language - parents verbally reflecting back to children what they were doing
- asking the child's view - showing interest in what the children were thinking and feeling
- appropriate understanding of the need to both set boundaries and to encourage risk-taking, ie, knowing when to step in
- judicious use of the experience of making mistakes.

The project seemed to be valued by the parents who took part. One parent reflected the views of others when she said:

"It has made me look at everything that my child does in a different light. I find I don't get so irritated when she's making a mess, etc. When she shows an interest in doing something, I now try to make more of an effort to accommodate her needs."

Reference: Whalley, M. and Arnold, C. (1996/7), Parental involvement in education Research, Development and Training Base Pen Green Centre for the Under 5s and their Families, Pen Green Lane, Corby, Northamptonshire NN17 1BJ.

Optimising challenge to young children - practitioner research in a nursery school

Teachers in a nursery school in East Sussex participated in a project that sought to identify the characteristics of successful challenging strategies and to increase the use of challenge by teachers through a process of action research.

The Research Team at the school judged a child to be challenged:

"when s/he is actively engaged in a situation or problem and through this high level of involvement, her/his current capabilities are extended either in depth or breadth."

They established a number of criteria for deciding whether a challenge was high, medium or low level. The criteria were based on:

- the extent of independence shown by the child
- the extent to which the experience was new to the child
- the degree of involvement of the child
- whether new skills were developed.

What did the practitioner-researchers find to be the characteristics of effective challenge interactions in the school?

In the initial phase of the project, all staff participated in making observations of practice in the school, which led to challenging interactions between staff and children. From these observations, a number of key components of activities that support challenge emerged. These included:

- planning to allow children to access the same activities at a variety of levels
- using knowledge of individual children
- being able to judge when to intervene and when to stand back
- adopting teaching styles appropriate to the individual child.

Other key factors related more to overarching principles governing the education of children. For example, staff observed that it was important to take a holistic view of education and to avoid compartmentalisation of learning. Staff also noted that it was essential to maintain good relationships in the school and to have high expectations of children's potential.

A staff research team working in collaboration with the whole staff grouped the successful strategies they had identified under four headings:

- giving children appropriate new experiences
- using a 'stepped' approach to presenting children with challenges
- offering children opportunities to practice
- providing feedback.

How was good practice observed by the practitioner-researchers fed into whole staff development?
Through collaborative discussion and analysis of data collected in the first phase of the study, teachers' guides were developed to help teachers engage children in challenge activities. Some of the advice related to involving children in new experiences. It suggested that the problems posed should be linked to an area of interest in which a child has already had experience. Useful strategies were provided as examples, such as, 'thinking aloud', as in, "When I was a little girl I found this really hard but I found xxx helped".

In applying what they refer to as a 'stepped approach' to children's learning, the Research Team advised teachers that challenges should be 'only slightly in front of current capabilities'. Challenges that are more complex could also be offered, involving a greater degree of teacher interaction with the child. The advice about feedback was comprehensive and informative. It stressed the importance of encouraging self-analysis and evaluation by pupils using questions like "what if?", "how?" and "in what way?" to encourage a child to verbalise his/her experience.

What happened when staff applied their colleagues' action research findings in classrooms?
During the second phase of the study, staff consciously sought to implement the successful strategies they had identified in the first phase. Observers recorded data about the incidence and level of challenge, such as:

- challenge activities were much more frequent among groups of four-year-olds than of three-year-olds
- the main curriculum areas in which challenge took place were language and literacy, mathematics, physical, and science and technology
- approximately a third of the challenges were high-level
- over half the challenges came out of child-initiated activities but less than a third of these were high level
- most adult-directed challenge activities were high or medium level.

Observers noted that overall, the levels of adult-directed challenge in the second phase were higher than in the first phase of the study. They suggested that this reflected the application of earlier findings in the action research cycle, which was a key part of the study.

Reference: Rees-Jones, S. (2000), Optimising challenge to young children: Action research in a nursery

school National Foundation for Educational Research (NFER), Topic-online, Issue 24.

Your feedback
Have you found this study to be useful? Have you used any aspect of this research in your own classroom teaching practice? We would like to hear your feedback on this study. To share your views with us email:
research@gtce.org.uk
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Further reading

What else might I enjoy reading?

Qualifications and Curriculum Authority/Department for Education and Employment. (2000) *Curriculum guidance for the foundation stage: Stepping stones.* London: QCA/DfEE

Moyles, J., Adams, S. and Musgrove, A. (2002) *Study of pedagogical effectiveness in early learning*. London: DfES

Qualification and Curriculum Authority. (1999). *The early learning goals*. London: QCA

Where can I find out more online?

For early years education:
www.early-education.org.uk

The DfES Standards website:
www.standards.dfes.gov.uk

The Qualificationsa and Curriculum Development Agency website:
www.qcda.org.uk

Related research

Early years learning and development - a literature review:
http://publications.education.gov.uk/default.aspx?PageFunction=productdetails&PageMode=publications&ProductId=DCSF-RR176

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Appraisal

Robustness
This rigorous study provides extensive and helpful information about effective pedagogy in the early years of children's learning, a field of research which has, so far, received little attention. The study draws on evidence from 14 case study sites and 46 childminders. Information was gathered through observations of children and staff, through interviews with parents, staff and managers and from comprehensive documentation provided by the settings. A literature review provides a context for a detailed analysis of what constitutes pedagogy in the early years, which practitioners will find helpful.

Relevance

This important stage of children's education is the foundation upon which all subsequent learning is based. The messages contained in the report about the importance of cognitive challenge and child-adult interactions that foster shared understandings will be relevant and helpful to teachers in all phases. Parts of the study also have relevance for parents and childminders in exploring the actual and potential contributions they can make to children's development.

Applicability
There is a clear focus on pedagogy throughout the report, with particular emphasis on those forms of pedagogic activity that have the greatest impact on children's cognitive development. Classroom interactions between children and adults are described in a lot of detail and points of good (and bad) practice are highlighted. The strategies described are meaningful to and potentially usable by other teachers including those in other phases. The study offers teachers the opportunity to review and reflect on their own practice and to build on their existing knowledge, beliefs and strategies.

Writing
The length and density of the report make it difficult to read although the researchers have tried to help readers by using informative section headings to signpost the contents. The close association of the study with the larger-scale Effective provision for pre-school education project (EPPE) is also a complicating factor at times, although the researchers try to make the reader aware of the respective purposes of the two projects. Near the front of the report, there is a helpful glossary for the many specialist terms used by the researchers. Some parts of the report contain technical information about data collection and analysis.