

1

Thinking about Young Children's Thinking

Intentions

This chapter explores:

- what is thinking in young children
- why it is important to have regard for young children's thinking
- what happens when young children think
- how we recognise their thinking

Our brains, minds and thoughts

Brain and mind

We are all born with a physical brain but how does the mind develop? This is a vast and almost imponderable question but we know that the mind is more than the grey matter that we all inherit. Rather, it is shaped and refined by individual personal experience – as such, it is unique to each person. Susan Greenfield suggests that 'the mind may be the evolving personal aspect of the physical world' and 'consciousness brings the mind alive' (1). Young babies become conscious of and responsive to personal experiences from birth, in particular the loving interactions they have with close adults. Maria Robinson states that 'From this sensitive beginning of understanding the individual needs of the baby, there is also born the beginnings for the baby to have a mind of their own' (2).

We know that the young physical brain is very receptive to experience, and Gopnik and her colleagues liken a new baby's brain to a computer that is set up and running. This enables them to absorb experiences from their world and gradually start to make sense of them (3). Given these

insights, Tricia David helpfully suggests that 'maybe if we use a computer analogy we can, for now, think of the brain as the hardware and the mind as the software' (4).

Thought

Defining thinking is equally difficult and particularly so as much research focuses only on 'thinking skills' (5, 6). The National Curriculum states that thinking involves the basic cognitive skills of perception (understanding), memory, concept formation (forming ideas), language and symbolisation (representations); these underpin the ability to reason, to learn and to solve problems (7). But any person familiar with young children knows that their thoughts and ideas are not only to do with intellectual development. As Robson points out in her comprehensive book, *Developing Thinking and Understanding in Young Children*: 'It is more than a skill. Equally important is the development of the disposition to make use of this skill, to want to be a thinker and to enjoy thinking' (8).

Thinking and learning

Some educationalists such as Claxton reject the term 'thinking' in favour of the broader term 'learning' (9). For the purposes of this book, I refer to young children thinking but not only in a narrow, rational sense. I link mind and thought, recognising that thinking results from processing all the experiences that are received in the mind. Peel summarised this over fifty years ago: 'Thinking is part of what goes on inside the mind, in between sense-reception and effective action' (10). When we apply this definition to young children and observe their behaviour, we recognise that their thinking is closely linked to early physical and sensory experiences, social growth and feelings and their creative powers. Thinking is closely involved with the whole child.

Why it is important to consider young children's thinking

Parents and practitioners living and working with children have always been faced (and sometimes fazed!) by young children's thoughts and ideas. Often we are amused and bemused by children's actions and comments but are not sure what they signify. In recent years there has been an upsurge of interest in issues around children's thinking. Why is it so high on our agenda for young children and what messages are we receiving? Some reasons are to do with:

- strong support from research evidence
- imperatives in National Frameworks
- increased insights from practitioners in their day-to-day work

Support from research evidence

During the last twenty-five years studies have recognised that thinking starts very early; young babies are primed to think in their unceasing efforts to make sense of the world. Parents have long known, for example, that their babies are aware of familiar faces and alert to stimulus – neuroscience now provides the evidence. Within the first year of life babies learn about others' minds and begin to recognise that when people disappear they have not gone for ever but still exist. Some of these points are highlighted in Chapter 1. Tricia David sums up powerful messages from the research she reviewed for *Birth to Three Matters*.

Babies come already 'designed' or 'programmed' to be deeply interested in the people and world in which they find themselves. They are incredibly observant and selective, as well as being extremely clever at interpreting what they witness. They learn best by playing with things they find in their world and, above all, by playing with the familiar people who love them. (11)

Social contacts

Early studies starting with John Bowlby in the 1950s (12) and followed twenty years later by Mary Ainsworth (13) showed that babies and young children need close relationships to provide a secure base from which to explore the world. Sue Gerhardt's more recent work supports this with reference to neuroscience. She explores how early, loving contacts shape the baby's nervous system and suggests, for example, that being lovingly held is the greatest spur to development. Her work points up the importance of babies forming close attachments both with immediate family members and then a key person in daycare. These significant people are able to read a young child's behaviour and provide a tailor-made response to individual needs:

Like a plant seedling, strong roots and good growth depend on environmental conditions, and this is most evident in the human infant's emotional capacities which are the least hard-wired in the animal kingdom, and the most influenced by experience. (14)

Around the same time as Mary Ainsworth, Lev Vygotsky's work showed that social relationships are not only important for emotional

development, but are central to thinking and learning in the young brain. He regarded language exchanges as particularly significant in communicating meanings which a child can then use as the basis for his or her thinking (15). Barbara Rogoff builds on Vygotsky's theories and suggests that learning and thinking grow through guided participation with others (16). This might range from support and guidance from their special person to incidental contacts with family and play with friends.

Companionable learning and thinking

Rosemary Roberts introduces the notion of 'companionable learning', which, as she defines it, is very much to do with guided participation:

Companionable learning is an essentially interactive process. The learners may not be learning the same things. ... But they will be jointly involved and focused; and companionably engaged, interacting with each other in the process of their learning together. (17)

Roberts outlines some principles of companionable learning which she claims support children's well-being. The principles are equally applicable in sustaining their thinking. The headlines below are adapted from Roberts' book, *Wellbeing from Birth*, and are expanded in subsequent chapters.

- First principle: companionable attention – young children gain full attention and are assured of their companion's continuing physical presence and interest
- Second principle: companionable play – children are engaged in play with close adults and peers
- Third principle: companionable conversations – children and close adults communicate through body language and talk
- Fourth principle: companionable apprenticeship – children and close adults do routine activities together, the child being regarded as a competent helper.

Communication is threaded across these four principles. It has been well researched in recent years (18, 19) and is a theme running through this book. Babies and infants use their bodies and facial gestures, in fact every means at their disposal, to reach out to close adults. The breakthrough to spoken language is a very significant step in thinking. Helen Moylett says that 'the process of dialogue with others mirrors our internal dialogue' (20). Because during the early years children use talk as a major tool to express their thoughts, parents and close adults have to listen carefully in order to appreciate what is being made public in young minds.

Making sense

Research has also helped us recognise that context or situation hold the key to the potential for children's thinking. Piaget made it clear that young children are not simply immature adults with undeveloped thinking mechanisms. He emphasised that children's thinking is qualitatively different but just as powerful as the thoughts of older people. The difference lies in them having less experience of life but using all their mental capacities to make sense of what they know. However, Piaget also held a somewhat inflexible view of young children; he believed that babies and children progress through distinct and fixed stages of development, for example, that children under seven years were not able to think in abstract ways but were entirely dependent on concrete experiences for understanding. This led practitioners to set a ceiling on children's abilities. During the 1960s and 1970s, when Piagetian thinking was most influential, a great deal of practice centred around waiting for individual children to achieve the next stage of readiness in their thinking rather than adults helping them to become ready (21).

These theories were radically extended by theorists such as Margaret Donaldson and David Wood, who opened our eyes to see that children are actually much more capable of higher levels of thinking if they are in situations which make sense to them (22, 23). Donaldson agreed with Piaget that formal and abstract thinking are simply not accessible to young children. Such thinking may involve theoretical situations or understanding and manipulating symbols. She suggested that this type of thinking is not linked to familiar and concrete situations. In this situation, young children will fail. However, rather than accept this deficient view, Donaldson suggested that if we offer young children opportunities to think or problems to solve which are linked or associated to known scenarios or to familiar stories, they show themselves to be significantly more competent.

Case Study 1.1

Raisa's dad complained to her nursery teacher that his daughter was not learning properly. He said that he had asked Raisa (3 years 7 months) to divide 9 by 3 – she had merely looked puzzled and walked away.

Jen, Raisa's teacher, gently explained that the little girl was in fact learning very well but needed to make sense of what was required of her and

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to understand the language used. She persuaded Raisa's father to stay with his child for an hour in the nursery. During this time Raisa was happily engaged in domestic role-play with some dolls. Jen took a tin of nine cakes into the role-play area and suggested that these were a special treat and that Raisa should share the cakes fairly among the three dolls. Raisa shared out the cakes easily and equally.

Comment

Raisa was not able to solve a mathematical problem in the abstract. However, she was able to do so when the problem was associated with her play. She understood the use of language, 'share' and 'fairly', and could demonstrate her understanding through practical activity. Raisa's father began to understand how he could recognise his daughter's thinking and learning.

Importantly, we now understand that children's abilities to think are not static but are capable of development. Resnick suggests that young minds are better thought of as developing muscles than fixed-capacity engines (24). Given this, we face the challenge of how we support children's minds and their thoughts and ideas.

Infused and discrete methods to support thinking

There is still uncertainty about how we best support children to think. The two methods to promote thinking identified by Carol McGuiness are:

- 'infusion', where enhanced practice uses everyday situations and scenarios are used to help children identify and use their thinking;
- 'discrete', which uses specific materials, programme and techniques to introduce children to using different ways of thinking. (25)

A literature review from the NFER found that:

- when compared to discrete approaches, infused approaches to promoting children's thinking draw on a broader range of topics and, in particular, a broader variety of play
- when compared to infused approaches, discrete approaches to promoting children's thinking seem to encourage children to develop their abilities more systematically although the impact of discrete methods has not yet been evaluated properly. (26)

Despite the lack of hard evidence, conclusions about the limitations of one of these approaches are becoming clear. The main criticism of discrete teaching of skills is that it is narrow and fragmented and does not support children to transfer what they have learned to other contexts (27). Claxton supports this. He describes discrete approaches as 'bolt ons' – they may include lessons in teaching thinking skills or some handy suggestions to support memory or enquiry. Often the children enjoy these novel approaches but Claxton suggests that most discrete methods do not help children to use and apply their new found thinking to other situations (28).

The work of McGuinness and other theorists is mainly focused on approaches with older children. We must be aware that, in this book, we are considering what is right for babies and children at the start of their lives, and the terms 'infusion' and 'discrete' should be considered in this light.

The use of 'discrete' teaching materials and programmes are not relevant for very young children whereas 'infused' methods for babies and infants in the form of loving contacts, companionship and interested conversations will affirm their explorations and encourage thinking (see Chapter 3). Children of 3–5 years and in Reception classes will continue to benefit most from infused approaches, particularly in the opportunities offered to them in their self-chosen play and in their relationships and discussions with others (see Chapter 5). When children move into Years 1 and 2, infused approaches continue to be valuable while discrete programmes to support thinking, which are in accord with Donaldson's beliefs that children must make sense of what is offered, are also introduced (29). Some programmes, such as *Philosophy for Children* (30) and *Let's Think* (31), have been particularly successful in this respect and will be referred to in Chapter 7.

Thinking skills or dispositions

We are accustomed to refer to thinking as 'thinking skills', and of course we must support children's cognitive processes from the earliest age. But the reference to skills does not sit comfortably with a focus on the whole child. With young children it seems more relevant to refer to dispositions to think. Lillian Katz made the distinction: 'Dispositions are a very different type of learning from skills and knowledge. They can be thought of as "habits of mind", tendencies to respond to situations in certain ways' (32). We can of course teach an isolated skill such as categorising, but it's not much use if a child is not inclined to categorise things or people in everyday play or when going outside to explore. Moreover, whereas specific thinking skills may be taught successfully later in life, if a young child has been brought up to be compliant and accepting and strongly dissuaded to use his thinking abilities, it is extremely difficult to motivate him to do so later on. Thinking is hard

work – it can mean feeling muddled, unsure, insecure and perhaps unsafe. It means breaking new ground and being brave enough to come up with your own ideas. In order to venture into this territory children have to be prepared to take a risk.

We know that the way in which we feel about ourselves has a powerful effect on the way we operate and this applies from the earliest years of life. If a four year old hasn't been cared for or respected as a human being, he feels that he isn't worth much and the chances are that in the reception class he will sink into his shell and become invisible. In his class, though, there will be other children who are naturally curious, relish challenge and problem solving, and grappling with ideas. Carol Dweck's work on *Mindsets* (33), explored in later chapters, highlights the significance of children's habits of mind and the way it influences their thoughts and ideas.

Margaret Carr's approach to assessment is focused on dispositions in young children and she asks the critical question 'How can eager learning be described and encouraged?' She explores this by suggesting important aspects of dispositions:

- becoming interested
- getting involved
- persevering with problems
- sharing ideas and thoughts with others.

Carr highlights one of these aspects with a Learning Story for four year-old Sean in which he persists with a difficult task even when he gets 'stuck'. Attached to this story is a photo of Sean using a carpentry drill. The teacher, Annette, records the incident:

'The bit's too small Annette, get a bigger one'. We do drill a hole and then use the drill to put in the screw. 'What screwdriver do we need?', asks Sean. 'The flat one.' Sean chooses the correct one and tries to use it. 'It's stuck.' He kept on trying even though it was difficult.

Carr explains that this Learning Story will provide a focus for more discussion between Annette and Sean and, together with other Learning Stories, helps both of them to see how well he is progressing in persevering with problems (34).

Strengthening dispositions to think

If we are serious about strengthening young children's dispositions to think, we should consider the influence of the environment – where is the scope for thinking? Claxton and Carr identify four backgrounds:

- a *prohibiting environment* may be tightly controlled with a predetermined schedule which makes it very difficult for children to make a response
- an *affording environment* offers some opportunities for children to become involved but not sufficient for all; there may be some intriguing aspects to explore but children are not made aware of them and only the most determined individuals will take advantage of what is there
- an *inviting environment* positively encourages children to ask questions and to work and play together
- a *potentiating environment* is likely to promote shared play activities where children take responsibility for decisions and power is shared with close adults (35).

Robson and Hargreaves' research into the beliefs and practices of practitioners in regard to young children's thinking also emphasises the importance of the environment and climate. Some main findings from their investigations include:

- the need for support for thinking to be woven into the child's daily experience rather than treated as something to teach separately (an infused approach as described by McGuinness)
- the benefits of outdoor experiences to provide children with opportunities to explore, investigate and problem-solve
- the importance of provision for play-based learning
- opportunities for children to make choices (also emphasised as a feature in Claxton and Carr's potentiating environment)
- the size of the group
- time given for children to practise and apply their ideas and to share them with others (36).

These important points are taken further in subsequent chapters.

Long-term benefits of supporting young children's thinking

Research findings are also providing encouraging messages about the value of adults supporting children's thinking and the long-term gains. Two major research projects, EPPE (*Effective Provision of Pre-School Education*) and REPEY (*Researching Effective Pedagogy in the Early Years*), considered a range of pre-school provision for children ages 3–5 and which factors had a positive impact on their learning (37, 38). Findings suggested that one of the ways in which we could identify high-quality early years practice was where children were helped to improve their

thinking skills. In the most effective early years settings, staff provided opportunities to sustain and challenge children's thinking and to model this for children to share their thoughts with other children. The two projects and, in particular, the term 'sustained, shared thinking' were widely disseminated. It was defined as: 'an episode in which two or more individuals "work together" in an intellectual way to solve a problem, clarify a concept, evaluate activities, extend a narrative etc. Both parties must contribute to the thinking and it must develop and extend' (39).

Since then the EPPE project has followed the same children from pre-school into the primary school and now into the secondary sector (40). The primary study of children aged 3–11 found that by the end of Year 5 these older children had continued to benefit from attending high-quality and effective early years provision and this was reflected in their achievements in mathematics and reading. Moreover, the benefits were stronger where effective early years provision was followed by experiences in an effective primary school. This was particularly noticeable for the most vulnerable groups of young children who have had a poor start to life. The EPPE findings also recognise the strong influence of home and stresses that the greatest impact on children's progress is likely to be improving the quality of learning (which includes encouraging children's thinking) in both the home and early years and primary settings.

Although findings from this study are cautious, they are immensely encouraging in that we can see that by continuing to support children's thinking in early years and primary school as well as in the home, we are aiding their long-term achievements and importantly helping to make a difference to children who need it most.

Imperatives in National Frameworks

Within the last thirteen years children's thinking has been publicly highlighted in national policy documents across the United Kingdom.

Since 1999 thinking skills have been included in the National Curriculum. Thinking skills are expected to be developed at all key stages (41). In 2006, The Primary Framework for Literacy suggested core learning in Literacy that most children should achieve year by year. Many of these involve aspects of thinking. For example, in drama year one, children are expected to discuss why they like a performance; when engaging with and responding to texts in year two, most children are expected to give some reasons why things happen or characters change (42).

A little later, Early Years National Frameworks in England and Wales, Scotland and Northern Ireland give clear statements about the need to have regard to and offer support for young children's thinking. The Frameworks emphasise the importance of active learning, problem

solving, inclusion and the need to provide learning opportunities which are tailor-made for each child. This means that practitioners must identify a child's interests and thoughts at the heart of all they plan and provide.

England

In England, the Early Years Foundation Stage, which refers to children from birth to five years, has been revised and the new Framework will be implemented in September 2012.

The government has accepted many of the recommendations from Clare Tickell's independent report and there are some clear messages in the new Framework which relate to young children's thinking. They are highlighted particularly in one of the three Characteristics of Effective Teaching and Learning:

- Creating and thinking critically is achieved where children
 - 'have and develop their own ideas
 - make links between ideas and
 - develop strategies for doing things' (43).

The two other characteristics are:

- Playing and exploring
- Active learning

The messages in creating and thinking critically refer to fundamental ways in which children cultivate and use thoughts and ideas; namely, children's drive to be creative, categorise and connect, and start to control their thinking.

These messages are important but they are contained in a mere bullet point in the Framework and do not do justice to the essential role that children's thinking plays in their total learning and well-being.

Clare Tickell's report provides more detail by giving a rationale behind the three characteristics of effective learning which she describes as relating to 'lifelong learning' and 'about how rather than what children learn' (44). Tickell emphasises, though, that we cannot describe these in a developmental sequence. For example, a young baby may be very innovative in the way he plays with a soft toy and perseveres with this play activity, whereas a six year old may be at a loss as to how he might use additional resources to extend his construction and quickly loses interest in the activity. These characteristics apply to all children but will be demonstrated in different ways and at different times.

The new Framework follows Tickell's recommendation that practitioners should be mindful of how the characteristics support learning

across the newly devised seven areas of learning. Moreover, in each of the prime and specific areas of learning there are references to children's thinking, for example:

- **Personal and social development – children:**
 - talk about their ideas and choose resources they need for their chosen activity
 - talk about their own and others' behaviour and its consequences
 - take account of one another's ideas about how to organise an activity
- **Communication and language**
 - Children listen to stories, accurately anticipating key events and respond to what they hear with relevant comments, questions or actions
- **Physical development**
 - Children move confidently in a range of ways, safely negotiating space
- **Mathematics**
 - Children solve problems, including doubling, halving and sharing
- **Expressive arts and design**
 - Children use what they have learned about media and materials in original ways. They represent their own ideas, thoughts and feelings through design and technology, art, music, dance, role play and stories (45).

Wales

The Welsh Assembly Foundation Phase Framework for Children's Learning, which covers children aged 3–7 years, includes developing their thinking as part of a non-statutory Skills Framework, which also applies across all of the areas of learning. The emphasis is on processes of planning, developing and reflecting, which help children acquire deeper understanding when they explore and make sense of their world. The statement for the Foundation Stage emphasises that these processes support children to think critically and creatively. Moreover, the processes should not be seen as separate and distinct, but should link together. Young children are initially impulsive but as they mature, and with support, they can be encouraged to adopt a more considered approach and learn from their experiences (46).

Scotland

In Scotland, Curriculum for Excellence became a mandatory document for ages 3–18 years in 2010. Before that, the early years and primary

phases had been working to achieve requirements using guidance published in 2007. Building the Curriculum 2 identifies the main components within the main Framework, one of which is active learning. Practitioners are encouraged to support young children to learn actively, through playing together, tackling problems, extending communication skills and taking part in sustained, shared thinking (47).

Northern Ireland

The revised curriculum for Northern Ireland was introduced in 2007. Thinking skills and personal capabilities are considered to be at the heart of the curriculum for all phases of education and apply equally to children aged 4–7 years. The framework involves five strands:

- managing information
- thinking, problem solving and decision making
- being creative
- working with others
- self-management

In common with the other frameworks, these different types of thinking are intended to be integrated and infused across the curriculum and include every child (48).

Taken together, these national documents across the four countries of the United Kingdom offer consistent and clear messages regarding the importance of young children developing as thinkers. Practitioners and teachers need to seriously regard how to support them.

Increased insights from practitioners in their day-to-day work

These research findings and requirements in National Frameworks, which point up the significance of young children's thinking, really re-enforce what so many practitioners have intuitively long known to be true. Part of the Early Education Projects on Young Children Thinking (49, 50) involved structured discussions with those who are in daily contact with babies and young children in settings and reception classes, and this section summarises some of their views on the importance of the topic.

Need to focus more on children rather than pre-planned provision

In recent years those who work directly with young children have been required to give priority to planning and 'delivering' the curriculum. In their hearts, practitioners recognise that in these endeavours to *provide*

for children they may be in danger of missing what children are interested in here and now, and where they are investing their energies. A carefully planned and resourced project on fairy stories may attract the attention of some reception children, but others are not sufficiently motivated when their minds are full of the latest super-hero character. We cannot make children learn but we can provide circumstances which entice their thoughts and ideas.

Gain a true picture of children's thinking competencies

Practitioners also recognise that, unless we have insights into ways in which children express their ideas and thoughts, we may be in danger of underestimating their potential for learning. Commonly, we look at children's mark making as an indicator of their achievement. However, a child may have poorly developed fine motor skills, he may have little pencil control and his drawings, paintings and models are immature. In this case, the representations may not reflect that child's complex and original ideas, which perhaps are revealed in role play or when he is engaged in constructing outside.

Case Study 1.2

Rachel, the reception teacher, had a class of 30 children and only a part-time teaching assistant. She found it difficult to observe children regularly in their self-chosen play.

At the start of the summer term Rachel was busy completing the profile statements for her class. She had become anxious about Carlos and his low scores in Communication, Language and Literacy (CLL). He was not interested in mark making in any form inside or outside, and Rachel had very few responses from him when she tried to engage him in conversation. He seemed to flit around different activities and found it particularly difficult to engage in any group activity.

Rachel decided to observe Carlos for longer periods to see if he performed differently in other activities.

She observed that Carlos engaged in construction with blocks; he was intent on building a snooker table and had attracted a group of boys who wanted to help and to play the game. It quickly became clear that Carlos was very conversant with the rules of playing snooker and he assumed the role of the expert. Carlos directed the boys to find two small balls and some wooden broom handles for cues. He explained the rules clearly and lucidly and organised a rota for taking turns. One of the boys complained that he couldn't remember when it was going to be his turn. Carlos calmly collected a large piece of paper. He asked each boy to give him the first

letter of their name and made a list which showed the sequence for the players.

Comment

Rachel's observation of Carlos had revealed his interest in snooker. Given the opportunity to re-present the game and share his expertise with others, Carlos revealed competencies of which Rachel had previously been quite unaware. He was totally absorbed in the activity, used language to express his ideas and easily conveyed the rules to others through written recording.

Thinking underpins future achievements

Practitioners also know first-hand from their practice that where young children are good thinkers this is a precursor to later achievement. In order to write clearly and imaginatively and solve problems by using and applying mathematics at Key Stage 1 children must first become clear and inventive thinkers. If young children learn to reflect on their actions and recognise the link between cause and effect, they start to regulate their behaviour and are less likely to act impulsively – surely a lesson for life. Above all, children who are encouraged and become able to think for themselves are likely to become eager and autonomous learners. Those who work with young children on a day-to-day basis recognise that by supporting their thinking we are going with the grain of their learning and well-being; there are tangible signs of children being in their element and progressing their thoughts and ideas. Conversely, if we ignore children's interests and insist that they fit in with our ideas and programmes, we are in danger of going against the grain. This is hard work for both children and adults. Children have their own thoughts, but we can provide conditions which entice their ideas and help to grow their minds.

What happens when children think?

Mental disequilibrium

We can be going about our daily affairs cheerfully until we come up against something new that causes us to pause for thought. It may be as a result of a film we see, a book we read, a training course we attend or simply a discussion with a friend. Whatever the source, it poses a new idea or thought which doesn't quite fit in with what we know already.

It challenges our current understanding and we are not clear in our minds about it. What often follows is a period of confusion, often quite uncomfortable, as we try to gain a clearer understanding of this new notion. We may re-read part of the book, talk to others who have also seen the film, look again at the notes from our training or seek out the person we had the discussion with and ask her to explain her idea again. Over time, when we turn the idea over in our minds, we come to absorb or assimilate the new idea. Our former understandings are now no longer sufficient. They have to be modified in order for us to mentally adjust and accommodate to new thinking. As we accommodate to a new idea, the state of confusion or mental disequilibrium is resolved and, armed with new thinking, we have once more achieved a state of equilibrium.

Piaget developed the concept of the three processes of assimilation, accommodation and equilibrium as central to propel children's thinking forward, but it is also relevant for us all through life (51).

Being developmentally ready

We cannot force new thinking. It can take considerable time for a young child to give up her current understanding and adjust to a new idea. Sometimes a child is not developmentally ready to make a leap in her thinking. Piaget suggested that there is little that anyone can do to hurry this development and to some extent this is true. For example, a young child in a reception class will insist that shopkeepers give you money, not change. No lesson or explanation will alter this belief. But, as pointed out earlier, children are social creatures and also learn through active experiences. Given plenty of encounters with and conversations about role-play shopping with an adult or more experienced child and going shopping at home (to shops where cash is exchanged rather than card transactions!), the child is helped to move on through assimilating the notion of exchange, accommodating it and modifying her thinking (equilibrium).

Making connections

Young children are actively involved in trying to make sense of their world. They are buzzing with ideas. Given a rich environment and an adult who is a thinking companion, children will link or connect ideas together. One of the most exciting aspects of working with young children is to be present when they relate their thoughts, put two and two together and, through the processes of assimilation and accommodation, they arrive at a new point in learning.

Case Study 1.3

The practitioner read the story of *Harry the Dirty Dog*. Leon (3 years 6 months) usually found it difficult to listen to a story in a group. On this occasion, though, he listened intently and then a beam spread over his face. 'That's like my dog at home', he said excitedly, 'Sadie is like Harry – she is always getting dirty and we have to give her a bath.'

Comment

When listening to the story, Leon recalled his dog at home. He made a connection with the characteristics of the book character and Sadie. Immediately, the story made sense to him.

How we recognise young children's thinking

It is relatively easy to find out what older children think. We can read a piece of writing from a ten year-old child and recognise if they have understood the sequence and structure of a story. We may ask an eight year old how they arrived at their conclusion to a problem-solving activity. Even if their response is hesitant and incomplete, it still gives us insights into the child's thinking processes. Because younger children do not have this facility with written or spoken language practitioners and parents are alert to other clues.

Schema

Young children's thinking is heavily influenced by their interests and when they play freely they often repeat actions again and again. These repeated patterns of play can often (but not always) be recognised as a child's pre-occupation, or scheme of thinking, a term first used in 1953 by Piaget (52) and later used by Chris Athey in the Froebel Early Education Project (53). Children's common schemes of thought are listed and referred to in subsequent chapters. Recognising them is a helpful way of interpreting and understanding young children's sometimes puzzling behaviour. For example, we may observe children apparently flitting from activity to activity in a seemingly meaningless manner. Once we are familiar with different schemes of thinking, we may be able to interpret this behaviour and recognise that the apparent 'flitting' is the child's way of fitting his experiences together.

Case Study 1.4

Kwame, just three years old, is very active for every moment of his nursery session. He enters the role-play area and throws two teddies into the air – on to construction where he knocks over a tower of blocks which has been painstakingly constructed by two other boys. Kwame shouts 'great, great', before swiftly moving outside, clambering on to a wall and jumping off. This is repeated several times until he spies some balls. He rushes over and throws them high, shouting with glee as one lands on the roof of the building. Kwame looks around and then makes for a small grassy slope; he rushes up and down again and again before stopping at the bottom of the slope to pause for breath. Kwame then moves over to a box of dressing up clothes, clammers inside the box and covers himself with a curtain. He remains there for some time before climbing out but still wrapped in the curtain. He finds the wooden hidey hole and curls up inside.

Comment

Over the last two months, Kwame has shown this obsession for moving himself and objects (through kicking and throwing) in straight lines and arcs. His key person recognises that this behaviour shows a dominant trajectory schema and has encouraged Kwame to spend as much time as possible outdoors, which allows him scope for his schema while creating minimum disruption to others. Kwame now appears to be assimilating a new enveloping scheme which his key person supports by suggesting that she and Kwame build a special den for him to hide in the bushes. Kwame's interest in trajectory schema remains, particularly in kicking and throwing balls but his main pre-occupation is now hiding himself and two teddies in the new den.

We can also see how children's thinking through schema progresses.

- Fragile schemes of thought are observed as a baby shows interest in particular patterns of activity (pulling toys round in circles, dropping things from a height, sitting toys in rows).
- The schemes of thought are strengthened as the baby repeats the activity in different situations (starting to draw circles in the sand, jumping or dropping themselves from a height, separating and lining up his food on a plate).
- One scheme is co-ordinated with others through Piaget's processes of assimilation, accommodation and equilibrium to form a cluster of schemes.
- In turn, these increasingly complex clusters of schema develop as concepts. Schema are discussed further in Chapters 2, 4 and 6.

Re-presentations of their experiences

Children have different ways of re-presenting their experiences and making sense of them. Jerome Bruner suggests that children's re-presentations take three forms:

- through their physical actions – **enactive re-presentation**
- in their mark making, drawings and paintings – **iconic re-presentation**
- when they use symbols in their play, early writing and mathematics – **symbolic re-presentation** (54).

These three forms move from active to abstract ways of representing. Initially, babies and infants will use their bodies to represent what they understand. As children develop and mature, they show us more through mark making and by using symbols. However, Bruner suggests that all forms are equally valid and children will use them to suit their purposes. A four year old who has observed newly hatched frogs jumping in the nursery pond may:

- re-enact this experience through practising jumping herself from different surfaces (enactive)
- re-present through a drawing showing the frog's movement in twirls and swirls (iconic)
- build a pond using blocks and fabrics for water and use small-scale figures of frogs to re-play their jumping (symbolic).

Questions and comments

Young children also communicate their thoughts, ideas and enquiries through language. Babies use body language, eye contact and gesture to gain information, and their questions are clearly conveyed when they point to an object and confront the adult with searching look. With the emergence of talk, infants give us further insights into their enquiries.

Children are required to develop questioning skills in the National Curriculum and undoubtedly they can be helped to improve the quality and scope of their questions. However, young children will naturally ask questions if they want to know about something and if they are in a familiar environment. This is very apparent in the home where typically children inundate their family members with questions. Robson suggests that: 'one of the ways in which children seek to close the gaps in their experience is through asking questions. Children's questions reveal a lot about what they do and do not understand, their misconceptions and their interests. Their questions may not, however, all

require an answer. What children may often be doing is using their own questions to help them to shape and clarify their thinking by thinking aloud'. (55)

Children around three years will also talk or drop comments about something which give us insights into their understandings and what is on their minds. Sometimes their contributions seem odd and not relevant to what is being discussed but there is always a connection.

Listening to children's questions and comments helps to illuminate some of their struggles with understanding difficult and emotional issues.

Case Study 1.5

Three year old Seb, sharing a group conversation in class about birds children had spotted in the garden, suddenly announced that boys didn't need mummies. His teacher quietly acknowledged that this was an interesting thought that perhaps Seb would like to chat about later. At the end of the afternoon Seb's childminder collected him and told her that Seb's mum had suddenly left the family at the weekend. It transpired that Seb's older brother had tried to console Seb by telling him firmly that the two boys and their dad could cope very well together. After all, boys and men did not need mummies.

Comment

Seb's comment about not needing mummies was expressed at a time when he was upset, confused and trying to convince himself of the wisdom of his brother's counsel. At this time he desperately needed to make a public statement.

In private conversations

In my experience, by the time they go to school it is not common for young children to be so open. Adults who are experienced in working with young children usually agree that their responses and comments in an adult-directed group are very different from the verbal exchanges that take place when children believe that they are conversing in private. Where an adult is perceived to be leading the conversation, children tend to be socially compliant. While a few confident individuals will speak unreservedly, many more will be more guarded with their responses, trying to sense what the adult wants to hear. However, these inhibitions and social constraints disappear when your children believe that they are out of earshot. Peer conversations flow on diverse topics and frank opinions are exchanged. Because they feel comfortable and at

ease on their own territory with their talking partners, children appear less hesitant in their use of language.

They use words to express their ideas and differences of opinion, argue a point and seek clarification. Preserving the child's impression of privacy is essential, but adults who listen in unobtrusively will gain rich evidence of children's mindfulness.

Case Study 1.6

Here is a conversation between two boys playing with small world superhero figures.

Ricki: 'My dad's really tough – he's a wrestler and he can push people over, even my uncle Jack.'

Don: 'It's not good to fight people – my dad says you have to try to be friends.'

Ricki: 'Well... well, wrestling's not fighting, not really, my dad says it's a game.'

Don: 'Does your dad hurt people though?'

Ricki: 'Well only sometimes I think – but it's not proper fighting if it's a game. Some fighting you even kill people.'

Don: 'Mrs Evans don't like fighting, does she – does she like wrestling?' [Ricki shakes his head vigorously]

Comment

A thoughtful discussion where the boys try to distinguish between fighting and wrestling. They are aware of Mrs Evans' (their teacher) disapproval of violence and would probably not have this conversation in her presence.

Main messages in this chapter

- The importance of having regard for children's thinking is highlighted in National Frameworks, research evidence and reflected in the views of practitioners.
- Thinking involves the whole child and is strengthened through close relationships and real, motivating experiences.
- Young children's thinking is best developed through weaving support into their daily activities.
- Early support for their thinking can have long-term benefits.
- When young children think, they assimilate and accommodate new ideas and make connections to come up with a new notion in learning.

- Children demonstrate their thoughts through schematic behaviour, their re-presentations, questions and comments.

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