



EYFS Developmental Milestones

First
Discoverers

wesco.

Contents:

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Pre-natal



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16 - 26 Months



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Introduction

No matter how you account for its origin, the first moment of our being is a truly miraculous event. The spark of life thus created immediately sets about building its own autonomous humanity, and this review tracks significant milestones in the first five years of that life journey.

As chapter two explains, the growing embryo wastes no time in acquiring human traits: By nine weeks it is startled by loud sounds, and soon develops a preference for it's mother's voice – perhaps the first evidence of the critical bonding and attachment which will influence so much of early life. In the light of fresh discoveries about learning and development inside the womb, researchers are now inclined to downgrade the importance of birth as an event for this tiny 'learning machine'. However, chapter three reveals the remarkable extent to which newborn infants are optimised to learn from every experience. Studies of pre-verbal communications suggest very young babies are wired to detect and extract information critical to their development amidst the complex swirl of sensory data they encounter.

At around twelve months, the young child is working his way towards speech, and chapter four notes how scientists have compared elements of this developmental phase across human and avian species. Here also, there is an account of studies detailing the extraordinary understanding of these toddlers still unable to walk or talk. Once heading towards a second birthday, the 'virtual twos' have become mobile and verbal and, as chapter five illustrates, are rapidly getting to grips with their social world. And whilst the youngsters don't seem to mind at all, some professionals have reservations about exposing young children to the digital world Chapter six looks at communication, on which the toddler – by now perhaps as much as three years old – expends lots of effort The discussion centres on questions, baby talk, and the importance of storytime as an opportunity for development. Next, in chapter seven we sample the experience of children between 30 and 50 months – generally feisty, chatty, and unceasingly inquisitive. And finally, in chapter eight we look at the 'rising five' child in his pomp: Restless, ambitious and making rich discoveries each day. Though everyone understands this child is on the eve of transition, many educators are strongly opposed to early moves away from play-learning on the grounds that we are denying children the chance to flower at an optimum stage in their cognitive development.

Note: Throughout this publication, reference is made to the EYFS developmental stages outlined in the UK 'Early Years Outcomes' document, issued by the Department for Education in 2013. This helps parents, childcare professionals and other readers to relate comment and description in this e-book to phases identified in this detailed government source.



Figure 1.1: Span and duration of pre-natal & EYFS developmental phases

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*There was a time when meadow, grove, and stream,
The earth, and every common sight,
To me did seem*

*Apparelled in celestial light,
The glory and the freshness of a dream.*

William Wordsworth

The world of the newborn: An accelerated learning machine

Wordsworth's wonderful perception of a child's mind, captured in his 'Ode: Intimations of Immortality From Recollections of Early Childhood' – published in 1793 – correlates remarkably well with the findings of recent studies. Though he and his sister Dorothy were, for a time, responsible for the care of a toddler, the poet's observation and depiction of newborn experience is still exceptional for the period.

For those interested in modern childcare, relevant scientific discoveries now serve to extend our factual knowledge and contribute to our understanding of child development. This in turn informs our increasingly nuanced appreciation of the mechanisms by which tiny human beings advance day by day into their futures. But when, where, and how, does this magical process begin?

Perhaps logically, birth itself is the practical ground zero, though in 1890, William James' 'Principles of Psychology' held that life for the newborn was a 'blooming, buzzing confusion', and even in the 1960s, medical text-books were suggesting human consciousness 'probably does not exist in the infant'. As developmental psychologist Alison Gopnik (1999) puts it: 'The dominant view was that children were essentially defective adults. They were defined by the things they didn't know and couldn't do.'

However, science continues to roll back the frontiers, and we now know a startling amount about the world of the newborn. Moreover, new approaches have allowed us to reach conclusions about behaviour in the womb, so the marker for the notional starting point of a child's developmental journey is now being pushed back beyond birth into the pre-natal period.

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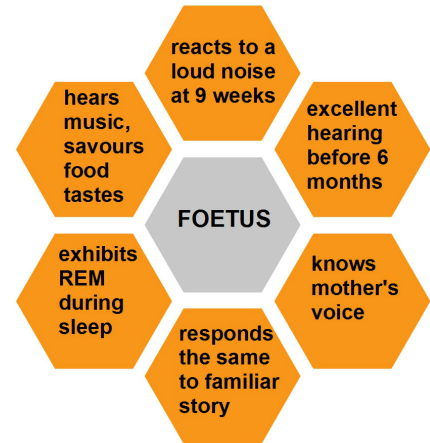
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Learning in the womb

Scientists point out that, in behavioural terms, a 32-week-old foetus is very much the same as a newborn. Neurologically speaking, birth is not a major milestone, but as the following diagram reveals, much else has happened to the developing foetus at an earlier stage:

Figure 2.1: Foetus behaviours and attributes within the womb
(Inspired by Hopson (1998))



According to Hopson (1998), by nine weeks, a foetus can react to a loud noise, and before six months, it has excellent hearing. This enables it to recognise its mother's voice – reacting differently to the voices of strangers – and respond in the same way each time it hears a familiar story. Just like adult dreamers, a foetus exhibits rapid eye movement (REM) during sleep, and cultural life begins in the womb as the foetus savours the food tastes in its mother's diet and listens to the music it hears from the outside world, often responding to certain familiar pieces.

For the foetus, the womb appears to be as much a workstation as a resting place: Hopson quotes developmental psychologist Als Heidelise from Harvard Medical School who reports that the foetus 'touches a hand to the face, one hand to the other hand, clasps its feet, touches its foot to its leg, its hand to its umbilical cord'. Others have observed the foetus pushing off with its feet as if walking around the womb, and speculate that later-born children – whose mothers have a more-extended womb and a longer umbilical cord – enjoy extra room for this motor experience, and thus are likely to develop into more-active infants.

According to DeCasper and Fifer (1980) among others, much of the learning within the womb takes place via 'habituation' – the repetition of a stimulus which first provokes a reaction, later modified once the stimulus has become familiar. As regards hearing, a foetus not only prefers its mother's voice, as a newborn it demonstrates a distinct preference for the sound of that voice filtered through the womb's amniotic fluid, rather than through air, and enjoys that familiar voice much less if it then switches to a foreign language.

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mimic facial expressions

recognise voices

direct eye contact

recognise faces

limited vision

build understanding

Figure 2.2: Newborn attributes soon after birth
(Inspired by Dewar (2009), Meltzoff & Moore (1983))

Newborn perspectives

Science no longer perceives the newborn infant as a passive receiver but an eager participator. Perhaps mothers instinctively sense this as they endlessly coo and talk to their baby, smile, sing, and gaze into her eyes. Dewar's account (Dewar, 2009) reveals that researchers too are equally confident neonatal infants arrive pre-installed with social attributes helping them to:

- recognise both voices and faces;
- communicate with others;
- build an understanding of the minds of other humans.

Though a newborn has limited vision – sight, hampered by the womb's visual limits, is the last primary sense to develop – the ability to recognise familiar faces emerges within hours of birth. So too does a preference to engage with those who use direct eye contact. Studies also demonstrate the neonatal child avidly follows the gaze of a parent, as if curious to know what has excited interest, and why. Even more remarkably, Meltzoff and Moore (1983) discovered that, at just one-hour old, newborns were able to mimic facial expressions they observed for just 20 seconds – a dramatic illustration of Colwyn Trevarthen's extensive work over four decades suggesting babies are pre-programmed to 'coordinate their actions with others'.

Reviewing the vast field of contemporary newborn research, Streri et al (2013) strongly believe that 'for human newborns, the studies concerning their cognitive abilities... are far from having established the full repertoire of competencies that they possess.'

A leading researcher herself, Alison Gopnik (1999) eloquently summarises how far science has taken us beyond the traditional newborn image of 'innocence and helplessness':

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“... what we see in the crib is the greatest mind that has ever existed, the most powerful learning machine in the universe. The tiny fingers and mouth are exploration devices that probe the alien world around them with more precision than any Mars rover. The crumpled ears take a buzz of incomprehensible noise and flawlessly turn it into meaningful language. The wide eyes that sometimes seem to peer into your very soul actually do just that, deciphering your deepest feelings. The downy head surrounds a brain that is forming millions of new connections every day. That, at least, is what thirty years of scientific research have told us.”



Wide eyes that peer into your soul.

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Discovering the rational infant

The term ‘infant’ – from the Latin ‘infans’: meaning speechless – is characteristically applied to young children up to 12 months, which suggests this is also a useful designation for those children covered by the Early Years Foundation Stage (EYFS) ‘0-11 months’ descriptor. Bearing in mind the EYFS developmental time frame also incorporates the four-week newborn period, this chapter reviews how established child development theories relate to the infant phase, before examining some recent research exploring the stunning advances made by these ‘speechless’ fledglings driven by a hungry and impatient evolutionary imperative to understand the world to which they have been summoned.

Relating prominent child-development theories to infancy

This illustrative timeline gives an overview of some of the major child development theories:

Year	Theorist	Focus
1925	Arnold Gesell	Maturationist view
1952	Jean Piaget	Constructivism
1959	Erik Erikson	Psychosocial theory
1974	B. F. Skinner	Behaviourism
1978	Leo Vygotsky	Sociocultural theory
1989	Urie Bronfenbrenner	Bioecological perspective

Figure 3.1: Timeline of principal child development theories

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Relating prominent child-development theories to infancy

This illustrative timeline gives an overview of some of the major child development theories: Arnold Gesell's theory (1925) took a maturationist view, proposing that infant development was primarily determined by heredity with advancements occurring without major environmental influence. Nevertheless, despite its simplistic biological assumptions, many other theories built further on its core premise of sequential maturation. The behaviourist theories of B. F. Skinner (1974) and others countered Gesell's focus on nature by emphasising the central role of the nurture provided by adults and carers. Thus, in behaviourist terms, it is this (adult) positive reinforcement acting on the 'blank slate' of the infant mind which critically shapes development. For Erik Erikson and his psychosocial theory (1959), however, the first phase of the infant's life journey is depicted as a conflict between trust and mistrust: if the environment is loving and emotionally secure, the child blossoms, but those who suffer abuse will likely find their advancement blighted. Jean Piaget's constructivism (1952), on the other hand, regarded the child's individual interaction with the environment as the paramount mechanism prompting cognitive growth – firmly placing the relatively speechless and inactive infant within Piaget's initial sensorimotor stage. Shifting the focus outwards, Leo Vygotsky's sociocultural theory (1978) underlines the importance of language, social interaction, and society's broader expectations, as evidenced by the enthusiasm with which parents and carers stimulate and support the infant's attempts to socialise and learn.

And zooming out even further, Urie Bronfenbrenner (1989) perceives the infant to be at the heart of a fullblown bio-ecological system – as represented by his landmark diagram of broadening concentric circles. Despite the fact that a tiny infant is predominately influenced by the innermost Bronfenbrenner circle – namely, its own microsystem of parents and family – Bronfenbrenner would nevertheless argue that each layer of this outer world exerts an influence in proportion to its distance from the centre, and that any theory of development which attempts to separate each component and ignore this systemic relationship is incomplete.

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Newborn cognition

Prior to the 1960s, newborn 'blank slate' research was hampered by the fact that very little more than motor behaviour was explored. A closer inspection of gaze activity then ushered in the concept of very young infants 'able to perceive and understand ... the environment before they are able to actively act on it.' (Streri et al., 2013). This development greatly encouraged newborn research. Now, for example, it has been established that – nine minutes after birth – newborns can:

- 'perceive patterns of faces,
- discriminate between curved/rectangular 2D shapes,
- conceive the unity of partially hidden objects, and
- discriminate between smaller numerosities (black dots in 2s or 3s).' (Streri et al., 2013)

Attention

Similar early reservations had been expressed about infant attention spans – even EYFS development guidelines suggest attention is 'not under a child's control' at this stage. However, given the benefit of modern research initiatives, Gopnik (1999) has an alternative view:

... when we say that babies and young children are bad at paying attention, what we really mean is that they're bad at not paying attention. So they're bad at getting rid of all the interesting things that could tell them something and just looking at the thing that's important. That's the kind of attention, the kind of consciousness, that we might expect from those butterflies who are designed to learn.

In contrast to adults, who have well-developed, exclusively 'spotlight' attention strategies, Gopnik believes infants use expansive, 'lantern' attention strategies, as depicted below:

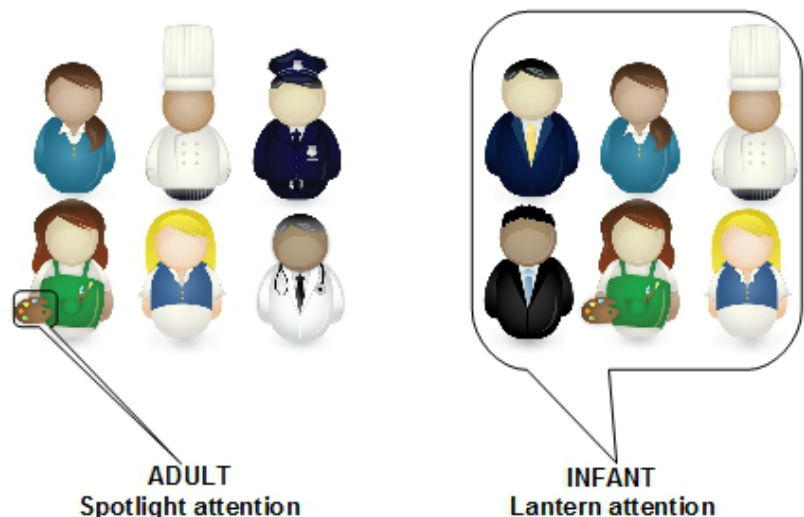


Figure 3.2: Comparison of adult and infant attention strategies (Inspired by Gopnik (1999))

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Language

Scientists such as Michael Meyerhoff (2006) now confidently assert that ‘babies’ intellects are working, and working very well, long before they can talk’, and bearing this out, US research into infant babble at eight months, completed in 2014, tells us:

“... infants whose mothers responded to what they thought their babies were saying, showed an increase in developmentally advanced, consonant-vowel vocalisations, which means the babbling has become sophisticated enough to sound more like words ... The infants were using vocalisations in a communicative way ... because they learned they are communicative.”

(Michiko et al., 2015)

And a recent study of brain activity in 11-month-old infants, conducted by scientists from Warwick University (2015), found a biological predisposition to linking images and sounds, giving infants both the tools and insight to understand that spoken words relate to real-world visual objects – the gateway to speech.



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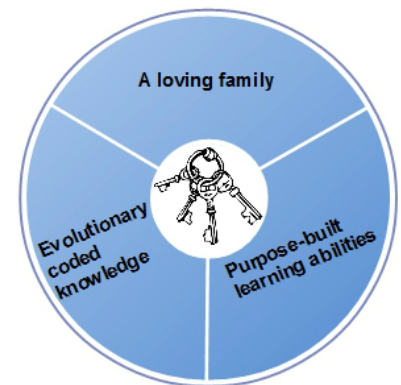
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Born to learn

Meltzoff proposes that imitation is a favoured mode of infant learning, and both parents and childcare professionals would surely concur with his observation that ‘mutual imitation produces a powerful impression in both infant and caretaker that they have psychologically “made contact”, that they are in a relationship.’ And once this behaviour is established, he believes, ‘the infants’ ability to detect that something out there in the world is like them, and can do what they do, has cascading developmental effects.’

Figure 3.3:
*The rational
infant's guide*



Emerging evidence suggests infants and newborns may have a relatively simple, ‘knowledge-lite’ mode of learning which optimally equips them for the noisy intricate world they have recently encountered. Researchers believe that a ‘multidimensional world’ demands ‘mechanisms that allow (infants) to immediately adapt to that environment.’ As a result, they argue, the ‘mind of the newborn might be better prepared to extract invariants from complex, multimodal situations.’ (Streri et al., 2013) Modern research thus provides us with ample evidence that each rational infant arrives with at least three custom keys to help unlock the mysteries of life: innate, evolutionary-coded knowledge; powerful, purposebuilt learning abilities; and a loving family comprising the most patient and dedicated teachers a child could ever wish for.



The most patient teachers a child could wish for.

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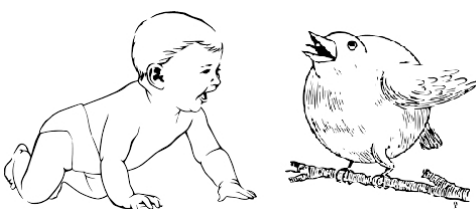
Talking Toddlers: The doors of perception

The second of the overlapping Early Years Foundation Stage phases extends from 8-20 months. Here, the 'yearling' emerges from the true infant stage and, bolstered by ever-increasing confidence and competence, this tiny human apprentice presses on with his developmental journey with renewed vigour. Though evolution is clearly a gradual process, this phase can feel much as if the baby is in real frontier territory: the tenderfoot soon to become committed to finding his feet, and voice too – joint developmental landmarks which will enhance and change his life for ever.

Language lab

Observing this trainee communicator conducting endless vocal experiments to acquire and shape the sounds and rhythms of speech, scientists as far back as Charles Darwin have been struck by the parallels between the approach adopted by babies and that of young songbirds. The human fledgling, like his avian counterpart, first produces immature babbling vocalese. As this becomes more accomplished, the repertoire becomes more controlled and speech-like, calling to mind the rhythmic 'scat' singing of a jazz-singer as well as the 'subsong' babble of juvenile songbirds. In both bird- and human scenarios, each novice receives extensive parental input and encouragement, with the consequent imitation eventually yielding precious song/word fragments. Intriguingly, young songbirds also have the capability to reproduce the songs of other bird species, just like babies have the capacity to speak other human languages, but parental reinforcement determines the actual nature of the finished output. This attribute is rare in the animal kingdom and, because of all these factors, scientists now believe some avian/mammal neural pathways share similarities which could 'shed light on how some (human) babies learn to talk faster and more accurately than others' (Deshpande et al., 2014). Returning to the exclusively human domain, the move from the babbling phase towards true speech links this behaviour to Piaget's final 3 of 6 sub-stages in the sensori-motor phase of his theory of cognitive development (1952), characterised by the 'deliberate planning of steps to reach an objective' (4), 'experimenting with new behaviour' (5), and using 'primitive symbols' whilst forming 'enduring mental representations' (6). Vygotsky (1962) would likewise find the evidence consistent with the first 'vague syncretic stage' of his language development model, where the child exhibits 'pre-intellectual speech' accompanied by 'pre-verbal thought'; and Vygotsky would also regard the parental input as the critical social context essential for development to occur.

Figure 4.1: The shared biological imperative to communicate



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Perceptive evidence

Despite a lack of functional speech, babies at 12-20 months are, of course, assembling a collection of the more easily acquired nouns, and it is no accident that these constructions, which use only the most basic phonology (sound system), include the most fundamentally important components of the child's world: 'baba, mama, dada, nana, meme ...' However, it is important to remember too that one-year-olds and upwards have a superior grasp of 'receptive' language – the true extent of their understanding – and that, as with adults, their deployment of 'productive' language – functional speech – is markedly inferior.

Quite startling evidence of the real understanding of young children continues to flow from developmental psychologist, Alison Gopnik and her contemporaries. Gopnik's own work (2014), describing how 18-month-old toddlers quickly learned to match both 'odd' and 'even' pairs (chosen entirely at random by researchers, and without 'explicit linguistic cues or cultural scaffolding') in order to complete a task, reveals these babies employ relatively sophisticated 'causal higher-order relations', during task-solving, 'an ability which could play a crucial role in further learning.' However, writing in the Wall Street Journal, Gopnik signposts even more astounding research from Stahl and Feigenson (2015) demonstrating that toddlers as young as 12 months' old were able to perceive the properties of objects appearing to behave in bizarre and unexpected ways. During experiments, babies witnessed balls apparently passing through solid walls, or rolling off tables to remain suspended in mid-air. Given the balls to play with, the children were observed either banging them against hard surfaces, or dropping them to the floor in anticipation of replicating the 'floating' behaviour - each response specifically triggered by whichever type of experimental illusion the baby had previously witnessed. Apart from the amazing insight this study provides about the perceptive powers of tiny learners, educators will also note the continuing effectiveness of novel experiences to promote really meaningful learning at any age.

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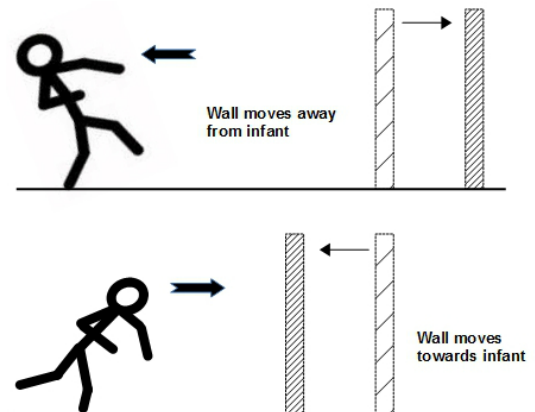


Finding his feet and voice will change his life forever.

The need for solid ground

Finding behavioural methods to test babies' reactions in order to assess their perception is a well-established research strategy. In an early example, Lee and Aronson's study (1974), the first to identify the role of vision in monitoring posture, placed toddlers who had learned to stand on a solid floor inside a specially constructed room with three moveable walls. In 'normal' mode, the children were able to balance properly, but once the moving walls came closer, or moved further away, each child swayed and experienced a loss of balance.

Figure 4.2: The operation of the sway reaction in toddlers



In every case, the toddlers' reaction was the same: leaning forward when the walls came forward, and backwards when the walls moved away. These results show that, when learning to walk, toddlers rely heavily on stable visual feedback from a 'fixed' visual landscape in order to control and balance the necessary motor functions, and that anything distorting this visual flow quickly precipitates a loss of balance. Follow-up studies also demonstrated that the visual abilities required for walking did not develop in parallel with motor capacity – non-walking crawlers displayed exactly the same sway-reaction when sitting in the experimental room. In addition, researchers discovered the balance loss to be most acute during the first three months, after which the effect began to subside. Though the prelude to walking and talking is undoubtedly demanding for toddlers, they continue to show an undaunted zest for expanding their universe, supported by an insatiable curiosity inspired by the unexpected; a superbly adaptable neural-plasticity mechanism custom-built for rapid learning cycles based on experiment/analyse/reset repeat; and powerful perceptive abilities which continue to surprise us at every turn.

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The Virtual Two: A work in progress

Having cracked the outer layers of the language code and largely mastered the basics of mobility, the former yearling is heading towards 'supertot' status – more prosaically defined in Early Years Foundation Stage terms as 16 to 26 months. Even though walking and talking could hardly be described as honed to perfection, the 'virtual two' has left much of infancy behind. Yet despite his recent acquisitions, the aspiring two-year-old is still likely to find learning the ropes in this new phase a tough assignment.

Betwixt and between

Piaget (1952) describes the cognitive development of a child of this age as leaving the sensori-motor stage and entering, or about to enter, the pre-operational world of symbols. Meanwhile, as regards linguistics, work on two of the four knowledge elements Shaffer (1993) identifies as essential for mastery of language – phonology (sounds) and semantics (meanings) – is well under way. For Vygotsky (1978), the child's language would be moving towards his second 'complex' stage where language and thought begin to move in parallel, and where tasks are mainly accomplished with the support of adult 'scaffolding'. And according to Erikson's psychosocial theory (Erikson, 1959), virtual twos are experiencing stage two where the major conflicts centre on autonomy vs. shame, resulting in a wilful push for independence interspersed with moments of paralysing doubt. The more particular phenomenon of 'separation anxiety' (Kagan, Kearsley and Zelazo, 1978) when a significant trusted caregiver is not nearby has most likely peaked just as this EYFS phase begins, and is now set to decline.



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Interactive language

Armed with a growing repertoire of nouns to name more and more objects in their world, virtual twos finally break the bonds which shackle the rest of the animal kingdom by uttering their first two-word sentence. This basic pattern, known as ‘telegraphic’ speech, strips communication to its essentials and usually requires some contextual interpretation by those sensitive to, and familiar with, a child’s needs and routines. For example: ‘Mummy, chair’, could have a range of meanings such as ‘I want to sit in my chair’, ‘I want to sit in Mummy’s chair’, ‘Mummy is sitting in her chair’, ‘Mummy, sit in your chair’ etc. During this phase, the limitations of two-word telegraphic speech are ingeniously circumvented by the child’s use of what Braine (1963) identifies as a ‘pivot’ word followed by an ‘open’ word to give a useable variety of phrases: ‘all gone’, ‘all done’, ‘all clean’, ‘all messy’, and so on. This approach is illustrated in Figure 5.1 below:

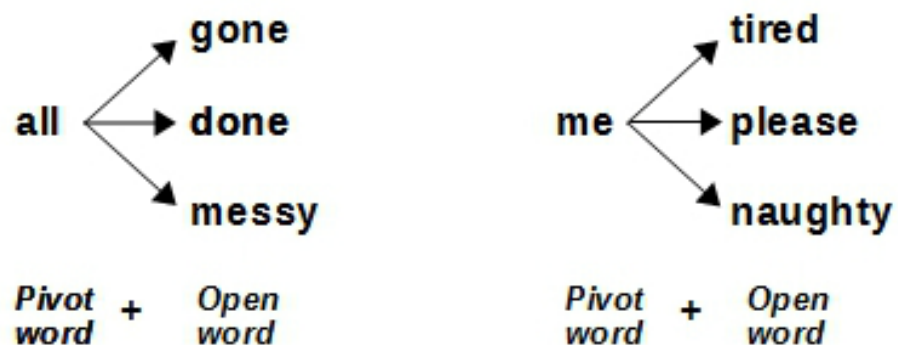


Figure 5.1: Two-word telegraphic speech strategies
(Inspired by Braine (1963))

Further research confirms this mechanism to be universal:

“All over the world, children apparently talk about the same meanings—or ideas—in their first sentences ... (they) refer to possession (Mommy dish, my coat), action-object sequences (hit ball, drop fork), attribute of an object (big truck, wet pants) or an object’s location (cup shelf, teddy bed).”

(De Villiers, 1979)

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Social interludes

By virtue of their developmental progress, virtual twos are now at the start of their journey towards an understanding of the moral rules and social conventions which will help them to socialise with others. Describing children's mental constructs during this phase, Astington and Edward (2012), note they are able to:

“... show awareness of the difference between thoughts in the mind and things in the world. In pretend play (e.g., pretending a block is a car), toddlers show that they can distinguish between an object – the block – and thoughts about the object – the block as a car. They also understand that people will feel happy if they get what they want and will feel sad if they do not. ... children see that there may be a difference between what they want and what another person wants. ... in language too: 2-year-olds talk about what they and others want and like and feel.”

Nevertheless, as many childcare professionals will know, the most common precursor to social interaction with other children occurs when virtual twos engage in ‘parallel play’, in which children play alone but in close proximity, sometimes modifying their own actions to incorporate elements they notice in the play of others.



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Electronic babysitters?

Today's supertots live in a world of screens, many of which are designed to entertain, provide information, and even teach, in a manner which often removes the need for any human interaction. This reality is implicitly acknowledged in the EYFS Early Years Outcomes (2013) document (See Figure 5.2) which describes a virtual two who 'seeks to acquire basic skills in turning on and operating equipment' and his senior counterpart, just six months' older, who 'knows that information can be retrieved from computers.'

Whilst opinions are sharply divided about the need, or otherwise, to limit access to technology for very young pre-school children, certain observations can be made:

- there is little research on the impact of technology on young children;
- infants and toddlers learn best through hands-on and face-to-face experiences;
- the American Academy of Pediatrics (2013) advises parents to 'discourage screen media exposure for children <2 years of age.';
- interactive screen technologies are used for education and entertainment by children as young as two;
- 'plugged-in' parents who don't communicate with their young children are becoming a common sight.

Technology

Age	Typical behaviour
22 to 36 months	• Seeks to acquire basic skills in turning on and operating equipment.
30 to 50 months	• Knows how to operate simple equipment. • Knows that information can be retrieved from computers

Figure 5.2: Extract from technology description in the EYFS document (2013)

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The views of those who are concerned about the adverse effects of media exposure are echoed in the closing statement from the Kaiser Family Foundation's (2005) historical review of media research:

"... research has not come close to keeping up with the pace of new media development. Infants, toddlers and preschoolers today are developing in an environment saturated with media, and unanswered questions abound concerning their use of electronic media. In order to fully grasp the positive and negative consequences of this media use, funding must be available for a comprehensive, cohesive research agenda on media effects."

Widely reported Boston University School of Medicine statements about recent research (Guardian newspaper, 2015) are equally cautious about the use of new mobile media devices by the very young. Researchers recommend interactive co-viewing and limited access, saying:

"... there are more questions than answers when it comes to mobile media. Until more is known about its impact on child development, quality family time is encouraged, either through unplugged family time, or a designated family hour."



Acquiring basic skills in operating equipment

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Entry-level Word Processor: The toddler as an apprentice 'wordamatician'

Generally much smarter than he sounds, and therefore frequently under-estimated, the child described in the Early Years Foundation Stage 22 to 36 months phase has the keys to the discovery zone, but sometimes finds his recently acquired autonomy takes him to places his patience just doesn't want to go. Yet even though he has still to learn to negotiate all kinds of barriers, this young adventurer risks everything just to move forward, knowing instinctively that such behaviour, supported by his evolving language skills, will reap incredible rewards.

The cognitive development debate

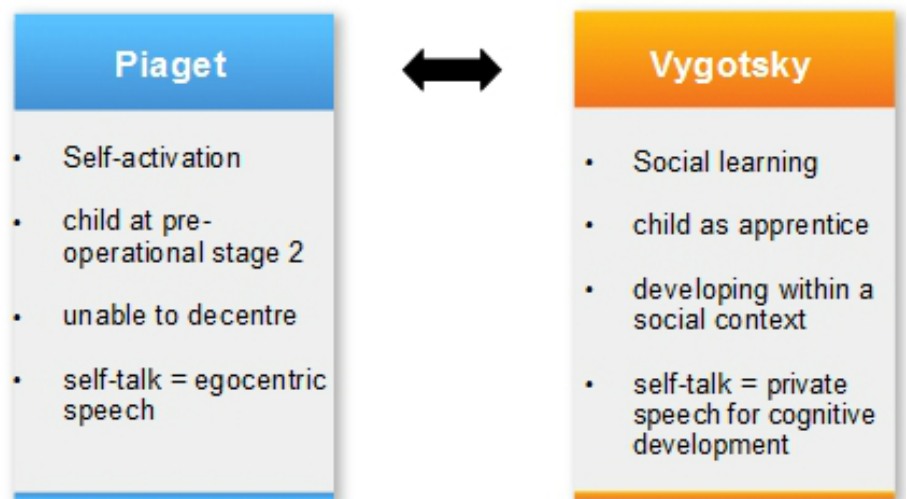


Figure 6.1: Contrasting assertions informing language development

The majority of children at this developmental phase will be entering Piaget's 'pre-operational' Stage 2 (Piaget, 1952), where the theory states a child will 'learn to use language and to represent objects by images and words'. Importantly, the theory also holds that 'thinking is still egocentric – (the child) has difficulty taking the viewpoint of others,' and is inclined to 'classify objects by a single feature'.

Piaget's work casts Stage-2 children as being unable to 'decentre' – and thus effectively unaware of any perspective beyond their own. However, many critics have demonstrated that Piaget's experiments were flawed in a number of respects, some even observing that a more sympathetic reading of Piaget's outcomes could suggest his child subjects, rather than displaying ignorance, were following researcher's verbal cues. Fontana's comment not only reinforces this view, but acts as a warning to caregivers:

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“Children’s failure to understand the questions and instructions and explanations offered to them by adults is due less to their own shortcomings than to the frequent inability of adults to present these communications to them in a form which is appropriate to the level at which conceptually they are able to function.”

(Fontana, 1981)

Where Piaget stressed self-activation as the basis of cognitive development, Vygotsky by contrast saw the child as developing understanding and expertise in a social context via the role of an apprentice. A child’s language, Vygotsky argued, was central to this process; and where Piaget (1926) dismissed child self-talk as ‘egocentric speech’, Vygotsky (1962) instead saw ‘private speech’ – a key feature required for the promotion of cognitive development.

Self-talk

Most childcare professionals will, of course, be aware young children talk to themselves. This important phenomenon commonly emerges a little after 24 months, and peaks during the pre-school years. Many have argued its presence implies the existence of planning and monitoring capabilities, whilst Berk (1994) believes this is ‘an essential part of cognitive development for all children’. Researchers have found such utterances tend to mirror a child’s developmental experiences, noting private speech can occur, for example:

- when the child makes comments and/or produces noises during fantasy- or pretend play;
- as a spontaneous outburst with emotional overtones, such as the staccato ‘Oh ... Oh’;
- where the child employs it as a tool for self-guidance, frequently echoing a salient fragment of prior adult instruction.



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The advent of question time

No sooner has private speech arrived than questions appear too. Planas (1995) notices that ‘interrogative utterances frequently appear in the linguistic repertoire of adults who interact with very young children’, whilst Savic (1975) notes also that ‘this tendency reverses when children begin to form (their own) questions’. Snow (1986) advances a reasoned view for this adult behaviour, which most caregivers would support, when he proposes that:

“Seeing children as relatively incompetent conversational partners helps us to understand why language addressed to children is so full of questions (attempts to pass the turn to the child), clarifying questions and expansions (attempts to clarify and upgrade child turns).”

So it seems children ‘catch’ this adult behaviour, and before long, start to return it with interest!

Phonology for dummies(?)

As with adults, any child in a hurry to learn about the world is bound to cut corners at times. Thus the mastery of more difficult speech sounds is likely to result in many initial approximations which, the helpful ‘playing with words 365’ (2012) website explains, are termed ‘phonological processes’. Amongst the short cuts all children at the 22 to 36 months EYFS phase develop, the following examples will be quite familiar to childcare professionals:

Phonological process	Description/ outcome
Unstressed syllable deletion	Banana = nana
Final consonant deletion	Dog = dah
Fronting of velar (back of the tongue) sounds	Car = tar (the /k/ is produced as a /t/)
Assimilation	Cat = tat
Reduplication	Water = wawa
Gliding	substituting a /w/ for the /r/ and/or /l/ sounds (like wabbit for rabbit and pwane for plane)

Figure 6.2: A child's common verbal approximations
(Inspired by playing with words 365 website)

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Word up to the benefits of word play

Canizares (No date) believes ‘word knowledge is among the most critical pieces of language development’ and sees the period up to 36 months as a time when ‘language growth occurs very quickly’. Every adult-child conversation during this period presents an opportunity to extend a child’s language skills, as Canizares exemplifies via this simple exchange:

“A child may say: “Doggy ruff ruff?” The mother responds: “Yes, there goes the doggy. Ruff, ruff! That’s how he barks. He is hungry and wants his dinner.”

As caregivers will know, young children are also fascinated by the sound of long, unusual, or seemingly difficult words. This suggests they are wired to pay special attention to the way adult conversation uses words with precision, and for special effect. Parents and caregivers prepared to feed this fascination by providing a vocabulary-rich environment where sophisticated words occur naturally will soon discover that this brings rewards – far from sailing above children’s heads, this approach may yield comments about clothes being ‘saturated’, or a sibling’s behaviour appearing ‘ridiculous’.

Highlighting language and cognitive development opportunities at storytime

A variety of storytime contexts are available to children between 22 and 36 months, and research suggests that shared-reading, started early, nurtures the development of language abilities. Both with traditional bedtime story and opportunities offered during nursery care, researchers tell us that adults trained in ‘dialogic-style’ reading (1988), as shown in Figure 6.3, offer children the greatest benefits.

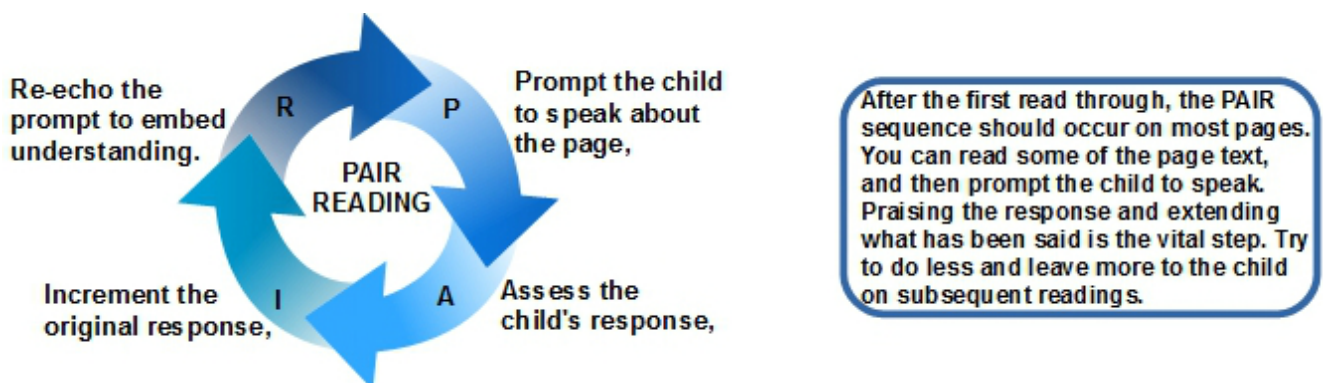


Figure 6.3: Dialogic reading using a PAIR approach

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At the heart of this technique is the notion that open questions prompt the child to take the lead whilst the adult supplies informative and expansive feedback customised to the child's level of understanding, a strategy resulting in richly rewarding responses paving the way for lasting advances in literacy and language development.

Whilst daily life has its fair share of frustrations for the two-year-old whose third birthday is approaching at a rapid pace, helping this child to understand, articulate and deploy language is one sure way to promote and encourage the mindset required to successfully navigate such challenges, whilst simultaneously honing a core communication tool which will last a lifetime.



Shared-reading nurtures language abilities.

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‘Curiouser and Curiouser’: The child’s EYFS journey gathers pace

Whilst it would be an exaggeration to claim the child between 30 and 50 months has become an entirely independent social being, liveliness, resilience and an enormous degree of inquisitiveness are now the dominant traits of these increasingly talkative and assertive adventurers. Little wonder that parents and childcare professionals are starting to look towards progressively more challenging provision with elements perhaps leading to formal outcomes mimicking the curriculum formats children will subsequently encounter at ‘big school’.

Early years identity

Taking an active interest in their child’s education and welfare is, of course, a fundamental and enduring aspect of parental support which every educationalist wishes to encourage. However, Lindon (2008) has professional reservations about some attitudes she believes contribute to a failure to treat children between 30 and 50 months ‘as young children learning within an early years curriculum’, noting:

“... entry into reception class is frequently described as “starting school” - by parents and also practitioners. Some primary schools also treat their reception classes as effectively the first year of school and very young children are shoe-horned into the role of “pupil”.”

Stressing that accommodating demands which ‘steamroller down from an older age band’ is far from good practice, Lindon nevertheless senses ‘an enthusiasm to be known as “pre-school”’, and cautions:

“It is so much harder to promote the early years ... as valid in their own right, when so many people involved in this professional field are content to be described as a kind of waiting room for school.”

Such highlighting of the danger that some early-years educators may pay lip-service to schemes of work as they push on through EYFS leads naturally to a review of literature and research findings which support and inform the learning and development of children between 30 and 50 months – or have the potential to do so.

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The influence of major cognitive theories

PIAGET:

- Phased development
- Discovery learning

VYGOTSKY:

- Scaffolding
- Collaborative learning

INFORMATION PROCESSING:



BRUNER:

- enactive
- iconic
- symbolic

Figure 7.1: Significant cognitive theories

All cognitive theories can be applied to education and have influenced curriculum development. Piaget's work (Piaget, 1952) has shaped what, when, and how children are taught, and has prompted the evolution of childcentred 'discovery learning'. By contrast, Vygotsky's emphasis on the social context (Vygotsky, 1981) favours teacher-child interaction – especially as regards 'scaffolding' – and underpins classroom groupings of all kinds where both collaboration and conflict encourage fruitful learning outcomes. The American 'information processing' theory (2001) abandons Piagetian cognitive-development stages altogether, instead emphasising an ongoing pattern of development and presenting the mind as a mechanism with an attention phase for information input, a working memory for active manipulation, and a long-term memory for subsequent retrieval. According to this theory, which has heavily influenced reading and mathematics, processing advances as a child develops. Information processing can be a useful way of considering the teaching strategies a task demands – for example by avoiding many explicit instructions for an implicit learning task. Also forsaking Piaget's neat phases, Bruner (1960) proposes three stages of his own: namely the enactive (0-1 years), iconic (1-6 years) and symbolic (7 years and above). At the iconic stage, Bruner believes learners primarily store information as images, so here illustrations strongly support verbal information. His 'spiral curriculum' theory proposes that even complex concepts can be introduced in an 'intellectually honest' form to young children, if appropriately tailored to their developmental understanding. These important core subject concepts are later revisited, appropriately recast at each later stage, to promote deeper understandings.

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Windows of opportunity

A research summary by Gabbard and Rodrigues (2015) underlines the vital importance of early years learning opportunities by calling attention to studies enabling ‘the identification of critical periods in brain development in which experience may be most effective in forging connections in wiring the brain.’ Open before birth, these windows ‘narrow as a child grows older’, fully justifying Lindon’s call for every childcare professional to remain fully focussed on the here and now. One important message is the role of early years ‘movement and sensory experiences’, given that the gross-motor skills ‘window’ starts to close after five years of age (See Figure 7.2 below).

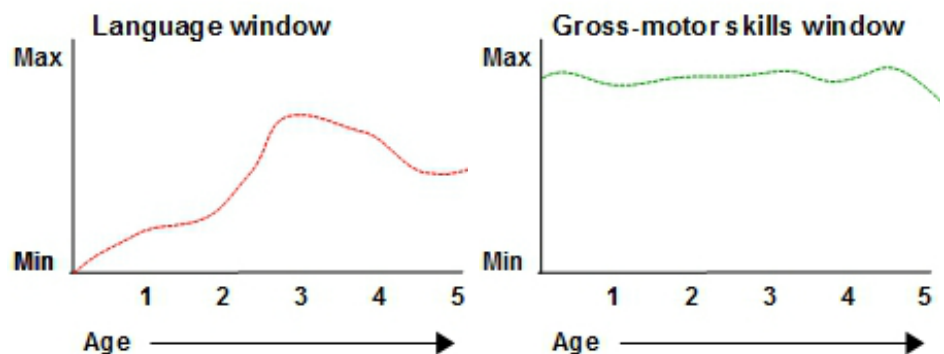


Figure 7.2: Critical periods of brain development

Teaching and learning

Research constantly reminds us of the need to use appropriately pitched language in educational exchanges, but Fontana reminds us too of the ‘frequent error ... to assume that because children appear to “know” a particular word, it carries ... the same meaning it carries for (the teacher).’ And it is equally problematic, he argues, when ‘the teacher assumes that an inability to put things into words inevitably indicates an absence of understanding.’ (Fontana, 1981)

Recent work on the understanding of early-years learners offers further insights: results achieved by Legare & Lombrozo (2014) suggest that asking children to offer their own explanations during learning directly enhances outcomes, leading researchers to argue that ‘explaining engages young learners in ways that other cognitive processes do not’.

Meanwhile, Walker, Gopnik and Ganea (2015), report that children have a more sophisticated ability to ‘differentiate between realistic and fantastical stories from a very early age’ than might have been predicted. Moreover, it seems this trait continues to develop because ‘children with the greatest amount of knowledge about fantastical representations are the least likely to draw analogies between worlds.’

Elsewhere, Vales & Smith (2015) confirm that hearing a word label helps young learners search more quickly for a ‘target word or shape’ by securely encoding, and then maintaining, the target in the child’s visual working memory, thus indicating that ‘the influence of language on visual processing begins early.’

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Learner characteristics

Childhood amnesia – our universal inability to recall our early lives – is said to occur because the hippocampus area of the brain, strongly implicated in consolidating memories, usually remains immature until a child is at least two years of age. An early language-development peak arrives at age three (See Figure 7.2), before formal schooling (often beginning around age five) imposes an entirely new way of encoding experience on young children. Thus the phenomena of childhood amnesia disappears somewhere between three and five years of age. Considering another memory characteristic, Squire et al. (1990) make a distinction between the ‘explicit memory’ learners use for conscious recall, and the ‘implicit memory’ required for the development of embedded skills – explaining why automatic repetition without recourse to instructions is the goal of everyday tasks such as tying laces.

Child-centred educators will be ever-mindful of the specific needs of their charges. For example, a four-yearold may have a younger sibling plus a new baby in the family. If so, research suggests an ‘oldest child’ may well be disadvantaged with the presence of younger and more demanding siblings limiting his own receipt of developmental stimuli. Likewise, Donaldson (1978) cautions that ‘linguistic skill’ can also affect learning outcomes because:

“Children from privileged backgrounds are more likely to pay scrupulous attention to the words of the question, (whereas) ... less privileged children have a strong tendency to substitute a “more natural” question...”

In summary, given the significantly different developmental profile and discrete learning needs of early years children, touched upon in this discussion, childcare professionals are entitled to feel privileged to be entrusted with the developmental prospects of children at this crucial point in their young lives. Big school will arrive in good time, but many of today’s priorities can’t be missed, and just won’t wait!



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Magnets and miracles: The EYFS twilight zone

“Beyond the horizon of the place we lived when we were young, In a world of magnets and miracles, Our thoughts strayed constantly and without boundary...”

‘High Hopes’ - Pink Floyd (1994)

Young children between 40 and 60 months have entered the final EYFS phase which will inexorably lead them towards the dizzy heights of ‘big school’. This is indeed a time of high hopes and great expectations, and as the Pink Floyd song quoted above – which focuses on the effect of transitions – similarly acknowledges, ‘desire and ambition’ are natural and familiar life forces driving us on ‘beyond the horizon’.

A new world

As children, teachers and parents are swept forward on this tide of progress, what is not always quite so apparent, and thus often overlooked, is that the next phase of education actually has very different goals, and very different methods of achieving them. This new world will contain much more direct instruction, and as Donaldson (1978) points out, the normal school-ready child will enter school with ‘his thinking ... directed outwards on to the real, meaningful, shifting, distracting world’, only to find the goalposts have been moved:

“What is going to be required for success in our educational system is that he should learn to turn language and thought in upon themselves. He must become able to direct his own thought processes in a thoughtful manner.”

Others too have noted that direct instruction, as Gopnik (2011) observes, ‘lets you get the right answers more quickly than you would otherwise’, which explains why such methods are extensively used to impart knowledge once formal education begins. Nevertheless, far from advocating a need to make ‘kindergartens and nurseries more like schools’, Gopnik is convinced that ‘very young children should be allowed to explore, inquire, play and discover’, and points out:

“Perhaps direct instruction can help children learn specific facts and skills, but what about curiosity and creativity – abilities that are even more important for learning in the long run?”

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Developmental differences

Developmentally, our EYFS children between 40 and 60 months, mostly four-year-olds and ‘rising fives’, are very much part of a thrilling early-years world of ‘magnets and miracles’. Though children will inevitably graduate from this Elysian environment, educators and childcare professionals must be extremely wary of depriving them of its rich, once-in-a-lifetime benefits by replacing it with an inappropriate ‘school for babies’.

Though all this could be read as a nostalgic appeal to put off formal learning for another day, Gopnik’s rationale clearly explains that a typical four-year-old is surprisingly good at discovering smart solutions to problems. Even so, his brain has not yet evolved to the extent that he copes well with the very different requirements of ‘routinised learning’ in school – defined as a process whereby ‘something already learned is made to be second nature, so as to perform a skill effortlessly and quickly.’ (Gopnik, 2005) Supporting this assertion, a recent study with this age group, by Bonawitz (2010), found that ‘direct instruction made the children less curious and less likely to discover new information’. Work by Buchsbaum et al (2011) similarly concluded that when a researcher assumed the role of a teacher ‘children imitated her exactly’, whereas if the adult researcher was just scaffolding play in the background, children discovered ‘more intelligent and more novel’ solutions.

Those promoting early years learning should therefore beware of ‘advanced’ teaching and learning approaches which have more in common with Piaget’s third, ‘concrete operations’ stage (Piaget, 1952). Most of their charges will actually be securely grounded in the intuitive sub-stage of the ‘pre-operational’ second phase, and whilst a ‘go-forward’ curriculum may impress some schools and parents, it risks arresting holistic cognitive development at a time when children’s brains are ‘more connected, more flexible and more active than they ever will be again.’ This important feature of child development is too often overlooked by the ‘School-Ready’ movement, though many other educational. As always, the onus falls upon teachers and childcare professionals to determine the level of their children’s thinking and plan activities accordingly. Here, Fontana advises:

“... children’s powers of conceptualization are linked closely to their physical activity ... in an ... exclusively teacher-orientated environment, children are therefore starved of the practical experience which serves as the raw material for their thinking.”

(Fontana, 1981)

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Task-monitoring provides essential feedback too because, as Fontana notes, ‘errors may ... simply be evidence of children’s attempts to make sense of material in terms of their existing cognitive structures.’

The focus of play

Discussing the characteristics and importance of physical play, Sandström (1966) would expect to find ‘rulemaking’ a strong feature of children’s play at this EYFS phase, with ‘constructional play’ becoming common around the age of 4½. One important attribute which distinguishes constructional play from other forms of imaginative play is that it seems to be driven by results and outcomes, making it much more than amusement and entertainment. Rule-making, of course, implies ‘co-operative play’ which also appears at this stage of development, and Vygotsky’s theory (Vygotsky, 1981) also emphasises the value of social learning – which is why teachers find children learning in pairs are often motivated to complete tasks which would be daunting for an individual child.

The development of increasingly social and interactive forms of play is illustrated in Figure 8.1 which combines the play descriptions independently devised by Parten (1932) and Sandström (1966).



Figure 8.1: Play types as a continuum
(Inspired by Parten (1932) and Sandström (1966))

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Motivation and learning

With motivation being a key component of learner achievement, it must still be remembered that not all children in an early years group necessarily enjoy the same life chances, and that this may inevitably impact upon their ability to fulfil their potential. Maslow's theory of motivation (Maslow, 1954) addresses this issue by describing a notional hierarchy of needs with the requirement for survival and security at the most basic level, and the need for self-esteem and self-actualisation only appearing at the topmost levels once the 'bare necessities' lower down have been met.



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our thoughts strayed
constantly and without
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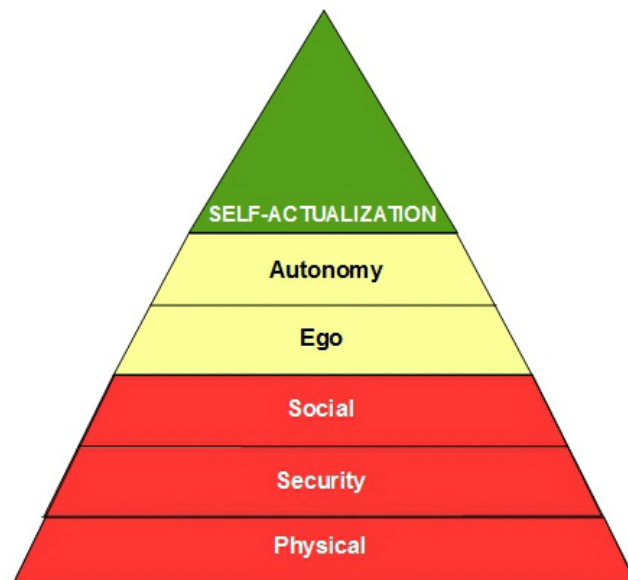


Figure 8.2: Maslow's theory of motivation

Researching in a US context, Maslow found that whilst 85% of Americans reported being able to satisfy life's basic needs, only 10% had satisfactorily met their self-actualisation expectations. One implication for teachers is that, when addressing a young child-learner's difficulties, the full context must always be explored and assessed.

Playful learning

Many educators believe that, to fully prepare our children for modern-world challenges, it is vital we should give free rein to their outstanding talent for spontaneous, innovative learning, and continue to encourage their thoughts to 'stray constantly and without boundary' (Pink Floyd, 1994). Supporting this perspective, a 2013 report by the Professional Association for Childcare and Early Years (Pacey) voices concern that:

"... the importance of (learning through) play in the early years is being neglected and risks being eroded even further by current government proposals ..."

(Pacey, 2013)

For Pacey and others, the contention is that, far from respecting, supporting and promoting this unique golden age of child development, when – as many adults will recall – 'the grass was greener, the light was brighter' (Pink Floyd, 1994), this unwarranted erosion may be leading directly to the creeping 'schoolification' of the UK's early years provision.

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