



Association for the Professional Development of Early Years Educators

## OCCASIONAL PAPER NO: 2

### School Readiness; a critical review of perspectives and evidence

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#### Starting School

We only start school once in a lifetime; at this exciting point early in life, a child arrives brimming with a huge range of attributes, some biological, some cognitive, some dispositional, some motivational. Even at the age of four, when a child may begin in a primary school Reception class, they come through the gates of the institution with a bundle of diverse previous experiences, a bank of knowledge and skills already mastered, a brain wired up and eager to absorb masses of new information and, most importantly, a disposition towards learning. It is the privilege of both parents and teachers of these young learners to foster these attributes and develop them, to scaffold steps into new areas of learning and to support them in facing new challenges as they prepare not just for school-life, but for the longer term, setting the foundations for lifelong learning.

What is not at all predictable and uniform, however, is the combination of those attributes and skills with which any individual child arrives at school. Economic and social factors such as unemployment, ill-health, homelessness, illiteracy all affect the well-being of families. Stressed parents dealing with economic and social disadvantage may be limited in their ability to provide the responsiveness and cognitively stimulating care which fosters the development of early language and cognitive skills that facilitate learning<sup>1</sup>. Hence, the potency of the child's start in school is often overlooked in the focus upon their 'deficits' upon arrival. Indeed, the language used in much recent government guidance reflects a sense of growing anxiety and negativity about the state in which children are emerging out of the Foundation Stage into Primary classes. In its attempt to assuage this escalating anxiety, over recent years the government has intervened increasingly through early years policy and guidance for practitioners, aiming to 'control' the diversity of states in which children appear through the school doors and to standardise what will be taught to the children once in Year 1. This increasing intervention has been placing pressure on early years practitioners to make the children 'ready for school'.

Tension has been mounting amongst early years educationalists in England as they perceive that those children leaving the Foundation Stage and arriving in primary school are being measured against a 'deficit model', a set of inappropriate, one-size-fits-all standards of 'readiness' for school. In this paper we argue that these concerns stem from a mismatch between increasingly evidence-based pedagogical understandings within the

early years sector and the curriculum required to be delivered within Primary schools in England, arising from and compounded by the continued intervention of recent governments.

#### Government policy perspectives

Causes of the growing frustration amongst early years educationalists have been encapsulated succinctly very recently within the contradictions printed within some of the policy framework documents released by the government in 2011. Within documents such as *Supporting Families in the Foundation Years* (DfE, 2011) and cited sister reports,<sup>2,3,4,5</sup> the phrase 'school readiness' or 'readiness for school' is used with a variety of connotations. This reflects a wider trend within policy advisory groups over recent years, in which the phrase has appeared with increasing frequency but to different ends. In parallel, the phrase is being used by academics and educational advisory groups to reflect their conceptions of young children's 'readiness' within not just schools, but other provision of care and education. The arguments surfacing about whether, how and why a child should be 'made ready' are symptomatic of the far deeper tension growing within the early years education sector, in relation to a deep conceptual divide. There is no agreement upon a definition of the term 'school readiness' or 'readiness for school' and its use because *there is no agreement upon what young children should be prepared for*; in essence, the disagreement about terminology and definition encapsulates *a fundamental difference in conception of the purpose of early years education*.

#### Readiness to learn

All children, at all ages, are 'ready to learn'. Recent research using new techniques in developmental cognitive neuroscience has established that many of our cognitive processes are there and fully functioning at birth, or mature very quickly during the first 4-5 years of life. During this period, the brain increases in size fourfold largely as a consequence of a rapid increase in the number of synaptic connections between neurons in the cerebral cortex. In this very early period basic 'executive functions' are rapidly established which support fundamental learning processes, including statistical learning<sup>6</sup>, learning by imitation,<sup>7,8</sup> learning by analogy<sup>9</sup> and causal reasoning.<sup>10</sup> Furthermore, neuroscience research has shown that all learning depends on neural networks distributed across many regions of the brain, such as the motor cortex, sensory cortices, language areas and so on. As a consequence, the wider the range of

types of experience, the deeper and more secure the learning<sup>11</sup>; this is referred to as 'multi-sensory' learning.

So, the significant question is not *whether* a child is ready to learn but *what* a child is ready to learn. The concept of 'readiness to learn' was historically advanced by Piagetian theory, within which *development was seen to determine learning*. However, subsequent research showed that Piaget's experiments severely under-estimated the abilities of young children, and ignored the important influence of social interactions and language. It is also no longer accepted, as his theory suggested, that there are different developmental stages in children's ability to learn, or that a child cannot be taught until they are cognitively 'ready'<sup>12</sup>.

### **Children constructing their own learning**

Understandings of children's early learning within modern developmental psychology and among early educators in the UK today are much more influenced by Vygotsky's theory of social constructivism.<sup>13</sup> This theory recognises that *learning determines development* and that all learning is social in origin. The notion of the 'zone of proximal development' (ZPD) suggests that when faced with any particular task or problem, children can operate at one level on their own, described as their 'level of actual development', but when supported or 'scaffolded' by an adult or more experienced peer, their learning can go further, a level described as their level of 'proximal (or potential) development', which necessarily differs between children. So cognitive development does not just happen in the brain of the individual child, but depends upon interactions between the child and others, including adults and peers, predominantly through spoken language.

Social constructivism is at the centre of much widely respected European pedagogy, such as Reggio Emilia, for example, whose practitioners' concern is "to maintain a vision of children who can think and act for themselves"<sup>14</sup>; 'curriculum' centres upon the interests, experience and choices of young children. Likewise, a broad concept of pedagogy is in evidence in countries encompassing a tradition of *social pedagogy*<sup>15</sup> such as in many Scandinavian and Central European countries; such models place equal value upon care, upbringing and learning. As in England, national curriculum frameworks exist within these European countries, but they are used as instruments of general guidance rather than policy instruments to bring about a set of pre-defined standards for a child's entry into primary school. Pre-schools exercise a high degree of autonomy in determining their own curricula in consultation with agents in the children's immediate social context, such as parents and wider family members. This enables an holistic pedagogical approach, in which children are supported in their current developmental tasks and interests and in which the pedagogies, content and learning of particular groups of children can be fine-tuned to individual needs within the specific contexts. The natural learning strategies of young children are valued, such as learning through activity, play, social interaction and individual investigation. There is a movement to extend this early childhood pedagogy into the lower classes of primary school in many Scandinavian and Central European countries<sup>16</sup>.

In the remainder of this paper, we address the evidence related to a number of areas of research which, taken together, provide some powerful insights concerning ways in which early years settings and primary schools could be made more ready for children.

### **Early Childhood Experiences**

The make-up of society in England is extremely complex. Numerous indicators highlight the substantial differences in early childhood experiences across children, differences that affect their initial development and which persist as children age, influencing dispositions towards learning as well as the range of skills they will be ready to employ upon arrival in school. Healthy child development may be supported by a variety of factors during the early years or, conversely, the desired outcomes for a child may be compromised whether temporarily or on a more long-lasting basis. Such factors include, for example, the nature of early relationships with parents and other caregivers, the extent of cognitive stimulation, and access to adequate nutrition, health care, and other resources such as a safe home and neighbourhood environment.

Poverty affects a sizable share of young children in the UK; the number living in low income households in the UK reached 3.9 million in 2008/09.<sup>17</sup> Living in certain areas where high percentages of the population have income below the poverty line limits healthy development for many. Such neighbourhoods offer limited opportunities in terms of resources important for early child development, including health facilities, parks and playgrounds. Preventative health care does not reach all parents and young children, which disadvantages those children who miss out on opportunities for health and developmental screenings, through which parental behaviours are also encouraged, to promote healthy child development. Extensive research evidence has linked economic disadvantage to parental stress, low responsiveness in parent-child interactions and a range of poor cognitive and social-emotional outcomes in young children, including adequate language acquisition, self-regulation, and confidence to interact or express their needs.<sup>18</sup> Moreover, children from low-income or less educated families may be "doubly disadvantaged" since they are also less likely to be enrolled in early education settings.<sup>19</sup> International research shows that early intervention contributes significantly to putting children from low-income families on the route to development and achievement in life. Evidence from programmes such as the *Family Nurse Partnership*<sup>20</sup>, *Parent Child Interaction Therapy*<sup>21</sup> and *Community Mothers*<sup>22</sup> have revealed that if appropriately related to health, employment and social services, early childhood services can effectively enhance parenting skills, community-building and maternal employment and decrease family poverty.<sup>23,24</sup> The longitudinal EPPE project in the UK, which investigated the effects of pre-school education upon 3,000 children, concurs that well-funded, integrated, socio-educational programmes improve the cognitive and social functioning of children at-risk. Evidence from EPPE<sup>25</sup> suggests that investing in good quality pre-school provision can be seen as an effective means of achieving targets concerning social exclusion and breaking cycles of disadvantage, especially where children are placed in classes composed of children from different social

backgrounds. Findings from this study further suggest that specialised support in preschools, particularly for language and pre-reading skills, can benefit children from disadvantaged backgrounds and those for whom English is an additional language.

### **Developmental aspects**

In contemporary developmental psychology, children's learning is seen as being limited only by their lack of experience and accumulated knowledge and, as outlined above, neuroscience today is revealing that all the basic processes of learning and reasoning are available even from infancy. In essence, during this period what develops is the child's knowledge base and their capacities for metacognition and self-regulation (becoming aware of and in control of their own cognitions, emotions and behaviour). The development of language is central to the whole process; as a symbolic system, and through the channels of pretend play and the imagination, even very young children can think and reason about experiences and ideas in sophisticated ways. Central to development are the executive functions of the brain, which encompass cognitive flexibility, inhibition and working memory, as well as more complex functions such as capacities to problem-solve, reason and plan. The human brain is inherently designed to build these core mechanisms, and according to Vygotskian theory, this development can be furthered within supportive environments. Self-regulation is the primary characteristic of these higher mental functions, supporting the qualities of creativity, flexibility and self-control, all of which begin to develop during early childhood, qualities which are crucial for success not just in school, but in life<sup>26</sup>. *Metacognition* describes the process of monitoring and controlling cognitive tasks.<sup>27</sup> A considerable body of evidence finds that a child's powers of metacognition begin to emerge early and continue to develop well into primary school not only in the cognitive domain, but also across the emotional, social and motivational domains, as reviewed in detail by Bronson<sup>28</sup>. Underpinning the employment of cognitive skill and the application of metacognition however, is the child's motivation, confidence and self-regulation. The child's beliefs about the value of the task, their emotional response to it (feelings of difficulty), level of interest and personal relevance, as well as the reasons they attribute to previous success and failure on similar tasks will all affect 'goal-orientation',<sup>29</sup> and thus their metacognitive performance. Other important work relates to 'self-efficacy',<sup>30</sup> to interest<sup>31</sup> and to 'self-determination'<sup>32</sup> which suggests that the satisfaction of children's needs for feelings of competence (self-efficacy), autonomy (self-agency), and 'relatedness' (warm and loving relationships) crucially impact on their ability to take command of their own motivations and regulation.

### **Models of Pedagogy for Early Childhood**

In its attempts to 'raise standards' the government has been encouraging the introduction of formal curricula at ever-earlier points in school. It has imposed a systematic programme for phonics teaching, for example and it continues to emphasise delivery of the National Literacy and Numeracy Strategies in Reception classes. But the emerging developmental evidence referred to above, reveals that this 'earlier is better' approach in relation to

children in the early years is misguided and will not make a difference in the long term. In contrast to the focus on early, didactic instruction, current research into early emotional and cognitive development suggests that long-term well-being and success at school are most powerfully supported by children's developing executive functioning and self-regulation abilities, and by the satisfaction of their needs for feelings of autonomy, competence and 'relatedness'. Deeper understandings of children's cognitive, metacognitive and motivational development, combined with the empirical evidence from research into the characteristics of high quality pre-school provision, enables the distillation of several key 'ingredients' required for an effective pedagogical model of learning and teaching in the early years.

A recent study<sup>33</sup> that compared the abilities of children from schools in which children do not start learning to read until they are seven, with children who start at the age of five found that by the age of 11 there was no difference in reading ability level. This parallels the results of the High/Scope Perry Pre-School project<sup>34</sup>, in which outcomes of children who participated in different types of early years provision were compared. Researchers found that although direct instruction methods of teaching seemed to bring some children initial advantages in terms of their early reading and numeracy, the High/Scope children who had been in 'social constructivist' learning environments showed significantly more positive results over the long term, whereas by the age of 15, the direct instruction group participants were showing signs of having become 'disaffected' with learning, presenting more psychological and social problems than other groups and reading only half as many books.

Neuroscience's revelation that learning depends on neural networks distributed across visual, auditory and kinaesthetic brain regions, means that opportunities for multi-sensory, active learning, for repeated practice and for progressively increasing the challenge offer the best means for development and the acquisition of expertise.<sup>11</sup> Play is a central vehicle for such learning, allowing children to imitate adult behaviours, practise motor skills, process emotional events, and develop understandings about their world.<sup>35</sup> Both free play and guided play are linked to social and academic development. Outdoor free play, for example, has been shown to heighten attentiveness to academic work<sup>36</sup> amongst primary aged children, especially boys, who did better in reading and mathematics than did peers who do not have outdoor play opportunities. Another study used guided play throughout a school day to help pre-school children learn how to curtail impulsive behaviours and responses and several executive function skills (attention, problem solving, and inhibition) nurtured in the guided play conditions were related to improvements in mathematics and reading.<sup>37</sup> Recent research has increasingly endorsed Vygotsky's social constructivist approach, in which the child's learning develops through the process of moving from other-regulation (supported by an adult or peer) to self-regulation (performing a task on one's own). A highly successful approach to 'teaching' self-regulation, Tools of the Mind<sup>38</sup> focuses on the development of self-regulation at the same time as teaching literacy and mathematics skills in a way that is socially mediated by peers and teachers and with a focus on play and has been

found to improve classroom quality and children's executive function. A number of studies have focussed on the social and emotional aspects of educational environments which might support the development of self-regulation<sup>39</sup> including investigating the processes by which adults support children's learning. Elements which make some adults particularly effective have been identified, such as through encouraging, instructing, asking questions, simplifying the task, reminding children of the goal, making suggestions, modelling to emphasise the key points and giving feedback. Other key characteristics include a positive and supportive classroom climate; a strong focus upon understanding; the encouragement of autonomy and shared responsibility for learning.

## Conclusion

The model of 'readiness for school' is attractive to governments as it seemingly delivers children into primary school ready to conform to classroom procedures and even able to perform basic reading and writing skills. However, from a pedagogical perspective this approach fuels an increasingly dominant notion of education as 'transmission and reproduction', and of early childhood as preparation for school rather than for 'life.' In this paper, we have reviewed the now extensive evidence that the curriculum-centred approach evident in many Key Stage 1 classrooms, and the idea that rushing young children into formal learning of literacy, mathematics etc as young as possible is misguided. This leads to a situation where children's basic emotional and cognitive needs for autonomy, competence and relatedness, and the opportunity to develop their metacognitive and self-regulation skills, are not being met. The problem is not that children are not ready for school, but that our schools are not ready for children.

## References

- Shonkoff, J.P. & Phillips D.A. (Eds.) (2000) *From Neurons to Neighbourhoods: The science of Early Childhood Development*. Washington DC.: National Academy Press
- Field, F. (2010) *The Foundation Years: Preventing Poor Children Becoming Poor Adults*. The report of the Independent Review on Poverty and Life Chances. London: HM Government
- Allen, G. (2011) *Early Intervention: The Next Steps*. London: HM Government
- Allen, G. (2011) *Early Intervention: Smart Investment, Massive Savings*. The Second Independent Report to Her Majesty's Government. London: HM Government.
- Tickell, C. (2011) *The Early Years: Foundations for life, health and Learning*. London: Department for Education
- Kirkham, N.Z., Slemmer, J.A. & Johnson, S.P. (2002) Visual statistical learning in infancy: Evidence for a domain general learning mechanism. *Cognition*, 83, p.35-42.
- Rizzolatti, G. & Craighero, L. (2004) The mirror neuron system. *Annual Review of Neuroscience*, 27, p.169-192.
- Gergely, G. (2002) The development of understanding self and agency. in U. Goswami (Ed.) *Blackwell Handbook of Childhood Cognitive Development*, p. 26-46. Oxford: Blackwell
- Chen, Z. & Lei, M. (2004) Schema Induction in Problem Solving: A Multidimensional Analysis. *Journal of Experimental Psychology: Learning, Memory, and Cognition*, 30, p. 583-600
- Baillargeon, R. (2004) Infants' reasoning about hidden objects: evidence for event-general and event-specific expectations. *Developmental Science*, 7, p.391-424.
- Goswami, U. & Bryant, P. (2007) *Children's Cognitive Development and Learning* (Primary Review Research Survey 2/1a), Cambridge: University of Cambridge Faculty of Education
- Donaldson, M. (1978) *Children's Minds*. London: Fontana
- Vygotsky, L. (1978) *Mind in Society*. Cambridge, MA: Harvard University Press
- Dahlberg, G. & Moss, P. (2005) *Ethics and Politics in Early Childhood Education*. London & New York: Routledge Falmer
- OECD (2006) *Starting Strong II: Early Childhood Education and Care*. Paris: Organisation for Economic Co-operation & Development
- Martin-Korpi, B. (2005) The Foundation for Lifelong Learning. In *Children in Europe* 9 p.67. Edinburgh: Children in Europe
- DWP (2010) *Households Below Average Income 1994/95-2009/10* London : Department for Work and Pensions
- Dearing, E., Berry, D. & Zaslow, M. (2006) Poverty during early childhood. In K. McCartney & D. Phillips (Eds.) *Blackwell Handbook of Early Childhood Development*. Oxford: Blackwell.
- Meyers, M., Rosenbaum, D., Ruhm, C., & Waldfogel, J.(2004) Inequality in Early Childhood Education and Care: What Do We Know? In K. Neckerman (Ed) *Social Inequality*. New York: Russell Sage Foundation
- Barnes, J., Ball, M., Meadows, B., Howden, B., Jackson, A., Henderson, J. & Niven, L. (2010) *The Family-Nurse Partnership Programme in England*. London: Institute for the Study of Children, Families and Social Issues. Crown copyright
- Zisser, A. & Eyberg, S.M. (2010) PCIT; Treating oppositional behavior in children using parent-child interaction therapy. In A.E. Kazdin & J.R. Weisz (Eds.) *Evidence-based psychotherapies for children and adolescents (2nd ed.)*, p. 179-193). New York: Guilford.
- McGuire-Schwartz, M. (2007) Community Mothers: Relationships Between Family and Social Support and Mother-Child Bonds. Multicultural Perspectives in Ireland and the United States. *Journal of Poverty and Children*, 13,( 2), p 133-156.
- Lynch, R. (2004) *Exceptional Returns. Economic, Fiscal, and Social Benefits of Investment in early Childhood Development*. Washington DC: Economic Policy Institute
- Brooks-Gunn, J. (2003) Do you believe in magic? What we can expect from early childhood intervention programs. *Social Policy Report*, 17 (1), p. 3-7.
- Sylva, K., Melhuish, E. C., Sammons, P., Siraj-Blatchford, I. & Taggart, B. (2004) *The Effective Provision of Pre-School Education (EPPE) Project: Technical Paper 12 - The Final Report: Effective Pre-School Education*. London: DfES / Institute of Education, University of London.
- Diamond, A. & Lee, K. (2011) Interventions Shown to Aid Executive Function Development in Children 4 to 12 Years Old. *Science* , 333, p.959-964
- Nelson, T.O & Narens, L. (1990) Metamemory: a theoretical framework and new findings. In G. Bower (Ed.) *The Psychology Of Learning And Motivation: Advances In Research And Theory*. New York: Academic Press.
- Bronson, M. (2000) *Self-regulation in early childhood*. New York: The Guilford Press.
- Pintrich, P.R. (2000) The role of goal orientation in self-regulated learning. In M. Boekaerts, P. R. Pintrich, and M. Zeidner, (Eds.) *Handbook of Self-Regulation*. San Diego, CA: Academic Press.
- Bandura, A. (2001) Social Cognitive Theory: An Agentic Perspective. *Annual Review of Psychology* 52, p. 1-26
- Dweck, C.S. (2000) *Self-Theories: their role in motivation, personality and development*. Philadelphia: Psychology Press
- Ryan, R. M., & Deci, E. L. (2000) Self-determination theory and the facilitation of intrinsic motivation, social development and well-being. *American Psychologist*, 55, p.68-78.
- Suggate, S. (2007) Research into early reading instruction and luke effects in the development of reading. *Journal for Waldorf/R. Steiner Education*, 11 (2), p.17
- Schweinhart, L. J., Montie, J., Xiang, Z., Barnett, W. S., Belfield, C. R., & Nores, M. (2005) Lifetime effects: The HighScope Perry Preschool study through age 40. *Monographs of the HighScope Educational Research Foundation*, 14. Ypsilanti, MI: HighScope Press
- Hirsh-Pasek, K. & Golinkoff, R.M. (2008) Why Play = Learning. In R.E.Tremblay, R.G. Barr, R.DeV. Peters & M. Boivin (Eds.) *Encyclopedia on Early Childhood Development*. Montreal: Centre of Excellence for Early Childhood Development Press
- Pellegrini, A.D. (2005) *Recess: Its role in development in education*. Mahwah, NJ: Lawrence Erlbaum Associates
- Diamond, A., Barnett, W.S., Thomas, J., Munro, S. (2007) Preschool program improves cognitive control. *Science*,3, (18), p.1387-1388.
- Bodrova, E., & Leong, D. J. (2007) *Tools of the mind: The Vygotskian approach to early childhood education (2nd Ed)*. Upper Saddle River, NJ: Prentice-Hall.
- Meyer, D. & Turner, J.C. (2002) Using instructional discourse analysis to study scaffolding of student self-regulation. *Educational Psychologist*, 37, p.17-25.