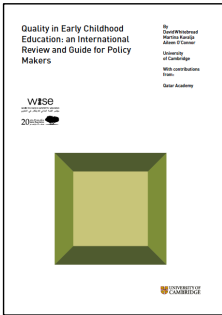




Recent & forthcoming publications

Whitebread, D., Basilio, M., O'Sullivan, L., & Zachariou, A. (in press). The importance of play, oral language and self-regulation in children's development and learning; implications for quality in early childhood education. *Early Child Development and Care, Special Issue: Quality in Early Childhood Education*.

Whitebread, D. (in press). Quality in Early Childhood Education: the contribution of Developmental Psychology. In M. Fleer and B. van Oers (Eds.), *International Handbook on Early Childhood Education and Development* (Volume II: Western-Europe and UK section - section editors D. Whitebread and B. van Oers). Dordrecht: Springer.



Structure of the Talk

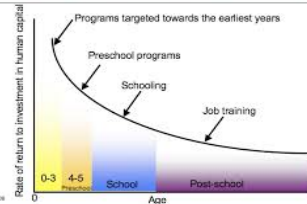
1. Why high quality education is important
2. Crucial aspects of children's early development
3. Pedagogical processes that support learning 21st Century skills
4. Key elements in 21st Century ECE

1. Why high quality education is important

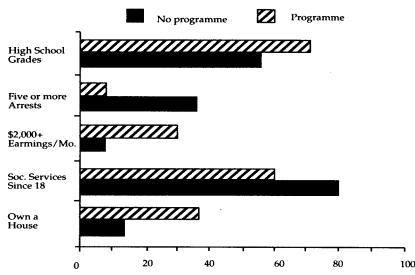


The Heckman Curve

Figure 9: Rates of Return to Human Capital Investment at Different Ages: Return to an Extra Dollar at Various Ages



The High/Scope study: Weikart et al (1993): follow-up at 27 years



All findings are significant at p<.05 based on chi-square statistics.
From Schweinhart and Weikart (1993).

2. Crucial aspects of children's early development

- Self-regulation
- Expressive language development
- Playfulness

Self-regulation

all the problems

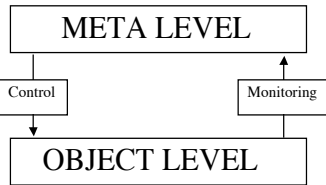


It's happy outcome



- Developing awareness of one's own mental processes and strategies to use them more effectively for one's own purposes
- "The process whereby students activate and sustain cognitions, behaviours, and affects which are systematically oriented toward attainment of their goals" (Schunk & Zimmerman, 1994, p. 309).
- NOT necessarily the same as being well-behaved, or compliance with teacher's goals

Nelson & Narens (1994): cognition & metacognition



Why all the fuss? Metacognition and Learning

- Most powerful single predictor of learning, independent of IQ (Wang, Haertel & Walberg, 1990; Veenman & Spaans, 2005)
- Plays a crucial role in the development of:
 - thinking skills and transfer of learning (McGuinness, 1999; Larkin, 2002)
 - reasoning and problem-solving (Whitebread 1996, 1999)
 - mathematics (de Corte et al, 2000)
 - reading and text comprehension (Maki & McGuire, 2002)
 - memory (Reder, 1996)
 - motor development (Bouffard & Wall, 1990; Sangster & Whitebread, in press)
 - visual search strategies (Whitebread & Neilson, 2000).
- A key problem for many children with learning difficulties (Sugden, 1989)
- Is highly teachable (Dignath et al, 2008)

Self-Regulation and Early Childhood Education

- Blair & Razza (2007): level of inhibitory control in 3-5 year olds from low-income families predicted early maths & reading abilities a year later
- Rimm-Kaufmann et al (2009) : level of executive function/ self-regulation at entry to kindergarten predicted 'adaptive classroom behaviours':
 - » behavioural self-control; persistence & resisting distractions
 - » cognitive control: engagment in tasks, working towards a goal (which in turn predicted learning outcomes by end of year)
- Saarni (1999), Denham & Burton (2003): emotional regulation in pre-school predicts peer status, friendship, academic competence, self-image and emotional well-being

In the long-term

- Peter Ornstein et al (2010)
 - 'mnemonic' teaching style in Grade 1 and achievement on a Study Skills task in Grade 4
- McClelland et al (2013)
 - self-regulation (attention span or persistence) in 4 year olds predicted maths and reading achievement at age 21
- John Hattie (2009) & Steve Higgins et al (2011):
 - Effective educational interventions

CHILD 3-5

Checklist of Independent Learning Development 3-5

Five statements under each of the four areas of self-regulation identified by Bronson (2000)

<p>Emotional</p> <ul style="list-style-type: none"> • Can speak about own and others behaviour & consequences • Tackles new tasks confidently • Can control attention and resist distraction • Monitors progress and seeks help appropriately • Persists in the face of difficulties <p>ProSocial</p> <ul style="list-style-type: none"> • Negotiates when and how to carry out tasks • Can resolve social problems with peers • Is aware of feelings & others and helps and comforts • Engages in independent cooperative activities with peers • Shares and takes turns independently 	<p>Cognitive</p> <ul style="list-style-type: none"> • Is aware of own capabilities • Can speak about how they have done something or what they have learnt • Can speak about planned activities • Can make reasoned choices and decisions • Asks questions and suggests answers • Uses a strategy previously modeled • Uses language previously heard for own purposes <p>Motivational</p> <ul style="list-style-type: none"> • Initiates activities • Finds own resources without adult help • Develops own ways of carrying out tasks • Plans own tasks, targets & goals • Enjoys solving problems
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Expressive language development

Hoff (2013)

- significant individual differences by age 3
- impact on literacy development and broader academic trajectories
- differences increase with development
- relate to vocabulary size, grammar, length of spontaneous utterance, narrative skills, phonological awareness and speed of language processing.

Walker, Greenwood, Hart & Carta (1994)

- relation between SES and academic achievement is moderated by oral language skills
- vocabulary size at 36 months predicts reading and spelling skills from kindergarten through 3rd grade.

Expressive oral language and dialogic teaching

Littleton, Mercer, Dawes, Wegerif, Rowe & Sams (2005)

- dialogic pedagogy supported 5-6 year olds to produce and effectively use high level 'exploratory talk'
-
- progress in their ability to argue their case and provide explanations for their views
- associated with significant gains in both the general quality of their oral language and their non-verbal reasoning skills.

Language and self-regulation

- **(Valloton & Ayoub, 2011)**
American study of 120 toddlers in New England

- At 14, 24 & 36 months, found strong relationship between:
 - Vocabulary size
 - Observed self-regulatory behaviour (ability to maintain attention on tasks; ability to adapt to changes in tasks and procedures)



The importance of play in early development



The importance of play

Dr David Whitebread
University of Cambridge

With Marisol Basilio, Martina Kuvajja and Mohini Verma

A report on the value of children's play with a series of policy recommendations



Play & Learning: the evidence

Evolutionary psychology: Bruner (1972) Nature & Uses of Immaturity
- phylogenetic progression of play: physical (mammals) / object (primates) / symbolic (humans)

Anthropology: Peter Gray (2009) Children's unconstrained play in extant hunter-gatherer societies

Neuroscience: Pellis & Pellis (2009) Neuroscientific studies of play in mice and other mammals: play, brain size and brain growth

Developmental psychology: playfulness:

- associated with early cognitive ability (Tamis-LeMonda & Bornstein, 1989) & emotional well-being (Bornstein, 2006)
- supports language development (Christie & Roskos, 2006)
- predicts self-regulation & academic achievement (Marcon, 2002; Barker et al, 2014)



Play: Five ways to learn



Physical play

Symbolic play

Play with objects

Games with rules

Pretence

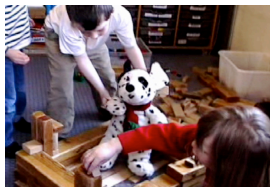
Role of play in early metacognition

- Self-regulation : Manuilenko (1948)
 - study of 3- to 7-year-old children 'standing sentry'
 - children standing sentry in a room containing playmates managed to stand motionless for significantly longer than when they were on their own.
- Mental representation: Berk, Mann & Ogan (2006)
 - observational studies of incidence of 'private speech' among 2- to 6-year-olds
 - high levels of private speech during make-believe or pretend play
- Barker et al (2014)
 - 'Less-structured time in children's daily lives predicts self-directed executive functioning'

3. Pedagogical processes that support learning 21st Century skills

- Emotional warmth & contingency of teacher-child interactions:
 - autonomy, competence, relatedness
(Self-Determination Theory Ryan & Deci, 2007)
- Playful & collaborative approaches to learning, which promote language development & self-regulation:
 - Cognitive challenge
 - Articulation about learning ('metacognitive talk')
(Whitebread, 2012: Developmental Psychology & Early Childhood Education, Sage)

Social interactions between children, adults and peers



Tomasello & Todd (1983); Wells (1985): size of vocabulary related to amount of time spent with mothers in joint attention episodes



- Several pedagogical techniques developed:
- 'co-operative groupwork' (Forman and Cazden, 1985)
 - 'self-explanations' (Siegler, 2002)
 - 'reciprocal teaching' (Palincsar & Brown, 1984)

Effective teaching interventions

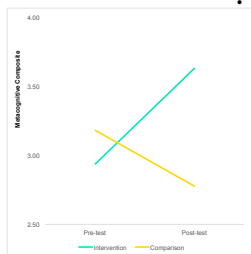
Meta-analyses (Hattie, 2009, 2012; Higgins, Kokotsaki & Coe, 2011) indicate most effective interventions supporting children's development as learners:

- make the processes through which they learn explicit
- engage them in activities which oblige them to think and talk about their learning
- i.e. support children's metacognitive abilities and do so by making the processes of learning 'visible'.

Children Articulating Thinking (ChAT) project

- Hypothesis that improving 5-6 year old children's abilities to articulate their thinking and engage in 'exploratory talk' with peers would support their development of metacognitive & self-regulatory abilities
- Intervention consisted of
 - problem-solving activities
 - activities related to the development and evaluation of 'Rules for Talk' (Mercer & Littleton, 2007).
 - Open-ended activities designed to provoke exploratory talk

Composite metacognition scores for Intervention & Control classes



• The children in the intervention group improved their composite (mon + con + lmc) metacognition scores significantly more than the children in the control classes

Effect size large ($g=.80, SE=.26$) for the Metacognitive composite, moderate ($g=.62, SE=.26$) for Monitoring, and large for Control ($g=.86, SE=.26$) behaviors.

4. Key elements in 21st Century ECE

Elements of quality in ECE either (i) structural or (ii) process quality (Tietze, Cryer, Bairrão, Palacios, and Wetzel, 1996).

Structural quality

- organizational and administrative aspects of ECE provision
- includes physical environment of settings, staff qualifications and training, leadership, adult/child ratios, duration and dosage of children’s experience and parental and community involvement

Process quality

- direct experience of the child in social, emotional, and physical interaction with materials, peers, and teachers within the ECE setting

level of ECE staff qualifications & CPD

- most consistent indicator of process quality (NICHD Early Child Care Research Network, 2002; Slot, Lerkkanen, & Leseman, 2015)
- Pianta et al. (2005) teachers’ education, training, and experience with 4 year olds significantly predicted classroom quality
- ECE practitioners with specific training in ECE and children’s development
 - engage in more interactions with children
 - rated as more positive and less authoritarian in their instructional style (Arnett, 1989).
- children in the classes of such teachers have greater social, language, and cognitive abilities as opposed to children of teachers without specific training (NICHD Early Child Care Research Network, 2000).

Enhancing teacher quality: the importance of action research

- **Cordingley (2015)**
 - meta-analyses of effective teacher professional development
 - central significance of research, and of programs that support teachers’ abilities to critically engage with research evidence and relate it to their own practice.
- **Wood & Bennett (2000):** study documenting the development of effective play-based practices with Reception class teachers in the UK.
- **Cheng (2008, 2010):** studies with Hong Kong kindergarten teachers
 - crucial development of ‘meta-learning’, in relation to effective play practice
 - video-stimulated reflective analysis of their practice
- **Perels, Mergel-Kullmann, Wende, Schmitz, & Buchbinder (2010)**
 - five 2 hour sessions of self-regulation training for German kindergarten teachers,
 - significant improvements in levels of self-regulation for the children in their classes

**Conclusions for discussion:
ECE in Ireland in the 21st Century**

- Focus on process aspects of quality
- Work to enhance status and qualifications /CPD of ECE professionals, providing a deep understanding of early childhood development
- Develop ECE professionals as researchers as embedded part of initial training and CPD
- Extend ECE approach, including play-based learning, into later years of schooling
- Delay introduction of formal instruction of literacy & written mathematics, at least until age 7
- Develop focus of ECE curriculum on self-regulation, expressive language and playfulness



PLAY IN EDUCATION DEVELOPMENT AND LEARNING

More information about the research centre
can be found at:

<http://www.educ.cam.ac.uk/centres/pedal/>
Twitter: @PEDALCam
Email: pedal@educ.cam.ac.uk
