FWE Early Childhood Education Roundtable

Shining a Light on Early Years Learning: For Individual and Societal Growth and Prosperity 18th Oct 2019 Beijing Session 2: Keynote (1530-1600)

The Honeycomb of Early Childhood Development (ECD): Meeting Developmental Needs of Children and Supporting Sustainable Development Goals

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Warmest Greetings from NIE, NTU Singapore!





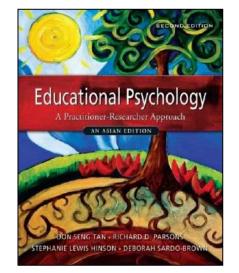


Centre for Research in Child Development (CRCD) is Major Research Centre of NIE which is an institute of Nanyang Technological University (A comprehensive research university ranked 11th in the World by QS)





Lead Editor Oon-Seng Tan





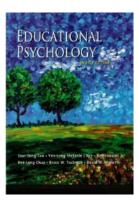
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Springer Nature: ERPP

Editor-in-Chief Oon-Seng Tan Educational Psychology Textbook for Teacher by Tan et.al. used in Singapore, China and parts of Asia and Internationally



Keynote at Tsinghua University on Future Learning NSF Distinguished Lecture, Washington DC Chen Yidan Global Fellow Lecture Harvard University



Early Childhood Development is a key investment for the <u>long haul</u> and the quality of ECD impacts on

- Nation Building
- People's Capacity for Adaption
- Value Creation
- Values Preservation
- Capabilities for Innovation
- Adaptability for Work Life, Heath and Well Being

UN Sustainable Goal



By 2030, ensure that all girls and boys have access to quality early childhood development, care and preprimary education so that they are ready for primary education.

Meeting Development Needs of Children and Supporting Sustainable Economic Development Goals call for an integrated 6E's Approach

- Ecology
- Education
- Empowerment of Educators
- Essence
- Equity
- Economics

Economics of ECD

Economics of ECD

- Every \$1 spent on ECD = Highest possible return of \$13 (Henriette Fore, UNICEF; Annette Dixon, Word Bank; T.A. Ghebreyesus, WHO; M. Bachelet, PMNCH)
- Access to Care for Children = More Successful Outcomes (Janet Currie of Princeton)
- Early Childhood Intervention = Cost Saving Outcomes in Life & Outcomes beyond Schooling (James Heckman, Nobel Laurete)

ECD in Non-cognitive areas (self-regulation) predict Outcomes pertaining to Relationships, Worklife, Health and Criminality

(Richie Poulton, Dunedin Study)



OECD, Starting Strong (2017)

- Rate-of- Return is highest when educational interventions are delivered early in life
- The returns are especially high for those at greatest risk
- Canon et.al. (2018) evaluated 115 studies. Investing Early affirms that BCA (Benefit-to-Cost Analysis) = 2-4 USD
- Optimal interventions gives better BCA.

Ancient Wisdom:

Train up a child in the way he should go and when he is old he will not depart from it James Heckman: Investment in early childhood learning is more cost effective than investment in an older age. Early learning begets later learning

O.S, Tan: Human resource is most important asset of a nation and starts from age zero. Human doing emerges from human being and becoming from the time conception

ECD Investment

Parents + Environment + EC Centres

Economics (WHO 2018)

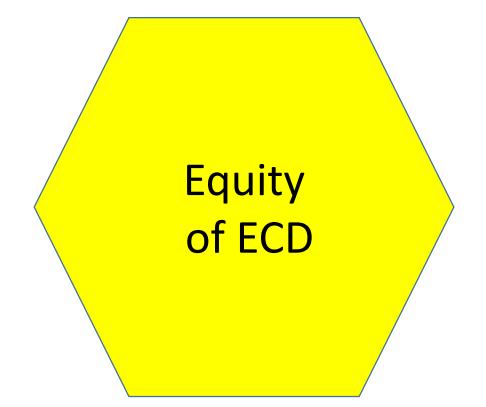
Investment in EC has tremendous benefits:

- Boost shared prosperity
- Promote inclusive economic growth
- Expand equitable opportunity
- End extreme poverty
- Create human capital for diversification & growth
- Preventive & promotive interventions achieve more and cost less than attempts to compensate for early deficits with remedial interventions at later ages
- Benefits last a lifetime into the next generation (intergenerational benefits) - adult health, well-being, education, earnings, personal relationships & social life)



ECD Investment Needs Enlightened Perspective on Interventions

- Foundations of future learning and adaptability
- Cognition, Emotions, Socio-emotions, IQ, EQ, MQ are impacted
- Neuroscience, Brain studies, Education, Psychology support ECD
- Piaget, Vygotsky to Feuerstein: TIME & QUALITY interactions



Equity of ECD

- Inequality of early childhood development provision and care is serious challenge (OECD, 2001)
- Danger of poor EC education and care outcomes with the corollary widening gap
- Accessibility and Affordability are critical for dealing with unequal participation
- Social-economic characteristics, cultural characteristics, political contexts, geographical locations and many factors contribute in inequity.

Lack of Parenting + Lack of Care -> Inequality

- Inequalities and deprivation from human flourishing start from the Early Years
- Poverty experiences (0-6 years) have lasting effects on brain development, health, cognitive and non-cognitive skills
- By the time of first years of elementary school
 it is too late to close gaps
- In terms investment of time, interventions it is cheaper to close the gaps of inequality earlier

Lack of Equity: Not just a matter of \$ but understanding what is Family Disadvantage

- Equity Formula must look beyond indicators such as Family income, Parental education, and Housing
- Child Development = Appropriate Parental guidance, Nourishment, Positive Encouragement
- Truer Measures need to look at Quality Parenting
- Quality Parenting = Stimulation + Attachment + Sensitive Care +, Encouragement + Support

Equity Implications

- Policies on <u>Access</u> (commitment towards universal access)
- Policies on <u>Affordability</u> (Funding models and targets to reach out to all)
- Attention to <u>Inclusiveness</u> special attention to disadvantaged, vulnerable and diverse groups
- Attention to <u>Quality Assurance</u> and standards in EC provisions and care
- Attention to EC <u>Staff professionalism</u>
- Ensuring <u>System Coherence</u> and harmonisation

Essence of ECD

Essence: Brain Development

- The Child's Brain develops most rapidly from 0-3 years
- Neurobiology: Every second thousands of neurons are forming connections
- Gene-Environment interaction lays the "terrain and railway track" (ostan analogy) for learning and becoming (growth).

Essence

Intra and Inter personal Developments

EC Development = f (gene + environment + culture + contexts)

Inter-generation

Nurturing Care

Brain Development

- By 6.5 years 95% of the Brain reaches peak volume (Giedd et.al., 2009 about "Anatomical brain")
- Developmental trajectories vary across brain regions some reaching full functions at earlier ages (Dean et.al., 2015 on "White Matter")
- Cerebellum: Motor control (first few months rapid growth)
- Hippocampus and amygdala: Memory and emotion (sustaintial growth within the early years)
- Prefrontal cortex: planning and regulation (growth continues into adolescence)

Example: Brain Development

- Brain growth influenced by Experience
- Critical periods and Sensitive periods
- Sustained attention and dosage and thresholds are important
- Parallel eg Exposure to Light -> Healthy visual systems development
- Analogy: DNA is a recipe on a filter paper. A filter paper – experience is the ink. The ink can make the filter paper harder to read and hence affect the later outcomes.

Brain

- Working Memory reaches stability by age 5
- Working Memory affects cognitive outcomes
- Working Memory = f(mother-child attachment)
- Emotion Regulation reaches moderate stability 3-6 years
- Emotion Regulation affects sociability and impulsiveness
- Self-Regulation predicts school success and later adult life (health and criminality)
- Emotion Regulation =f(attachment + sensitive care)

Infant Brain and Nurturing care

- Physical Protection
- Sensitive Care: Perception and Sense of Security and Safety
- Nutrition
- Health
- Responsive Care Giving: Early Stimulation
- Early Learning: Learning Opportunities
- Nature

How is a child feeling?

- Human social genetics: changes in the expression of hundreds of genes can occur as a result of environment (social and physical).
- Feeling effects on a child's subjective perception beyond the objective

Social Environment

Gene Expression

Essence

- Early Childhood is a phase of life in his/her own right
- The Rights of the Child to be himself/herself
- Every Child deserves Warm, Friendliness, Cultural Sensitivity from others and adults

ABC of EC

- Active Play
- Belonging
- Communication

Education for ECD

Education for ECD

- Early Childhood: From conception to formal primary entry
- Early Childhood: Characterized by distinctive development milestones in domains of physiomotor, cognition, language and socio-emotional
- Based on Feuerstein's Mediated Learning Experience (MLE): INTERACTION is the key to ECD
- MLE: Intentionality-Response (echoed by Harvard CDC "Serve & Response), Meaning and Transcendence
- EC Development is a maturation process resulting from the child's interaction with the environment

Mediation Learning (Interaction)

Train up a child (Nurture, Cultivate, Interactively, Intentionally, Sensitively) in the way he should go (Respond to his/her interest and develop his/her taste and potential inclinations) and when he is old he will not depart from it (the foundations will equip him/her for life).

Education

- Children born ready to learn...wired from beginning to learn, experience and master the world (Jack Shonkoff, 2005)
- We need to understand that children are curious and inquisitive
- They need to be given the space to be active and to develop their feeling of competence
- Children are diverse and have multiple intelligences to be competent learners in their own rights
- Children are explorers and builders
- Adults who lack of knowledge on ECD can create unwarranted hindrances to children's desires to explore and, their intuition to constructing knowledge
- Given rich opportunities children are capable of generating strategies to overcome obstacles
- Pestalozzi "whole" child Head, Heart and Hands

Education

- The foundations and "piling works (for building)"
- Intra-emotional tendencies leading to selfregulation and future well-being
- The pre-dispositions for being and becoming emerges
- The capacity to learn and the pre-requisites of thinking
- Development profile trajectory for human potential

Education

- Intentional Programme (Holistic Curriculum)
- Developmentally Appropriate & Culturally Responsive Practices
- Care-giving Routines
- Communication & Language Development
- Cognitive Development, Early Numeracy & Problem Solving
- Aesthetic Experiences
- Play as Learning
- Indoor & Outdoor Experiences
- Safe & Healthy Environments

Education

- Aesthetics & Creative Expression
- Discovery of the World
- Language & Literacy
- Motor Skills Development
- Numeracy
- Social & Emotional Development

Good News: Psychological Interventions can reverse stress-induced genomewide transcriptional responses. Positive state of mind:

- Optimism
- Tranquility
- Affection
- Gratitude
- Admiration
- Mindfulness
- Social connectedness
- Compassion

Education: Non-cognitive skills

- Perseverance, Conscientiousness, Selfcontrol
- Trust, Attentiveness, Self-esteem, Self-efficacy,
- Resilience to adversity, Openness to experience, Empathy
- Humility, Tolerance of diverse opinions, Productive engagement in society

Education: Non-cognitive skills predictive of

- Educational attainment
- Labour market success
- Health
- Criminality

Education in ECD is Play

- ECD Curriculum: Value of play
- Research show that PLAY contributes to intellectual attainment, cognitive & metacognitive development, linguistic development, socio-emotional learning and wellbeing; self-regulatory abilities; development of independence and resourcefulness; self-agency. These attributes in turn are important for future adaptability (economic, social & environmental challenges)
- Opportunities & support for children's play under threat
- Play deprivation is an issue given increased urbanization

Education and Urbanisation

- Crowded city life environment tends to result in risk-averse society
- Parenting Problem: Overscheduling of "parent stereotypical desired learning outcomes" instead of "child's interests"
- Adults over-supervision
- Increasing stress in family life also affects children's emotions
- Lack of access to nature and the outdoors
- Competitive societies: Tensions in educational systems with emphasis on the "earlier is better"

Role of Adults in Play

- Parents and educators need to appreciate the role of play in children lives
- Play is unfortunately poorly activated
- Educators are inadequately prepared about play
- Presence of "counter-productive" activities, gadgets and toys

Five Fundamental Types of Human Play

- Physical
- Play with objects
- Symbolic
- Pretence or socio-dramatic
- Games rules

Each supports a range of cognitive & emotional development

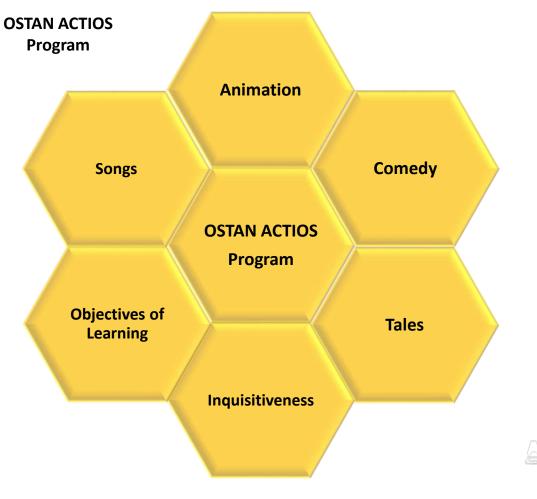
Healthy play diet: a good balance of play experience

Implications for Education Policy

- Promote awareness & change attitudes regarding children's play
- TIME for play
- SPACE for children's play
- Support arrangements enabling children to experience risk and develop resilience through play



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OSTAN ACTIOS

- OSTAN ACTIOS Framework
- Animation Children imagine representation
- Comedy Children love humor
- Tales Stories are powerful with children
- Inquisitiveness Incorporates curiosity, investigation, questioning
- Objectives Playfulness has learning objectives and a framework of progressive learning
- Nurturing element Care about others, nature, environment
- Songs Music is another powerful element with children
- Inspired by Lesser of Harvard who helped pioneered Sesame Street

Singapore EC Education Frameworks

- Singapore: "A Good Start for Every Child"
- Early Years Development Framework (EYDF): 2 months to 3 years
- Nurturing Early Learners Kindergarten (NEL) Curriculum Framework; NEL): 4 to 6 years
- NEL and EYDF provide the coordinated approach to the care, development and learning of children from infancy through to age 6.
- Broad Frameworks centered on the vision of the child as an active, curious, and competent learner. A holistic approach focused on purposeful play is emphasized.
- The frameworks allow for the adoption of a range of pedagogical approaches.

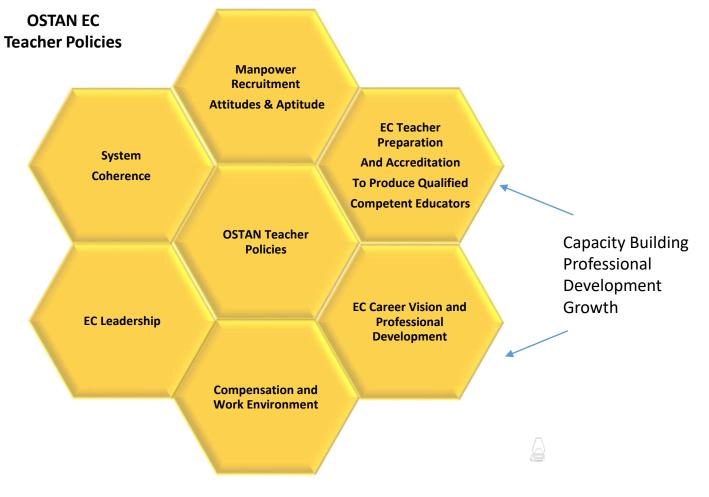
Singapore EC Education Frameworks

- Innovation in curriculum and pedagogy is encouraged through funding of grants and research projects
- Sharing of ideas and resources across the sector is critical and supported by top-down and ground-up initiatives.
- Challenge: Changing parent expectations for pedagogy emphasizing play rather than academic achievement
- Another challenge is the competence of teachers in designing and using play-based pedagogical practices

Empowering Educators & Educarers for ECD

Empowerment of Educators

- EC sector need qualified, competent and set professional standards from pre-service
- EC professionals should be properly compensated with good working environment
- We need develop professionalism and shared understanding of what caregiving and education means and looks like
- We need to strengthen capacity building through professional development, career growth and mentoring
- More research is needed to strengthen the science of EC practitioner, develop examples of excellence that are scalable.



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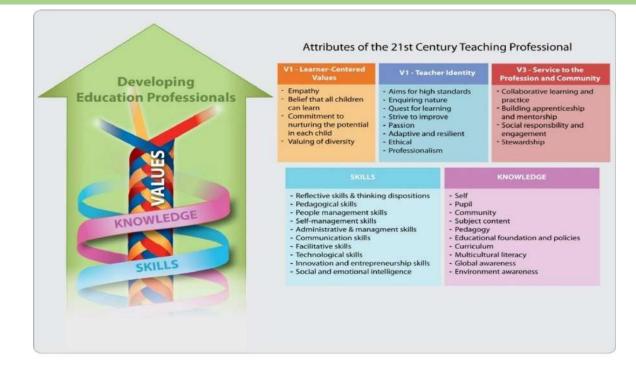
Singapore's Education: Bringing Out the Best in Every Child

- Committed to provide each child with a broad and deep foundation for lifelong learning
- Emphases
 - Broad-based and holistic education
 - Bilingual advantage
 - Good teachers and school leaders
 - ICT-infused curriculum
 - Partnership with parents

Teacher Policies in EC

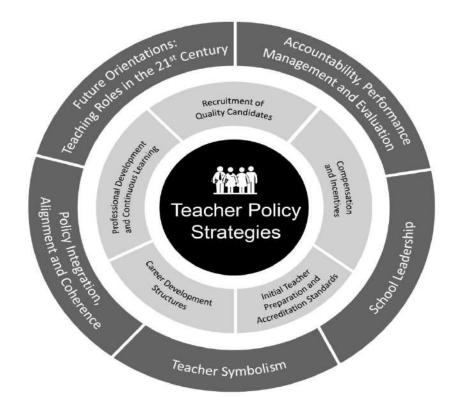
- Believing in Teachers
- Values-set
- Professionalism

TE²¹: A Values-Driven Underpinning Philosophy

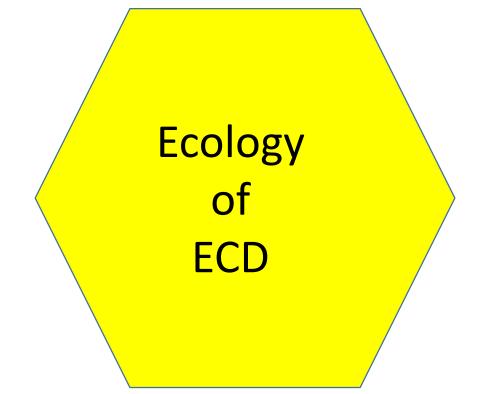


Source: NIE, 2010

Teacher Policy Strategies



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Ecology

Stakeholders Governments Policy makers in relevant ministries Civil society groups **Development partners** Philanthropic organizations Business community **Professional associations** Academic institutions Funding initiatives **Parliamentarians** Service providers Media

Ecology

- Strong Home-Centre Partnerships
- The Engaged Community (Source: EYDF)
- Physical, Interactional & Temporal Environments (Source: NELCF)
- Multiple sectors (health, nutrition, education, labour, finance, water & sanitation, social and child protection) (Source: NCECDF)

Ecology: Strong Home-Centre Partnerships

Importance of involving families as partners in care, development & education of children:

- parents key significant people in children's lives
- possess valuable insights into children's temperaments & dispositions and give continued support long after they leave centre
- most influential adults in children's lives

(Source: EYDF)

Ecology: Strong Home-Centre Partnerships

- II. Value of Positive Adult Relationships:
- provide continuity & consistency of care
- support transition between home & centre

III. Importance of Stable & Secure Environments:

healthy socio-emotional development & well-being of children

IV. Sense of shared responsibility & mutually supportive roles

• sharing of info provides continuity of responsive and individualized care

(Source: EYDF)

Ecology: The Engaged Community

Centres provide network of resources & support for family & centre:

- updated info & access to govt, non-govt or private sectors
- social services: financial, medical; marital; mental health, etc
- preventive & educational services: nutrition; parenting; psychological assessments, special needs issues; interventions, etc
- make referrals

(Source: EYDF)

Enabling Environments for Nurturing Care

- Caregivers' capabilities
- Empowered communities
- Supportive Services
- Enabling Policies

(Source:NCECDF)

Ecology

- Whole-of-Government Action
- strong political commitment & determination
- lead & co-ordinate activities
- 5 strategic actions: lead & invest; focus on families & communities; strengthen services; monitor progress; use data & innovate
- Whole-of-Society Approach

(Source:NCECDF)

OECD affirms effective strategies

- Powerful role of families and social environments
- Multiplicity of skills for functioning well in society
- Quality parenting
- Caring environments
- Effectiveness of mentoring and guidance

Scaling-up Nurturing Interventions: Strategies (Britto, et.al., 2008)

- Adoption of multisectorial intervention packages enabling platforms and coordinated national body
- Strengthen quality care through a trained workforce
- Broadening data and evidence systems
- Planning and costing for sustainable scaled program delivery
- Advocacy and communication strategies
- Differentiated strategies for different contexts

Ecological Approach for Coherence

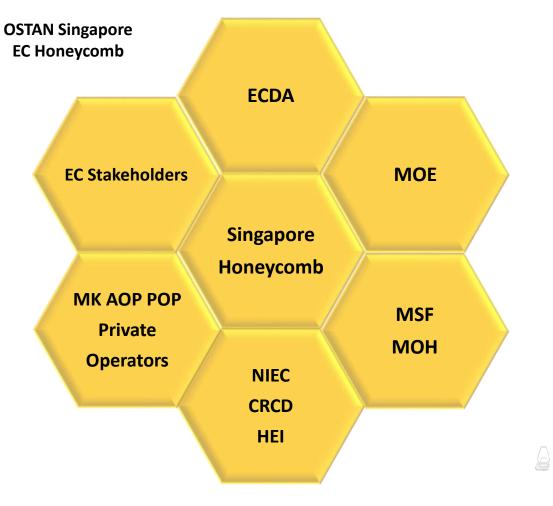
- Ecological Approach also implies that we need laws, mandates, and frameworks that are coherent and aligned to the holistic development of children.
- We need to link areas such as curriculum, health, teacher certification and accreditation, professional development of EC professionals, standards and quality of centers transitions, protection of young children, and support for families.

OSTAN Ecology Elements



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Singapore Case: Recent Quantum Leap Developments for ECD



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MOE Kindergartens

- By operating kindergartens, MOE gains direct experience, improves curriculum design and ultimately raises standards across the industry.
- MK is also a new preschool model. Each MK is located with a primary school. Each MK offers all three MT languages and provides a bilingual environment, just like a primary school.

NIEC

- Giving preschool teachers better training and career progression
- National Institute of Early Childhood Development (NIEC) has been established to upgrade training for preschool teachers and raise their standing.

Affordability

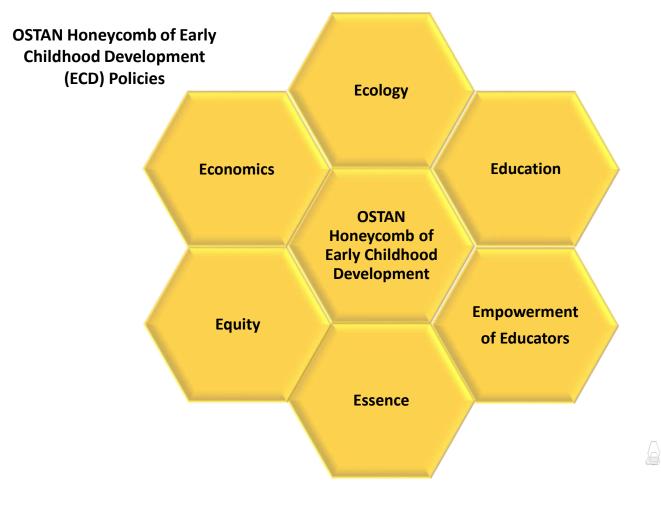
- Efforts to make preschool more affordable.
- The Government funds the Anchor Operators and Partner Operators, to keep fees down.
- All parents receive significant subsidies for childcare, with lower income parents receiving substantially more.
- Preschool subsidies enhanced. The income ceiling for means-tested subsidies will be raised from \$7500 to \$12000 per month. Quantum of preschool subsidies will also increase. [Will take place from Jan 2020 as shown on ECDA website.]

KidSTART

- KidSTART program (piloted 3 years ago): Give extra help to 1000 children from less privileged families.
- The KidSTART team advises and supports the parents on nutrition, child development and parent-child interaction.
- Pilot results seem positive and will need to follow up for a few more years to assess more exactly its benefits.
- KidSTART will be expanded to reach another 5000 children over the next 3 years.

Accessibility

- Doubled full-day preschool, to almost 180, 000 places.
- Enough places for every child aged 3 and above.
- Updating the preschools. The new HDB void deck centres are better designed and appointed; mega centres with comprehensive facilities (e.g. PCF Sparkletots centre at Punggol) have been built.



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