

## Developing Ecologically Sustainable Education for Singapore Preschool Children

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### **Abstract**

This paper begins by discussing the international context and developments that have taken place in the promotion of a sustainable world. It discusses the steps that a Southeast Asian country such as Singapore has taken towards creating a society that promotes sustainable practices in different aspects of life. It then examines the role of early childhood education and how this can play a vital role in promoting the sustainable agenda in an urbanised society.

**Key words:** *Sustainable Development, Early Childhood Education, Early Childhood Educator, Singapore*

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### **Introduction**

In a mission statement from the international agency UNESCO (United Nations Educational, Scientific and Cultural Organisation), the period 2005 to 2014 was declared as the ‘Decade of Education for Sustainable Development (DESD)’ (UNESCO, 2009). In an ensuing report, the *DESD Global Report Learning for a Sustainable World: Review of Contexts* (2009), UNESCO makes an explicit statement about the importance of creating a sustainable world. It advocates a world that is based on the efficient management of natural and human resources, and one in which social cohesion, equity, social justice and the well-being of human beings and the societies in which we live play a vital role. The statement in the report is an urgent call to all in society to ensure a quality of life for our young children and future generations.

As a result of UNESCO’s current agenda, early childhood educators from around the world have responded to this call for sustainable education. An international workshop on the role of early childhood education for a sustainable society was held in May 2007 at Goteborg University in Sweden (Davis, 2007; Engdahl, 2007). The forum brought together a collection of ideas and narratives of how young children can be facilitated to participate and contribute to a sustainable world. Each participant country shared perspectives that emerged from its particular experience, context and educational philosophies, often embedded in strong cultural traditions. Each country was clear and passionate in articulating its specific goals to develop ecological intelligence in their young children, with the aim that children will be active agents of change for the betterment of the future. Each state also had its distinct challenges to resolve in order to achieve the appropriate early childhood practices for sustainability. The surge of interest in sustainability issues is evident across the globe.

Within this international context, this paper looks at the steps that a Southeast Asian country such as Singapore has taken towards constructing a society that promotes sustainable practices in different aspects of life, and examines the extent to which these practices have influenced early childhood education. For the intent and purposes of this paper, ‘ecologically-friendly early childhood education’ is defined as the pedagogical practices that serve to enable young children to understand and develop an ecological and environmental consciousness; in other words, to be ecologically literate or intelligent about the need to safeguard the environment and world we live in. It is about helping children to renew connections and form relationships with the natural world, as well as educating children so that they can work towards and contribute to a future that supports sustainable living. UNESCO defines ‘sustainable development’ as the communal understanding of the need to protect our human population, ‘animal and plant species, ecosystems, natural resources’ and that which ‘integrates concerns such as the fight against poverty, gender equality, human rights, education for all, health, human security, and intercultural dialogue.’ (UNESCO,

2009). This involves fundamental changes to our principles, behaviours, socio-economic systems, and lifestyles with regards to the environment, humans beings and other life forms.

### **The Singapore Context**

In many respects, Singapore has made concerted attempts to ratify the United Nations Framework Convention on Climate Change (UNFCCC), by providing a platform for countries to collectively avert the threat of global warming. The Ministry of Environment and Water Resources (MEWR) for instance, is an active partner in environmental cooperation on a global and regional level. In a speech delivered on 18 November 2009 by Dr. Khor, Senior Parliamentary Secretary for the Environment and Water Resources, she urges leading international and regional experts from the public and private sector to share their views on current policies and legislation legislations 'relating to renewable energy, energy efficiency and sustainable development in the Asia Pacific region'. Dr. Khor reports that the country's growing efforts to contribute to sustainable development have led to cross agency collaboration in all sectors of Singapore's economy, through the establishment of the Energy Efficiency Programme Office in 2007. The office is co-led by the National Environment Agency (NEA) and the Energy Market Authority (EMA), with representations from various other government agencies such as the Economic Development Board (EDB), Land Transport Authority (LTA), Building and Construction Authority (BCA), the Housing and Development Board (HDB), Infocomm Authority of Singapore (IDA), and the Agency for Science, Technology, and Research (A\*STAR). The establishment of the Energy Efficient Programme Office is the result of a collaborative effort to improve environment sustainability, through the implementation of conservation measures and energy efficiency programmes for consumers and the country's citizens.

In a further drive towards creating a sustainable environment, the Ministry of the Environment and Water Resources has also initiated the development of environmentally friendly buildings and construction projects. The newly opened Marina Barrage, the island's largest and most urbanised catchment area, was designed and built on green principles. It has an iconic green roof that serves as an insulation layer to lower indoor temperature, thereby reducing the building's air-conditioning requirements. The area also houses the largest collection of solar panels – 405 in all, which converts solar energy into utility grade electricity to supplement the daytime power requirements of the Marina Barrage. The Sustainable Singapore Gallery, housed within the Marina Barrage aims to educate the public on important environmental and water issues through interactive multi-media displays, exhibits and games (Public Utilities Board, 2010).

### **Singapore: A Garden City and Green Playground**

Singapore is a largely urbanised, city-state, with over 4 million people spread across 640 square kilometres. The country is one of the most densely populated cities in the world, with approximately 6,500 people per square kilometre. In keeping with its popular image as a 'Garden City', the government has worked to conserve much of the country's natural greenery over the decades. During the 1960s, the vision of the Prime Minister then, Mr. Lee Kuan Yew, was to transform Singapore into a greener city. The purpose was two-fold; Firstly, it was to improve the people's health conditions by providing a more ecologically friendly environment, and secondly, to promote the country's commitment towards sustainable development among the wider international community (Han, Fernandez, & Tan, 1998).

As part of the government's plan to promote the country's image as a 'Garden City', a green network of infrastructure has been set up around Singapore. There are currently 56 regional parks and 242 neighbourhood parks with 25 'park connectors' or linear open spaces that connect between major nature sites and housing sites. The entire nature land forms a green network, spanning over 300 kilometres across the whole island, making it easy for people to move from park to park (National Parks, 2008-2009). The National Parks also organises an annual calendar of events to encourage Singaporeans to participate in the natural world around them, through public national events such as treasure hunts, workshops, guided nature

walks, nature talks, as well as international events such as the orchid shows and the annual Singapore Garden Festival. In addition, the Singapore Botanical Gardens created an additional outdoor space for children named 'The Jacob Ballas Children's Garden', which opened in October 2007. The children's garden has been designed to provide a unique discovery and learning experience for children. Through play and exploration, the children's garden aims to cultivate an appreciation for plants, nature and the environment among the nation's young (National Parks, 2007).

The National Environmental Agency (NEA) has also taken an active role in providing environmental education, through the introduction of environmental health programmes for preschools with the aim of promoting environmental awareness among young children. In 2004, the NEA, together with the People's Action Party Community Foundation (PCF) designed and created 'The Environmental Health Education Programme' for preschool children aged 5 to 6 years old, in order to support and encourage the integration of environmental and hygiene issues into the preschool teaching curriculum.

The NEA introduced a mascot, 'Captain Green', which accompanies a series of books and songs on topics ranging from recycling to the rain forest for children. As part of its annual calendar of events, an art and craft competition and an 'Environmental Dance' competition were organized alongside an exhibition of environmental projects and activities at the 'Clean and Green Schools Carnival in 2008. More recently, a special 'Preschool Environmental Education Kit (PEEK)' was written and produced by a group of 16 year old students in the local community. The project includes a series of illustrated stories and a teachers' guide on environmental awareness, with themes ranging from deforestation, animal conservation to the 3 'R's of environmental resource management: reduce, reuse and recycle. As a nation, it is evident that Singapore has taken active steps in creating environmental awareness amongst its citizens. However, a key question remains: how do these efforts resonate in early childhood education, and in particular the local early childhood community?

## **Early childhood education in Singapore: Challenges to ecologically-friendly education**

### **1. The early childhood curriculum**

As a country without natural resource and only its people as its greatest resource, education is one of Singapore's main focus. Traditionally, the nature of the curriculum in Singapore, across the levels from preschool to tertiary education, places a pervasive emphasis on performance and grades, which are commonly perceived as indispensable indicators of children's achievement at schooling. As a result, it is common for preschools to emphasise the development of literacy, linguistic and overall academic skills, most of which are reflected in a highly structured curriculum with regular table work involving work sheets and repetitive exercises (Ang, 2006a). As most child-care centres and kindergartens in Singapore are private enterprises and dependent on a market-led economy, these structured and academically driven curricula are highly popular with parents who perceive them to be essential in preparing their children for entry into the primary school system. Within such a curriculum, the opportunities for children to learn from enquiry, first-hand experiences and exploration are likely to be limited, and are often relegated in favour of a more competing 'academic curriculum'. A research study on the Singapore kindergarten curriculum by Ang (Ang, 2006b) suggests that there is a clear tension between parental expectations and preschool teachers' desire for the provision of a more balanced curriculum (Ang, 2006a). The first challenge for developing an ecologically-friendly programme in preschool education in Singapore then, is to convince stakeholders in the early childhood community that the very issue of sustainable education is a priority, and one which warrants due focus and attention.

### **2. An 'indoor preschool'**

As a geographically small nation state, land and space in Singapore are scarce and highly prized commodities. It is often difficult for preschools to acquire large playgrounds or outdoor space in their premises. At the same time, while there would likely be green spaces near the school, it would take much effort on the part of the teachers to ensure that children are taken into these areas on a regular basis. In the 'Framework for Preschool Curriculum' introduced in 2003 by the Ministry of Education, 'environmental awareness' is listed as one of the key principles underpinning the curriculum. In practice however, there is no explicit mention for learning to take place in natural settings apart from a provision of outdoor space for gross-motor skills activities (Ministry of Education, 2003).

According to a statement by the Ministry of Education, environmental awareness is defined as a 'focus of activities on children's emerging knowledge and understanding of their environment, including both the natural and man-made world... providing the early foundations for historical, geographical and scientific learning'. The aim of environmental awareness is to ensure that 'children will recognise, make observations and express their views about their immediate surroundings, gradually extending to the wider environments of Singapore and the world...' (Ministry of Education, 2003). However, within this statement, there is no explicit policy on the extent of contact and engagement with the natural world that preschools are required to provide for their young children. As merely a statement of guidelines, the issue of developing environmental awareness among young children is left largely to the individual practices of the preschools and the autonomy of early childhood professionals.

An influencing factor in the campaign to include a closer relationship between young children and their outdoor environment is also the country's weather conditions. With a consistent humidity of 28 to 30 degree celcius or more, the high temperature is a determining factor on the length of time children are able to spend outdoors. A previous study on Singapore children and the natural world found opposing views towards the pleasures and dangers of outdoor play from the perspectives of both the children and adults. One child commented on the 'heat of the sun and the fear of water', while a few mothers articulated their anxieties and fears of their children falling down and hurting themselves during outdoor play, as opposed to the physical and emotional benefits for children in exploring the open space (Kong, 1999). The findings of Kong's study suggest a somewhat ambivalence and even reticence on the part of preschool parents towards outdoor play. The study illustrated the shared concerns that the parents of preschool children have with their young engaging with the natural world.

Importantly, what Kong's study also suggests is that having an awareness about the environment is in itself insufficient in maintaining a sustainable agenda. Environmental education must also facilitate children in enjoying nature, encountering nature, and this necessarily entails the provision of sufficient time and space within the curriculum to explore the outdoor environment. Researchers call for children to be outdoors experiencing nature in ongoing, unregulated, and direct ways, and for time for them to connect with nature, so that children can learn to 'love it' before we can ask them to 'save it' (Stephen R Kellert, 2005; Sobel, 1999).

If preschools play a vital role in the promotion of an ecologically friendly education, what would this therefore entail? Apart from the physical resources, an important consideration is the pedagogical provisions that we as early childhood educators put in place in the setting. The challenge is to not only promote environmental awareness among young children, but to do so by creating opportunities for children to direct their own learning through their explorations of the natural world, making contact with the plant and animal life, and consequently leading to an understanding about the eco-systems that support this life. Yet, the Confucian ideology that underpins much of Singapore's preschool and school curriculum suggests that the discipline, education and govern of children are paramount to their overall development, and that older members of society such as teachers and parents have the

primary responsibility for maintaining these ideals, supports a teacher-centred approach to learning as opposed to a more child-centred one (Ang, 2006a). It is a challenge ahead for teachers to provide a curriculum which enables children to spend their preschool days freely observing, exploring, and developing a sense of wonder about the natural world. Despite recent government initiatives to provide a curriculum for a more developmental and child-centred approach to learning (Ministry of Education, 2003), such an approach remains a painstakingly slow shift away from the traditional teacher and academic-centred one.

### **Working towards ecologically friendly early childhood education in Singapore: A Case Study**

The Singapore government's attempt to promote environmental awareness is clear. Recently, a few early childhood programmes have heeded the call to promote sustainable education, making it a priority to develop ecological literacy in young children. As Sobel suggests, the main objective in the early childhood years should be empathy between the child and the natural world. If children can develop a sense of connectedness with the natural world, that sense of connectedness can become the emotional foundation for more abstract concepts of how everything is connected to everything else (Sobel, 1999).

Little Village, a Child Development centre for children 18 months to 6 years old, is an example of an early childhood programme that had made concerted attempts to promote sustainable education in their provision. Located close to the city centre, the preschool is surrounded by buildings that characterize much of the urban landscape of Singapore. The practitioners of Little Village aim to foster in the children an awareness of the importance of plants, animals and the surrounding ecosystems. Photographs taken of grasses, wildflowers, ferns, animal life, interesting leaves and plants found around the compound serve as springboards for discovery, interest and discussion. Fien and Tilbury (1996) argue that children develop most of their adult physio-neurological capacity in the early childhood years, and therefore learning and the development of appropriate attitudes and values towards the environment is an important process from the early age (Fien & Tilbury, 1996). At Little Village, practitioners and children are continually reminded to adopt the 7 'R's' of respect, reflect, reduce, re-use, repair, recycle, and (to be) responsible in their daily practice. For instance, food wastage at lunchtime is minimized, and the use of electricity and wastewater is channeled for watering plant life around. Recyclable containers and materials are turned into artistic innovations on a daily basis. Careful composting is also carried out with fruit and vegetable waste by the older children.

The outdoor provision of the setting includes the area of 4 bungalows spread over a large area giving the children a feeling of openness and the invitation to explore the natural environment. The children at Little Village have daily access to natural space and a curriculum that provides ongoing support for ecological projects among teachers, children and families. Within the curriculum, the children have schedules for taking care of the environment through daily observational walkabouts, watering and weeding duties for plant life and vegetable plots around, and for the care of the Centre's pet rabbits and terrapins. Each class has weekly responsibilities for the setting's rabbits and terrapins, with duties ranging from feeding to the cleaning of the animals' environment. Consequently, with all these activities, the children have opportunities to observe changes in an environment over time, use tools and practice life skills through these activities. In a paper based on observations of the setting, Russo and Bramwell comment that these encounters with nature become important, meaningful science lessons for the children (Russo & Bramwell, 2007).

The teachers at Little Village are committed to allowing the children this regular daily exploration and participation. They know that nature's potential as a living classroom may not be realized if adults themselves do not have the knowledge to share with the children. Teachers must be able to satisfy their curiosity to keep their interest in nature. Studies by Chawla and Wilson reveal that many environmentalists had meaningful experiences with

nature during their childhood, often accompanied by significant adults. If a child is to keep alive his inborn sense of wonder, he will need the companionship of at least one adult who can share in it, rediscovering with him the joy, excitement, and mystery of the world we live in (Chawla, 2006; Wilson, 1996). Over the past three years, much effort has been put in place to keep the practitioners in tune with the Centre's goal of organizing a programme for the children that encourages their connection with the natural environment and its corresponding issues of waste and care. The teachers have opportunities to develop their skills and knowledge through articles, seminars, excursions, events and collegial sharing in fortnightly staff meetings. Consequently, environmentally friendly practices are carried out in an interactive learning setting for both children and teachers.

Parental involvement is another vital area in the Centre's promotion of eco-friendly education. Within the curriculum, there are activities that involve the support of parents. For example, parents and children celebrate the annual event, World Environment Day, with the planting of seeds, seedlings, and trees at Little Village. Parents who are avid gardeners also contribute to ad-hoc projects around the school. The Centre's work in partnership with parents to promote environmentally friendly practices like reducing, recycling and reusing, often bringing in household items for recycling and sharing used but still useful toys and books for reuse.

The examples of practice above illustrate a few steps taken by one preschool in Singapore to promote sustainable education in the curriculum. It also illustrates how the interactions and work with the children and parents at the preschool can help to create a natural sustainable environment.

### Conclusion

The early years pioneer, Friedrich Froebel (1782-1852), grew up with a love for nature and



this love was central to his thinking as an educationalist. He conceptualized "a garden of children", or "kindergarten", in which children would not be schooled but freely developed. The name 'kindergarten' also signified a garden for children, a location where they can observe and interact with nature. Froebel knew it was important that children maintained their connection with nature. Our present-day kindergartens in urbanised societies like Singapore are somewhat different from this early concept of a 'kindergarten'.

Educators face new challenges in nurturing children who will respect and care for the people and the life around them. Richard Louv, in his book *Last Child in the Woods* (Louv, 2008), presented a perceptive image of children today when he wrote of children travelling in a multi-purpose vehicle (MPV) through the countryside, amidst wide expanses of greenery, watching a mobile television installed in the vehicle throughout the entire journey, entirely missing out on the sensory offerings outside.

The report by UNICEF: *The State of the World's Children: Special Report Celebrating 20 years of the Convention on the Rights of the Child* (2009), states that the changing landscape of our environment in the last two decades has become a crucial factor that greatly impinges on the rights of our young children, particularly as the result of 'climate change and the

burgeoning global population are increasing competition for limited resources, including access to water, and raising concerns about food security.’ The Convention on the Rights of the Child advocates a world in which ‘children have the right to survive and grow in a healthy, physical environment (p.65). As early childhood educators here in Singapore face the challenge of developing an ecologically friendly world with their young children, they will need great courage to make a stand for what they believe, in order to help children make their connections with the natural world and contribute to a more sustainable future. Promoting sustainable education in early childhood can only serve to provide an opportunity for countries, local communities, and early childhood professionals alike to revitalise their commitment to young children and their rights in society.

### ***Biography***

Ms Hui-Ling Chua is an early childhood educator with over 30 years experience in the early childhood field who is passionate about raising awareness of “sustainable environments”. She is currently working on a doctoral program with the UNISA (University of South Australia) to further her research interests in this area. She is also the Principal of Little Village, and the current President of the Singapore Committee of O.M.E.P. (World Organisation for Early Childhood Education) and a past member of the World Executive Committee of O.M.E.P.

Dr. Lynn Ang is Senior Lecturer of Early Childhood Studies at the University of East London in England. She is Programme Leader for the MA in Early Childhood Studies and is a supervisor of Doctorate students. Her research specialisms include the early years curriculum, issues of diversity, early years leadership, and early childhood across cultures. She has worked in Singapore, Scotland and now England, in different early years settings and institutions. She has published papers in various international journals and has been awarded a number of research grants from major funding bodies: the British Academy and Economic and Social Research Council (ESRC), the UK’s leading research and training agency. Her latest publication is: Ang L., Trushell J., Walker P. (Eds.) (2009), *Learning and Teaching in a Metropolis*, Amsterdam: Rodopi.



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