Nature Playgardens: Facilitating Connections with Nature

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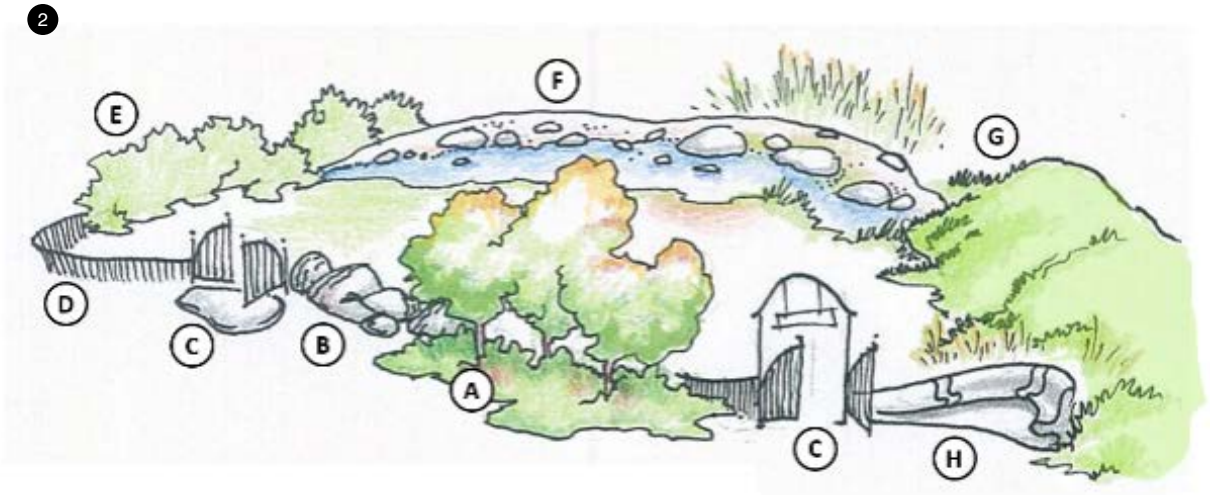


This literature review explores various design concepts of nature playgardens targeted for preschool children and their influence in facilitating a child's experience in nature through play.

More children are being born into cities today than ever before, with nearly half the world's population of children living in urban areas today compared to 30 percent just fifty years ago (UNICEF, 2012). Inundated with technology and gadgets from a young age, children are growing up in an urbanized environment with little need to interact with the natural world.

Urban lifestyles, which tend towards physical inactivity and involving little connection with nature, can negatively affect health and well-being. A clear example is Singapore, a city-state that went through rapid development over a period of a few decades, where 100% of the population lives in an urban environment. The lack of interaction with nature was observed in a study to be a significant factor contributing to students in Singapore having 25.8 percent more likelihood to get myopia than those in Sydney (Rose et al., 2008).

Besides negative health impacts, children who spend less time outdoors also feel more apathetic towards nature and environmental issues. Hence, it is important to create opportunities for children to connect with nature in urban places as part of play. To encourage nature interaction in recreation spaces, biophilic elements can be integrated into outdoor play to create nature playgardens.

Nature Playgardens

It is not uncommon to see play spaces in urban parks fitted with composite play equipment made of plastic, metal, and other artificial materials, set in isolation from natural landscapes. While these play equipment have their own benefits (Bento & Dias, 2017), they often neglect the opportunity for children to interact with the natural elements. When children interact with elements within nature, they become familiar with nature and appreciate it (Whitehead, 1929). This pleasure encourages the child to seek more of such similar experiences (Carr & Luken, 2014).

Giving children the freedom to explore nature and manipulate nature elements in their own ways makes them more aware of its richness and diversity, creating a sense of ownership and responsibility for nature (Bento & Dias, 2017; Moore, 2014). The literature review suggests that playing in nature will be instrumental in combating nature-deficit disorder and promoting environmental awareness amongst younger generations.

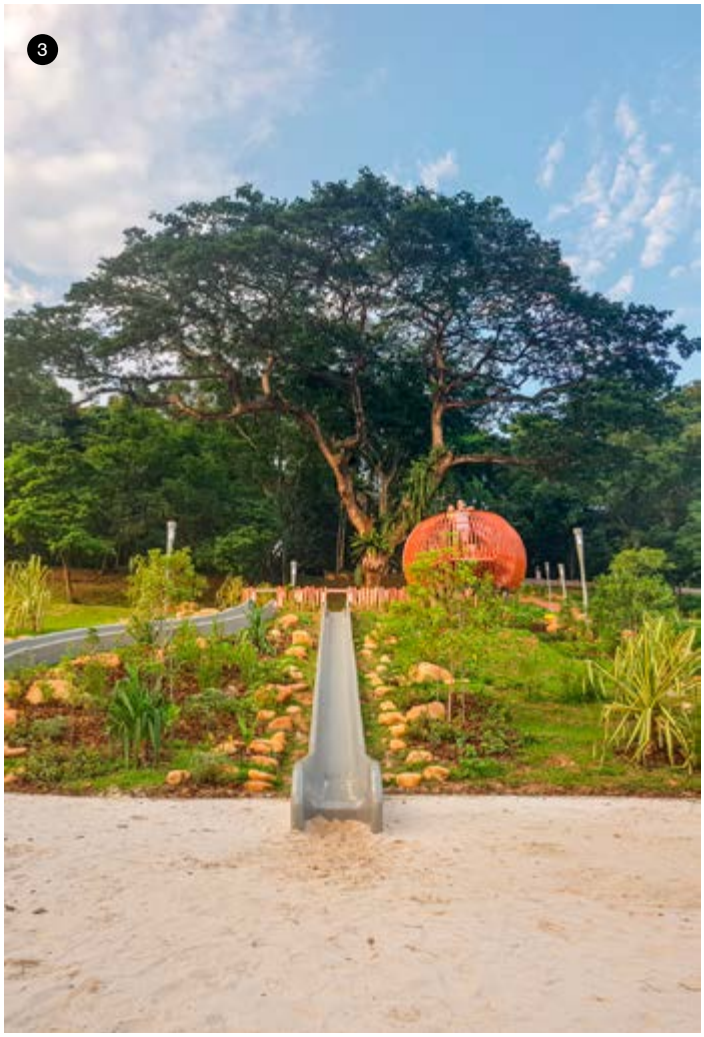
What Makes a Space 'Biophilic'?

The Biophilia hypothesis proposes that humans have an innate, emotional affiliation with nature (Kellert & Wilson, 1995). Based on this principle, nature playgardens are designed with inspiration from nature where children can develop a connection with nature. These physical design elements can improve motor skills, strengthen the immune system and reduce risk of cardiovascular diseases later in life (Fjørtoft, 2004; Lowry et al., 2007; McDade et al., 2010).

Biophilic design features in a play space encourage hands-on experiential learning with natural materials. It also allows children to develop a connection with nature - the overarching concept of biophilic play. This route of learning

1. A hiding space integrated into the uneven topography of a landscape. Illustrated by Poh Choon Hock.

2. An enclosed, safe playgarden with (A) trees and understorey shrubs, (B) rocks and boulders, two (C) entry/exit points, (D) conventional fencing, (E) dense large shrubs, (F) shallow water bodies, (G) landscaped mounds, (H) continuous structures which may serve as outdoor sitting surfaces. Illustrated by Poh Choon Hock.



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allows children to manipulate the materials in the environment in any way they choose, and in doing so, stimulates multi-sensorial experiences (Luken et al., 2011). Such experiential learning also has to be unstructured to encourage child-initiated learning. This enables children to develop independence, self-esteem, and creativity (Taylor et al., 2002).

Biophilic design has four key outcomes in creating an environment that emphasises on natural interactions. Generally, biophilic design…

…invokes the five senses. It is important to incorporate the senses of smell, touch, taste, sight, and hearing. Having close encounters with objects gives greater emotional impact and builds better relationships with both built and natural environment (Gehl et al., 2006). The design can incorporate the sound of wind and water, the texture, temperature, colours, and patterns of natural materials, and scents of plants and animals (Heerwagen, 2006; Alvarsson et al., 2010; Brown et al., 2013).

…takes advantage of time. Anticipation of temporal changes should be incorporated into the design, such as the influence of the rise and fall of tides or changes in light and shadow (Figueiro et al., 2011). This element adds an extra dimension to the space and is continually changing.

…creates mystery. The design can encourage users to expand their comfort zone to explore and discover the environment while being aware of the risks and safeguards in place. This element creates a sense of anticipation for users and increases pleasure (Salimpoor et al., 2011).

…mimics natural systems and processes. The design can mimic natural airflow and ventilation, and the water cycle (Gill et al., 2007). This also reduces operational costs while providing positive environmental effects, such as reducing air and water pollution and increasing energy efficiency (Foster et al., 2011).

Design Features of a Nature Playgarden

The objectives set out above can be achieved by incorporating various features that create a biophilic environment.

1. Integration with existing natural environment

Foremost, it would be best for the nature playgarden to be fully or partially immersed in the natural environment to allow children to develop an emotional connection with nature. For example, the play area can envelope a small water body, or be situated in a naturalised setting to take advantage of the terrain (Figure 3). Including these features as part of the play area would passively allow children to explore and get up close to the natural landscape.

2. Creating habitats for wildlife

When the play area incorporates healthy habitats for flora and fauna, children can observe in a natural environment and discover biodiversity (Bento & Dias, 2017). Microhabitats can also be created through placing untreated log piles or bird nest boxes (Goddard et al., 2013). Creating such habitats for wildlife brings children closer to nature, allowing them to gain greater appreciation for nature (Figure 4).

3. Heterogeneous spaces and connectivity

When designing play spaces within the play area, consideration can be given to the creation of heterogeneous spaces, including a variety of hiding spaces, gathering spaces and spaces for crawling and exploration (Figure 1, 2, 5, 6 and 7). A more heterogenous, naturalized and well-connected landscape presents greater opportunities for sensory exploration, imaginative play and social interaction (Moore, 1996), leading to greater cognitive development (Herrington & Studtmann, 1998; Carr & Luken, 2014). When presented with open-ended play, children are able to find varied uses for a space (Aitken & Ginsberg, 1988).

3. A series of slides situated on the naturally sloped terrain at Fort Canning Park. Photo credit: Kathleen Yap

4. A naturalised landscape within the play area at Jacob Ballas' Children's Garden in Singapore Botanic Gardens allows children to observe wildlife in water bodies. Photo credit: National Parks Board

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Organic materials give the area a softer and friendlier look, which can help to reduce stress, and natural materials will amplify the immersive experience of being in the natural environment (Stigsdotter & Grahn, 2003)


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5,6. Using natural materials to create connectivity while also creating heterogenous spaces include various spaces to hide, crawl and gather. Forest Ramble in Jurong Lake Gardens. Photo credit: National Parks Board.

7. Climbers covering a tunnel trellis in the Gardens by the Bay Children's Playground. Photo credit: Amanda Ng.

8. Casuarina logs used to create a mini obstacle course for children on Coney Island's Casuarina Exploration Adventure Area. Photo credit: Neo Meng Yang.

4. Interactive elements

In a nature playgarden, synthetic materials should be kept to a minimum and should not draw attention away from the surrounding natural environment (Figure 8). Organic materials give the area a softer and friendlier look, which can help to reduce stress, and natural materials will amplify the immersive experience of being in the natural environment (Stigsdotter & Grahn, 2003).

There should also be loose parts of natural materials available for children to pick up, change their shape or property. Children can also engage different senses to explore the object by smelling, touching, and even tasting (Figure 9-10). This allows for opportunities for greater imaginative play, sensory exploration, and increases social interaction (Moore, 1996; Maxwell et al., 2008). This also stimulates children's natural curiosity and directs their attention towards nature (Campbell, 2013; Bento & Dias, 2017).

Allowing Children to Grow through Unstructured Play

Play within a nature playgarden has to be unstructured, with adults allowing children to play freely, with minimal instructions (Figure 11). Parents should adopt a hands-off approach when allowing their children to play in such spaces in order for them to learn through experience and self-discovery, even when a child falls. Unstructured play allows children to develop independence, self-esteem, and creativity, and improve academic performance (Taylor et al., 2002). Unlike adults who have a subscribed notion about a certain object, children interpret the use of materials in their own way. With unstructured play, children have the freedom to exercise their creativity and discover their abilities through trial-and-error. Moreover, unstructured play allows for child-initiated learning by discovering the wonders of nature, and hence developing an emotional connection to nature through this sense of discovery (Bento & Dias, 2017).

Safety Considerations in Nature Playgardens

Playing in nature playgardens may expose one to risks not typically present in a composite playground, such as an uneven topography or contact with wildlife. Given the complexity of elements and materials used, the lack of 'standardised equipment' also means that the usual playground safety standards certification cannot be applied. Instead, the safety of a nature playgarden should be evaluated using a risk-benefit assessment framework. Such an assessment ensures a safe play environment while accommodating fun, adventurous play with controlled risk (Ball et al., 2012).

'Risky' play for children provides physical and psychological benefits. A child may develop physical and social health benefits, and an understanding of the world through risky play (Brussoni et al., 2017). Through such play, they

learn to stay safe and develop competencies required to face future challenges (Ginsburg, 2007; Bento & Gias, 2017). Physical activities can also increase bone density and strength, which reduces the chances of falling and injury at an older age (Kohrt et al., 2004). Hence, it is important to allow for controlled risky play in a curated environment, which is an intended outcome of nature playgardens.

To facilitate the development of an effective risk-benefit assessment, a policy framework can help to clarify the principles and objectives of nature playgardens, as well as provide guidance for development and maintenance (Ball et al., 2012).

With such measures in place, parents would be reassured that their children are in a safer environment, and be encouraged to revisit the garden. Assured parents play an important role in allowing their children repeated and sustained exposure to such play spaces, which in turn strengthens their child's emotional connection to the garden and, by extension, to nature.

Conclusion

The large amount of time spent indoors may lead to Singaporean children feeling apathetic towards nature. There is a need to address the disconnection between Singaporeans and nature. Nature playgardens, which aims to instil in children a sense of emotional connection with nature, provide an ideal pathway to address this disconnect.

The emotional connection with nature is achieved by incorporating special design elements into a play space, providing opportunities for children to discover nature through self-directed experiential learning. Moreover, several benefits to a child's social, physical, cognitive, and emotional development arise from the unstructured, self-directed play within a nature playgarden.

However, in order to reap the desired outcomes, adults play an essential role in facilitating play. That is, giving children the freedom to explore and discover by adopting a hands-off approach and facilitating unstructured play. While safety within the nature playgarden is indeed important, play with controlled risk should be allowed as this encourages children to hone important developmental skills to face future challenges. As such, a risk-benefit assessment formulated with a sound policy framework is crucial. Through nature playgardens, coupled with our efforts to intensify nature in the city and greening our urban infrastructure, we can promote environmental awareness among children, address Singaporeans' apathy towards nature, and cultivate environmental stewards in future generations of Singaporeans.

9. Seeds of different plants which children can gather and learn more about the plants that they come from. Photo credit: Tok Yin Xin.

10. Fallen leaves and twigs provide loose materials for children to play with. Photo credit: National Parks Board

11. A child playing with fallen Tabebuia rosea flowers from the ground in Bishan-Ang Mo Kio Park. Photo credit: Ling Han.

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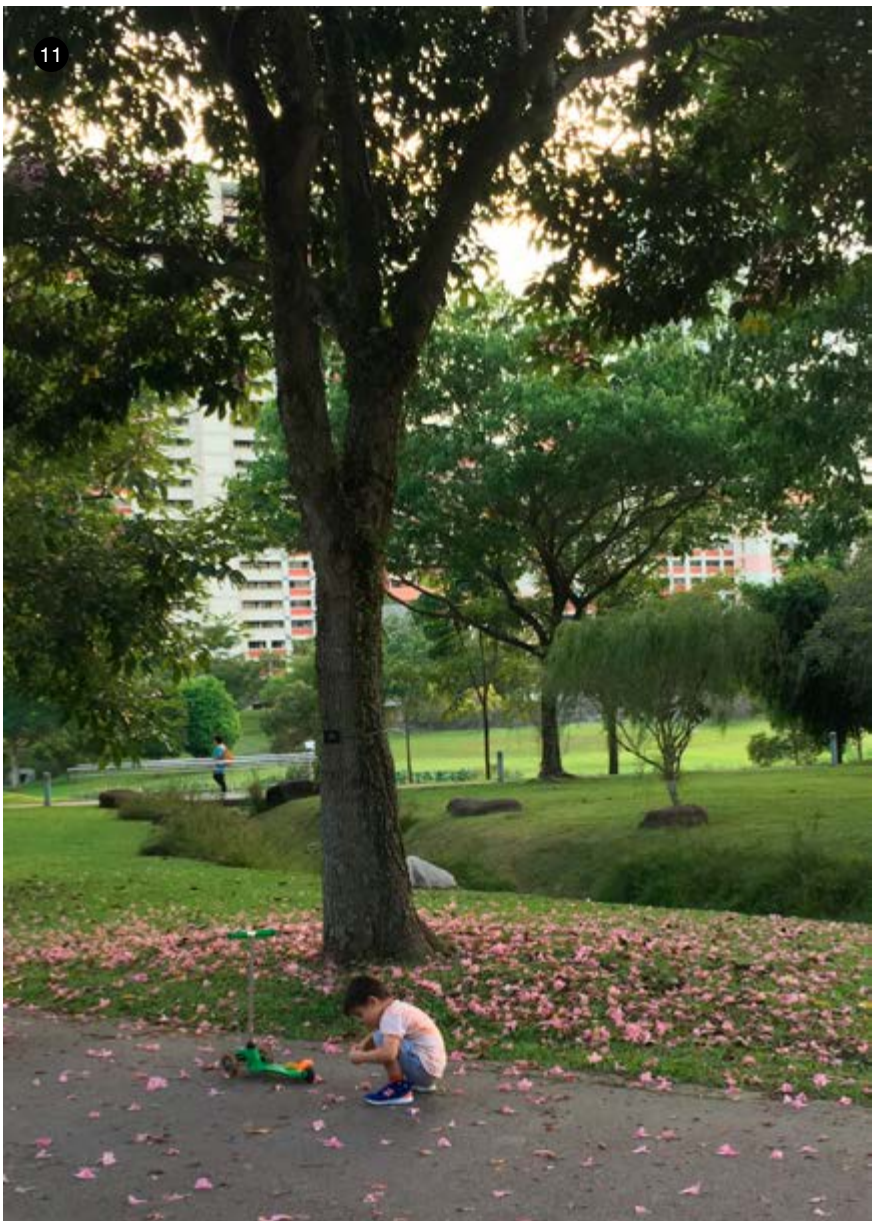
Unstructured play allows children to develop independence, self-esteem, and creativity, and improve academic performance (Taylor et al., 2002).



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