

Design Issues and Beneficial Outcomes from Greening a Childcare Outdoor Space for Babies and Toddlers.

In this month's Nursery Paper Anne-Marie Morrissey, Caroline Scott and Llewellyn Wishart from Deakin University report on levy funded research focusing on the benefits of greenspace in childcare centres.

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Introduction

The first five years of children's lives are crucial for their later life outcomes. Many young children spend significant amounts of their waking time in childcare and outdoor environments in these programs will be important influences on children's wellbeing, learning, and development. There is growing research evidence that well-designed, naturalised or green outdoor spaces benefit young children including: increasing the level and quality of physical movement (Cosco, Moore & Islam, 2010; Fjortoft, 2001; Greenfield, 2004); enhanced opportunities for play, increasing the sophistication of children's social and play skills (Herrington, 2007; Nedovic & Morrissey, 2013); providing a sense of calm and wellbeing (including for children with ADHD) (Nedovic & Morrissey, 2013; Wells & Evans, 2003); enhancing children's ability to concentrate (Waters & Maynard, 2010); and promoting children's understanding and appreciation of the natural world (Nedovic & Morrissey, 2013; Waters & Maynard, 2010).

Despite the growing evidence of the benefits of providing children with access to the natural world, it can be observed that many childcare centres have 'denatured' their outdoor spaces, and are providing the children in their care with limited experiences of green environments. This trend appears to be exacerbated by concerns to avoid litigation, leading to the elimination of 'risky' elements such as trees, rocks, etc. and their replacement by artificial soft-fall surfaces, plastic and low-challenge fixtures. The recent long-term drought has also encouraged management in some centres to remove vegetation, and install artificial surfaces. In addition, many childcare centres' lack of shade-providing vegetation such as trees, can mean that concerns about sun-exposure limits the times that children can spend engaging in healthy activity outdoors. This can increase the risk that children end up having too little exposure to sunlight, leading to conditions such as Vitamin D deficiency and depression (McCurdy, Winterbottom, Mehta & Roberts, 2010).

Perhaps the most important factors in this trend to increasingly artificial outdoor environments in childcare centres are a lack of

awareness and appreciation of the value of green environments for children, and practical challenges faced by centres in establishing and maintaining green spaces. Despite the growing research on the value of naturalised outdoor spaces, there is only limited evidence on exactly how young children engage with green elements in childcare spaces. Research in Australian contexts is particularly limited, and there is a need for the acquisition of specialised knowledge in this area, that can form a basis for the development of viable and practical horticultural and landscaping 'models' and solutions for outdoor spaces in childcare centres. Without this specialised knowledge base, and the appreciation of the benefits of green spaces, it is difficult for childcare centre management and staff, and landscape designers and architects, to envisage and create outdoor garden spaces that maximise children's beneficial engagement with a green environment, while also being sustainable within the constraints of a childcare context.



Looking to the north end of the yard pre-greening



The north end of the yard post-greening

With funding from the NGIA and the Centre for Research in Educational Futures and Innovation at Deakin University, and in partnership with Fleming's Nursery, researchers from Deakin University investigated the effects on children's play and physical activity of greening an outdoor space for babies and toddlers (called 'The Babies Yard'), in an urban childcare centre run by a not-for-profit organisation.

The Research Project

The focus of the research was on observing children's physical and play activity and interactions with the environment pre- and post-greening. Physical and sensory interactions with their environment are crucial for babies and toddlers. At this age, children learn through their senses, activity and movement. This means that the opportunities provided for them in their physical environment, and the opportunities to move around in and act upon that environment, are critical factors in their development and learning. The researchers used 'behaviour mapping' (Cosco, Moore & Islam, 2010) and tracking of individual children's activity in the space, to record the different types of play and physical movements that children engaged in, where these occurred, and how children used the different environmental features.



The herb garden

The researchers used Gibson's concept of *affordances* to help interpret their observations of children's responses to the space before and after greening. This concept is a way of conceptualizing environmental features (natural and man-made) in terms of the opportunities they provide for meaningful activities and experiences (Heft, 1988). Gibson views affordances as sitting between the environment and the observer, and affordances can hold a different meaning and potential for each individual based on factors such as knowledge, experience, strength, size, skills and preferences (Sandseter, 2009). In the same environment, children may perceive different affordances than adults would. Being able to understand what affordances children perceive in an environment is important, not only for reasons of avoiding potential hazards, but also as a basis for providing children with environments that offer a range of opportunities for positive experiences and interesting activities that promote wellbeing, learning and development.

The researchers were also interested in exploring the perspectives of Fleming's staff on the processes and requirements of designing a space for babies and toddlers in a childcare context. To this end, the designer/project manager at Fleming's was interviewed on her perspectives on the project, including design goals, challenges and experiences of consultation and collaboration with researchers, staff and management.

The Space

Before Greening

The space had been inherited from the previous owners, a commercial chain of childcare providers. It was dark and dreary, with a wind tunnel effect, and the only natural elements a few struggling pot plants. The outlook from inside was dominated by a view of a grey concrete wall. A number of observers described the space as 'like a prison yard' or 'a concrete cage'. Play resources consisted of brightly-coloured plastic, defined-use toys and equipment, often brought out from inside.

The Greening Process

The process of greening the Babies' Yard was described by Fleming's designer and project manager as 'daunting'. Challenges included: the pre-dominance of concrete, including the possibility that it covered the whole space under the artificial surface; the lack of sunlight with a substantial area under a roofed veranda; the need to include an emergency exit wide enough for a cot to be pushed through, and the numerous building and safety regulations and requirements that had to be met.

Extensive consultations were held between Fleming's and the childcare centre staff and management about how they worked in the outdoor space and their ideas for what could happen in the new greened space. The designer remarked that this was an important element of the design process, and that the eventual design would have looked very different without it. The researchers gave input on their preliminary observations of how children were using the space, as well as discussing existing research evidence on effective design and features for natural play spaces for babies and toddlers.

The eventual design had a number of objectives including:

- To introduce plantings and other natural elements into the space



A child's eye view looking towards the south end post-greening

- To encourage greater use of the whole space such as by introducing points of interest at the ends of the space, and allowing pathways for activities such as riding bikes and running
- To include elements of challenge appropriate for toddlers while also accounting for the needs of the babies
- To respond where possible to staff suggestions and requests
- To expand the view from inside so as to bring in light and allow glimpses of greenery, sky, the weather, etc.

After Greening

Visually, the effect of Fleming's greening of the space was dramatic and the photographs show that the space now afforded children sensory experiences of trees, plants, sky, and natural materials such as sand, hay, stones, logs, and wooden features such as edgings and a bridge. The removal of a paling fence allowed sunlight to flood in, not only brightening the space and allowing plants to grow, but also introducing the play of sunlight and shade in contrast to the monotone of grey light that had dominated previously. The removal of the fence also allowed light and views of natural features from inside.

The new greened space also provided new opportunities for play and physical movement. Analysis of the behaviour mapping and child tracking data showed higher levels of physical activity, more movement across the space, and a greater range of types of movement after the greening. In particular, movements of walking and crawling up and down an incline, sliding, stepping, and balancing were not observed until after the 'greening' of space. Children were also now observed to be actively ranging across the space.

Balancing, Stepping & Inclines

Several new features in the greened space appeared to support this increase in level and variety of physical activity. Child engagement in balancing and stepping are interesting examples. While prior to greening, the space contained a plastic balance beam (see photo 5), balancing was not observed in this phase. After greening, children were observed spontaneously engaging in balancing activity as they used a wooden edging that crossed the space, (see photos 2, 3 & 4), usually as they were on the way to somewhere else. In some places there were steps in the edging and the children appeared to enjoy this feature, expressing delight and concentration when attempting to step up or down (see photo 5). Interestingly the

researchers have observed this in other projects, where features such as edging, steps and slopes, embedded in an outdoor 'play landscape', have afforded children opportunities to engage in a range of physical movements not available in flat level spaces.

The wooden bridge was also a feature of the greening. The bridge appeared to provide opportunities for children to negotiate what was a steep incline for toddlers who had only recently learnt to walk, and the children appeared to relish the challenge, crossing the bridge over and over again. Photo 6 illustrates how children had to concentrate on placing their feet to negotiate the steep slope.

Engagement with Nature

Post greening, children also engaged more often with natural materials. Despite the availability of a sand tub pre-greening, observations showed the post-greening sand pit was used twice as often as the sand tub. A possible explanation for this might be due to the sandpit being more accessible for the children; they could climb up to it via the edging or garden bed and sit in the sand, whereas the sand tub had been raised off the ground (to at least child chest height) and children had to stand around and reach in to access it. The implication of this may be that the children found the sand pit more accessible, and a more comfortable and inviting place to sit and play.

The children were interested in engaging with nature, and often expressed surprise and delight at the way in which natural



The plastic balance beam post-greening and wooden edging post-greening



Children walking over the wooden bridge post-greening

affordances interacted with their senses in new and exciting ways. The stones set in concrete at the ends of the bridge afforded interesting feelings and sounds as children rode or pushed the bike wheels over them and as they walked over them (see photo 6). Children were observed stopping and squatting down to further investigate the stones with their hands. Loose parts such as leaves, bark and flowers were picked and thrown, sprinkled, squashed or sniffed in a way that the static, hard, plastic manipulatives in the pre-greening yard could not be. The designer and project manager remarked that: "We wanted the kids to interact with the plants. Our plant selection was about choosing things that were robust enough to handle kids pulling bits off and tasting them...". In some instances, children were observed peacefully observing a bee flying around the plants or branches swaying in the breeze, indicating that children were benefiting from the restorative nature of the green space in a way unavailable pre-greening.

Conclusions

In summary, the greening of the Babies Yard led to a significant increase in the level and variety of children's physical activity. It also provided them with an environment that offered new challenges in

their play, and positive experiences of the natural world. Visually the transformation was dramatic, providing children and staff with an attractive sunlit garden in which to spend their days, as opposed to the previous grey concrete 'yard'. The findings showed that natural elements and carefully designed features provide affordances for young children that support their learning, development and wellbeing.

When asked if she had any advice for her colleagues in horticulture and landscaping on designing outdoor spaces for children, the designer responded:

I think I'd say take a step back from what is currently out there as a traditional play space and start exploring some of the more natural ways you can achieve the same thing. You know a climbing frame doesn't have to be a plastic structure. It could be rocks, it could be hay bales, it could be logs. There's so many different things that it could be and I think it's about encouraging children to be creative. Don't provide them with a set activity, provide them with components that could be any number of activities depending on the child.

Further Information

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