Bringing schools to life through a co-design learning approach with children

Susan J. Wake
Unitec Institute of Technology, Auckland, New Zealand
swake@unitec.ac.nz

Abstract: This paper proposes that incorporating professional expertise (e.g. landscape architects and architects) in school ground greening projects, with a commitment towards engaging in a democratic participatory process with children (known as co-design), could lead to equitable and enriching outcomes for all stakeholders. These have been documented as: learning opportunities for participating children plus their greater ownership in the process and the result, fulfilment of environmental sustainability education and stewardship responsibilities within the community for landscape architects and architects, reciprocal benefits for these professionals through achieving better outcomes due to the creative input and knowledge of place that children bring to the process, and the establishment of community-integrated green spaces and wildlife corridors within the urban fabric. The paper draws on participatory learning theory, New Zealand case study projects and international literature sources to suggest a paradigm shift to architects and landscape architects towards engaging more with schools on school ground greening and building projects as a community service. This could see them contributing to creating pedagogically and ecologically richer school grounds that are creatively designed to encourage indoor-outdoor connections, sensibly planned for maintenance and sensitively planned to increase biodiversity and provide ecosystem services within communities.

Keywords: School ground greening; co-design; landscape architecture; children.

1. Introduction

School ground greening projects are on the rise. The transformation of concrete and grass-dominated school grounds into varied, ecologically-rich and sustainability-focused places of learning for children can benefit from the input of both architects and landscape architects. A recent contribution posted on the *In Field* blog site of the American Society of Landscape Architects claims the following:

> A movement to green school grounds and connect students to nature is gaining momentum in the United States and around the globe, weaving the ideas of urban sustainability and ecological design together with academic achievement, public health, children's wellbeing, sense of place, and community engagement. (Danks, 2014: para. 1)

Danks, herself a landscape architect, is a passionate champion for school ground greening, and author of the how-to guide *Asphalt to Ecosystems* (Danks, 2010). School ground greening is a term widely used for establishing gardens and mixed plantings within schools (Dyment and Bell, 2007), and as Danks suggests, the rationales and benefits are myriad and confirmed by others (e.g. Williams and Brown, 2012). However, the issue being proposed in this paper is that professionals such as landscape architects are not often actively involved in helping school management develop masterplans and implement discrete projects to develop school grounds into places of biodiversity and experiential learning. Instead this is largely undertaken by schools themselves, and very often by individual teachers – with potential problems of disillusionment due to over-burdening and/or lack of knowledge (e.g. Passy, 2014), or the departure of the staff member possessing the knowledge, so the process collapses. Schools are usually short of money, especially for 'non-essential' items such as gardens and creation of natural environments. Despite this, practice, supported by research, is confirming that greening school grounds can lead to positive learning outcomes, especially in maths, science and environmental learning, albeit there is consistent recommendation among reviewers for a more systematic approach to research (Ozer, 2007; Blair, 2009; Williams and Dixon, 2013). Research into participatory practices such as co-design, where school children and professionals work together on design and build projects (Parnell *et al.*, 2009), is also indicating that children are natural designers and experts in their own environments. Including them in the masterplanning process and subsequent design briefs can unleash their creativity, develop valuable skills (including soft skills like communication), and lead to increased ownership of the space plus empowerment resulting from having greater control over their learning (Sorrell and Sorrell, 2005; Wake, 2010). The environmental advantages are untold and generally not well researched. For example: greater shading and cooling from planting trees and shrubs; food and shelter for birds; creation of insect, lizard and mammal habitats; restoration of stream courses and wetlands – all forming a more continuous green corridor throughout cities.

Where do landscape architects and architects fit into this? Rationales for contemporary school gardens are tied up with concerns adults have about modern childhoods including children being disconnected from nature, unaware where food comes from and poorly equipped to take on future Earth Stewardship roles (Williams and Brown, 2012). These are issues of relevance for Landscape Architecture as a discipline and landscape architects as professionals representing that discipline. For example, the New Zealand Institute of Landscape Architects has a stated role as advocates for the environment as well as working for and within communities (www.nzila.co.nz). This suggests that landscape architects could be a resource for creating better solutions through proactive involvement in planning processes for school ground greening initiatives. Architects could be similarly involved, for example in projects that include buildings, and are perhaps further advanced as a discipline than landscape architecture in working with schools and students, for reasons that are discussed in this paper.

2. Children's learning and participation

In the 25 years since drafting and ratification of the UN Convention on Rights of the Child (CRC) (UNHCHR, 1989), children's rights have been increasingly emphasized, including children participating in decision-making. Participation can be defined as active involvement in a process of decision-making where the fundamental requirement is for power sharing to occur, leading to opportunities for transformational learning (Reid and Nikel, 2008). Sterling (2010, p. 524) defines this as an "intrinsic and life-changing inner process." It is now known that such participation builds soft-skills and other benefits such as increased self-confidence, leadership abilities and a strengthened sense of community (Sorrell

and Sorrell, 2005; Wake and Eames, 2013), as well as other specialised outcomes when concentrated within specific disciplines such as design (Wake and Eames, 2013).

Hart's (1997) 'ladder of participation' is a well-known model describing children's participation. The model proposed that the bottom three rungs of the ladder (1. Manipulation, 2. Decoration, 3. Tokenism) were 'non-participation' while the top five rungs are all degrees of 'genuine participation' (4. Assigned but informed, 5. Consulted and informed, 6. Adult-initiated, shared decisions with children, 7. Child-initiated and directed, 8. Child-initiated, shared decisions with adults). Hart has stressed that it was not implied that the eight levels should be sequentially reached or that the top rung (child-initiated, shared decision-making with adults) was best or most appropriate in every situation. Despite this, the ladder model has frequently been interpreted as a hierarchical measure of children's participation and Malone and Hartung (2010) point out that an on-going problem is the reliance on such models as tools, rather than seeing them as theoretical frameworks.

Within children's participation and power sharing with adults the direction of learning is set by children and builds their capacity for deep and transformational learning. If participation is centred around a project that is real (i.e. authentic) and personally relevant (i.e. local), such as transforming their school grounds, children are taking a role as active citizens, something Chawla and Cushing (2007) plus Malone and Hartung (2010) identify as essential for development of pro-environmental attitudes and behaviour.

Unfortunately, in many school garden situations, children are not given this agency, and are expected instead to follow adult directions, e.g. maintaining a garden created by others. Malone and Hartung (2010) suggest that one barrier is adult resistance to the required change in power relationships between children and adults. However, in order to develop into what Sterling (2010) terms 'resilient learners' who can adapt as required by circumstances, children must engage politically (Chawla and Cushing, 2007); yet there is a perception that if children take political roles they are being robbed of their childhoods (Malone and Hartung, 2010).

3. A case for co-design within school ground greening

As identified previously, environmental learning that is authentic and relevant encourages pro-environmental behaviour and this should include students engaging politically and in an advocacy role, not being passive participants (Chawla & Cushing, 2007), e.g. gardening under direction. Wake and Eames' (2013) findings determined there were significant learning gains when students worked alongside architectural and building industry practitioners in grappling with design issues within regulatory frameworks. In this example, and with strong project support by school management, students learnt about building consents, risk assessment reports, waste management, performance of materials and design techniques as well as developing soft skills such as collaboration, confidence in public presentations and problem-solving. There is a growing body of research and examples of democratic involvement of students with architects (e.g. www.designingwithchildren.dao. theusefularts.org). This is, in part, due to the United Kingdom's Government-led Building Schools for the Future Programme (BSF) of 2005–2010, which helped to mainstream school-based co-design projects between practitioners and stakeholders (Burke, 2007). Parnell, Patsarika, Proctor and Cave (2009, p.9) define co-design in this situation as

> "… users tak[ing] an active, hands-on role in the design of the school building/grounds, working directly and collaboratively with the design team to develop designs through models, for example".

I suggest that the lower cost and complexity of school ground greening projects make them more commonplace than building projects but also leads laypeople (e.g. teachers and school management) to think that landscape and plant specialists are not required or allowed for in the budget. Simply, state school grounds have typically not been valued as an asset by government departments and school managers in the way buildings are. Evidencing this, Downs (2006) comments that during the recent BSF period in the UK, funding shortfalls led to a lack of landscape architect involvement in school renewal projects, with volunteer assistance of teachers and parents used instead. Downs predicts this will lead to long-term problems with design and management. In contrast architects were an integral part of BSF and this has led to identification of a number of reciprocal benefits. For example, learning how to work with children and youth (Parnell *et al.*, 2008), creating potentially better designs due to the input and creativity of the people who will use the space (University of Sheffield, 2014), and potentially securing future paid work through positive profiling (Wake, 2010). This latter may be regarded as a trade-off for working on projects with children that are rewarding in intangible ways, but not fully billable, as expressed by the co-design architect for an eco-classroom project (Wake, 2010, p. 175):

> I absolutely love it. … I come back from the classroom and think this is the best thing I do. … The enthusiasm and liveliness of the kids is just wonderful. … The disadvantages from our point of view is that it is not an economic proposition … more than half of the time we are putting into the project is volunteer. … We are doing it because … educating people … and the green environment is really important to us. … And we have all gained a lot on a personal level. And I think that other clients can see what we are doing… What this is about isn't the project in itself so much, it's actually about what's happening to those students.

With regards to landscape architects' co-design input into school ground greening projects, I propose there would be similar benefits. This could perhaps result from landscape architects being proactive in offering their services to schools, for example, as community outreach projects that may not generate much initial income, but are rich in reciprocal benefits. In addition to the benefits already outlined this could include contributing to better planned school grounds that function as learning environments and provide ecosystem services within communities (e.g. shading, cleansing of stormwater, bird habitat corridors). In turn this would contribute to fulfilling professional responsibilities of landscape architects and could be used to promote the benefits in terms of maintenance through getting specialists to design school grounds rather than *ad hoc* planting by teachers and parents. With regards the benefits for school students, there is evidence to suggest that the experience of participating in the design process is pedagogically transformational and deepens their connection to place (Green, 2014).

If the current school garden movement is to be enduring, I propose that the methodology around the development and use of school gardens needs to encompass a range of partnerships and embrace democratic participation of children, in order to realise the potential of school ground greening projects through learning transformations. In their Australian-based research using Uzzell's framework for school-community partnerships, Flowers and Chodkiewicz (2009) concur with this. They point out there are four levels at which partnership can occur. These range from learning being isolated within the school, to community members coming into the school, to schools going out into the community and, ultimately, schools working with communities as social agents for environmental change. These authors

argue that the last is the most effective for transformative environmental learning. Which implies the importance of building strong relationships outside the school and engaging students very actively with the process of school ground greening. This adds up to a vision of co-design partnerships between schools and landscape practitioners where students work alongside specialists to research, design, construct and use their outdoor school environments in a way that integrates curriculum learning, engages with local communities and builds empowerment.

However, it has been emphasised that children alone cannot execute complex design processes. The final decisions may need to rest with practitioners who have specialist knowledge (Iltus and Hart, 1995; Mannion, 2007). In this regard, the choice of design practitioners to work with children is crucial to the success of the project (Wake and Eames, 2013) as is open communication with children about the limitations to their participation (Hill, 2006).

There is research emerging that supports children as co-designers with adults in school ground greening projects. For example, in an Australian school garden project, Green (2014) found that children became proficient in design skills and knowledge when they were included in the designing and planning of the environments where they lived. This transformed the teaching and learning in the school due to the ownership children felt and the creativity and imagination required during the design process. Green acknowledges, however, that there are, to date, few examples reported of children as designers within school garden discourses. This example therefore illustrates a shift in approach whereby children's learning was enhanced through empowerment and a departure from measuring being a mathematical or scientific endeavour (as school garden-based learning often is), to a design one where drawing, mapping, modelling, planting and building for aesthetic and practical solutions were foregrounded. I propose that this approach would be further enhanced through the inclusion of landscape practitioners to work with students in providing authentic and relevant environmental experiences both within schools and reaching out into the wider community.

4. Case studies

There are studies emerging which have investigated school ground greening projects that have a strong co-design focus with practitioners. One USA example is a school-ground greening project to establish an ecological habitat for children's play and exploration in an area adjacent to the school (Derr and Rigolon, In press). A group of retired adults living in the wider community were also involved, having used this space for free play in their youth. The project utilised participatory processes including co-design with city planners and collaboration with the, sceptical, retired adults, who were eventually won over by the project's process.

Similarly, in the USA, Smith (2011) portrays a high school for students who are considered challenging. The school has transformed itself and students through a process of both school- and community-based ecological and other sustainability-driven projects. Using projects that focus on five domains of sustainability: architecture, energy, water, forests and agriculture, students are empowered to bring about positive environmental, social and economic change within their communities through establishment of gardens, restoration of habitats and building of affordable, sustainable housing for students' families. This holistic approach recognises that children's lives at school cannot be significantly improved unless their home and family lives are secure.

In a New Zealand school-ground greening project I recently visited at Rhode St School in Hamilton, students aged 9-12 years old had the idea of developing an ecological island (a predator-free sanctuary

for endangered species) on the school playing fields (an adjacent park will be used for sports games). Students worked with a landscape architect and ecologist to develop a Masterplan for the site and the project is drawing on local expertise and involvement. For example, soil and tyres to create the island were donated by local businesses & the shipping containers were purchased through grants (see Figure 1a). With the help of an architect, students have researched sustainable ways of converting the top container into a bird hide (see Figure 1b) and the lower ones into a science centre, with local artists working with students to create murals (see Figure 2). A native tree canopy is being established and the island now needs a predator-proof fence in order to safely introduce threatened native fauna. The island will perform valuable ecosystem services as an area of native flora within the city, providing habitats for birds, insects, reptiles and freshwater creatures (once the moat separating the island from the rest of the school is operational). Students and their families are learning about sustainable practices of land use & building (e.g. recycling the container and insulating it for use as a science centre, as well as improving their neighbourhood and sense of belonging, through empowerment.

Figure 1: (a) The island composed of donated tyres and soil from community businesses (b) Opening windows in the bird hide show the developing native tree canopy & moat.

Figure 2: Science Centre in construction, with mural.

At a further case study school, Meadowbank Primary School in Auckland, a parent who is a landscape architect worked democratically with students to develop an environmentally, historically and pedagogically rich school ground that has been implemented over time (see Figure 3). For example, an amphitheatre was created on the site of a rubbish pile and it now provides a nature-enriched place for outdoor learning and an occasional romantic weekend wedding venue for community members (see Figure 4).

Figure 3: Landscape architect's plan following students' input.

Another collaborative project between school children and the landscape architect was the design of a 'Lorax' garden, with its cautionary tale about greed and unsustainability (see Figure 5). This example illustrates how the involvement of a landscape architect in a participatory school ground greening project can enrich both the landscape result and the learning for students through ownership and empowerment.

Figure 4: Interpretive sign about the amphitheatre constructed as part of the school ground greening project with input of a landscape architect working with students.

Figure 5: The Lorax garden is a further project based on students' ideas.

5. Conclusion

Landscape and building projects that are planned with children to be authentic (real) and relevant (local) have the potential to empower children and in turn their communities to take charge of their environment, through the ownership children feel and the messages they subsequently take home. With regard to school ground greening, it is suggested this could help to realise the largely unacknowledged and under-utilised learning potential of school grounds through creating enduring green spaces, which will become ever more important as cities expand and infill, and communities become more diverse and incoherent.

This paper has argued for a paradigm shift that could see landscape architects and architects having a role in formal learning through collaborative projects that create ecologically richer school grounds, which are sensibly planned for maintenance and sensitively planned to add ecosystem services and other facilities within communities. Engagement in participatory processes with children that encompass learning and environmentally sustainable outcomes is perhaps both a key challenge and an opportunity for design practitioners in the future. Further research to investigate such possibilities and suitable methods is recommended since investing in children's design education is truly living and learning towards a better built environment.

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