Building Empowerment: Ways of working with children and youth to create sustainable buildings

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Abstract: This paper presents preliminary research into community empowerment via children and youth participation towards generating sustainable building outcomes within two low income, predominantly Pacifica and Māori communities in New Zealand. In these case studies, a combination of working with regulatory frameworks alongside commitment by key stakeholders to empower communities is leading to environmentally sustainable outcomes on two levels. The first is the resulting buildings, which function as sustainable best practice examples within the community. The second is the learning that occurs, which has the transformative potential to engender permanent change in environmental attitudes and values of those involved.

The paper focuses on relating the processes within these case studies to the theoretical frameworks of ESD, participatory learning, co-design and community empowerment, especially relating to children and youth. It concludes that involving communities in a meaningful way with sustainable buildings would be a move in the right direction for permanent sustainable outcomes. This is particularly the case in cities that are fast growing and within communities that are frequently marginalised.

Keywords: community empowerment, participatory learning, ESD, children and youth

Introduction

The underlying premise of environmental learning for children and youth is that teaching them knowledge, skills, attitudes/values of environmental sustainability (called education for sustainable development or ESD) will lead to them living more sustainably. This is relevant in the context of this World Sustainable Building Conference since 2014 is the final year of the UN Decade of Education for Sustainable Development (DESD), which has the goal of mobilizing world educational resources in creating a more sustainable future (1). The decade, under-pinned by the aphorism 'think global, act local' that emerged, via Agenda 21, from the Rio Earth Summit in 1992 (2), resonates well with the global nature of this conference and the rhetorical question it poses – 'Are we moving quickly enough, it's up to us.'

The term 'sustainability' is highly contested, with multiple interpretations and potential conflicts according to situations, values and points of view. Morgan (3) suggests this ambiguity has paved the way for unique 'local' solutions that have relevance to place and people, and the DESD has provided a learning framework for encouraging this. The two sustainable building (SB) case studies discussed here both focus on 'local' responses to sustainable development issues. In the first case study, the design of a music and arts centre for youth was borne out of a long history of broken promises to a predominantly low-income community, which had led to local government setting up a policy of community collaboration that had to be followed by architects working on the project. Part of this was inclusion of local youths, who were studying architecture, in the design team. This gave reciprocal benefits of experiential learning for the fledgling professionals and a youth voice to

the design of the centre. In the second case study, the community is a junior school (5-12 year olds) in a relatively poor neighbourhood. This community is transforming their playing fields into an ecological island and science centre, all conducted as learning within the teaching curriculum required by the New Zealand government. A local park will be used for sports.

This paper outlines the structure of the two case studies and relates this to the theory of transformative and participatory learning, co-design, ESD and community empowerment, especially concerning inclusion of children and youth in design decision-making within their environments. Building on the established importance of 'local' projects that focus on community empowerment through democratic participation and transformative learning (2,4, 5), the case studies demonstrate that valuing people's knowledge and contributions can lead to creative and sustainable outcomes. These go beyond traditional or transmissive approaches to ESD (3) by integrating scientific and technological solutions into values-driven community initiatives. The paper concludes that while more detailed research via data collection on these case studies is needed, empowering, especially marginalised, community groups such as low-income and children and youth, offers offers a way forward towards a more transformed way of living in our rapidly urbanising world.

Literature Review
In the process of transformative learning all three types of learning are engaged. Based on direct experiences and role modeling, new knowledge is absorbed (cognitive), skills are developed (phychomotor), and attitudes and behavior is adopted (affective) – possibly leading to forming new values longer-term (3). Transformation, therefore, implies a fundamental change in the way we think and live. Flowers and Chodkiewicz (4) investigated possibilities for schools to work more closely with their communities as 'change agents' in ESD that functioned transformatively at two levels – through deeper student learning, and influence within the community. In this model schools act as a social agent and these authors emphasise the importance of ESD projects including social, cultural and political factors, not just nature, science and environmental factors. This inclusion of social-cultural aspects implies 'participation'.

Participation of children in matters that affect them is a democratic right and a regulatory requirement in signatory countries to CRC, the UN Convention on Rights of the Child (6). Emerging alongside this in the 1990s, the sociology of childhood, or the new social studies of childhood, positioned children as active citizens, and childhood as a state of being rather than becoming (7). This reheToric has combined to result in children and youth participation in design and construction of their built environment becoming more mainstream over the last ten years. This was aided in large part by the significance of the United Kingdom government's Building Schools for the Future (BSF) programme (cancelled in 2010), which served to legitimise involvement of students in school design, with a sustainability focus (8). Despite this, according to Percy-Smith and Burns (5) many ESD projects in schools are still oriented towards equipping children for the future rather than giving them a role to play now.

Like sustainability, the term 'participation' is often overused and sometimes mis-interpreted. Participation is defined as active involvement in a process of decision-making and the fundamental requirement is for power sharing to occur, leading to opportunities for transformational learning, while avoiding 'tokenistic' responses (9). With regard to ESD it is widely agreed projects should be 'action-oriented' and involve 'social learning' (3,5). This preferences collaborative multi-disciplinary ESD projects with benefits across a spectrum of learners/community members, for example those including co-design.

Although co-design is not a term reserved exclusively for children and youth participation in design, Parnell, Patsarika, Proctor and Cave (10, p9) offer a useful school-based definition: "As co-designers the users take 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." Uttke (11) describes a transformative process whereby youth in Germany designed and constructed their own public spaces, evidenced through the breadth of resulting learning, which included development of soft skills such as public speaking and presentations. This can equally be applied to participatory ESD projects. Parnell (12) also points out that there is potential for learning transformations through the reciprocity of learning that occurs between practitioners and children/youth.

In both case studies presented in this paper there was an intention to power share with children and youth participants, leading to experiential and transformative learning about environmental sustainability through design of their built environment. These outcomes are grounded in relevance and authenticity by the projects being both 'local' and 'real'.

SB Case study 1 – Community and youth involvement in a music & arts centre for youth
Due to a long history of consultation ending in cancelled projects within this community comprising 40% Pacific Island and 20% Māori people, local government had devised an engagement strategy that had to be followed. The architecture firm appointed to the project found this way of working to be a good fit with their company philosophy – responding to the requirement for face to face consultation with an innovative plan to engage with community on several levels. Firstly, they opened their practice up to the community one day per week during the concept development phase, inviting them to come and watch or contribute ideas and stories. Secondly, they ended this day by moving to the local library, that adjoined the site for the proposed music and arts centre. Members of the multi-disciplinary design team spent several hours there working within the intellectual and cultural hub of the community. By doing this, locals felt more at ease and therefore contributed more freely. The architect felt this was the most fertile time for gathering local stories and relevant material to inform the design. In this spirit of openness and trust the community felt listened to, and this respected the importance of interaction within Māori culture, which determines the success or not of the outcome.

Thirdly, local government called for expressions of interest from local youth (under 25 year olds make up 35% of this community), to join the art group within the design team. The

design team comprised the architects, who were responsible for site analysis and building organisation and regulations, and the art group, who worked on the theme of the building and the stories it would visually tell. The two youths selected were locals of Pacifica ethnicity and students of architecture. Their contribution to concept development was significant as they embraced both the sustainability and cultural aspects that were at the heart of the project. The wider site already included a library and community centre with marae (Māori meeting house), and it backed onto a nature reserve with stream. They saw the proposed music centre as a visual extension of the stream through the massed solar panels on the roof and the rainwater collection devices it would have. In this way it sought to represent the area's rich history of settlement and cultivation, local youth, the connection between the other buildings, and the diversity of cultures within the community.

The art team's response to this matrix of significances was to generate artwork to be incorporated into the fabric of the building that referenced significant trees within the cultures represented within the community. Although inevitable budget cuts caused earlier, more literal, iterations to be reduced, the concept of 'uru' or 'grove of trees' has persisted within the fabric of the building's design and therefore signficance within this community, connecting the natural world with the tectonic nature of the built structure (see Figure 1). It fits well with both the sustainability mandate of the build (high international sustainability standard was sought and it will reach 50% net zero energy with further gains possible over time) and the earlier-expressed community desire for an organic shaped building that would connect and strengthen the roles of the other community buildings on the site. The way of working and the significance behind the developed concept is also empathetic with Māori culture, where interaction and encounters are pivotal, buildings are organic and meaningful in a connected and hierarchical way, and sustainability or guardianship of the land is paramount (reflected in the Māori term Kaitiakitanga).
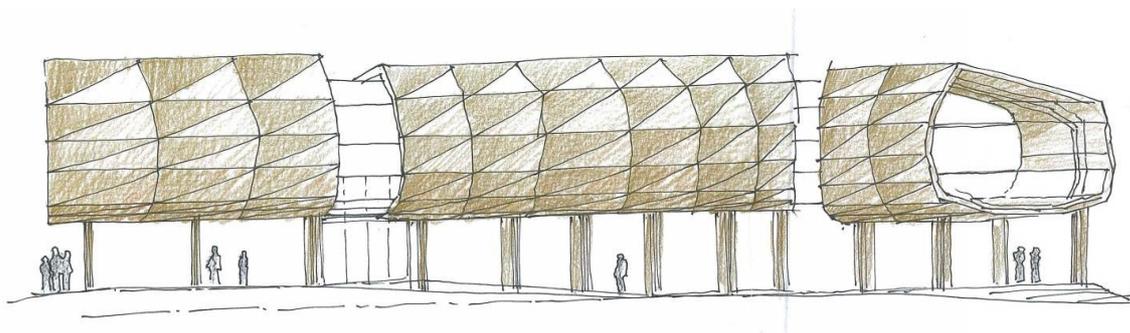

Figure 1
Perspective showing the uru (grove of trees) concept within the music and arts centre building design. (Archimedia, used with permission)

SB Case study 2 – School children involved in an ecological island and science centre
Working with a New Zealand (NZ) NGO-designed Programme called Enviroschools, the school in this case study has instigated a number of environmental projects over the last seven years including gardens, cooking, recycled materials into art, re-purposing structures and

buildings. The school neighbourhood is relatively low socio-economic with a dominant population of Māori and Pacific Island families, many of whom rent rather than own their houses, making them somewhat transient by New Zealand standards. As a result the local primary school, which teaches students from ages 5-12, has taken on an important nurturing and holistic education role within the community. Enviroschools advocates a process of 'whole school' involvement in decision-making and encourages active participation of children in projects that have been democratically determined via a school vision-mapping process (see www.enviroschools.org).

For the last four years the school as a community has embarked on a more ambitious project to convert their grass sports-field into an ecological island that will create a habitat for endangered native species of birds, reptiles, insects and fish, in the middle of suburbia within a medium-size NZ city. As part of this they are establishing a science centre on the tiny island, as a learning resource (see Figure 2). The original idea for the island came from a student, while on a field trip to a much larger-scale ecological island, so this is an example of school acting as a social agent (4). From approximately ages 8-12 students are encouraged to join the school 'Green Team' and commit to meet weekly (eg at lunchtimes and after school) and work on projects they have decided on (such as the ecological island), under the facilitation of the head environmental teacher.

All learning that occurs is matched to the NZ national curriculum. However, led by the vision of the school's principal, learning is authentically contexualised to encourage students to learn experientially about ecology and sustainable building processes and products. The project weaves in other layers of meaning and learning such as choosing shipping containers to convert into the science centre, due to recent NZ significant events involving them. For example their use as temporary shops & modular houses following the 2011 Christchurch

Figure 2
View of ecological island and science centre showing two of three containers, moat and planting. (Author's photo)

earthquake and the oil spill and container contents pollution from the grounding of the container ship *Rena* on the Astrolabe Reef, near Tauranga, the same year.

Commensurate with the importance of keeping the project 'local', which is recommended both for increased meaning (1,3) and for sustainability (2), goods and services are sourced locally and are often donated (eg the shipping containers, soil to create the island, machinery to dig the exterior moat). So far students are researching species and planting the site to create longterm canopy cover for wildlife, although none can be released until a predator-proof electrified fence is constructed round the perimeter. The containers making up the science centre are being converted into a bird hide, visitor centre with art and information, and laboratory with eel breeding tanks and microscopes for exploring. Students are working on challenging mini-projects such as how to generate power for the electric fence and the best way to insulate the containers. They are working in conjunction with architects and ecologists and there is a strong focus on incorporating electronic technology within the project, eg for telling stories, sourcing information and managing resources on the island.

Discussion and Conclusion

The literature reviewed is consistent on the need for environmentally sustainable learning to be transformative in order to lead to changes in behaviour (2,4,5). Transformative learning is linked to empowerment (3) and participatory and social learning are recommended processes for facilitating this (2,4,5,9). Inclusion of community within projects is an obvious way for this to occur (4,5,11). Therefore, while more primary data is needed, the two case studies presented in this paper provide early evidence of the ESD value of building community empowerment through participatory learning.

In the music and arts centre project, earlier attempts to engage the community in a tokenistic way had led to withdrawal from the process. This persisted until the development of an engagement strategy by loval government combined with the positivity of the architecture firm appointed. This led to rich processes of folding local stories and meaning into the fabric of the sustainability-driven building. A key aspect of this was designers basing themselves within the community via workshops and conversations in the library and including local youths to help make artistic connections between the building, the people and the wider environment.

In the ecological island and science centre project, the school forms a community of eager learners that is reaching out further into the wider community for ideas and expertise – acting as a social agent (4). The strong process of participatory learning that is being applied to curriculum-linked topics means that children are learning experientially about sustainability as it applies both to building construction and creation of a safe, natural habitat for endangered wildlife. In turn, their learning reaches into their families and wider neighbourhood.

Both projects enable reciprocation of learning, as proposed by Parnell (12). Architects of the music centre and staff at the school maintain that their knowledge and awareness has increased and their behaviour changed as a result of community participation (including children and youth). Also noted, in agreement with Uttke (11), was that the projects encouraged development of 'soft skills' in participants such as leadership, working in teams and communication of ideas (eg giving presentations). This highlights the added currency due to projects being relevant and authentic. In conclusion, this paper makes a strong case for the value of investigating social examples of sustainable building. In particular to see if projects that are action-oriented and participatory lead to community empowerment through learning transformations that promote sustainability as a way of life and socialisation. One that integrates nature, science and technology. It is suggested these examples may be future best practice for creating enduring sustainable buildings and landscapes, especially as cities expand and infill, and communities become more diverse and incoherent. In answer to the conference theme question - are we moving as fast as we should? Maybe not, but it is up to us to take time to involve people and communities with sustainable building in a fundamental way, in the knowledge that these outcomes may have a permanent effect, since good things take time.

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