

Designing with Children

Eco-Classroom “Living Room”

This four year project (mid 2005 to late 2009) engaged a group of students with the design and construction of an eco-classroom using recycled and environmentally sustainable materials and technologies. It developed at Hukanui primary school situated in the suburbs of Hamilton, a New Zealand city (1.5hrs south of Auckland). It was the vision and passion of the Lead Education for Sustainability (EfS) teacher that drove and facilitated the project, with the expert support of The EnviroSchools Foundation. School staff, members of the Board of Trustees and the whole school community were actively involved in and supported the project, with the core working party consisting of approx. 170 students. These were aged 9-11 years old.

Motivation

Children's learning was the key driver for their participation. The EnviroSchools Programme uses an Action Learning Cycle, which the teacher found to be very powerful in the Eco-classroom Project. Incorporated in this is 'identifying the current situation', 'exploring alternatives', 'taking action' and 'reflecting on the change'. This matched well with the 'emergent curriculum' inquiry-based learning style currently favoured in NZ schools, with its focus on thinking skills. In combination with the embedded culture of democracy and EfS within the school, which is also supported by the EnviroSchools Programme, the Eco-classroom project was part of a wider initiative towards student empowered EfS within the school. This fits well with the EfS pedagogical concept of 'Action Competence'.

In this light, the guiding principles of the charitable trust EnviroSchools Foundation reflect the motivation for student engagement. These are: developing empowered students, learning for sustainability, considering Maori perspectives, respecting the diversity of people and cultures, and building sustainable communities through a focus on shared decision-making, locally relevant projects and a whole-school approach to education for sustainability. The aims below are closely associated with the rationale for children's involvement in the design project. These are the following:

What

An eco-classroom using recycled and environmentally sustainable materials

Where

Hamilton, New Zealand

Age

9-11

Group Size

Approximately 170 students

Project Stage

Brief, Concept, Construction, Design Development, In Use

Children's Roles

(Co) Designers, Advocates for Change, Builders, Creative Inspirers

Timescale

Mid 2005 to late 2009

Partners

The school's Lead Education for Sustainability (EfS) teacher (Initiator)
The EnviroSchools Foundation (Funder)
WWF-New Zealand Environmental Education Action Fund (Funder)
Antanas Procuta Architects (Architects)
Students and staff at Hukanui Primary School (Participants)

- increase children's current and future awareness and attachment to the environment through development of knowledge and skills of sustainable architecture;
- increase children's skills of advocacy and community engagement so that they develop lifelong environmentally responsible habits;
- empower children as learners and agents of change through interest and ownership within the project;
- demonstrate the multi-disciplinary nature of education for sustainability through the integration of the project with traditional subjects within the New Zealand primary school curriculum;
- provide a school and community resource that foregrounds the importance of environmental sustainability; and
- illustrate different future career paths to children.

Children's involvement

The idea for the eco-classroom came from the whole-school 'vision map', developed as part of the Enviroschools Programme. The Lead EfS teacher ran elective courses on the project during the school year, which generated ideas and designs that the participating students researched and tested as part of their engagement and learning. The Working Party of 12 senior students was instigated in late 2006 to bridge the work carried out within the electives and provide continuity to the project.

The real-life nature of the project necessitated some prioritising of ideas and issues, although the teacher was constantly vigilant to the importance of remaining inclusive of ideas, as proposed by students. Because of the project length some students had left the school before the building was complete, but their ideas were still incorporated by newer cohorts, as well as them contributing their own. The children's ideas shaped the building design. This was followed by a 'tempering process', whereby the final design was modified to comply with constraints such as the project budget and building regulations. The architect reflected upon the personal difficulties he experienced in trying to negotiate between the children's ideas and project constraints. However, the children felt that they were listened to and if their ideas could not be achieved the architect was clear with them about this. This honest relationship between the architect and the children was crucial to embedding the children's views into the design process.

It is important to acknowledge that the purpose of the project was student learning. In this regard each student elective actioned an aspect of sustainability and reached a concluding point along the pathway of this journey. Finally, students celebrated and reflected on their achievements.

Children were primarily learners in this design project. Their learning process involved a range of design process-related roles including: Advocates for Change, Creative Inspirers, Co-designers and Builders.

The students worked with the school's lead EfS teacher, the Enviroschools Co-ordinator and

a local architecture firm to carry out research and make decisions to inform the development of a concept plan. They did presentations to potential sponsors for fundraising. Detailed drawings and tender documents were prepared by the architect and a Project Manager employed for this task (with students on the interview panel). Students were continually engaging with the wide range of issues related to sustainability within the building process including Waste Management Plans and an Environmental Impact Report. They also played an active role in the construction phase, for example, compacting the rammed earth walls, laying glass bottles in the floor, installing insulation and making specific features such as the sculptural rainwater downpipe.

Outputs and outcomes

The Living Room is a multi use room that values and respects the links between inside and outside environments. It is used as a place for teaching EfS and for groups within the school (eg. Kapahaka [Maori performance], choir etc.) and wider community to use. It has a concrete floor for heat retention, non-treated timber framing and cladding. Natural ventilation and a pallet burning fireplace give warmth and airflow. Wide eaves and a pergola give shade and tanks collect rain water for use on the garden. Earth bricks behind the fireplace are from locally-sourced clay.

The Living Room embodies the learning of the children and adults who designed and constructed it and the sense of place and meaning it has for them as well as for current and future students and the community who use it.

This project showed that children's knowledge and skills related to sustainable design can develop through their active engagement in on-going and real design and build projects in a formal learning environment in which EfS is non-compulsory. As a result, it was determined that learning transformations occurred, which were then thought to contribute to behavioural change through shifting values and attitudes. This is shown by the working group's ongoing engagement with the 'Living Room'. The name of the Eco-classroom in itself reflects their view that the building facilitates learning and is dynamic.

A great deal of environmental sustainability learning also took place. Children developed an understanding of the principles of environmental architecture, such as low impact and low energy design, ecological footprints, building orientation, choice and experimentation of materials, environmental impact surveys, recycling and dealing with waste, and development of a more integrated approach to designing an indoor-outdoor living space. They also learnt cross-disciplinary skills such as leadership and presentation techniques, and strengthened their sense of confidence.

A significant number of awards showcase the project's success. These include:

- 2009 Transpower Neighbourhood Engineers Award (Merit);
- 2010 National Green Ribbon Award: Community Action for the Environment: Young People; and
- 2010 Waikato/Bay of Plenty Sustainable Architecture Award

Essential to the positive outcomes outlined above was the strong culture of EfS and school participatory ethos and practices, the strong facilitation of the teacher and support of school

management, and the inclusion of environmentally passionate and socially-minded professionals and other community members who gave their time generously to the project. The support and resources of the Enviroschools Foundation were also considerable.

The working group has taken on the role of 'caretakers' of the Living Room and are involved in ongoing action for sustainability. They call the Living Room 'The Never Ending Project', because they recognise that there will always be environmental action that they can take in the school and home environments. There are also ongoing projects associated with the 'Living Room' – for example, in the two years after the building opened, a water feature was constructed by students to direct storm water off the roof and into a rain garden; an operational manual for the classroom was written by students; a bee-hive and chicken tractor were added to the grounds and students have established raised beds for vegetable growing. Due to the project length, some students had left the school before the building was complete, but their ideas were still incorporated by newer cohorts who also contributed their own fresh thoughts.

Quotes

'You are actually building something into those students, and not the building itself, which has got a future, ... a very important future' (Architect).

'The concept of kids' participation added a truck load of important outcomes to the project that adults wouldn't have seen. Not just the learning but the building functionality...' (Board of Trustees Member).

'Whenever we asked if we could have something like ... a fish pond ... he didn't just go oh no sorry your can't have that because it's just not happening. He came back with a different idea' (Student view on the Architect).

'I really like this project because no-one has done this in NZ. It has got so many opportunities. At the start I didn't know anything about it and I've learnt so much since I got involved. I like what it stands for and it is for everybody. It's a big project and it will help save energy. People might do what we are trying to do and it could be a big hit around the world. It's great for the environment, a really special project' (Student, 10 years).

Acknowledgements

A big thanks to Susan Wake (Unitec Institute of Technology, Auckland) and Michelle White (Hukanui School, Hamilton) who have co-authored the above text on the Eco-Classroom "Living Room" project.

Resources

Hukanui Primary School <http://www.hukanui.school.nz/> (accessed 29 April 2013).

Hukanui Primary School 'The Living Room'
http://www.wwf.org.nz/what_we_do/education/digital_stories/hukanui_primary_school/ (accessed 29 April 2013).

Wake, S. J. (2009) 'Power of participation: children's learning about sustainable design through co-designing an eco-classroom', in S. Loo, G. Nolan, S. Sequeira, F. Soriano (eds),

Performative Ecologies in the Built Environment: Sustainability Research Across Disciplines: 43rd Annual Conference of the Australian and New Zealand Architectural Science Association, [Available CD-Rom] Launceston, Australia.

Wake, S.J. (2010) The eco-classroom project: Fostering student participation through education for sustainability. *Master of Education (unpublished thesis)*, The University of Waikato, Hamilton. <http://hdl.handle.net/10289/5298> (accessed 18 June 2014).

Wake, S.J. and Eames, C. (2013) 'Developing an "ecology of learning" within a school sustainability co-design project with children in New Zealand', *Local Environment* 18, 3, 305-322.

The Enviroschools Foundation www.enviroschools.org.nz (accessed 29 April 2013).



Courtesy: David Mossop, principal (photographer: Hukanui School. Hamilton. New Zealand)



Courtesy: David Mossop, principal (photographer: Hukanui School. Hamilton. New Zealand)



Hukanuieco147. Courtesy: David Mossop, principal