

The Winston Churchill Memorial Trust of Australia



Report by Bernard Holland
Churchill Fellow 2006



**To investigate how education systems institutionalise
Ecologically Sustainable Development
(Canada, Denmark, Sweden, Scotland, England and Ireland)**

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Signed _____

Dated: March 6th, 2007

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Introduction and Acknowledgements

The Fellowship afforded me by the Sir Winston Churchill Trust was nothing short of an amazing opportunity for educational and personal growth, realising learnings in the management of ecologically sustainable development in schools and school systems and hopefully reaping rewards for educating our future generations.

Throughout my trip I was welcomed and supported by education authorities and not-for-profit organisations as well as those who work with children in schools and those in facility planning and building.

It is with both gratitude and a deepest respect for those who have journeyed where I am now going, that I owe my learning and wonderful experiences.

To those who have fought the moral battles; who have achieved incremental change in sustainability; who have had set backs, re-grouped and persisted when political will was against them; to those who have helped others work through the layers of discomfort and personal change required and to those who have engendered a belief and purpose in those around them while pushing the boundaries between tolerance and anarchy. These people have been an inspiration to me.

To those numerous teachers I met, whose every day consists of giving life long learning experiences to their students, thank you. It is these people who make a difference to the child now and society later. You have shown me that a passion for the environment can be an everyday experience and not just a philosophical stance with occasional action.

I would like to thank the Winston Churchill Trust for this opportunity to engage with this issue in a global context and bring back learnings which will assist educators and education administrators to embed sustainability into the everyday life of schools.

It is important to also acknowledge my employer, Brisbane Catholic Education who supported my fellowship through the granting of leave and opening up opportunities to develop my learnings within our school system.

Finally, I would like to thank those closest to me during my extensive time away from them. Their support was very important to me.

Please Note: The data collected and reported on through this fellowship is not intended to be an academic report nor aligned with current publications, policy or programs in Australia. The report reflects the lived experience of those I met in a sample of school visits and program information meetings on sustainability issues within various education sectors in Canada, Denmark, Sweden, Scotland, England and Ireland.

Executive Summary

My Winston Churchill Fellowship focused upon ways in which educational organisations in six different countries have attempted to embed sustainability into their curriculum, management and capital infrastructure. My Churchill Fellowship can be summarised under three key findings:

1. **Motivation: The need for individuals to understand their connectedness to the environment.**

Case Studies include school biodiversity projects, Danish and Swedish Nature School Programs and an Uppsala University teacher education program.

Learnings illustrate the need for children and adults to understand their direct and indirect impact upon the ecology. It appears that only through ecological conversion can one be in a position to honestly confront sustainability in their life and consequently be a role model and mentor to those we profess to teach and support.

2. **Method: The need for schools and system leadership to create and maintain common purpose.**

This theme was most evident in the leadership of eco-literacy programs such as environmentally focussed schools in Denmark, Scotland, England, Toronto (Canada), Ireland; Upper Canada College and Eco-friendly school construction in Canada, England and Ireland.

Learnings include the need for an organisation's ecological goals to be linked inextricably with the schools local community and its shared purpose; for self improvement processes to be implemented and validated; and for successful implementation to build the confidence needed to challenge schools to make increasingly difficult but ecologically friendly choices over time.

3. **Scope: The need for schools and system leadership to form partnerships and alliances to create sustained change.**

Examples of strategic alliances and partnerships were most evident in the Danish Outdoor Council, the Scottish Sustainable Development Education Liaison Group, the Toronto District School Boards Energy Co-ordinating Committee and the Higher Education Funding Council for England. These groups demonstrated what can be achieved if organisations look beyond their organisational silos to those who are aligned in belief or who have a vested interest.

Building teams of multidisciplinary or multi-stakeholder groups appears to be the foundation to broadening community and political support from which the education community can help to institutionalise sustainable practices.

The learnings I have brought home have already been shared on radio and at a Brisbane Catholic Education staff day for 230 staff. This report and its recommendations will inform the Leadership Team of Brisbane Catholic Education who will guide further action.

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Fellowship Program

Vancouver	CANADA	
Mon Oct 9	Peter Drescher	Deputy Superintendent Surrey District No 36 (Orientation Meeting)
Tues Oct 10	Bob Winton	Principal, Cambridge Elementary (New School Design)
	Lorne Cope	Principal, Panorama Ridge Secondary (New School Design)
	Ross Brennan Yrsa Jensen	Coyote Ck Elementary (Eco-Literacy) Director of Instruction (Curriculum Meeting)
	Alan Jones & Rick Fabbro	Assist Superintendents (Leadership and Succession Planning Meeting)
Wed Oct 12	Mary Gibbons	Holly Elementary (Eco-Literacy)
Calgary	CANADA	
Thurs Oct 12	Basim Farag	Petro Chemical Consultant, Alberta
Toronto	CANADA	
Mon Oct 16	Richard Christie	Program Coordinator, Ecological Literacy and Sustainable Development School Services, Toronto DSB
	Toronto Eco-Schools Network	Roberta Oswald, Sean Hurley, Scott Greive (TCDSB) Richard Christie and Catherine Mahler (Ontario Eco-schools) (York University)
	Samara Newman	Evergreen TDSB
	David Percival	Architect Planning and Facilities TDSB Thomas Wells (LEED Certified school design)
Tues Oct 17	Mary Lovett, Camilla Troutan (parent) Catherine Mahler & Penelope Conner	Jackman Elementary School (Eco-School) Leslieville Public School (Eco-School)
	Mary Lovett & Cheryl Carr	Dr Norman Bathoon Collegiate (Eco-School)
	Stephanie Foster Julie Johnston Stephen Thuringer	Upper Canada College (Eco-School), Sustainability policy development and Green Design and Construction
Wed Oct 18	Scott Greive	TDCSB Officer: Energy Conservation (facilities)
	Greg Rogers	Student Leadership program TDCSB (Catholic System)
	Angelo Sangiorgio	TDCSB Executive Superintendent of Planning and Facilities
Thurs Oct 19	Greg Rogers	Student Leadership Day (observation)

	Carmela Giardini	Principal Mary Ward Catholic Secondary TCDSB,
	Michael Wallace (Principal)	Chaminade Catholic Boys School (Eco-School)
	Barry White	Principal St Paul's Catholic School (Eco-School)
Fri Oct 20	Frank Coppinger (General Manager)	TDSB Energy Co-ordinating Committee
DENMARK		
Wed Oct 25	Egil Larsen	National Co-ordinator Eco-Schools (Danish Outdoor Council) Copenhagen
	Poul Hjulmann	Nature Schools and Nature Interpretation in Denmark
	Ida Kryger	Eco-Schools for Kindergarten
Thurs Oct 26	Heidi Høj Pedersen	Hørsholm Lille Skole, Rungsted Kyst (Eco-School)
	Lone Hagen	Baunebjergskolen, Humlebæk (Eco-School)
Fri Oct 27	Jesper Steenberg	KE Vand ApS, Valby Nature School
SWEDEN		
Mon Oct 31	Lars-Ake Backman	Sustainability Development Officer: Ed Dept
	Margareta Grönqvist, (univ. Adjunkt) and Karin Hjalmeskog, (univ. Lektor)	Uppsala University
Tues Nov 1	Christian Pyke	Sigtuna "Nature school"
Wed Nov 2	Kajsa Mellner Daxberg, Manager (Primary Schools)	City of Uppsala (Development Office)
Sat Nov 5	Lars-Ake Backman	Sustainable Housing Design
SCOTLAND		
Wed Nov 8	Kate Campbell	Eco Schools Manager Scotland
	Alison Mont (Retired Teacher)	Currie Community High School Edinburgh
	Pat Brown	Hermitage Park Elementary School, Edinburgh
Thurs Nov 9	Sustainable Development Education Liaison Group	Bill Lynch, Development Officer, Sustainable Development Education (Glasgow)
	Jamie Pearson	Edinburgh Council (Waste management)
	Kate Campbell	Eco Schools Manager Scotland
	Mark Wells	Education and Campaigns Manager Scottish Environment Protection Agency
Fri Nov 10	Alistair Lavery	RSPB Scotland (Edinburgh)

	Barry Greig	Scottish Executive (Edinburgh)
Tues Nov 14	Moraq Watson	Education Policy Officer WWF Scotland (Stirling))
ENGLAND		
Wed Nov 15	Andrew Suter	EnCams (Eco-schools) (Wigan)
Fri Nov 17	Joanna Simpson	Higher Education Funding Council for England, (Bristol)
Tues Nov 21	Nigel Spears	RC Archdiocese of Westminster
	Facilities Planning Liaison meeting	Bishop Challoner Catholic Collegiate High School (Three school amalgamation / construction worth \$100m Aus)
	Steve White Principal Buildings and Development Officer CofE Diocese of London	St Mary's Anglican, Camden (New School Design)
	Nigel Spears	St Aloysius Catholic Elementary School, Camden
	Nigel Spears	St Mary Magdalene's Catholic Jnr School
Wed Nov 22	Nigel Spheres	Collis Catholic Elementary School, Richmond (New School, Construction)
Thurs Nov 23	The Felsted School	(Preparatory School Visit) Essex
IRELAND		
Mon Nov 27	Cathy Joyce	Green Schools, Dublin
Tues Nov 28	Dave O'Learey and Birgit O'Driscoll (Green Schools)	St Brogan's College, Bandon
Thurs Nov 30	Frank Lewis (Senior Architect), John Dolan Senior Engineer and Energy Policy Co-ordinator Larry McEvoy Manager (Professional and Technical)	Tullamore Building and Planning Division Round table Meeting School Visits...new and refurbished schools inc 'Gaelscoil An Eiscir Riada', Tullamore
Friday Dec 1	Frank Lewis	Newly constructed schools: Visits

Major Findings and Observations

Section 1: Motivation

The need for individuals to understand their connectedness to the environment

The snow flakes fell gently as I walked through hillocks of rocky terrain dressed with pine and weeping spruce trees at the Sigtuna Nature School, 50km north of Stockholm.

The teaching staff shared wild berries with me, told me the story of the Stone Age and Iron Age burial middens rising from islands to hills through tectonic lift. We observed several animal tracks in the fresh snow; examined traditional timber products students had made from local materials and I was shown pictures of students fishing through ice holes and constructing Roman architecture using ice blocks cut from the frozen river.



As I wrapped my hands around a warm coffee and talked with the staff back at the Nature School Hut, I realised that having almost completed four weeks of my study tour, the pieces of the puzzle were finally falling into place. Summing up my feeling of 'being in touch with nature' again, Christian Pyke said, *"For sustainability to work, children must have a relationship with nature!"* As basic as it sounds, this was the most significant "ah ha!" moment of my fellowship!



I then realised that all the organisational change processes I had observed to date would mean little unless each of us understood our impact upon the ecology. This is particularly true for younger children who require practical activities to make these connections, only able to understand more abstract concepts such as 'indirect impact' as they mature.



The ecological story as told by the nature school gave children a history lesson that informed the present while increasing their ability to make informed decisions about the future.

Being grounded in the reality around us and in touch with direct and indirect causes and effects prepares us as adults to also undertake more ecological practices.

Case studies illustrating this connectedness to nature included school biodiversity projects, Danish and Swedish Nature School Programs and the Uppsala University teacher education programs.

Chaminade Boys College, Toronto

- The school has an overall focus upon water, wild life and water recreation and appreciation e.g. (weed control, tracking toxic dumping, bio diversity plantings, water quality monitoring as part of wider study and has developed a fish hatchery for replacing local fish stocks)

- The program is integrated within the science curriculum, with programs including outside field trips such as canoeing to environmentally pristine areas: a privilege program
- Their 'Adopt a Creek' program is supported by local council and is modelling its successful ecology program to other schools.
- The school committee model of shared leadership / co-responsibility and the engagement of students within their local ecology has reaped a better understanding of the impact of development on the ecology and the ways in which a damaged creek ecosystem can be improved through careful management.
- As a consequence of this whole school focus, student consultation and involvement, behaviour in the school has improved and the school now has an enrolment waiting list.
- Key facets of the program include dedicated teaching staff of Tino Romano and Bob Giza, who I describe as coaches to each other and the students. Coupled with a Principal, Michael Wallace, who acts as a mentor / sponsor, opening doors and supporting positively.



Learnings

- When Leadership and the rest of organisation share common goals the focus of the whole is sustained over time.
- Purpose, experience and success builds incremental change.
- Such success in change management positions the organisation to challenge long held beliefs and practices as harder issues are tackled in the cause of sustainable practices.
- Sustainability of programs is increased through the involvement of multiple stakeholders i.e. council and school.
- Sustainable leadership of such programs requires coaches who walk the journey daily with staff, mentors who can help map out future pathways to follow and sponsors who can open the doors to opportunity when no other way is possible. Such people are essential to the progression of difficult change issues.

Copenhagen Nature School

From time to time, specialised learning on a topic using equipment not readily available to classroom teachers is required to give children a more developed taste and feel for an issue. Water, waste, energy, transport etc can be catered for through Nature Schools or as we call them in Australia, Environmental Education centres.

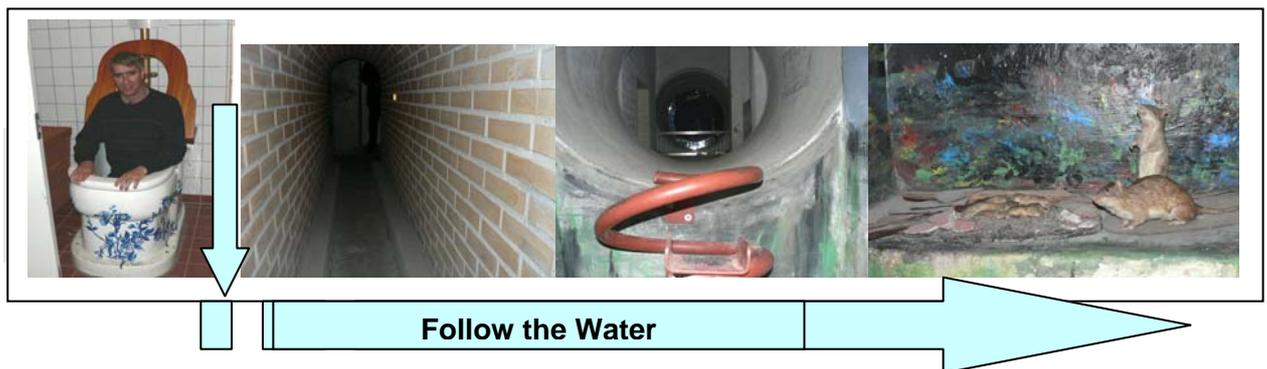
The Copenhagen Nature School system has a school ranger program for eco-interpretation as well as stored equipment (butterfly nets, garden implements etc) in park sheds for teachers to access in their local school area as well as a developing specialised service delivery facility call Nature School. The nature school I visited was treaded out of an obsolete Sewerage Treatment works and already had tunnels, water and pond facilities in place.

Jesper Steenberg (Teacher in Charge) underlined the importance of connecting children to nature when he compared stone-age man to modern man. Lighting a fire to clear scrub is

an active participation with visible environmental consequences. A simple cause and effect model as illustrated, thanks to Jesper, shows that in today's world children are more removed from direct cause and effect.



Programs run at the Copenhagen Nature school include “Follow the water” where children descend down an oversized toilet pedestal to see the hidden effects of the sewerage system. This normally passive participation by children with the invisible environmental consequences masks the true impact of their actions. Out of sight and out of mind we may say. The ‘Follow the Water’ Program (Children Aged 8-12 years) tells a story through participation and when coupled with other programs such as Play With & Learn About Energy and Water’ Aged 3-8 Years provides opportunities for learning across the years.



Learnings

- Hands on activities reinforce core concepts. These concepts provide the foundation for more abstract learning in later years.
- Specialised facilities are important to provide support for classroom programs and enable more expensive demonstrations to have costs shared across many schools.
- Good communication with local government and utility authorities can enable learning opportunities be created in obsolete facilities that suit specialised learning for children.

Uppsalla University Teacher Training: Consumer Education

I was told at one point while visiting Sweden, that there was a ban on owning a unit for investment when you owned a house. This apparently ensured that the market did not overheat and affordability of accommodation was somewhat controlled. Coupled with a propensity for communally designed housing where five families may have their own separate house but share laundry and heating services (ground source heat pump) and a communal kitchen and activities room when required, consumerism appeared to be recognised as needing constraint to say the least.

In the same vein, Uppsalla University have designed teacher education courses in sustainability such as a course called Klara Skivan...”a way to Consumer Education”, designed by Margareta Grönqvist, (univ. Adjunkt) and Karin Hjalmeskog, (univ. Lektor).

The aim of the course according to Margareta and Karin is to create “a preparedness for living and acting together in a diverse society by providing experiences and an understanding of the consequences of daily activities and habits in terms of economics, the environment, health and well-being.”

The students learn to minimize their effects on the ecology through a ‘design for living’ menu for their family. All activities are based on research that has determined that food, transport and housing takes 90% of household spending...so that is the obvious place to start in consumer education.

Other concepts underpinning the course were explained in terms of

- A need to change to green consumption.
- A need to buy less things.
- Need to shift of the economy to invest in the services of people and not ‘things’. This keeps employment higher and eco-footprints lower.

The University staff also highlighted recent research which suggested that because boys and girls do differing amounts of house work, consumer behaviour or awareness is also based on gender. This has particular implications for educating boys and girls in sustainability.

The following hypothesis from Margareta and Karen provides an insight into one way to think about sustainable development

We have a need to row the boat with two oars to achieve sustainability:

- *Row with the ‘oar of innovation’ through scientific improvement, and*
- *Row with the ‘ethical oar’ to make decisions based on morals and well-grounded beliefs*

Learnings

- If we are in the business of educating students in sustainability then surely we are also in the business of professional development for teachers.
- Even more importantly shouldn’t we also be engaging universities about pre-service courses in ecological sustainability, underpinned by ecological conversion.
- The heart of sustainability is the need to be wise consumers and that education is the best pathway to achieving this.

Greening and Bio-diversity Programs

While teacher education and nature schools present managed approaches to education in sustainability, the core of teaching children comes in their involvement with their immediate, classroom environment.

From school visits in Canada, Scotland and Denmark it was evident that enthusiastic teachers were very active in the creation of curriculum based greening, bio-diversity programs and school gardens. These programs assisted children to not only see the connections between food sources and their local ecology, but to also model ways to enhance the local ecology and reduce the effects of green house gas emissions.

The programs I witnessed formed part of the schools environmental program and relied heavily upon key staff members and student participation through committees and/or class based initiatives. While all these programs had been sustained over many years, one always got the sense that if the key staff member / parents were to leave the school, all would be at risk!

From the Jackman Primary ‘Green Roof project in Toronto to the re-establishment of native species at Curry Community High, Edinburgh, the school garden projects at Baunebjergskolen, Humlebæk near Copenhagen, formalised greening projects supported

by organisations like SEEDS or informally organised programs by individual teachers, the net gain for the school and students was an increase in bio-diversity, beautification of school surrounds, at times thermal insulation for buildings and broadened school community involvement in the schools development. All schools reported increased esteem in the community and some reported comparatively higher formal test results.

In Canada the SEEDS program gave grants to schools for landscape development however the conflict between maintenance issues arising from plantings (leaf drop, mowing, underground services etc) realised an area for conflict and in some cases saw projects either mothballed or delayed to such an extent as to determine further applications.

When a project manager co-ordinated greening projects in Toronto in consultation with school maintenance officials, projects were more successfully implemented.

In some jurisdictions, such programs funded a part of one employee's wages to assist schools with the functions of grant applications and the co-ordination of projects with facilities maintenance sections with greater success.

Learnings

- To drive greening or bio-diversity programs in schools, like any initiative, requires them to be part of the overall school vision, requires someone to champion the cause and lead the project and needs broad community involvement and support to have long term effectiveness.
- If the champion of the cause works in a silo within the school, the initiatives will be treated as a passing phase.
- Successful and sustainable projects involve all stakeholders in the solution.

Section 2: Method

The need for school and system leadership to create and maintain common purpose.

The leadership of eco-literacy programs was evidenced during my fellowship through programs such as Eco-Schools (Canada, Scotland, Denmark and Ireland) Upper Canada College and Eco-friendly school construction in Canada, England and Ireland. Success in these programs required easily adapted but systematic programs of implementation, capable of being adapted to local agendas but validated along recognised quality assurance principles.

One such program, **Eco-Schools** is an environmental management tool, learning resource and recognized award scheme. Loosely based on ISO14001/EMAS, Eco-Schools are a simplified and participative environmental management system operating in over 14000 schools in 37 countries (FEE:2005). Eco-Schools is a key program of The Foundation for Environmental Education (FEE) a 25 year old international organisation designed to encourage whole-school action for the environment and support. FEE not only has the Eco-Schools Green Flag program but also Blue Flag (beaches and marinas) marine environments, Young Reporters for the Environment (Secondary School network), and Green Key (eco label for tourist facilities), and LEAF (Learning about forests).

Learnings

FEE Eco-Schools literature highlights the following

- The need to involve the whole, or the greatest part of the school.
- Outcomes of Action Plans should be demonstrable.
- The school should inform the whole school and community of its activities.
- The Local Authority should be involved in some capacity.
- Schools should concentrate first on understanding and implementing the seven steps of the programme to change the school and its environment.
- Schools are recommended to establish links or contacts with other schools.
- While schools may participate in various themes and issues of relevance to Local Agenda 21, the core themes of Eco-Schools are Water, Energy and Waste.

The following case studies highlight a number of important learnings from my study of Eco-Schools and their various spin offs.

Scottish Eco-Schools

Over 2,500 or nearly 80% of all local authority schools had signed to the eco schools charter not only for environmental stewardship reasons but also to better meet National Priorities in Values and Citizenship, for which they undertake inspection. This represents the highest percentage I found in any country and ensured that the Learning and Teaching was embedded with the principles of sustainability.

The Scottish Eco Schools program is affiliated with FEE and as such has both a proven seven step process which forms an integral part of each schools on-going renewal cycle.

1. Establishment of the Eco-School Committee:

Hermitage Pk, Edinburgh
Committee Leaders





2. Environmental Review
Children Monitor of Water use in school: 'Gaelscoil An Eiscir Riada', Tullamore, Ireland

3. Action Plan:
4. Monitoring and Evaluation:
Upper Canada College
Carbon Neutral Ice Hockey Rink



5. Curriculum Work
6. Informing and Involving
Hermitage Park Primary Edinburgh

7. Eco-code:
Hermitage Park Edinburgh
Mission Statement



Celebrate when you receive the Green Flag
Lone Hagen and students at Baunebjergskolen, Humlebæk, Denmark (Eco-School)



Learnings

- When attainment of national priorities is linked to funding, schools actively adopt proven systems to achieve goals within these priorities.

Ireland Green Schools

This FEE affiliated Green Schools program I visited was currently dealing with Dublin schools that had achieved the distinction of three green flags. Unlike the Toronto Eco Schools program that was moving onto more and more difficult choices, the Green Schools program was implementing a circuit breaker by taking the concept into the homes of students while giving schools some respite in seeking further goals in sustainability.

Amid a booming economy, infrastructure around Dublin in particular was not coping with increases in car traffic and electricity consumption. While the government advertising at the time focussed on “the power of one” to reduce power consumption in homes, research showed schools were associated with 60% of all morning traffic and 20% of all car traffic. This helped to position Green Schools as a key element in the education process around transportation to and from school. Infrastructure alone doesn’t appear to increase walking or cycling!

Using the FEE seven step process, the transportation focus, a very different topic to waste, water and energy highlighted improvements through monitoring of base line data in cycling and walking to school through the (WOW: ‘Walk on Wednesdays or ‘Walk Once a Week’ Program). Similar results were recorded at Coyote Creek Elementary (Surrey District, Vancouver). Anecdotal evidence was also presented of improved social outcomes with friendships developing from joint travel and improved road and personal safety with children not in cars and walking with friends.

Meanwhile a Green Home initiative undertook a softly, softly approach to data gathering from homes through surveys and followed by implementation of a responsive education program. As with most not for profit eco groups, funding for basic operations was problematic and for special projects that required more resources like transportation and the Green Homes project, it becomes very difficult.

Learnings

- For funding to flow to projects outside of core operations, communication and liaison systems need to be established with government in a pre-planning stage to ensure a more integrated approach to program implementation. In this way funding opportunities can be maximized within the budget cycles of government.

Ontario EcoSchools: Toronto

The Toronto EcoSchools Program is not born from FEE but shaped by local issues. While not diminishing the great things happening in the other schools I visited in some ways, the Toronto EcoSchools presents as a more targeted and focussed response to climate change issues.

Outcomes for schools include the benefits of an eco-literacy program and consequently environmentally friendly practices at schools, academic and social achievement and financial savings. School boards also receive significant support in energy reduction programs and councils, cost reduction through waste minimisation and elimination.

An independent analysis of energy use at the Toronto DSB indicates that on average, certified EcoSchools use 12% less electricity and 7% less natural gas than comparable non-certified EcoSchools. When combined with the retro fitting of mechanical devices to control energy, savings across 558 schools amounted to 8%. While specific discussion of strategic alliances and partnerships will be discussed in section 3 of this report, it is important to note that through the instigation of the eco-literacy program and enhancement from York University and the collaboration of Ontario school boards, significant work has

been done in creating a connected curriculum for sustainability with the provincial curriculum. This co-operation has yielded fourteen guides and three multi-media presentations organized into four categories: Getting Started, Connecting to the Elementary Curriculum, Connecting to the Secondary Curriculum and Enriching your Program. See (<http://www.yorku.ca/ecoschl/index.asp>).

The benefit of these materials is they are consistent in presentation, current because of industry co-development, comprehensive in their coverage of the curriculum and form a series of work units that may be used by different schools depending upon that school's particular focus.

Ontario EcoSchools have a quality assured 5 step process which taps into the underpinning goals of the FEE Eco-Schools program, including broad participation, democratic decision making processes and measurable outcomes. What was most evident in all schools visited was the obvious marketing and showcasing of projects and achievements as a defining feature of the whole school community.



Specific school visits realised a wonderful array of school based waste management and minimisation, energy saving, transportation and greening projects highlighting the effectiveness of the school committee structures and the model of Coach, Mentor and Sponsor as previously highlighted.



Learnings

- If Governments or organisations want to reduce GHGE's they need to establish or support a structured system through which schools can meet targets and local agendas such as Eco-Schools.
- Enforcement is too blunt an instrument and doesn't drive education and therefore understanding.
- If we are to develop a well integrated recycling system government imposed taxes and refund systems appear to encourage good recycling practices (Holly

Elementary, Coyote Creek Elementary, Dr Norman Bathoon High) NB. South Australia recycles 85% compared to 35% in other Australian states. SA is the only state with a refund policy on goods! (Ian Kiernan: Clean Up Australia).

- If there is a system wide approach to reduce consumption including human intervention then behavioural science dictates that savings must be shared between all stakeholders in the equation for it to maintain a positive focus.

Upper Canada College

Privately owned and operated institutions can be more agile and adaptable to changing conditions than larger groups made up of many entities. Upper Canada College, a self funded boarding and day school is one such organisation.

The College developed an environmental mission which outlines a vision for community service, leadership, internationalism and environmental responsibility as the four hallmarks of a UCC education through its strategic goals of:

1. **Ecological Literacy:** In each student, (a comprehensive understanding of the basic patterns and processes by which nature sustains life and how these core ecological concepts relate to sustainable human communities).
2. **Learning It by Living It:** Model as an organisation, how core ecological concepts can be applied to create sustainable human communities.
3. **Environmental Ethic** in all members of the UCC community.
4. **Contributing to Society:** To fulfil the college's commitment to be a private school with a public purpose through research, publications and outreach in the areas of outdoor and environmental education, environmental monitoring, and sustainability.
(A Green School for the 21st Century, UCC, 2002)

In order to achieve these goals with all sections of the College, both on site and off site new staff specifically employed to focus on sustainability were using the following three pronged approach across the whole campus.

- To work with faculty throughout the school to further enhance the curriculum and ensure an integrated continuum in environmental education across all year levels.
- To build new facilities and existing ones modified incorporating the principles of responsible environmental stewardship and sustainability. Facilities will be used as teaching tools, to illustrate to all members of the UCC community how the buildings "work" and how they link with our natural world.
- To establish policies and procedures that will encourage the members of the UCC College community to live in a green way. The College will operate corporately with policies (e.g. purchasing, energy use, food, etc.) that reflect principles of environmental responsibility, sustainability and natural capitalism.
(A Green School for the 21st Century, UCC, 2002)

Significant outcomes since the publication of this approach have been the development of policies and processes that addressed:

- Policy for purchasing guidelines.
- Policy for Optimal Learning Environment for Boys (classroom / facility design).
- Policy for Waste Management.
- A draft Master Plan for the College.
- Development of a Carbon Neutral Artificial Turf Grid Iron Field.
- Design for a Carbon Neutral Twin Pad Ice Hockey Indoor Centre.

UCC was a lighthouse example of what alignment of goals, employment of appropriate staff and commitment by leaders, can do within an organisation. While all change management situations of such significance will have their human related problems, four years after policy development is realising outcomes that are measurable and obvious to everyone. UCC is a model, that many schools that have control over capital and recurrent budgets can follow.

It was of significance that the school had a philanthropic sponsor funding the two positions to address sustainability and a college principal whose vision for a 'lighthouse' ecological school was quite profound.

The financial capacity of the College to implement some aspects of their cultural changing program should not discourage other less financially able schools to follow suit, as much of what I observed was more embedded in organisational change management and leadership theory than hip pocket (money) politics.

Learnings

Policy that requires people and organisations to implement long term, sustainable policy and practice require management of that change through:

- Appropriate funding levels for staff to assist in policy development, research, co-ordination, communication, implementation, monitoring, evaluating and PR of that change. It is better to over supply in the short term than under estimate staffing levels if you are serious about change.
- Ownership and responsibility at Director / CEO level.
- Inclusion of all within the organisation.
- Involvement of 'spiral learning' in attaining increasingly more difficult goals.

They say first 20% are easy to change, the next 60% will follow and the final 20% are very hard.

Capital Development with Minimal Environmental Footprints

One constant theme throughout my visits to schools and education systems in the Northern hemisphere was the rising cost of energy.

All school systems I visited had centralised procurement and payment of energy accounts, be it within the local government authority or by a de facto local government arrangement through a board or trust system. Importantly for finding solutions to such problems they also had complete control over funding for and design of capital projects.

Utilising these linkages between capital and recurrent budgets, education authorities, particularly those in significant growth areas were modelling ecological sustainability through 'lighthouse' projects. 'Normal' developments followed these innovations utilising the more affordable lessons learnt in the process.

It is important to note that the prime motivating factor in energy efficient designs was budget bottom lines, regardless of how ecologically orientated the education systems was attempting to be.

Surrey District 36, Vancouver, had implemented centralised control over heating levels to the degree that budget targets could be met by raising or lowering heating levels by the push of a button. Automation of lighting and heating levels in new schools together with passive solar heating design was standard. Within the northern hemisphere, a propensity to build multi-level 'all in one' schools on smaller footprints than Australian schools maximise energy savings through better heat management. Manual control over systems by the custodian (caretaker) provided an essential human element of control over energy systems in older schools.

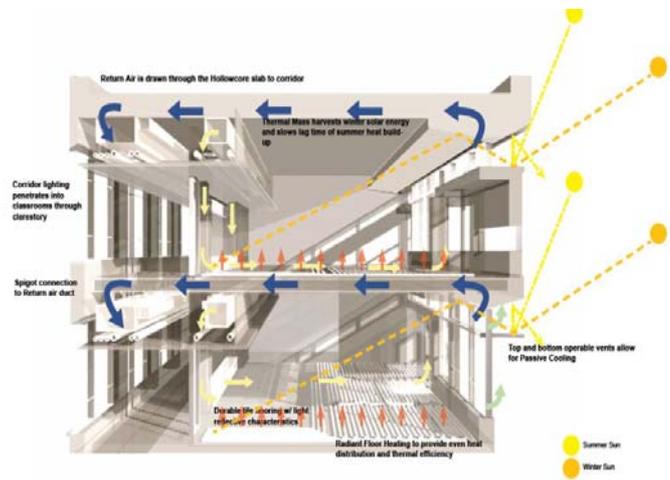
Toronto District and Toronto Catholic District School Boards demonstrated similar energy efficient school design with one significant 'lighthouse' project.

The Thomas Wells Elementary School (pictured) accredited with the Leadership in



Energy and Environmental Design (LEED) Green Building Rating System,TM demonstrated what could happen when environmental literacy (Richard Christie) and capital development interests (David Percival) communicate effectively with each other.

The Toronto District School Board made a decision to construct a school at 20% above normal project costs due to energy efficiencies that would take 12-15 years to pay off from its energy savings. Thermal imaging was even used to identify leakages in the building. Passive solar heating and reticulation of warm, purified air demonstrated a healthier air flow for students and created energy benchmarks from which further decisions by the board could be made.



London based Catholic and Church of England Education Diocesan Offices, while not financially responsible for new school construction, did play an important role in working with local authorities to improve ecological footprints.

This support model was important as it gave the school principal someone to walk the journey with while working with local authorities. Once again the political and budgetary imperatives for eco-friendly construction such as energy savings were paramount as local authorities had control over both the capital budget and energy account.



Example of Old Collis and modern Eco-friendly extension of Collis Elementary, Richmond

Ireland's planning and building is co-ordinated from the centrally located town of Tullamore and then outsourced to independent architectural firms for the construction phase.

Strong economic and population growth has created a push for new and refurbished schools which enabled them to trial a 'lighthouse' project with a view to rolling out a plethora of more energy efficient schools.

With a 'model' school designed around passive solar heating (pictured) and energy efficient heating systems such as bio-fuels, the planning and building of other new schools took on the lessons learnt. This resulted in a modulated design for 8, 16 or 24 classroom elementary schools. This profile could be implemented across Ireland using ecological standards for the facilities brief and then adapting to fuel sources as they presented themselves.



For example bio-fuels could be grown and pelletised locally in some areas by utilising local farm lots thus saving on transport costs, while other schools could more cheaply tap into

the traditional gas sources. This modular design system was similar to how many large education providers utilise economies of scale.

The planning and building services division however, lamented that their significant growth phase left little time for planning anything more than energy efficient school buildings. This highlighted the need for education systems to have better cross organisational structures with curriculum and those who use the buildings to better inform facility design around the learning and teaching process.

Summary of Eco-Friendly Eco-Developments

In most energy efficiently designed schools there was a total reliance upon the elimination of human factors in the saving of energy. In some jurisdictions there was total ignorance of the existence of Eco or Green School Networks designed to address such issues along with waste, water, transport and even health and well-being.

Research in Toronto has proven that mechanical / electronic devices and eco-design do provide substantial savings to those footing the energy account, however their research also demonstrated that through eco-literacy programs such as EcoSchools, further savings can be made and these savings are not limited to energy and may also transfer to modifying family consumer behaviour.

Failure to make connections between our jobs and global environmental impact is understandable in the silo view of the world, in which most of us believe we work and believe we have little power to change. Be it as a planner, a builder, a curriculum designer, a custodian or even a Director, the connections can elude us for a variety of very human reasons.

Upper Canada College and Toronto District School Board are particular examples of 'joined up thinking' (Nigel Spheres: Westminster Catholic Education), which can structurally out manoeuvre one's propensity to remain in a silo. The challenge for all of us is to create opportunities for 'joined up thinking' within our own business unit.

St Mary's Anglican Primary School, Camden, (England) (pictured) is another example of joined up thinking. In order to service a financially restricted capital program the air space above their school was sold to a developer of student accommodation in trade for a 99 yr lease and construction of a completely new primary school on the first two floors. The play yard of St Aloysius Catholic Primary (old construction) is in the foreground.



Learnings

- For real cost / benefits to arise from the development of eco-friendly capital projects there must be connections between operational savings created by the design and the capital investment that created them e.g. Thomas Wells LEED School TDSB.
- Ecological standards (Facility Brief) are needed for the development for teaching spaces (Ireland, England, Canada) and these can be established through Lighthouse projects and research with implementation on a broader scale defined by affordability and political desire to be more ecologically friendly.
- To achieve a true balance in ecologically friendly facility design and use we must engage in "joined up thinking" between all stakeholders especially with those who will utilise the facilities. This has implications for data driven improvement analysis coupled with environmentally focused Post Occupancy Evaluations.
- Using "joined-up thinking" a more global, ecological view is required to support the 'triple bottom line' of people, planet and profit.

Section 3: Scope

The need for schools and system leadership to form partnerships and alliances to create sustained change.

Examples of strategic alliances and partnerships are evident in the strongest dominions of education for sustainable development. The Danish Outdoor Council, Toronto District School Board, the Scottish Sustainable Development Education Liaison Group and the Higher Education Funding Council for England are four such organisations I observed during my fellowship.

Danish Outdoor Council

The most effective lobbying team I learnt about was the Danish Outdoor Council, an umbrella organisation of 96 not for profit, non government organisations including the Eco Schools network (FEE affiliated).

As an advocate for and co-ordinator of these groups, the Outdoor Council provided a platform upon which minority members could gain a voice within government and obtain staff through the sharing of part funded positions.



The benefits of one organising group were:

- focussed lobbying of Government for various causes; NB major groups such as sport engage with government as a separate entity;
- agility to push funding around within its organisation to take on new initiatives it had identified;
- the ability to secure government funding for projects based on its proven successful track record;
- Government had only to deal with one organising group although large entities such as sport also had a separate voice at the national level;
- for the Eco-Schools network, Nature Schools and the Ranger Program the broad representation within the Outdoor Council not only enhanced Danish culture and attitude towards the environment it also provided some protection of vulnerable programs.

Scottish Sustainable Development Education Liaison Group

This multi-stakeholder group was brought together through government initiative with voluntary participation by Eco-Schools, World Wildlife Fund (WWF), the Royal Society for the Protection of Birds (RSPB), Scottish Heritage, Oxfam, the Sustainable Development section of the Education Department and other interested parties. The Liaison Group addresses the convergence of social and environmental issues in the community such as Global Education, Peace Development, Environmental Education and Development of the 3rd World.

The RSPB alone has more members than any political party and together with the environment and heritage groups form a potentially strong lobby group in Scotland. One could see some sense in the government's actions.

Outcomes of this liaison group was a very well co-ordinated approach to sustainability in the school system to the degree that organisations such as WWF had developed significant resources for school use. Eco-Schools has also become the favoured means of meeting National Goals for almost 80% of local authority schools and the combined resource base provided significant levels of knowledge and programs from which schools could draw.

Essentially I was seeing a national approach which engaged with and supported a national environmental psyche in a similar relationship to the Danish Outdoor Council.

Toronto District School Board Energy Co-ordinating Committee

This group of over 30 stakeholders brought together eco-literacy, facilities' providers and maintenance groups of the Toronto School Board through partnerships from within the larger organisation. The committee also created strategic alliances with external groups such as power suppliers to meet shared goals.

As mentioned before, mechanical devices had proven savings in the system and when coupled with education, greater savings in the order of 5% per year were made not to mention other ecological benefits on the school and home front.

What was significant about this group in comparison to other co-ordinating groups was that eco-literacy was significantly involved in creating impetus within the group. Given an energy target to meet, the EcoSchools process gave immediate results to the Board and respectability to the program. With increasing sign ups to the program across Ontario and Toronto in particular, quantifiable gains were being made in the reduction of energy consumption. Initiatives such as the trial of a *Power Drill* where the energy company would contact predestined schools to switch off non essential power at times of peak loading proved that education could have a significant impact upon what was emerging as a key issue for Toronto's power grid.

With this respectability, much to do with the quality of the people involved as the actual program, the Thomas Wells 'Lighthouse' project was envisaged and accepted by policy makers.

The benefit of a cross organisational group such as this is the concept of central policy making and control, but local school decision making about methods of implementation.

The challenge now facing the Board is after a number of years of improved efficiency through technology and modified behaviour the 'low fruit has now been picked'. The meeting of further targets will be increasingly difficult with extras like fridges in classrooms having to be sacrificed to meet these targets. The only saving grace behind making harder choices is that confidence in the process and outcome has been raised in the face of on-going success and the embedding of EcoSchool programs in an increasing number of schools.

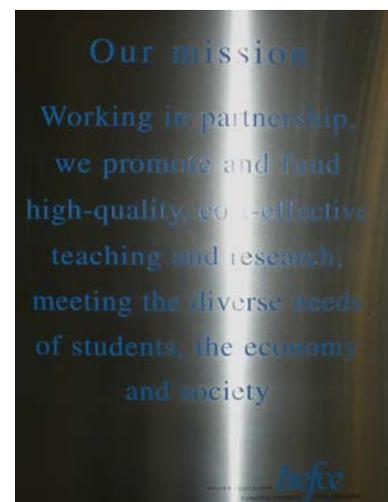
Higher Education Funding Council for England, (H.E.F.C.E.)

Under the auspices of a Government Strategic Action Plan, the HEFCE is a central policy making body involving disparate antonymous universities in order to meet national sustainability targets.

In a similar vein the EcoSchools step process the HEFCE has developed a Mission Statement using input from all stakeholders in an effort to guide the implementation of a strategic plan.

Some of the HEFCE aims are to:

- embed Sustainable Development (SD) in practices through a Strategic action plan;
- implement priority actions within the plan;
- undertake a Strategic review and establish baseline data through:
 - An energy audit.
 - A travel survey.
 - Product and procurement footprints.
 - Contracts evaluated through SD footprint; and



- Establish measurable performance indicators such as carbon emission monitoring.

Their research also indicates that 18 of 24 disciplines taught across their campuses can integrate sustainable development in curriculum and programs. This provides hope for the implementation in the higher education sector.

Learnings

- The need for organisations to form partnerships and alliances which both support their own goals and enable growth within their mission, thereby achieving institutionalised sustainable development.
- When like minded organisations form alliances, they present as a united group to government with a focussed message. Similarly, such organisations make it easier for government to sound out policy initiatives and set in motion far reaching action plans.
- That cultural norms and expectations need to be harnessed within representative groups so informed political debate and representation can be facilitated.

Conclusion

A more sustainable lifestyle challenges individuals to engage with a world that they may have assumed as a given...the natural world. A place which underpins our whole existence. A place under severe threat from human impact.

As educators our role in ecologically sustainable development should focus on the links between nature and each student's life.

In a consumer driven society one's ecological footprint becomes ambiguous and 'cause and effect' disconnected. Challenging us, is not only the call to change the way we think and act, but a call to engage in learning and teaching of sustainable development: a call to ecological conversion.

Secondly our role as educators is to focus on processes which provide enduring curriculum involvement with the environment - eco-literacy.

To do this we need to utilise proven structures that engage sustainable development and strategic renewal. Such structures are programs similar to the Ontario EcoSchool or FEE Eco-School Programs. In Australia, the Healthy and Green school network has potential to meet these aims.

Thirdly, as education providers we need to focus upon fostering intrasystemic and intersystemic relationships that connect all aspects of school provision. Leverage off "joined up thinking" will create the potential for broader community involvement and the potential for changing consumer buying patterns within our schools and perhaps even within the broader school community.

My fellowship has shown that when like minded organisations align goals and actions the indicators of institutionalised change such as broad community support and the attainment of increasingly harder eco-friendly choices will become more evident. If everyone is involved and subject to the same conditions, eco-friendly changes to our consumer orientated lifestyle will be more readily accepted.

Pro-active implementation of my recommendations would see more timely, democratic decision making processes, greater control of the agenda and better positioning of the organisation to inform government policy through organic, bottom up change management strategies.

Reactive implementation as a result of government policy change would involve thrust, top down agenda setting, less control by those implementing, less ownership at the local level and less planning for the inclusion of stakeholders who may assist schools or be assisted by schools.

I am sure from what I witnessed in my fellowship that a balance between top down support and bottom up initiatives would achieve the best balance for embedding ecologically sustainable development, given it is a long term change management process.

The institutionalisation of ecologically sustainable development in education starts by engaging our heart and soul with the ecology so ultimately we can address climate change and all its associated issues of equality, justice, power and democracy in local and global communities.

Recommendations

To institutionalise ecologically sustainable development in education systems we need:

1. To create the **Motivation** for addressing sustainable development by encouraging individuals to understand their impact on the ecology.

This may be achieved by:

- Developing engaging, interactive units of work involving sustainable development themes within state and national curriculum.
 - Utilising existing and creating more specialised environmental education centres working in the themes of water, waste, energy, transport, bio-diversity and health and well being.
 - Targeting ecological conversion and curriculum development in the professional development programs for pre-service and in-service of school staff.
 - Raising the profile and importance of consumer education within existing state and national curriculum programs.
2. To provide a **Method** for schools and system leadership to maintain common purpose and measurable actions in pursuit of ecologically sustainable development.

This may be achieved by:

- Planning strategically for sustainability.
 - Adopting proven processes for development of an environmental focus within schools.
 - Encouraging participation by schools through incentive programs.
 - Providing staff at a central office level to co-ordinate and inform school planning and implementation of ecologically sustainable development.
 - Linking responsibility for ecologically sustainable development with the responsibilities of one or more Directors.
 - Establishing a cross organisational liaison group to foster “joined up thinking”.
 - Collecting, collating and reporting on base line data on water, energy, waste, bio-diversity, transport and health and well-being from all schools.
 - Exploring ways to connect capital and recurrent expenditure to better inform and give incentive to expenditure on sustainability measures in schools.
 - Establishing a series of ‘lighthouse projects’ around these themes to explore solutions which can be modelled to schools.
 - Establishing ecologically sustainable standards for the facility briefs of new school constructions.
 - Establishing a retro-fitting project in existing schools based on base line data, modelled results and an ecologically sustainable facility brief.
 - Providing an appropriate central budget allocation reflective of mission and goals.
 - Seeking grant funding to support system and school initiatives.
3. To provide **Scope** for affective programs in ecologically sustainable development through the forming of partnerships and alliances.

This may be achieved by:

- Forming a voluntary multi-disciplinary liaison group between all education and environmental groups in Queensland to address ecologically sustainable development by:
 - Linking with external organisations such as Education Qld and environmental groups at a Brisbane level to drive communication, collective action and liaison with the Queensland Government.

- Providing impetus and modelling for regional areas of Queensland based on any successful model developed in Brisbane.
- Linking with national education and environmental groups to inform action around shared goals.
- Identifying a significant person to act as a sponsor for these groups. Someone who can 'open doors' and give strategic advice.

Time Frame

Ecologically sustainable development is a current theme right across Australia's political dialogue and as such now is the best time to capitalise upon both funding opportunities and the goodwill of those within central administration, school education, staff, children and their families.

The refinement of the organisations mission and policy for ecologically sustainable development should be achieved prior to the development of a system wide strategic plan specifically for this focus.

It should be noted however, that many of the recommendations can be investigated immediately as they are broad enough not to fall outside of any reasonable policy initiative and will take time to set up and organise.