



15th Biennial National Conference



*Australian Association for
Environmental Education*

Environmental Education up the
Track:
Hot Topics for our Community

**Charles Darwin University
9th – 12th July 2008
Northern Territory**



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9 - 12 July 2008
Darwin, Northern Territory
Charles Darwin University

Welcome...

ENVIRONMENTAL EDUCATION UP THE TRACK.... HOT TOPICS FOR OUR COMMUNITY

In a time of rapid change, our capacities to educate, share information and generate action in the community through formal and informal methods are challenged by everyday events. The conference committee trusts that the learning experiences participants share on Larrakia land¹ during the 15th AEE National Biennial Conference at Charles Darwin University Casuarina Campus will strengthen commitments and enthusiasm for quality sustainability education work in uncertain times. The event is also designed to extend strategies for educating for a sustainable future, globally and locally.

The Australian Association for Environmental Education is a broad range of practitioners who share concerns about the local and global environment. This conference brings us together to take part in conversations about a sustainable future, to build networks and improve our capacity to act in an informed manner for sustainable practices. The *Hot topics* include climate change, trans-cultural eco-literacy, indigenous knowledge, water issues, green business, waste management, ecological footprint, building, energy and biodiversity. A concurrent national youth forum is also being held. This conference aims to build capacity in on the ground and virtual networking practices as we promote and refine environmental education during the UN Decade in Education for Sustainability².

Share your wisdom. Practise your critical thinking and questioning. Make connections around the country and around the world. Enjoy your days with us in Darwin.

Mr. Phil Smith *on behalf of*
The conference Organising Committee

¹ The Larrakia people are the traditional land owners of Darwin

² The United Nations decade for sustainability is from 2005 to 2014.



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Charles Darwin University

AAEE Organising Committee:

Birut Zemits
Kate Smith
Jennifer Pearson



*Australian Association for
Environmental Education*

Conference Secretariat:

The Best Conference and Events Company

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General Information

Weather and Dress Standard

In Darwin the weather is tropical – usually warm and sometimes humid. Temperatures in July range from a warm 26°C to 33°C during the daytime and 15°C to 22°C at night.

The lifestyle in Darwin is casual and this is reflected in what people wear. Neat casual wear is appropriate for both the conference and in most social circumstances.

Conference sessions will be held in an air-conditioned venue, therefore you may consider bringing a light pullover or jacket in case you get cool.

Bank and Post Office

The closest banking facilities are at Casuarina Shopping Centre, and the closest post office is located at Charles Darwin University Casuarina Campus.

Transport

Darwin Radio Taxis	P: 131 008
Arafura Shuttle:	P: 08 8981 3300
Airport Shuttle:	P: 08 8981 5066
Darwin Bus:	P: 08 8924 7666

In and Around Darwin

Darwin is the Northern Territory's multicultural capital, famous for its relaxed lifestyle.

Darwin city has many cafes, galleries, interesting shops and parks to wander through. If you prefer a little more adventure, it is also the perfect base from which to explore the natural wonders of the Heritage-listed Kakadu National Park, Litchfield National Park and the Tiwi Islands.

The friendly and experienced staff at Northern Gateway will be happy to answer your questions and assist you with tour bookings. Northern Gateway has first hand knowledge of the Top End and works with a wide range of operators and suppliers; they can tailor-make an itinerary to suit your needs.

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Conference Facilities:

Conference Venue

The 15th Biennial Australian Association for Environmental Education Conference will be held at:
Charles Darwin University
Casuarina Campus
Building 35: Mal Nairn Auditorium
Darwin NT 0909

Please refer to the new campus map on page 5. Old versions of the campus map will be available at the Registration Desk.

Car Parking

All day car parking is available at the venue; signs will indicate both paid and non-paid parking.

Refreshments & Meals

All refreshments and meals will be served in the Mal Nairn Auditorium Foyer unless indicated by the MC. If you have requested a meal with a special dietary requirement please see the registration desk.

Mobile Phones

As a courtesy to other delegates and presenters, please ensure your mobile telephone and/or pager is turned off or has been changed to 'silent' mode during the conference sessions and social functions.

No Smoking Policy

All conference venues have a strict **No Smoking** policy. If people wish to smoke we recommend they retreat outdoors.

Instructions for Presenters

Presenters are required to be in the appropriate room 10 minutes prior to the session beginning to familiarise themselves with the room and the equipment.

PowerPoint presentations will be loaded on to the computer prior to the commencement of your presentation.



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Social Events:

Social Drinks

Date: Wednesday, 9th July 2008
Where: Student Area, Charles Darwin University
Time: 5.00 pm
Cost: No additional costs

A Lord Mayoral Reception hosted by Darwin's Lord Mayor, Graeme Sawyer followed by an exhibition opening at 6pm titled Topophilia- Love of the Land in virtual and CDU gallery.

Mindil Beach Markets

Date: Thursday, 10th July 2008
Where: Mindil Beach - (May still have a designated area)
Time: 5.30pm onwards
Cost: Buy your own food and drinks

One of Darwin's most famous attractions is the Mindil Beach Sunset Markets. The markets have been operating at Darwin's beautiful Mindil Beach every Thursday night of the Dry Season since 1987, attracting thousands who come to eat, drink and watch the sun set over the Arafura Sea.



There are around 200 art and craft Stalls and 60 food stalls trading. The food available represents the South East Asian Multiculturalism that is Darwin. There is also live music and loads of entertainment.

Mindil Beach Sunset Markets are within walking distance of the city, however, buses, taxis and parking are available. So grab a cab, take a refreshing walk or book a mini bus with colleagues or new friends and head down to the fabulous Mindil Beach Markets.

Conference Dinner

Date: Friday, 11th July 2008
Where: Darwin Sailing Club
Time: 6.30 pm
Cost: \$80.00 per Ticket



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Field Studies:

1. A Sustainable Future for Limilngan-Wulna People (1.45 pm – 6.15 pm)

Spend the afternoon with the Kenyon family at Fogg Dam and Window on the Wetlands Visitor Centre, 60 km east of Darwin. The family will tell you about the '*dreaming tracks*' that cross their country and the Limilngan-Wulna Association's efforts to create a sustainable future for their people.

Afternoon tea will be provided along with some women's cultural activities

2. Get your Greensleeves on (3.00 pm – 5.00 pm)

Greening Australia aims to raise awareness and educate the community about local native flora and its place in the built environment. You'll visit *Greening Australia's* new 8 hectare nursery specialising in Top End native plants, grown from locally collected seed.

3. Larrakia Darwin (3.00 pm – 5.00 pm)

Explore various places in Darwin where the Indigenous people of this area, the Larrakia, are working for cultural and environmental sustainability. This tropical city has an interesting past and a lively present. The sites you'll see will include the fish trap at Nightcliff and shell middens.

4. Be a Junior Ranger for the Day (2.45 pm – 5.15 pm)

Put on your 9 -11 year old hats and join rangers Dean and Dave for the afternoon. Learn a bit about the NT's iconic crocs, getting up close and personal, testing your harpooning skills and maybe developing a taste for them

5. The Tip is Green (3.00 pm – 5.00 pm)

Darwin's Shoal Bay Waste Disposal Site accepts in excess of 120 000 tones of garbage and 142 000 tones of green waste every year. Our tropical environment poses the challenge of ever-increasing landfill gas emissions. Visit this award-winning complex and find out about the first Renewable Energy Facility in a tropical city.

Conference Program

Day One: Wednesday 9th July 2008 Communities make the System

7.30 am	Registration Desk Opens	
8.30 am	Welcome to country:	Nicole Brown and Peter Brown
8.40 am	MC	Kathy Bannister
8.45 am	Aims of Conference:	Phil Smith: <i>AEE president</i>
9.00 am	Launch Virtual Conference:	Grahame Pegg: <i>Dean- Faculty of Education, Health and Science CDU</i>
9.15 am	Youth & Council of Wisdom	Including all ages: Intergenerational Environmental Education
9.30 am	MC	Roles of Reflection Groups with Council of Wisdom and Housekeeping

MORNING TEA BREAK – 9.45AM – 10.15AM

10.15 am	Australian context	Peter Woods
10.35 am	NT Environment	Ted Warren, MLA
11 am	Keynote Speaker 1: Presentation	Mark Diesendorf <i>Empowering the social movement for sustainable greenhouse solution</i>
11.30 am	Keynote Speaker 2: Presentation	Blair Nancarrow <i>The community's right or an optional extra: Where does public involvement fit in environmental decision making?</i>

LUNCH BREAK – 12.00 PM – 1.00 PM

Room	Red 6.01	Mal Nairn Red.07	Red 6.09	Red 6.14	Orange 11.2.06
Concurrent Sessions	School and Community	Natural Resource Management	Values in Community	Communication	IT room
1.00 pm	Communities changing the landscape: evaluation of an EE program for restoration of urban biodiversity Catherine Baudains & Arlene Moncrieff	Trading polar bears for coconut crabs – Adding value & meaning to biodiversity education in the south pacific Emily Findlay & Shadrack Fremden	Kormilda College, founding a centre for experiential learning in remote NT Malcolm Pritchard	Cooling hot topics Renaë Crosthwaite	On site Virtual Dirt: year of sanitation & planet earth student projects & resource ideas Cecily Wright
1.30 pm	Expanding our reach to school communities through a combination of traditional EE & EFS approaches Aimee Freimanis & Joanna Moylan	Improving community capacity in air quality management Peter Musk	Full capacity! How 'priority catchments' have changed the capacity of colleagues, council and the community in the Blue Mountains Adrienne Murphy & Jasmine Payget	Conservation education on marine wildlife tours Heather Zeppel	Virtual from New Zealand LivingCampus Samuel Mann

Room	Red 6.01	Mal Nairn Red 7	Red 6.04	Red 6.09	Orange 11.2.06
Concurrent Sessions	School & Community	Natural Resource Management	Local Government	Values in Community	IT Room
2.00pm	Earth day expo: Showcasing EE to primary school children Jennifer Pearson	Learning local lessons through regional natural resource management groups in QLD Joanne Kelly	Creating a community of practice among local government educators in NSW Sue Martin	Working together for successful (& fun) experiences (Partnerships & EE in Schools) Carolyn Gillard	Virtual from New Zealand Otago polytechnic's sustainable practitioner Phil Ker, Samuel Mann, & Anna Hughes

AFTERNOON TEA BREAK – 2.30 PM – 3.00 PM (Student Area)

Conference Program

Day One: Wednesday 9th July 2008 Communities make the System

Rooms	Red 6.01	Red 6.04	Mal Nairn Red 7	Red 6.14	Orange 11.2.06	11.2.06
Concurrent Sessions	School & Community	Natural Resource Management	Local Government	Values in Community	Communication	IT Room
3.00 pm	The recreational scuba diving industry: Environmental protectors or pests? Hazel Storey	Live it Up: It'll cost you the Earth. The true cost of consumer lifestyles Syd Smith & Jillian Cuppit	Practice makes perfect Greg Hales	Familiarity breeds context – delivering EE though local awareness Michelle Dale & Moni Carlisle	Ecotourism: Ecological management based on sustainable development Dr. Mir Mehrdad Mirsanjari	
3.30 pm	Ollie's Isl& - Exploring sustainable production and consumption Jane Stewart		Can community development approach support sustainability education? Anne Jennings	Catchments, corridors and coasts: Community interaction with sustainability initiatives Jennifer Pearson, Catherine Baudains et a;	What can social-ecological resilience theory contribute to EFS understanding and practice? Hilary Whitehouse & Neus Evans	
4.00 pm	Council of Wisdom Members and Reflection Groups discuss the day's issues					
5.00 pm	Close Day One: Student courtyard social drinks					
6.00 pm	"Topophilia: Love of the Land" Virtual and Real art exhibition opening (Orange Area)					
7.00 pm	Buses Depart for hotels					

Conference Program

Day Two: Thursday 10th July 2008

Transcultural Communication

7.45 am	Registration Desk Opens						
8.15am	MC and Leaders Leaders Summary of Communities Make the System – Link to Transcultural Communication						
8.30 am	Keynote Speaker 3: Presentation	Jerry Schwab <i>Environmental Education as a track to the educational and social re-engagement of Indigenous youth</i>					
9.00 am	Keynote Speaker 4: Presentation	Dr. Linda Ford <i>Indigenous perspectives / Indigenous knowledge: what's the difference?</i>					
Room	Red 6.01	Red 6.04	Mal Nairn Red 7	Red 6.09	Red 6.14	Orange11.2.06	Banyan
Concurrent Sessions	Eco Literacy	Globalisation	Indigenous Perspectives	Media & Art	Global Links	IT Room	Art Space
9.30 am	A little bit goes a long way Julie Harris	EE in Malaysia Ahmad Ismail	Live & Learn: Applying lessons learned in South Pacific region to environmental & development education in Indigenous Australian communities Robbie Henderson	Getting it together; sustainability internet, curriculum & literacy Bob Winters	Sub-Sahara's Indigenous environmental principles and practices: relevance. Saha Santosh	On site Capacity building for biodiversity: integrating urban biodiversity research with adult education theory. The Birds in Backyards Program Holly Parsons Kate Ravich	Fibre art workshop 1 Use and reuse; creative fibre art Aly de Groot
10.00 am	The place of 'Place' in environmental education Rebecca Miles	What does "Integrating global perspectives on environmental education" really mean? Ian Falk & Ruth Wallace	Aboriginal cultural perspectives on wildlife education in Australia Heather Zeppel		Fostering a culture of sustainability amongst horticultural producers from non-English speaking backgrounds Melanie Bradley		
MORNING TEA BREAK – 10.30 AM – 11 AM							
Rooms	Red 6.01	Red 6.04	Mal Nairn Red 7	Red 6.09	Red 6.14		Banyan
Concurrent Sessions	Eco Literacy	Globalisation	Indigenous Perspectives	Connecting	Global Links		Art Space
11.00 am	Thinking like a Murray cod: Re-creating rhizomatic natural history pedagogies Alistair Stewart	Reflections on EE – 6 months in Cambodia Sandra Wolltorton	My Country: strengthening Indigenous youth leadership in remote & regional Australia Sue Lennox & Gab Anderson	Sustainability – A global context learning from East Timorese students visiting the NSW EE Conference Sue Martin	Urban environmental challenges: Case study Zabol Bazzi Khodaram		Fibre Art Workshop 2 Make a small woven article Yolngu women from Galiwinku

Conference Program

**Day Two Thursday 10th July 2008
Transcultural Communication**

Room	Red 6.01 Eco Literacy	Red 6.02 Globalisation	Mal Nairn Red 7 Indigenous Perspectives	Red 6.09 Diversity	Red 6.14 Global Links
11.30 am	Roots, branches & EE resources in NT Dr Peter Jacklyn	Application of Islamic principles in holistic environmental management Dr Suleyman Aremu Muyibi	Indigenous leadership in caring for country Lauren Hargreaves & David Wise	Collaborative curriculum development with Indonesian partners Penny Wurm & Bronwyn Myers	Probability studies for assessment of dissolved oxygen profiles in Krishna River Chandra Mahesh Sekhar
12.00 pm	Engaging Ethnic Communities in Bird Conservation in Urban Areas Sue Stevens	Lessons Learned from Recovery Process after the 2003 Bam Disaster in Iran Alireza Fallahi	Sustainability – A Global Context Learning from East Timorese Students Visiting the NSW EE Conference Sue Martin	Timor Leste Community Based Environmental Education – How Friendship Committees are Working Together Jasmine Payget	On Holy Ground, Victoria; An Ecological Vision for Catholic Schools in Victoria Paul Dullard & Glenn Davidson
LUNCH 12.30PM – 1.30pm with Council of Wisdom					
1.30 pm	Field Study 1 Departure World Movie Premiere in Mal Nairn auditorium Entry by donation to Brian Foreman award.	Windows on the Wetlands: A sustainable future for the Limilinga-Wulna people SOLAR ROAD – The Solar Car Race: Darwin to Adelaide 2007			
2.45 pm	Filed Studies 2 – 5 Depart	Larrakia Darwin Get your green sleeves on Become a junior ranger for a day The tip is green			
5.00 pm	Day Two Closes: Buses depart field studies				
6.00 pm	Mindil Beach Sunset Markets				

Conference Program

Day Three: Friday 11th July 2008 Beyond Rhetoric- Improving our Capacity

8.00 am	Registration Desk Opens							
8.15 am	Council of Wisdom	Council of Wisdom Summary and Special Interest Group (SIG) activity for afternoon introduced						
8.30 am	Keynote Speaker 5 Presentation	Michael Christie & Yinguya Guyula <i>Holding People and Place Together</i>						
9.00 am	Keynote Speaker 6 Presentation	Graeme Sawyer <i>Community action and complex environmental problems – a case study</i>						
Room	Red 6.01	Red 6.02	Mal Nairn Red 7	Red 6.04	Red 6.09	Red 6.15	Orange 11.2.06	Banyan
Concurrent Sessions	HE / VET	Education	Youth	Decade of Education for Sustainable Development	Research	Transformative Education	IT Room	Art Space
9.30 am	Become a reflective environmentalist: Reflecting on reflective practice Jo-Anne Ferreria & Vicki Keliher	Effective whole school approached to education for sustainability: defining their characteristics Chris Eames, Heidi Mardon & et al	Secondary student views of global warming: Beliefs actions and willingness to act Keith Skamp & Edward Boyes	Write a plan! How to avoid the legacy of unused shade houses & dead worm farms Mark Caddey & Sue Burton	Kids teaching kids, adults and our community about the importance of sustainability...Using the future generation to educate the present generation... Cathy Oke	Teaching and learning transformational approaches in the NT Iolanthe Sutton	On Site Why is fire a hot issue in the Northern Territory Julie Crough, Lousie Fogg & et al	Fibre Art Workshop 3 Make a fibre sculpture Aly De Groot
10.00 am	Detangling the rhetoric of 'sustainable development': Developing student teachers critical reflective capacities and environmental identities Lynley Tulloch & John Lockley	Educating for a sustainable future – students for the biosphere Marnee Fraser	Does science still have a place in education for sustainability? Dr. Sally Birdsall	Education for Land Stewardship: A new role for land care Dr. Brian Sharpley & Moragh Mackay		Sustainable future – An exciting new approach to EE for senior students (or breaching the impenetrable certainties of the average teenager) Fran Davies	Virtual: Live from Canada Living lightly: Walking the talk Peta White	
MORNING TEA BREAK: 10.30 am – 11.00 am								
Room	Red 6.01	Red 6.02	Mal Nairn Red 7	Red 6.04	Red 6.09	Red 6.15	Orange 11.2.06	Banyan
Concurrent Sessions	HE / VET	Education	Youth	Decade of Education for Sustainable Development	Research	Transformative Education	IT Room	Art Space
11.00 am	Paradox, Passion & Pedagogy: Critical Challenges in Tertiary Level Sustainability Education Alison Lugg	Greening Early Childhood (NSW) Deb Watson & JulieGaul	OtherWISE – Youth Leadership for Sustainable Consumption Iris Bergmann & Cameron Neil	Building Trades & Professions Capacity to be involved in Acting Sustainably Val Macgregor	Satellite Remote Sensing: A tool for environmental education Xiuping Jia	New title?? Janet Sparrow	On site Explore Exciting New Multimedia Content for Environment Education Martin Stone	Fibre Art workshop 4 Have a go at traditional weaving styles. Yolngu women

Conference Program

Day Three: Friday 11th July 2008 Beyond Rhetoric- Improving our Capacity

Room	Red 6.01	Red 6.02	Mal Nairn Red 7	Red 6.04	Red 6.09	Red 6.15	Orange 11.2.06	Banyan
Concurrent Sessions	HE / VET	Education	Youth	Decade of Education for Sustainable Development	Research	Transformative Education	IT Room	Art Space
11.30 am	Teaching old dogs new tricks Greg Hales	Resource smart schools Jane Liefman & Kate Greer	OtherWISE – Youth Leadership for Sustainable Consumption (Continued ...) Iris Bergmann & Cameron Neil	The master builder green living program. An innovative approach to improve the capacity of domestic builders to respond to sustainability issues Dr. Philip Alviano & Mary Gates	The importance of GIS in environment education: Using GIS in the sustainable utilisation of species harvested in central Arnhem Land. Dr Diane Pearson	Enterprising ecosciences: linking secondary science students to natural resource managers Mary Rowland	On site Explore Exciting New Multimedia Content for Environment Education (Continued ...) Martin Stone	Fibre Art workshop 4 Have a go at traditional weaving styles. (Continued ...) Yolngu women
Room	Mal Nairn	Red 6.01	Red 6.02	Red 6.04	Red 6.09	Red 6.15	Red 11.2.06	
Concurrent Sessions	HE / VET	Education	Youth	Decade of Education for Sustainable Development	Research	Transformative Education	IT Room	
12.00 pm	Accredited permaculture training for VET in secondary schools Virginia Solomon	Walking the thin green line as a guest speaker Mia Christensen	Fun, food and (Shhh don't tell anyone) learning Lauren Appleby	The tides of change – fisheries education in Western Australia Michael Burke & Andrew Cribb	Understanding peoples' involvement in environment groups Emma Partridge & Jade Herriman	Our land, our water, our life Emma Bliss and Senior Arrernte Women	On site Tools & techniques from the growing new skills EFS Workshop Series Jo Bishop	
12.30 pm	Mainstreaming sustainability in teacher education research project: initial reflections Jo Ferreira, Juli Gassner et al	Action competence in New Zealand schools: improving the capacity for understanding student learning in EFS Faye Wilson-Hill, Chris Eames et al			Hands On!: Preliminary data from research into EFS at a Montessori school Elaine Lewis & Dr. Catherine Baudains	Packaging and recycling – The new multi-pronged approach. Why only teaching about recycling is not going to resolve our waste issues. Prudence Frost		

LUNCH BREAK: 1.00 pm – 1.30 pm

Conference Program

Day Three: Friday 11th July 2008 Beyond Rhetoric- Improving our Capacity

1.30 pm	Extra Long Working Lunch in special Interest Groups (SIGs) This activity is to share ideas in Special interest Groups. All delegates are asked to identify an interest and participate in the activities. AAEE encourages new Special Interest Groups to develop. Activities may be generated from conference conversations. Current SIGs are grouped below. Presentation will be prepared for SIG Vision report at AGM (can be a serious or funny creative script/poem etc. that works to define strategies in Education for Sustainability).						
	Red 04	Red 04	Red 02	Mal Nairn	IT Room	Red 09	Red 14
	Teacher & Education and VET Rep- Phil Smith How can we integrate EfS into teaching practice?	Developing Interest Group. What is the role of Indigenous knowledge and perspectives in EFS?	Young People & Citizenship Rep- This group combine with the Youth Forum to discuss EFS for youth.	DESD SIG rep- Working across constituencies- where are we going in the 4 th year of the UN Decade of EFS Development?	Research Student & Career Rep- Colloquium for researchers to describe their work & interact with mentors.	Transformative Learning Rep- Sue Lennox How can we build capacity in EE to facilitate effective transformative learning?	Early Childhood Rep- Moving forward strategically to address challenges in EC EFS.
AFTERNOON TEA BREAK: 2.30 pm – 3.00 pm							
3.00 pm	Mal Nairn Auditorium	Participate in the 'SIG Revue' – Discussions around previous session.					
3.15 pm	Mal Nairn Auditorium	AAEE Annual General Meeting Walk / talk: Casuarina Coastal Reserve or Casuarina Campus					
4.45 pm	Close Day Three: Buses depart for hotels						
6.00 pm	Conference Dinner – Darwin Sailing Club						

Conference Program

Day Four: Saturday 12th July 2008

Visions for Tomorrow

8.00 am	Registration Opens						
8.30 am	Keynote Speaker 7: Presentation	John Coulter Drivers of Environmental Un-sustainability					
9.00 am	Keynote Speaker 8: Presentation	Charles Hopkins International perspective (Virtual)					
Room	Mal Nairn Red 07	Red 6.01	Red 6.02	Red 6.04	Red 6.09	Red 6.10	Red 6.14
Sessions	Business	Education for Sustainability	Future Vision	Philosophy	Tools for tomorrow	Communication	Community building
9.30 am	Business and society; developing a new curriculum for business students Wayne Gumley	Write It Up – AAEE professional learning series in NSW Mark Caddey, Sue Martin et al	Capacity for what? Grahame Collier	Sustainability as the new Utopia Phil Smith	EE: Crossing the barriers in accounting education Rebecca Miles	Growing new skills: A response to meeting EFS Learning Needs Jo Bishop, Matt Cattanach et al	The need for joined-up thinking: connecting like minded schools and community groups Bernard Holland
10.00 am	Education about and for sustainability In Australian business schools Janelle Thomas & Jeremy Mah	EarthProbe: Integrated sustainability program for year 9s John Harris	Living with uncertainty Greg Hunt		How to calculate greenhouse gas emissions for an organisation. Frank Mitchell	Tomorrow's leaders for sustainability – an innovative leadership program for primary & secondary students Pat Armstrong and Jane Stewart	City of Wanneroo Adopt a Bushland Jennifer Pearson & Sharon Rose
10.30 am	Enhancing learning of sustainable enterprise management students through collaborative teaching & technology Paul Dargush & Adrian Ward		Eco Vision: A model for the future of environmentally sensitive housing Sandii Rogers		Saving the planet by sinking your school Glenn Davidson & Eric Bottomley	BirdNet: Using ICT's for EE in rural QLD Ruth Hickey & Hilary Whitehouse	
MORNING TEA BREAK: 11.00 AM – 11.30 AM							
11.30 am	Facilitator: Discussion:	MC: Kathy Bannister Feedback from Youth Forum					
12.00 pm	Council of Wisdom	Future Visions					
	Birut Zemits	Review Virtual Conference					
Hand over to 2010 Conference Organising Committee							
LUNCH BREAK: 12.30 pm – 1.30 pm							
CLOSE OF CONFERENCE							

POSTERS

The following posters will be on display in the Mal Nairn Auditorium Foyer

Year 10 Forum: Geography Earth Environmental Science day (GEES Day) Jennifer Pearson	Turtle Watch: Community contribution to environmental impact assessment Elaine Lewis, Catherine Baudains & Caroline Mansfield	Making waves Elaine Lewis, Caroline Mansfield et al	Jennifer Pearson	The Aboriginal Landcare Education Program working in partnership David Jon	Holding people and place together Michael Christie	Charles Darwin University
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Australian Association for
Environmental Education

15th Biennial Conference

***Environmental Education up the Track:
Hot Topics for our Community***

9 - 12 July 2008
Darwin, Northern Territory
Charles Darwin University

Keynote Speakers:

Ms. Kathy Bannister



Kathy Bannister has worked extensively in education, the environment, capacity building and advocacy. She has facilitated dozens of strategic planning processes, focus groups, action plans and workshops for community organisations and is very committed to community development and sustainability. Kathy's background gives her deep insights into the context of this AEE conference and its themes.

Coming from a career in teaching in mainstream schools, a bilingual school in Central Australia, adult education and Aboriginal teacher education, Kathy moved on to work as a Ranger, interpretations officer and communications Officer with the Department of Environment and Heritage in parks jointly managed with Aboriginal traditional owners.

The park roles involved either delivering or managing the delivery of junior ranger programs in primary and secondary schools and educating tour operators in environmental and cultural aspects of parks. Her current work is in the community sector in education, capacity building and advocacy and she maintains her enthusiasm for environmental education.



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Dr. Mark Diesendorf



Biography:

Dr. Diesendorf is currently at the Institute of Environmental Studies; University of New South Wales. At various times he has been a Principal Research Scientist at CSIRO, Professor of Environmental Science at UTS, and Director of Sustainability Centre Pty Ltd. He is co-editor of "Human Ecology, Human Economy: Ideas for an Ecologically Sustainable Future" and author of the new book "Greenhouse Solutions with Sustainable Energy"

Keynote Topic:

Empowering the Social Movement for Sustainable Greenhouse Solutions

Global climate change, from the human-induced greenhouse effect, is accelerating. However, there are solutions that are environmentally benign and relatively inexpensive, comprising primarily the efficient use of energy that is obtained from renewable sources. The biggest barrier to sustainable energy solutions is neither technological nor economic, but rather is the political power of the big greenhouse gas emitting industries. These industries exert pressure on major political deforestation, unsustainable agriculture and ever-increasing demand for consumer products. To achieve ecologically sustainable and socially just solutions to human-induced climate change, we need to empower the growing non violent social movement for genuine climate action. Environmental educators have a vital role in disseminating the multi- and inter-disciplinary knowledge that is needed to resources this movement and the community at large.



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Ms. Blair Nancarrow



Biography:

Blair Nancarrow is a social scientist with the Australian Research Centre for Water in Society in CSIRO Land and Water. She has been involved in the conduct of social investigations and public involvement programs in water resources and environmental management for twenty years. Her particular area of expertise is in the design and implementation of large, community-based research programs and experiments. Her project experience is in both the urban and rural spheres. Her background in education is invaluable in both research implementation as well as the communication of results to lay personnel.

Blair has a special interest in the development of evaluation of community processes which are practical and encourage wide-spread participation, while ensuring equity and social justice in environmental management and decision making.

Keynote Topic:

*The Community's Right or an Optional Extra:
Where does Public Involvement Fit in Environmental Decision Making?*

Understanding, communicating and managing the impacts of climate change are the major challenges for the first half of the twenty-first century. What we achieve now will determine the future of many species and the long term quality of life for human-kind. Often the size and complexity of changes that are being talked about can be overwhelming for the average layperson, as we start to see a trend of abrogation of planning and decision-making to "trusted" professionals. While the community is concerned about perceived risks associated with many proposed solutions to environmental dilemmas, such as clean coal technology, carbon trading, and potable use of recycled wastewater, many have little confidence in their rights or their abilities to contribute to the debates or planning processes. Frequently the argument is left in the hands of lobby groups that don't necessarily express the view points of the wider community. This situation, though, is preferred by many planners who also consider the wider community not to have sufficient knowledge to contribute in any meaningful way. Public involvement is frequently deferred until an "informed community" can be found, or only the vocal lobby groups are consulted. However, there appears to be little understanding of the role of public involvement in decision making by either the planners or the community, and educators can play an important role here. Community members can meaningfully contribute to the development of planning criteria through expressing lay opinions about their expectations and concerns associated with proposals. But they have to expect to be involved, have confidence in their abilities to contribute lay opinions, and not stand for second best. This needs to be taught from an early stage.



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Dr. Linda Ford



Biography

Dr. Linda Ford is a Rak Mak Mak Marranunggu elder from Kurrindju (Finniss River) Northern Territory. Linda's broad teaching and research interests are in the field of Indigenous and adult education and Australian Indigenous Knowledge Systems. With particular interest in sustainable practices relating to Language and Cultural Diversity in Educational Settings, Social and Cultural Mapping, Social Justice and Cultural Diversity, Issues in Indigenous Research and Community Development and Adult Education.

Keynote Topic:

Indigenous Perspectives / Indigenous Knowledge; what's the Difference?

Indigenous perspectives and Indigenous knowledge is different. Without Indigenous knowledge there would be no Indigenous perspectives. Indigenous knowledge underpins Indigenous perspectives.

In terms of the ongoing dominant continuity of the Australian nation-state education system, the use of Indigenous perspectives became the ideal paradigm for non-Indigenous teachers. The non-Indigenous teachers apply Indigenous perspectives as a method in developing their core curriculum content to teach about Indigenous people. Education for sustainability provides an alternative approach for non-Indigenous teachers to apply a method that recognises Indigenous people and their knowledge to their own ongoing professional and personal development as teachers of Indigenous perspectives. The non-Indigenous teachers are in a position where they can provide Indigenous people ongoing 'Indigenous' education. It is a means to design and develop Indigenous knowledge content to be integrated into the overall implementation of their core curriculum programs.

The 'Indigenous' education progression allows for Indigenous people and their community a right of entry into a practice acting within the new paradigm. This discourse offers the potential to become a sustainable course of action whereby the decision-making process is localised within the Australian nation-state education system. There are Indigenous communities and the Indigenous students' families involved in such Indigenous educational practices in the system that are operating effectively. These 'ways of doing' offer culturally meaningful ways to increase Indigenous students' retention in the Australian educational system.



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Mr. R.G. (Jerry) Schwab



Biography

Mr. Schwab is a fellow at the Centre for Aboriginal Economic Research (CAEPR) at The Australian National University. He is one of a very small number of anthropologists in Australia with research experience in the area of Indigenous education and training. He has been involved with educational research and development in Australia and overseas (USA, Canada, United Arab Emirates and Egypt) since the mid 1980's. He has worked in the fields of literacy, educational development (in schools and for academic staff in higher education) and program planning and evaluation.

A focus of his current research is land and resource management as an avenue for the educational and social engagement of Indigenous youth in remote regions. He has carried out major consultancies for a number of clients including Department of Prime Minister and Cabinet, the Department of Health and Family Services, the Queensland Department of Education, Training and the Arts and the Walpiri Education and Training Trust.

Keynote Topic:

*Environmental education as a track to the educational
and social re-engagement of Indigenous youth*

In many Indigenous communities around Australia - especially but not exclusively in remote regions - young people don't attend school or they leave early because they view formal education as boring and irrelevant. Many of the policy responses to this have been conservative and unimaginative. For example: a 'back to basics' focus on national literacy and numeracy benchmarks; continued defence of inappropriate staffing and funding models; and proposals for the imposition of punitive measures such as quarantining welfare payments to parents whose children do not attend school. One might ask if policy makers are on the right track.

Traditional learning among Indigenous people was always land-based so perhaps it is worth incorporating some millennia-old best practices into contemporary education policy solutions. In this paper I argue that environmental education 'on country', combining Indigenous customary and western science-based land and resource management knowledge and practice, can be a powerful means of re-engaging Indigenous young people with learning and their wider communities. Drawing on examples from Canada, the USA and Australia, I aim to show how environmental education 'on country' for Indigenous youth can provide meaningful skills and knowledge for employment while also contributing to national conservation and land and resource management goals.



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Dr. Michael Christie & Yingya Guyula



Biography

Michael Christie, worked as teacher-linguist at Milingimbi in the 1970's and Yirrkala in the 1980's. He moved to Darwin in the early 1990's and started the Yolngu Language and Culture Program at what is now the school of Australian Indigenous Knowledge Systems. His current position is Associate Professor in Education at the School of Education at Charles Darwin University researching digital technology and Aboriginal Knowledge work, and Trans-disciplinary research methodology through facilitating Aboriginal consultancies.

Yingya is a senior Djambarrpuyngu knowledge authority living at Milingimbi who works with Balanda³ to maintain and communicate culture and environment using ICT.

Keynote Topic:

Aboriginal people in remote places are increasingly using digital technologies to keep their knowledge traditions alive. In this talk Michael Christie will introduce a research program on the uses of computers in the intergenerational transmission of traditional knowledge. This project is reported on the website www.cdu.edu.au/ik. Yingya will talk about his work on country using camera and computer.

³ Balanda is a term used in the north to describe people of European descent.

Graeme Sawyer



Biography

Graeme Sawyer is a multi-skilled person who has a passion for the environment. Coming from a teaching background, he ran a business in the IT industry while working closely with the community, in protecting local Darwin frogs, particularly from cane-toads. A long-term member of AEE, he was voted in with a high level of support to be mayor of Darwin in 2008.

Keynote Topic:

Community action and complex environmental problems – a case study

This paper documents a community action phenomenon and some of the issues and processes that led to the community response and action that has followed.

FrogWatch was formed in the NT in 1991 as an interest group and advocacy body focused on frogs and associated issues. FrogWatch was focused on the identification of frog species and their distribution and was also looking for signs of any of the frog diseases causing problems in other parts of Australia and the world.

FrogWatch was advocating action against cane toads but was unable to get governments to respond in a positive manner. As cane toads got closer to Darwin public interest and media interest led to the NT government deciding to try some strategies to limit the damage cane toads would cause to the biodiversity of the area.

In 2004 funding became available for work on the cane toad issue and the group changed dramatically from a group of enthusiasts with no funds to an organization with over 1000 people on the mailing list and \$230,000.00 in the bank.

The paper looks at how this happened and the methods FrogWatch has used to engage the community in the project and the communication mechanisms that have generated the enthusiasm within the community to maintain the effort to minimise the damage the cane toad is causing across the region.

This example of community action gives hope that community action can make a difference in relation to solutions to complex environmental issues.



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Dr. John Coulter

Vice President of Sustainable Population Australia Adelaide South Australia

Keynote Topic:

Drivers of Environmental Un-sustainability

Australians are not living sustainably; too many of us are each demanding too much from the Australian and global environments. Population growth and growing per capita demand driven by economic growth are the fundamental drivers of our un-sustainability.

Yet government policy seeks more population and economic growth. It is vital that this pattern is reversed. The already high per capita demands of Australians means that further growth in either or both of these drivers has a larger global impact than anywhere else in the world.

Australia has an opportunity to become a world leader by deliberately setting out on a new and very different pattern of economic, social and population development and seeking to share its experiences, successes and failures with other people in other lands as they each seek their own path to an environmentally sustainable future.



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Mr Charles Hopkins



Biography:

Professor Charles Hopkins is the UNESCO Chair in Reorienting Teacher Education towards Sustainability at York University, Toronto. He is also a United Nations University (UNU) Chair on Education for Sustainable Development and an advisor to both UNESCO and UNU regarding the United Nations Decade of Education for Sustainable Development. Professor Hopkins has developed, and continues to coordinate, an international network of forty teacher education institutions from thirty-eight countries collaboratively working upon the reorientation of teacher education to address the issues inherent in sustainable development.

Abstract:

International Perspective

A virtual presentation will be given from Austria. Charles will provide an update on international activities in environmental education and education for sustainability that have occurred since the last conference in Bunbury.



Abstracts: Concurrent Sessions

Wednesday 9th July 2008

Dr. Catherine Baudains & Arlene Moncrieff

Communities Changing the Landscape: Evaluation of an Environmental Education Program for Restoration of Urban Biodiversity

Continued loss of biodiversity from urban areas is regarded as a critical issue. It is recognised that community education is required to improve awareness about environmental impacts and to achieve behavioural change to reduce environmental impacts.

A program to engage communities in restoration of biodiversity in urban gardens has been implemented by Greening Australia (WA) in a local government area. The concept of 'Discovery – Understanding – Action' leads participants through a process of learning, enabling learners to think of their own garden as a 'stepping stone' of habitat and encouraging them to accept responsibility for management of this habitat resource while also making connections with each other and the community. This paper presents the results of a small-scale evaluation of this program, including the significant positive changes captured by the pre and post program survey of knowledge, attitude, skills and empowerment.

Key outcomes of the interview analysis are also presented, highlighting participant views regarding major barriers to conserving urban biodiversity.

Emily Findlay & Fremden Shadrack

Trading Polar Bears for Coconut Crabs - Adding Value and Meaning to Biodiversity Education in the South Pacific: a Case Study

Education for Biodiversity Conservation (EBC) aimed to strengthen the capacity of formal education to support implementation of the UN Convention on Biological Diversity in the South Pacific through curriculum strengthening, development of educational resources and professional development of teachers and educators.

Biodiversity conservation necessitates more than just consideration of the science behind it (ecology and biology): biodiversity is intimately linked to community health, culture, economic prosperity and spirituality.

Constraints in the South Pacific education systems made application of an *Education for Sustainability* approach difficult: education being generally 'teacher-centred' and focused on memorizing information. These methods limit children's opportunities to learn and apply their learning in the context of local community.

We examine how the EBC project enhanced the connection between school and community life, providing opportunities for students to see how biodiversity directly affects their lives, thus adding value and meaning. We suggest that lessons learned are relevant to developed countries.



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Malcolm Pritchard

Kormilda College, Founding a Centre for Experiential Learning in Remote NT

As a part of a new strategic vision for Kormilda College, it is proposed to establish a Centre for Experiential Learning in a remote part of the Northern Territory, founded on two essential principles: environmental sustainability and intercultural understanding and learning. The Centre will offer a residential course of study for Year 9 students at Kormilda College of approximately 5-10 weeks in duration in which they will 'live' in a sustainable system (renewable energy sources, with study into the employment of renewable energies and the underlying science – e.g., photovoltaic cells) that is also culturally diverse. The learning that is to be undertaken will draw on both Indigenous and non-Indigenous approaches to learning.

Learning is a social activity that is most effective when students are seeking answers to their own questions. By creating a small community of 50-60 students with a range of social and physical needs in a remote setting, they will learn to rely on each other and the learning they undertake as a part of the programme to meet those needs. Students will make choices on a daily basis about the management and utilisation of resources in meeting their daily needs. In some areas, such as food production, the duration of the production cycle will extend beyond the tenure of the immediate group. This creates a model for cross-generational sustainability, where students from their own experience, gain an appreciation of stewardship, receiving benefit from previous cohorts of students, and working on behalf of future cohorts.

This form of immersion experiential learning is particularly effective in establishing life-changing attitudes and behaviours for young people.

Renaë Crosthwaite

Cooling hot topics

In recent years the mass media have played an important role in informing Australians about the need to conserve natural resources.

While acknowledging the role of the mass media in igniting interest, sustainability educators must recognise the limitations of 30 second TV ads and provide both adults and children with:

- a broader understanding of the topic
- reasons why behaviour change is important
- the skills to analyse and modify their behaviours
- the motivation to maintain behaviour change beyond the life of marketing campaigns

However, the challenge for a sustainability educator is to deliver these objectives within a program that meets the needs of;

- the formal education system, where teachers expect up-to-date, localised information delivered in a format and style compatible with teaching and learning strategies;
- community members who have varying levels of knowledge and may be after a 'quick-fix'; and
- program sponsors who anticipate immediate and sustained behaviour change and reduced demand on infrastructure

Using examples from across South-East Queensland, EnviroCom can demonstrate effective and best practice program development that delivers appropriate behaviour change information to all stakeholders, while also enabling participants to develop contextual knowledge that enhances overall understanding of natural resource management issues.



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Cecily Wright

Virtual Dirt:

Year of Sanitation and Planet Earth Student Projects and Resource Ideas

Discover online interactive Environmental Education resources that work for you, using classroom computers or in a lab.

This workshop will facilitate active exploration of the resources available on the OzProjects and Global Education websites to support student learning about issues such as sanitation, climate change, desertification and water.

Participants will brainstorm strategies for planning and participating in collaborative online Environmental Education projects and Learning Quests.

Aimee Freimanis & Joanna Moylan

Expanding our reach to school communities through a combination of traditional Environmental Education and Education for Sustainability approaches

With an ultimate aim of reducing schools' ecological footprints, a two year pilot program, known as the School's Environment Calendar, has been designed to streamline the myriad of environmental resources previously delivered to local schools by Council and other agencies into one cohesive and constructive program that facilitates the integration of Education for Sustainable Development in school curriculum and the implementation of School Environmental Management Plans (SEMP).

The Calendar is an events based program, consisting of Environment Days held in local parks and reserves and in-school workshops held in classrooms and playgrounds. Tried and true environmental activities, such as water bug identification and tree planting were combined with the establishment of footprint reducing tools, for instance worm farms and water saving devices.

The program was well received by teachers and students, however evaluation of the first phase has revealed that even the most innovative and interactive workshops had little impact on curriculum or SEMPs. Insight gained from a systemic analysis of the situation has instigated a new approach for the program's second phase, which focuses on transforming the relationship between Council and the school community.

Peter Musk

Improving Community Capacity in Air Quality Management

Community based participatory research (CBPR) is one approach to address local air quality problems. It involves forming and maintaining a partnership between community members, government representatives and researchers with the aim of finding out more about a community's air quality concerns and identifying possible solutions.

CBPR can be a successful way to increase the knowledge base, resources and services in a community; it can also assist in improving the environmental and social aspects of that community.

The Department of Environment and Conservation WA (DEC) has developed a CBPR Guide for air quality management that will be trialled with the community surrounding the Graham Farmer Freeway Tunnel.

The Guide aims to provide an introduction to CBPR and air quality issues and management, and provide tools to assist in successfully conducting a CBPR project to effect positive changes within communities. The paper will discuss the program and issues encountered in the implementation of the trial.



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Adrienne Murphy & Jasmine Payget

Full capacity! How 'priority catchments' have changed the capacity of colleagues, council and the community in the Blue Mountains

Education for sustainability outcomes are greatly improved when integrated into the broader environmental management. Blue Mountains City Council's environmental management program has evolved from a scattergun style to working in 'priority catchments' identified as having a severely degraded environment, high community concern and capacity for community involvement in catchment restoration. Council focuses resources in priority catchments over a 3 year period. Both on-ground actions and community education are coordinated in order to improve catchment health and biodiversity conservation. .

Significantly, the 'priority catchments' approach has created an educational trajectory for both council and the community. The results are tangible and measurable, and include:

- Increased capacity to integrate sustainability education into on-ground works;
- A greater sense of ownership of the catchment and more developed partnerships;
- Natural heritage, like walking tracks and endangered ecosystems, being valued as an asset and included in Council's Sustainable Asset Management Plans; and
- Increased capacity of the community to engage in environmental restoration, from simple Clean Up Conversations to biodiversity recovery programs.

Sustainability education has contributed to the transformation.

Heather Zeppel

Conservation Education on Marine Wildlife Tours

Marine wildlife tourism can potentially provide a range of education and conservation benefits for visitors. There has been limited assessment of educational programs on marine wildlife tours to identify whether these increase tourist knowledge, influence conservation intentions or behaviours and also promote lifestyle changes that aid marine conservation. This paper reviews the effectiveness of conservation education messages on marine wildlife experiences in Australia using Oram's (1999) framework of indicators to manage marine tourism. The key indicator assessed in this paper is behaviour/lifestyle change that benefits marine species, along with three indicators of conservation outcomes for marine environments. Information is drawn from selected case studies of research on guided tourist encounters with whales, dolphins and marine turtles from 1996 to 2007, in Australia. This analysis found learning about marine wildlife contributes to pro-environmental attitudes and on-site behaviour changes, with some longer-term intentions to engage in marine conservation actions.

Samuel Mann

LivingCampus – Virtual

The LivingCampus celebrates a sustainable model of urban agriculture for the ownership and benefit of the Dunedin community.

The aim of the LivingCampus is to inspire curiosity and capability in sustainability to change attitudes to how we use land. This will be achieved through the development of an interactive sustainability museum and education programs within a productive garden integrating sustainability into individual and community practice.



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Dr Jennifer Pearson

Earth Day Expo: Showcasing Environmental Education to Primary School Children

Earth Day is celebrated around the world on the 22nd April and the Earth Day Expo was developed to link the Western Australian community to this international event. Working at Edith Cowan University Australia as a new lecturer over 5 year ago, the lack of community events was the catalyst for shaping the expo for primary school children to raise awareness of environmental programs available to schools. The event also gave the pre-service students an opportunity to volunteer to work with classes of children from schools that accommodated them on their practicums, in a way saying thank you. EE Providers were encouraged to come free of charge to give hands-on learning experiences of 30 minutes to showcase their programs. In this way schools and pre-service teachers were also able to learn about the range of EE available in the Perth Metro area. There were many outcomes achieve that will form the basis of the presentation.

Joanne Kelly

Learning Local Lessons through Regional Natural Resource Management groups in Queensland

This paper addresses the capacity of Regional NRM groups in Queensland to support natural resource management education in schools. Through an applied research project looking at the needs of the Regional Management Groups, and the needs of teachers of environmental education in Queensland, this project aims to create a framework for the development and evaluation of environmental education programs, and how they contribute to the ability of a community to manage their natural resources sustainably.

Sue Martin

Creating a community of practice among local government educators in NSW

Community of Practice (CP) is a voluntary network of people who share information, build on existing knowledge, develop expertise and solve problems for a common purpose, driven by the interest of the community involved. http://en.wikipedia.org/wiki/Community_of_practice

This paper will look at the status of environmental education / education for sustainability in NSW using local government as a context. What are the needs of professional educators as we work to move our communities towards sustainability? The sustainability education project at the LGSA has evolved from "local government working with schools" and brings educators from the 152 LGA's in NSW. In 2008 a healthy community of practice exists in the NSW local government EE/Education for Sustainability sector; this paper will explore the mechanisms in place to maintain and build a community of practice. Many lessons have been learnt regarding partnerships, building social capital, professional development needs (8 Step guideline), and how to incorporate ESD principles into our everyday work.

The need to celebrate our successes and have meaningful tools to measure our successes so that our behaviour change goals can be measured and reported on is one gap that still exists in this sector, it is hoped that time can spent collecting and sharing the thoughts of the attendees on CP and reporting and celebrating our successes.



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Carolyn Gillard

Working Together for Successful (and fun) Experiences

The Wetlands Environmental Education Centre has been managing several programs over quite a few years which would not be possible without the collaboration of partners.

The importance of partner collaboration:

- Opportunities to reach a wider audience
- Opportunities to provide a broader picture
- Opportunities to include a greater number of participants
- Higher quality outcomes for participants

Positive actions for encouraging and supporting partnerships:

- Involve all partners in the planning process
- Make clear guidelines on the types of activities required
- Offer support in the development of activities
- Ensure they are comfortable with what is required
- Create a welcoming atmosphere on the day
- Show appreciation for participation.

This paper will describe some of the WEEC programs which include partners engaged in activities such as Planet Savers, the Envirothon Challenge and Network Meetings for Teachers

Phil Ker, Samuel Mann, Anna Hughes

Otago Polytechnic's Sustainable Practitioner – Virtual

Since 2004, Otago Polytechnic in the southern region of New Zealand has been working towards sustainability across campus. The aim is to integrate sustainability throughout everything we do, infrastructure, operations, staff development, communication, community, research, curriculum and of course the students.

Our goal is that every graduate may think and act as a "sustainable practitioner." Creating a philosophy of Education for Sustainability will be enhanced if undertaken within a context of institutional operational practice. We will then be seen to be modeling good practice.

Hazel Storey

The recreational scuba diving industry: environmental protectors or pests?

What makes a recreational scuba diver choose one overseas dive location over another for their well-earned holiday? What environmental expectations do they have of a dive operator? Do dive operators live up to such expectations? What efforts do they go to, to run a business with a small ecological footprint that respects and supports local cultural practices? Is environmental responsibility or education even on a dive operators' radar?

Drawing on personal observations and interviews this paper scans the dive industry to try and find some answers to these questions. It looks at the role of environmental education within the dive industry which itself is an extensive and far reaching community of interest.

Thanks in advance to the operators, locals and dive staff I've met in wonderful and exotic dive locations from Papua New Guinea, to Cocos and Christmas Islands, Borneo and the Great Barrier Reef.



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Syd Smith & Jillian Cupitt

Live It Up. It'll cost you the Earth. The true cost of consumer lifestyles

One of the most confronting yet unacknowledged problems facing our society is the culture of wasteful or unsustainable consumption. Why are we encouraged, some would argue brainwashed, into buying what we don't really need? How did we become the slaves of fashion, advertising and peer group pressures, often the result of status items feeding our need to be accepted by society at large? Regrettably this is one of the core features and requirements of our modern day capitalist democracies and, for many Australians, a life and existence where any alternative would be incomprehensible. Ironically we appear to support so called moves to more sustainable lifestyles but in truth we are still only articulating sustainability values. The challenge now is to change the habits of people who have lived mainly in relatively affluent times and for those who are not affluent but moving towards it.

The workshop examines the possibility of schools, usually controlled by political forces, to be given more freedom to challenge the policies of companies, industry and government and other powerful decision makers in our society, and to work with them to adopt newer more innovative sustainable management and production strategies. Current research into and ideas on sustainable consumption will be raised and participants will be made more aware of its social, economic and environmental implications.

A number of other issues inhibiting sustainability will be raised at the workshop and participants will be encouraged to work on a local example of their choice. This is a workshop that encourages long term action and a change in direction at the local level. A discussion paper will be provided for the workshop as well.

Greg Hales

Practice makes perfect

Key lessons from an 8 year community environmental partnership between our rural High School, Community and Catchment Group will highlight the trials and tribulations of realistic sustainability projects. Action learning in project realities has enabled Award winning programs to be developed from quite humble and optimistic beginnings.

The development of a collaborative School Sustainability Management System has enriched curriculum by targeting environmental, social and economic outcomes that helps to coordinate approximately thirty projects being implemented or developed across the school's curriculum; projects involving almost all teaching and administration staff, students, and many community members and groups.

Using case studies of the journey, including internal and off school projects, we will highlight that institutional commitment, program continuity, capturing the community expertise and empowering students through observation of issues, providing them with the skills to pursue and invoke change is a key aspect of all projects on any theme.

Michele Dale & Moni Carlisle

Familiarity breeds context – delivering environmental education through local awareness

With community concerns about environmental issues such as global warming receiving scientific and political priority, there is a corresponding demand for mainstream environmental education initiatives. The plethora of information available regarding broad environmental issues can be intimidating to educators keen to foster an informed sense of stewardship in their students. We discuss how using local examples to illustrate more general environmental science provides a sensible and necessary approach to environmental education. Natural resource management based on sound science requires knowledge of



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local biodiversity and sustainable agriculture. We present a case study in Far North Queensland where the Regional NRM body (Terrain NRM) facilitates partnerships with community and industry groups to provide teachers with access to relevant and accurate information, providing support and building capacity for educators. We describe how local learning's at the catchment scale build social capital around community awareness and vitality

Dr. Mir Mehrdad Mirsanjari

Ecotourism Ecological Management Based on Sustainable Development

Ecotourism involves travel for the discovery of and learning about wild natural environments. Wilderness travel is the personal re-creating through the travelling in natural environments that are devoid of human disturbances. Among the various subdivisions of nature based tourism ecotourism is the fastest growing tourism submarket.

Recently, with rapidly developing economies in Asia, ecotourists from these countries are entering the market as consumers. The experience is expanding with the increase in number of parks. There is now worldwide increase in nature travel market. Ecotourism has an idealistic agenda, as progressive, educational travel, which conserves the environment and benefits local communities. The Synonyms of eco-tourism are: Environment friendly tourism; nature tourism; green tourism; scientific tourism; hard tourism; risk tourism; adventure tourism etc.

The environmental assessment for ecotourism potential its sustainable development, management and strategies for future planning are the crucial factors in ecotourism development. There are many parameters for assaying the environmental impact for ecotourism development e.g. frequency and attendance, location, distance etc.

Jane Stewart

Ollie's Isl& - Exploring Sustainable Production & Consumption

In today's modern society, it is common to think of production and consumption as discrete stages in a product's life cycle, with production (an industrial activity) preceding consumption (a domestic activity). But production and consumption are inextricably interwoven. All production consumes resources and energy in order to produce something, which in turn is then consumed. Unfortunately this lack of full contextual understanding has led consumers to be disconnected from the environmental, social and economic consequences of their production and consumption patterns.

Ollie's Island is a new interactive multimedia educational program that gives students an understanding and appreciation of the full chain of production and consumption for everything we need in life - with a focus on Australia. The objective of the program is to highlight the different stages in a product's life cycle and showcase the people and some of the innovative practices they are implementing to become more sustainable in their operations. The further objective is to encourage the user to identify their role within the chain, so that they recognise the potential positive outcomes of their own behavioural changes towards more sustainable actions.

The Ollie's Island program builds on educational pedagogies such as critical thinking and inquiry based learning. Students are challenged with a range of problem solving activities at varying levels of complexity, allowing for individual achievement. Following best practice in environmental education, the program encourages students to commit to taking personal actions in a number of key areas of sustainability. The ultimate goal of the program is to enhance students' knowledge, skills and values, as they become active, self-directed learners and ethically responsible citizens.



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Anne Jennings

Can community development approaches support sustainability education?

There have been concerns that education for sustainability programs often demonstrate varying degrees of school engagement, with many being unintentionally short-lived (Wooltorton & Kidd, 2003; Wooltorton 2004). Whilst it is recognised there are programs that have advanced sustainability education in terms of curriculum frameworks, pedagogy and educational toolkits, how they can be embedded into the school culture is still questioned. This issue of longevity is considered vitally important.

This paper will examine opportunities to support sustainability education using community development approaches and report on progress of an action research project putting theory into practice. It is based on the hypothesis that engaging the wider community with their local schools will result in the community having a vested interest in ensuring local sustainability education programs will be long-term and relevant. This is part of a broader sustainability project that also involves schools undertaking energy audits and generating their own power. The community development project targets social and cultural aspects of sustainability to ensure they are included in the broader picture.

Dr. Catherine Baudains, Mr Michael Burke, Ms Amy Krupa, Dr Jennifer Pearson, Mr Wayne Walters

(Australian Association for Environmental Education: Western Australian Chapter)

Catchments, Corridors and Coasts: Community interaction with sustainability initiatives.

The WA Chapter of AEE has been presenting the Catchments, Corridors and Coasts (CCC) program for 13 years. Over this time it has evolved to become an important aspect of our work in the Western Australian community. CCC is a three day interactive program that provides a 'snapshot' of environmental education in WA. Participants come from community groups, youth organisations, teachers, pre-service teachers, private sector, and local and state government. It provides a rich experience, facilitating the developments of networks with and between practitioners, and an awareness of the resources and support across WA to help address core environmental and sustainability issues. Participants learn about environmental issues, what is being done by community groups and various levels of government, what resources are available and how we can all work together for a better environment.

The presentation outlines the elements of the program, the impact of the program for participants, the values of networking and the potential for developing skills and knowledge about sustainability issues. This program is very achievable for any group to replicate, enabling them to develop a community program that reflects and establishes synergies between the environmental education communities. The program demonstrates the synergies between the committee member's organisations that represent government, community and education sector.

Hilary Whitehouse & Neus (Snowy) Evans

What can Social-Ecological Resilience Theory Contribute to Education for Sustainability Understanding and Practice?

What emerging field of social-ecological resilience (SER) research can contribute to our understanding of education for sustainability (Education for Sustainability)? SER posits social and ecological systems as linked, complex and adaptive and recognises that social-ecological systems do not develop in smooth and deterministic ways. SER offers a framework for managing uncertainty by allowing us to think about our capacity to absorb sudden change as well as to cope with uncertainty and surprises.

If sustainability is now our focus within environmental education, we need to consider concepts of resilience and how these can be applied theoretically and practically to our collective work as educators. Carl Folke (2003, 2006) argues to effectively build sustainability there needs to be more solid understandings of social-



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ecological systems and resilience from an ecological perspective. The concept of SER has much to contribute to our understanding of Education for Sustainability within environmental education. Based on our research on water quality in North Queensland communities, we will explain the relevance of SER thinking for environmental educators and explore some ways in which SER thinking can constructively influence Education for Sustainability theory and practice.



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Julie Harris

A Little Bit Goes a Long Way

Transcultural Communication, as with most things, is best learnt through first hand experience.

The best part about learning this important skill is that you can make a significant difference along the way by sharing your skills with, and learning from, our regional neighbours, while experiencing education for sustainability in a country such as Cambodia. Australian environmental educators have much to offer in terms of building capacity in environmental education in Cambodia, and if approached in the context of mutual learning, results in rich learning's for all. This presentation seeks to provide a warts and all insight into the experience of working overseas and ultimately encourage environmental educators from across Australia to continue to engage in working with our near neighbours.

Ahmad Ismail

Environmental Education in Malaysia

Malaysia has shown its concern on environmental issues through the implementation of many activities which include rainforest preservation, sustainable development and public awareness programmes. Many sensitive areas such as water catchments, estuaries which serve as breeding places for marine lives, mangroves, and wildlife habitats have been gazetted and are protected by laws. The government is also serious in enforcing laws and regulations regarding land development such as implementing EIA (Environmental Impact Assessment), Environmental Auditing exercises, Environmental Quality Act and introducing good agriculture replanting systems. To enhance knowledge and awareness of the environment and environmental quality for healthy lives among the public, many on-going activities are conducted from school levels through the integration of environmental values in the curriculum and co-curriculum activities to the general public through environmental activities which are often with the participation of private companies and non-governmental organisations.

Environmental education in Malaysia involves children in kindergarten to youth and the elderly. Environmental education starts in schools through curriculum activities by introducing types of living organisms and their requirements to continue their lives and generations, and their adaptation to the environment to survive in this world. The training extends to co-curriculum activities such as trips to the zoos, wildlife retreat and conservation centres, excursions to natural parks, and camping in the forest, etc. These hands-on activities provide greater understanding among students about the environment and the functions of living organisms to human lives. The activities conducted for school children involve not only the Department of Education but also the Ministry of Natural Resources and Environment (NRE), Department of Environment, Department of Wildlife and National Parks, Department of Forestry, local authorities and others. Non-governmental organisations (NGO) such as Malayan Nature Society, Malaysian Zoological Society and other nature lovers' societies together with private companies also organise activities of their interests in support of the government's environmental awareness programme.

Most of these activities are run by trained personnel and based on specific modules. Recently, in July 2007, the Prime Minister and the Minister of NRE re-launched the environmental awareness programme with a particular agenda of maintaining clean river systems and urban environment.



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This environmental agenda is crucial in view of the rapid development in urbanisation, industrialisation, modern agriculture and transportation that the country is experiencing which will certainly affect the health of the environment if the public are not educated on the environmental changes that will occur and the responses to these changes. Environmental health is very important to human life not only for recreational purposes but also for economic reasons, healthy protein resources and healthy life. The Malaysian government views environmental issues as an important factor in the development of the country. Even though the government is taking many steps to garner public interests and involvements in environmental programmes, the country has still a long way to go in formulating and implementing better strategies in educating the public on environmental issues from man-made wastes, environmental pollution to nature and biodiversity.

Robbie Henderson

Live & Learn:

Applying lessons learned through environmental and development education in the South Pacific region to Indigenous Australian communities

Live & Learn is a non-government organisation working with Melanesian formal education institutions and rural communities to promote sustainability. Principles underpinning our approach include focusing programs on community perceptions of needs and aspirations, applying critical thinking to environmental problems, encouraging participation and dialogue, and linking knowledge to change.

Indigenous peoples in Melanesia face a range of challenges including the capacity of traditional knowledge and 'custom' to solve contemporary issues. Developers regularly exploit traditional governance systems resulting in people losing access to land and resources and decline in cultural practices. However, traditional knowledge and practices used for millennia also hold many solutions to sustainability. Live & learns' successes highlight the role of non-formal learning and education - allowing more empowerment, self determination and ownership of solutions.

Through Live & Learn stories we examine the potential for principles and lessons learned to be applied in programs for Australian Indigenous Communities

Bob Winters

Getting it together; Sustainability, Internet, Curriculum and Literacy

Is the 'Model for Inquiry Learning' going far enough for the learning needs of students? Why are teachers concerned at the number of students doing cut and paste from the Internet? Curriculum developers can go much further than providing units of work. They can also provide students with research information written to the students' literacy needs. Most sources of Internet information will not be read by reluctant readers. Bob Winters has developed a number of electronic materials over the past two years that demonstrate how sustainability, a model of inquiry learning, literacy and the internet can be combined. This includes how student research materials can be developed and designed for the Internet using appropriate literacy principles. The workshop will examine these examples discussing the underlying concepts. The participants will workshop how these examples can go further and discuss their own needs. We may be able to discuss the implications of literacy being supported by the new National Curriculum. The participants may wish to outline what they would recommend for a complete unit of work to be placed on the web.



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Saha Santosh

Indigenous Environmental Principles and Resource Management Systems in Sub-Saharan Africa

ABSTRACT: Sub-Saharan landscapes -- tropical forests, savanna grasslands, and desert -- are experiencing a wide range of human-induced ecological bio-degradation. The legitimate backlash against the failure of modern environmental policies that mostly rely on government and NGO backed top-down commandist initiative and people's disaffection with westernization in ecological management and the perceived loss of national sovereignty generated a debate, currently less scrutinized, about the indigenous resource management. Focusing on the 'Subaltern Studies', and assuming a non-romantic view of the indigenous attitudes toward the environment, I argue that various traditional practices, though not essentially environmentally friendly, are inspired by controversial moral economy that contributes to efficient resource-management.

Holly Parsons, Kate Ravich, Charlotte Taylor, Richard Major

Capacity Building for Biodiversity: Integrating urban biodiversity research with adult education theory; the Birds in Backyards Program

Birds are an important part of our environment and are also excellent indicators of ecological health. Our bird life is changing as small bird numbers are declining and large species are becoming more numerous. Since 2000 the BIBY program (in partnership with Birds Australia and the Australian Museum) has integrated scientific research, education and conservation, using a hands-on approach to encourage the public to connect with biodiversity issues.

This workshop will cover two topics:

1. Background and structure of the program: Using the website (<http://www.birdsinbackyards.net>) we will summarize and assess the initiatives and outcomes, and demonstrate our application of adult education theory.
2. Introducing the newly developed Guidelines for enhancing urban bird habitat: The seven sections are designed to be a tool for the effective management of urban landscapes and are designed for a range of users from schools to local councils. We will conduct brain-storming sessions based on the Guidelines allowing participants to experience the educational activities relevant for children and adults.

Rebecca Miles

The Place of 'Place' in Environmental Education

As many in the field of environmental education would appreciate, "to know anything about the world is to know its places". (Gruenewald, 2006, p. 4). Sobel (1996) suggests that, in teaching about environmental education, using local places to teach about environmental concepts, such as ecosystems or the watershed provides students with a context for what they are learning. Cameron (2008, p. 303) further argues that "by implication, education, environmental sustainability and intercultural dialogue should not just take place into account, but they should be deeply grounded in place". As well as providing an opportunity for environmental education to become more participative, and encourage intercultural dialogue and community action, education that is grounded in places encourages students to look critically at their places, both natural and constructed, and consider the interconnections that occur within and through these places. Further, allowing students to investigate the influence of social, political and economical decisions on natural places incorporates the socially-critical and political action goals of environmental education. This session aims to give an overview of place-conscious education and its place in environmental education, in particular suggesting that environmental education has a central role to play in promoting a place ethic.



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Professor Ian Falk & Ruth Wallace

What does "Integrating global perspectives on environmental education" really mean?

Drawing on a major cross-cultural research project on the role of communities in managing bio-security, this presentation will outline the key conceptual dimensions of what 'environmental education' really means in cross-cultural contexts. The locations discussed will be northern Australia and Eastern Indonesia. The activities in those locations include the ways 'community development' and 'environmental education' can work together in practice. Practical case studies from Bali, West Timor, Papua and a variety of organisations will inform the discussion. Case studies include learning from a series of projects based on enterprises development in remote Indigenous communities that explore ways to incorporate Indigenous knowledge's and languages into capacity building learning experiences.

Heather Zeppel

Aboriginal Cultural Perspectives on Wildlife Education in Australia

This paper evaluates Aboriginal cultural interpretation at 17 captive wildlife attractions and on 16 wildlife tours in Australia. Telephone interviews were conducted with 35 managers (9 Indigenous) and 26 Indigenous staff at wildlife attractions that included verbal or written Aboriginal wildlife knowledge. The Indigenous guides verbally presented both traditional uses and personal stories about Australian wildlife followed by Aboriginal 'Dreaming' or creation stories about totemic animal species. Non-Indigenous staff explained traditional Aboriginal uses of wildlife followed by biological facts and species information. This study thus highlights cultural differences in animal attitudes, approaches to wildlife use and wildlife education. According to staff, visitors benefit from the inclusion of Aboriginal cultural interpretation about wildlife by broadening their mind, dispelling myths, learning/education about Aboriginal cultures, novelty and excitement for visitors, increasing cultural awareness and developing more positive attitudes towards Indigenous people.

Guidelines are presented to further develop cross-cultural opportunities for Aboriginal wildlife education.

Melanie Bradley

Fostering a culture of sustainability amongst horticultural producers from non-English speaking backgrounds

Producers from non-English speaking backgrounds (NESB) comprise an important, strong-growth sector of the Northern Territory (NT) horticultural industry. Within this sector there are diverse modes of horticultural operation, and associated with this diversity, there are varying environmental, social and economic issues. This paper reports on collaborative research undertaken by CSIRO and the Northern Territory Horticultural Association (NTHA) that is focused on understanding the socio-cultural, behavioural, technical and regulatory factors influencing the operations and practices of NESB producers. Identification of these factors, and their respective degrees of influence, will assist the NTHA and NT Government with understanding how best to improve their level of engagement with the NESB sector. Importantly, the research findings will also support the development of educational initiatives that can help foster a culture of sustainability amongst NESB producers.

Alistair Stewart

Thinking like a Murray Cod: Re-creating rhizomatic natural history pedagogies

In this paper I bring together Leopold's (1949) 'thinking like a mountain' and Deleuze and Guattari's (1987) rhizome concept in order to re/create educational natural history stories about the Murray Cod, the Murray River (Australia) and the cultural dimensions of the declining health of both. The health of the Murray River in



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Australia has declined substantially since European settlement. Sinclair argues that 'a profound change in the way Australians think about the river and its history is necessary if we hope to preserve what remains of the old river, and imagine a healthier future for the regulated Murray' (2001, p. 20). Leopold, reflecting on the impact of deer on mountain forests, as a result of wolf removal, suggests to readers there is merit in 'thinking like a mountain'. Given the prodigious length and size of the catchment of the Murray River, and inspired by Robin's (2005) suggestion to think at the species level ('thinking like a Banded Stilt'), I will explore, using rhizomatic storylines, a pedagogy for thinking ones way into the life and circumstances of a Murray Cod.

Sandra Woolforton

Reflections on Environmental Education – 6 Months in Cambodia

Cambodia, now well on the road to recovery after substantial civil unrest, is home to the Mekong River the Tonle Sap Lake, substantial forest cover, a plethora of wildlife much of which is endangered, reputedly about one thousand varieties of rise and a very youthful human population that is set to increase rapidly. This photo-journal records reflections on Cambodia arranged in three groups: factors that support and those that threaten sustainability in the city of Phnom Penh; environmental problems and some education processes being used to address these in rural and Indigenous communities in the provinces; and lessons learned.

Gabriel Anderson & Sue Lennox

My Country Strengthening Indigenous Youth Leadership in Remote and Regional Australia

OzGREEN sustainability learning and leadership programs in the Murray-Darling basin and the Northern Territory are building connections with local Indigenous communities. In classic participatory learning and action process, new opportunities for collaboration are emerging. Indigenous leaders and youth have requested that we return and work directly with their local community. Preliminary follow up meetings with Indigenous elders and young people has enabled us to co-develop project concepts. Pilot funding has enabled us to begin implementing the project in three locations:

- River Murray (Shepparton - Echuca) Victoria, in partnership with Ganbina.
- Coorong – Murray Mouth in South Australia
- Ti Tree (Northern Territory)

This paper reports on the preliminary outcomes of the My Country project in these locations.

By building the capacity of young Indigenous Australians, OzGREEN is enabling Indigenous voice, vision and values to be strengthened and heard. Pathways for genuine reconciliation and understanding of Indigenous ways of governance and care of rivers and land are being built through connection with communities and young people already engaged in OzGREEN programs

Sue Martin

Sustainability – global context learning from East Timorese students visiting the NSW EE Conference

A DVD has been produced that will shown at the conference, this DVD shows the journey that a group of East Timorese students took to attend the 28th NSW Environmental Education conference, Nov 07. The lessons learnt are our lessons as we contemplate what ESD is really about.

At the Nov 07 conference SEEN www.seen.org.au took on a social responsibility commitment for the conference to raise awareness of and actively assist the sustainability journey of our neighbor and newest



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country - East Timor. This DVD is a way that the Sydney Environmental Education Network (SEEN) can measure our corporate social responsibility actions, which make up our social footprint.

SEEN and OzGREEN invited 4 East Timorese students (around year 11) and their teacher to the conference in Sydney. Additionally, to raise awareness of East Timor, [Australian Documentaries](#) filmed their journey from Oecusse to Sydney and the conference. It is intended that this will be used for several short films about the meaning of sustainability and education across cultures as well as the personal journeys of the students.

Bazzi Khodaram

Urban Environmental Challenges: Case Study Zabol

Zabol city is located in eastern Iran, and in a desert area with low rainfall (50mm annually). Because it is located in Hirmand river estuary, its natural shelving is zero, as a result of this, there is non natural drainage in this city. In addition, this city is exposed to local winds in summer (120 days), and a dense dusty storm blow the city, when Hamoon Lake is drought.

The creation of Zabol city dates back to 150 years ago which the coalescence of two villages of Hossin Abad & Nosrat Abad, with out any prospect of future events and environmental conditions. This leads into the building of narrow and one way streets in city centre. Finally, urban environment in Zabol is affected by four factors such as; Hirmand river, Hamoon lake, Local winds (120 days) and flattened plain.

This research studies the challenges of urban environment in Zabol city & it aims of at enplaning and solving these challenges. Research methods in this article are "descriptive-analytic", and use of library data's, observation and questionnaire.

Dr. Peter Jacklyn

Roots, branches and environmental education resources in northern Australia

The Tropical Savannas CRC has been involved in collaborative environmental education projects for a number of years, particularly through our *Tropical Savannas Knowledge in Schools* project which has produced the *Environorth* website (www.environorth.org.au) and the *Savannas Walkabout* module. During this time some key factors have emerged as being important for the success of these projects. During the course of a project, developing good networks with educators, students, and a range of knowledge providers across the community and effectively involving everyone in producing useful education resources has been important. In the longer term producing sustainable outcomes can be a bit like growing a tree: nurturing the roots of the system such as developing relationships and trust, and valuing knowledge continuity as well as encouraging the branches by being open to new ideas and being prepared to adapt quickly to new circumstances.

Suleyman Aremu Muyibi

Application of Islamic Principles in Holistic Environmental Management

Environmental management based on Islamic principles proposes that there is a fundamental link and interdependency between all natural elements which is based on the premise that if man abuses or exhausts one element, the natural world as a whole will suffer direct consequences. The holistic principle of environmental management as applied by the Prophet Muhammad (PBUH) is based on three important principles made up of the concepts of Unity (*Tawhid*), Stewardship (*Khalifah*) and Trust (*Amana*). The Islamic approach to maintaining a balance between material development and responsibility is explored and its application in environmental management is highlighted. The detrimental effects of pollution are also discussed and Islamic guidelines to ensure balance between material development and responsibility



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highlighted. The concept of waste as a resource to be used to reduce pollution as well as efficient utilization of scarce natural resources through bioconversion, recycling, and reuse is also emphasized.

Key words: environmental management, pollution control, Islamic principles, waste management, resource control,

Lauren Hargreaves & David Wise

Indigenous leadership in caring for country

The research project explores the field of leadership in Indigenous land management in remote Northern Territory. The project examines Indigenous Land management models that have become established within a variety of Indigenous social, cultural and political contexts in four differing Indigenous Land Management organisations. The models of leadership are investigated with senior elders and senior land management staff from the community who provide guidance to researchers as facilitators in their communities. The research project investigates how the Indigenous Land Management issues co-exist within community organizations and how these are governed, constrained or assisted from an Indigenous cultural perspective, a western scientific perspective of land management and the western organisational structures of hosting organisations.

Penny Wurm

Collaborative Curriculum Development with Indigenous Partners

In the past higher education modules have been exported for delivery in developing countries. In contrast Charles Darwin University has adopted an approach of collaborative curriculum development with partner universities in Indonesia. In this collaborative model students will enrol and be assessed at their home university, and staff and students from collaborating universities will take part in problem-based field activities in Indonesia. Advantages of this model include tailoring curriculum to high priority issues in the developing country, building capacity of staff of all partner institutions, relating student activities to ongoing research and development projects, and building and maintaining linkages between partner institutions.

Chandra Sekhar Mahesh

Probability Studies for Assessment of Dissolved Oxygen Profiles in Krishna River

One of the most important issues for effective resource management is recognition of cyclical and cascading effects of human activities on the water quality and quantity along hydrologic pathways. The degradation of water quality in one part of a watershed can have negative effects on users downstream. Everyone lives downstream of the effects of some human activity. An extremely important factor is that substances added to the atmosphere, land, and water generally have relatively long time scales for removal or clean up. The nature of the substance, including its affinity for adhering to soil and its ability to be transformed, affects the mobility and the time scale for removal of the substance. Policy alone will not solve many of the degradation issues, but a combination of policy, education, scientific knowledge, planning, and enforcement of applicable laws can provide mechanisms for slowing the rate of degradation and provide human and environmental protection. Such an integrated approach is needed to effectively manage land and water resources.

In this study, river inflows are generated by using the AR (1) model and it found to be successful for synthetic flow generation. Applicability of ANN based models for generating stream flows is also attempted in this study, the results demonstrates the potential of ANN in making reasonable reliable discharge predictions using lagged discharges as inputs. Error indicators and time series plots indicate the applicability of the



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model. The generated flows along with historical flows are later used as inputs to the DO model. Streeter-Phelps DO model is used to estimate critical dissolved oxygen deficit, time to critical deficit, and distance to critical deficit for all hypothetical cases of wastewater and BOD inputs into the river. The critical DO deficit curve indicates the significance of the results. The probability studies can be used to estimate the probability of having a critical DO deficit greater than or less than a fixed value or the probability for this value to fall between certain specified limits. Hence, this information can be of great use in deciding degree of treatment for the effluents to be discharged into the river. The results of DO model can be used to fix wastewater disposal and water intakes along the river.

Sue Stevens

Engaging Ethnic Communities in Bird Conservation in Urban Areas

Conservation of birds in urban areas requires the involvement of all members of the community - including members of culturally and linguistically diverse community groups; particularly in major capital cities, where 28 % (Melbourne) and 31% (Sydney) of city dwellers speak a language other than English at home.

Birds Australia is addressing this need through a one-year project commenced in July 2007 that aims to increase the participation of people from culturally and linguistically diverse communities in bird conservation in urban areas. The project, funded by the NSW Environmental Trust, links the very successful Birds in Backyards project (a partnership between Birds Australia and the Australian Museum) with the Ethnic Communities Sustainable Living Project (ECSLP) - a joint project between the NSW Ethnic Communities Council and the NSW Department of Environment and Climate Change. The ECSLP is based on peer-to-peer education: twenty bilingual educators from eight different language groups regularly visit community organisations to educate members of their communities on practical ways to live more sustainably.

This project links with all three major themes of the conference, and the presentation will include a background to the project, project methods and discussion of case studies.

Alireza Fallahi

Lessons learned from recovery process after the 2003 Bam disaster in Iran

On 26th December 2003, the ancient City of Bam, in south eastern of Iran, was hit by the worst earthquake over the last five decades, resulting in some 30000 dead, 20000 injured and left a greater number of homeless. He devastating 6.6 magnitude quakes struck at 5.28 a.m. local time, an hour at which 80,000 of the city's residence were in bed on the Muslim day of rest. The catastrophe levelled more than 80% of city to the round.

According to Bam sustainable land development policy, the task of recovery during the reconstruction phase was to make the survivors as independent of government aid as possible. It was aimed to encourage the householders to take an active part in the further relief process. Thus, it was announced that "the responsibility of rebuilding was for the homeless, over the reconstruction period". In practice, this task was coordinated by the Housing Foundation and a number of private engineering and architectural firms, trying to solve land management problems as they saw fit. This meant that each firm put into practice specific approaches as appropriate by establishing a consultation process with householders. Another contributing factor was the individual technical and financial capacities of householders. Such methods for providing shelter increased the survivors' abilities to actively participate in the process of recovery.

However, paperwork process in allocating lands and its management were major obstacles on the way of operation.



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Jasmine Payget

Timor Leste and a community based aspect of environmental education – how Friendship Committees are working together on environmental matters

Timor Leste's Millennium Development Goals include action on major environmental problems. What is the role for environmental education when food, security and housing are higher immediate priorities? Given that water is an environmental as well as health and agricultural issue, what are the best on-ground sustainable ways forward.

Friendship Agreements have been made between districts in Timor Leste and Local Government areas in Australia. The goal is to build enduring relationships between the peoples of each area. Some of these Friendship groups have a long history. The Hato Bulico – Blue Mountains Friendship Agreement was signed in 2007. The Friendship committees in each country are highly respectful of the ways in which priorities are determined.

Jasmine's presentation will

- Report on the work of established and recent Friendship groups in tackling sustainability and environmental goals.
- Reflect on how the community development approach of Blue Mountains local government environmental workers could be useful in Timor Leste
- Discuss the many challenges in this process.

Paul Dullard

On Holy Ground, Victoria: An Ecological Vision for Catholic Schools in Victoria.

The 'On Holy Ground, Victoria' Project has been developed by the Sandhurst Catholic Education Office, Victoria in partnership with Sale, Ballarat and Melbourne diocese. The document makes strong links between The AuSSI – Vic Framework, developed by the Victorian Department of Education, existing versions of *On Holy Ground from NSW and Qld* and the *National Environmental Education Statement for Australian Schools – Educating for a Sustainable Future* developed by the Department of Environment and Water Resources.

On Holy Ground, Victoria has been formulated in light of the curriculum initiatives outlined above and the desire to continue the integration of existing sustainability education initiatives into a holistic programme with measurable environmental, financial, social and curriculum outcomes.

On Holy Ground, Victoria will build on the work undertaken to date in developing the *Australian Sustainable Schools Initiative - Victoria*. It will also concentrate on building vital connections between the Catholic Education in Victoria and other government and non-government agencies to place learning for sustainability at the centre of curriculum, catholic schools and communities.

The On Holy Ground, Victoria project focuses not only on ecological sustainability but also on the social and cultural aspects of sustainability in order to strengthen student learning, teacher instructional practice and community development in catholic schools.

This workshop will give a background to how the On Holy Ground, Victoria project came about, the process that took place and who was involved. The presentation will highlight the successes and challenges of the project as well as celebrate the document that has been completed.

There will be time for delegates to unpack the On Holy Ground, Victoria document to emphasise the benefit of having it integrated into the AuSSI Vic framework and the National Environmental Education Statement. Delegates will be able to provide feedback and to suggest ways that it could be best used and adapted in their own communities.



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It is envisaged that this workshop will bring On Holy Ground, Victoria to the awareness of others from across Australia in both Catholic schools and other sectors. Networks will be established where further development of this document can take place with a local context in many regions, diocese and states and territories of Australia.

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Dr. Jo-Anne Ferreira & Vicki Keliher

*Becoming a Reflective Environmentalist:
Reflecting on Reflective Practice*

Reflective journals are often used in education to develop a student self-awareness that can create opportunities for professional growth and development. Engaging in the process of reflection can also enable students to identify and question the assumptions that guide their intentions and practices, to recognise the opportunities and constraints in the ideological and institutional contexts within which they currently work or may work in the future, and to make strategic plans for personal, professional and social change. During the Master of Environmental Education Program at Griffith University students undertake a series of exercises drawn from Mitchell Thomashow's (1996) *Ecological Identity: Becoming a Reflective Environmentalist*, and keep a 'Reflective Practice Diary'. These activities are designed to provide students with an opportunity to assess their personal commitment to sustainability and to understand the interacting personal and contextual factors that guide their personal and professional practices as an environmentalist, and as an environmental educator. This paper reports on the extent to which the reflective practice journal allows students in the Masters Program to engage in a process of reflection and enables them to articulate their personal and professional intentions and actions in relation to environmental education, sustainability and social change.

Chris Eames, Heidi Mardon, Miles Barker, Lyn Rogers, Faye Wilson-Hill, Barry Law,

Effective whole school approaches to Education for Sustainability: Defining their characteristics

This paper reports on the initial findings of a two year project aimed at investigating the relationship between whole school approaches to education for sustainability (Education for Sustainability) and student learning. This project has created partnerships between experienced researchers and practitioners in EDUCATION FOR SUSTAINABILITY in New Zealand involving members of the national EDUCATION FOR SUSTAINABILITY team, teachers and students in five NZ schools. The project team has developed an analytical framework for understanding a whole school approach. Data has been gathered using the framework through interviews, questionnaires and document analysis to determine firstly, whether the framework provides a valid indication of a whole school approach, and secondly, the potential to show a relationship between a whole schools approach and student learning. This paper presents the framework and some initial findings from the trial and how the framework may contribute to improved capacity for EDUCATION FOR SUSTAINABILITY in schools.

Keith Skamp, Edward Boyes & Mating Stanisstreet

*Australian secondary students' views about global warming:
Beliefs about Education for Sustainability about actions and willingness to act*

NSW secondary students' views (n=500) about how useful various specific actions might be at reducing global warming, their willingness to undertake the various actions, and the extent to which these two might be linked were determined using a constructed questionnaire. The degree to which students were willing to act was often greater or less than might be expected from the extent to which they believed particular pro-environmental actions to be useful. The strength of the relationships, for each action, between students' willingness to act and their belief that an action would be effective were explored. This suggested a measure of the potential effectiveness of education about that action. Where this relationship was weak



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altering belief about the usefulness of the action might not be expected to produce major changes in behaviour. Where the relationship was stronger environmental education could well be effective, especially if a large proportion of the population are not already willing to undertake that action.

Mark Caddey & Sue Burton

Write a plan!

Or how to avoid the legacy of unused shade houses and dead worm farms.

In NSW schools, there are many environmental activities occurring, mostly in an ad hoc manner and often the learning's from one project are not carried forward to the next or shared with others.

Whole school planning enables a school community to reflect on their achievements, the issues (such as climate change) that they are facing, and set direction that is meaningful and achievable. It ensures that actions are carried into the future planning of the school and embedded in the school's needs.

Workshops participants will be given a short overview on the role of whole school planning in Sustainable Schools NSW and the website www.sustainableschools.nsw.edu.au.

Participants will then collectively work through one issue faced by a school developing an integrated action plan that shows the links between environmental actions in schools, student learning, community participation and whole school planning. This workshop is useful for people involved in schools, those who work with schools or aspire to.

Dr. Cathy Oke

Kids teaching kids, adults and our community about the importance of sustainability... using the future generation to educate the present generation...

In this workshop we (including the audience) will explore the concepts behind the highly successful Kids Teaching Kids methodology. This multidisciplinary hand on approach to integrating key learning areas into a comprehensive educational model is one of the highest forms of learning and aims for a cultural change in the way we view, use and perceive our natural environment. With you the workshop audience we will explore how the method can be used to meet authentic outcome-based learning requirements across schools and our communities and how to create and use kids teaching kids presentations - We want to hear from you - What Works? What Doesn't? And how best, we can use peer teaching to working towards sustainability outcomes within your school and your community.

Iolanthe Sutton

Teaching and Learning Transformational approaches in the NT

This paper will explore the educational value for students of transformational teaching and learning approaches. Taminmin High School community is currently developing a Management Plan for sustainable use of the Woodside Reserve. While this process is still in the early stages, opportunities for action learning and professional development through innovative teaching approaches and reflective practices have emerged. Some examples of these initiatives will be presented and evaluated to examine possible shifts in practice in existing schooling contexts that are both affordable, and effective in achieving high quality student outcomes.



Julie Crough, Louise Fogg et al

Why is fire a hot issue in Northern Australia?

What is your perspective of fire; is it good, bad or other? How does your perspective compare with other people? How can fire be useful for biodiversity as well as reduce greenhouse gas emissions? This workshop will explore these and other related issues that will challenge your thinking about fire and why it is important in educating for sustainability. Participants will also receive a copy of *Burning Issues*, an online interactive learning module, which is an essential tool for helping to understand and challenge different ways of knowing about this hot topic.

Lynley Tulloch & John Lockley

Detangling the rhetoric of 'sustainable development': Developing student teachers critical reflective capacities and environmental identities.

The political orthodoxy of 'sustainable development' on an international level, coupled with the initiative the 'United Nations Decade of Education for Sustainable Development' (UNDESD), has placed sustainability on the agenda of public education systems. In Aotearoa/New Zealand, for example, the most recent curriculum statement (MOE, 2007) includes 'sustainability' as a key component of the 'future focus' principle embedded in this document. The corresponding shift from a classical environmental education to one of education for sustainability (EDUCATION FOR SUSTAINABILITY), is variable across New Zealand schools and tertiary institutions (Chapman, Flaws, Le Heron, 2006), but a move nonetheless that has generated debate amongst parents, teachers, environmental educators and curriculum writers.

This paper argues that these concerns should not be dismissed, but rather they provide an opportunity for educators and students to analyse and locate their own belief systems and environmental identities within a socio-political and historical context. Our task as educators is not to transfer the 'sustainability' concept into the minds and actions of our students, but rather to utilise discourses of environmental sustainability in a transformative sense.

Marnie Fraser

Educating for a Sustainable Future – Students for the Biosphere

Schools play an essential role in leading, teaching and learning for change. The need for whole of school and whole community engagement with sustainability including social, economic and environmental issues are evident when faced with such issues as climate change, water shortages, raising cost of resources and the direct impact of human activity on the ecosystem.

The Australian Sustainable Schools Initiative Victoria (AuSSI Vic) is a framework for change in schools towards a more sustainable future. (With over 350 schools in Victoria and around 40 schools on the Mornington Peninsula already undertaking the sustainability journey, this workshop will help teachers understand what and why behind AuSSI Vic, how it can help their school.)

The Dromana Cluster of Schools on the Mornington Peninsula has also been involved in the 'Students for the Biosphere' project. Direct links were made between the Mornington Peninsula & Western Port Biosphere Reserve and the National Framework for Values Education. This workshop will also showcase this project and its place in the overall AuSSI Vic program.



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Sally Birdsall

Does Science Still Have a Place in Education for Sustainability?

In recent years the role of science in environmental issues has been under investigation. While scientists are in a unique position of being able to alert people to the effects and consequences of environmental degradation, they are unable to provide guaranteed answers and solutions to such degradation (Ashley, 2000). Given this problem, does science still have a place in Education for Sustainability? This presentation will argue that science still does have an important place in Education for Sustainability and that as a field of endeavour, science itself has changed in a way that parallels the evolution of field/nature study into EE and then Education for Sustainability.

In order to investigate this assertion, data were gathered about 22 11-12 year old students' understandings of sustainability that developed during an Education for Sustainability programme. The programme focused on a local waterway and was underpinned by the concept of sustainability. Using an interpretative-qualitative mode of inquiry, the scientific knowledge within the students' understandings of sustainability was analysed. The analysis suggests that the students' scientific knowledge did contribute to the development of their understandings of sustainability. In addition, the students' scientific knowledge also informed the actions taken by them. These findings suggest that science has an important part to play in Education for Sustainability, both enhancing knowledge and informing actions taken.

Dr. Brian Sharpley & Moragh Mackay

Educating for Land Stewardship: A new role for Landcare

West Gippsland, once a temperate rain forest populated with 90-metre tall mountain ash, was radically cleared 100 years ago. Today it is mostly farmland with only a few pockets of remanent vegetation.

As a result of past farming practices, many current landholders face severe environmental problems on their land such as erosion, salinity, loss of soil fertility and the invasion of weeds and pests. The old ways are no longer appropriate but how do you change practices that have been passed down from generation to generation?

In response, Bass Coast Landcare Network has set about establishing education programs that challenge landholder attitudes and actions. The programs, which have evolved through experience and framed around adult learning principles, involve innovative strategic planning, the use of expert and local knowledge, funds to support ground work and, importantly, community participation.

A recent evaluation of these programs found that they have been highly successful in enhancing landholder knowledge, promoting sustainable actions and shifting landholder perceptions towards Land Stewardship.

Participants at this session will have the opportunity to explore some of the educational tools and strategies employed and to discuss the factors that have led to the success of these educational programs.

Fran Davies

Sustainable Futures – An Exciting New Approach to Environmental Education for Senior School Students (or Breaching the Impenetrable Certainties of the Average Teenager)

A new SSABSA* subject developed by Geography teachers in South Australia challenges teachers and their students to be innovative, to understand current issues related to the environment and to be pro-active in changing human behaviour in response. Students do the field work and reporting so typical of the



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social sciences but must go one step further – they must take some action to help convince their community of the need to change. Now in its third year, the subject has taken, and is continuing to take, students out of their comfort zone and into territory where many never imagined themselves – convincing their peers, families and the wider community to make changes to help achieve a sustainable future.

An overview of some projects that Top End students have completed will provide ideas for getting this often cynical or ego-centric age group involved in environmental education in a productive and personally rewarding manner.

(*Senior Secondary Assessment Board of South Australia)

Peta White

Living Lightly: Walking the talk – Canada Virtual

This beginning PhD research facilitates the deep (re)consideration of how I practice environmental education as a form of activism with an autobiographic and auto-ethnographic methodology. Environmental educators (like me) are constantly proposing to our audiences that they consider living lightly (with a low ecological footprint), yet, are we walking our talk? Sure, we may be implementing some of the changes in practice that we recommend, but are we really living with a footprint that has been reduced by the suggested 80% (as stated by Bill Rees, 2007) below the Australian/Canadian average? And can we? I have tried and, to be honest, it is difficult. This is not an excuse, or an attempt to diminish the need to keep trying. It is an acknowledgment that encourages conscious and continued effort with close reflection. Utilising eco-feminist post-structural analysis I am able to explore the dominant discourses around living lightly and environmental education activism.

Alison Lugg

Paradox, Passion and Pedagogy: Critical Challenges in Tertiary Level Sustainability Education

After an initial reluctance to embrace issues of sustainability, Universities around the world are now responding to the call from the United Nations to make 2005-2014 the Decade for Education for Sustainability (DESD), which sets a cultural, structural and curricular challenge for the higher education sector. Research in higher education pedagogy related to *sustainable development* and *sustainability literacy* emphasizes the need for interdisciplinary, holistic and innovative approaches thus creating a challenge for tertiary educators to reassess systems, teaching and learning practices and, perhaps, epistemologies. This paper investigates teaching and learning associated with the principles and practice of sustainability in the context of a university outdoor and environmental education course. It discusses findings from a case study of graduates and staff in an outdoor and environmental education post-graduate degree course in the UK. Findings reveal a possible paradox of, on one hand, the significance for students and staff of having passion and commitment to ideals and, on the other, an opportunity to challenge and question those ideals in theory and practice. Discussion of the role of experiential learning and critical reflection in this study, points to pedagogical opportunities and dilemmas arising in the tertiary sector from the sustainable development agenda.

Deb Watson & Julie Gaul

Greening Early Childhood (NSW)

In this decade of Sustainable Development it is timely that we consider the importance of Early Childhood services as mediums for transforming our communities. As we educate for sustainability we also empower children with the opportunity of responsibility for their world.



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Greening Early Childhood is a project which aims to develop the capacity of an EC service to implement Environmentally Sustainable strategies; reflective of their local community resources, needs and priorities. The basis of the work centres around a number of consecutive training sessions attended by staff and parents and follows the development of practical strategies for Environmental Sustainability within the context of each service's community.

As the project unfolds throughout NSW we have the opportunity to consider many perspectives around how we live and educate for sustainability within different communities.

This presentation is a work in progress, developing and reflecting on the discoveries of participants as we are becoming an environmentally sustainable community.

Iris Bergmann & Cameron Neil

OtherWISE - Youth Leadership for Sustainable Consumption

otherWISE is a community capacity building program that aims to inform, inspire and equip young Australians to take action and demonstrate leadership towards more sustainable consumption. The program supports young Australians to develop action competence to move from awareness to action for sustainability. This workshop outlines the community capacity building context and demonstrates the utility of linking footprint activities with action planning and follow-up action support. It shows how the action planning activities build the transition between the learning during the youth workshops and the activities that follow from that during the next phase, the youth action support program. The young leaders will engage in individual and/or lifestyle changes and community projects for which the community is mobilised to provide action support. *otherWISE* is a national program that can be tailored to local needs and is currently being implemented in the ACT and Melbourne and additional communities in preparation.

Val Macgregor

Building Trades and Professions capacity to be involved in acting sustainably

Sustainability Victoria is active in assisting with the development and delivery of a range of training and accreditation programs to equip trades people and professionals with skills to deliver energy efficiency and sustainability services to their customers. This paper outlines the work currently being undertaken by the National Framework for Energy Efficiency (NREE) Trade and Professional Training Implementation Committee as well as Sustainability Victoria's programs.

Following a survey commissioned by the Trades and Professions Committee, a number of Trades and Professions were identified as being able to make the greatest contribution towards energy efficiency. Work has now commenced on the top 4 of these, namely Electricians, HVAC (Heating, Ventilation and Air Conditioning), Facility Managers and Engineers to develop courses and associated accreditation systems. In addition, Sustainability Victoria has developed resources to complement 'Environmentally Sustainability Work Practice' competencies for both the Business Services and General Construction Training Packages, and has introduced the first accredited course for Home Sustainability Assessors in Australia; a course designed to train assessors to undertake energy, waste and water audits in residential homes.



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Xiuping Jia

Satellite remote sensing: A tool for Environmental Education

Environmental education has become important and urgent globally due to the rapid increasing of the concerns of pollutions and shortage of resources. Being educators, scientists and government organizations, we are responsible for making the full awareness of the environmental issues to the whole society.

Effective environmental education can be achieved using current remote sensing technology, which generates various images of earth surfaces from space or airborne platforms. The images are in digital formats with high spatial, spectral and radiometric resolutions. By analysing the data and processing the images, land cover and land cover changes can be monitored; disaster assessment such as flooding and bush fires can be conducted quantitatively. Satellite images, optical or radar images are rich information sources for atmospheric studies and regional climate modelling.

In this paper, remote sensing technology is introduced with good discussion on its applications in solving environmental problems. The challenges in data processing are overviewed. Finally, suggestions are provided for making remote sensing as an innovative and effective tool for environmental education.

Janet Sparrow

The Education for Sustainability Professional Learning Hub

The EfS Professional Learning Hub (the Hub) is an interactive online network that helps educators assess their own EfS professional development needs and link directly to appropriate learning opportunities and service providers. The Hub was developed by the NSW Department of Environment and Climate Change as part of the *Professional Development for Environmental Educators* project.

This interactive workshop will summarise the key research that underpins two of the Hub's innovative components; the Capabilities Framework and the Self Assessment tool. We will explore the results of an extensive professional development needs assessment in NSW and how this information has informed the evolution of this project. We will also take a virtual tour of the Hub; discuss other strategies for accessing professional development opportunities and draw out some ideas for the site's future improvement.

Martin Stone

Explore exciting new multimedia content for environmental education

The Le@rning Federation makes available a range of digital content to support teaching and learning in sustainability and environmental education in the P-10 years. This content includes interactive learning objects, digital resources and collections of content built around themes and topics.

Martin will lead a hands-on session for teachers exploring the free digital content made available by The Le@rning Federation (TLF). Try out interactive multimedia learning objects and view photos and film clips sourced from Australia's leading cultural institutions. Consider ways in which challenging learning tasks can be created with multimodal digital content in a range of themes and topics.



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Greg Hales

Teaching old dogs new tricks

The BestFarms Environmental Management System (EMS) program started in the southwest of WA during 2004. The project now has over 120 agricultural Landholders across Australia from a vast range of industry types and property sizes.

As a catchment-based EMS, BestFarms environmental education and training program provides the missing link to incorporate Environmental issues and sustainability to property owners and food producers, from which they prioritise environmental issues that are relevant to their property.

Through this process, participants effectively learn how to address farm sustainability and regional targets in their own EMS at property level, helping to achieve overall catchment goals. BestFarms environmental training is multi-faceted, incorporating training in recognition of issues, remediation techniques and hands-on use of monitoring equipment in a interactive and fun way.

Our surveys have shown a 60% increase in participant awareness of catchment issues and regional NRM funding processes through involvement in the BestFarms EMS.

Jane Liefman & Kate Greer

Resourcesmart Schools

Sustainability Victoria helps Victorians to use resources more efficiently and reduce everyday environmental impacts. Sustainability Victoria works across all industry sectors, schools, governments and communities and provides leading thinking, partnership programs and resources to help achieve sustainable outcomes for energy, materials and water.

In 2008 Sustainability Victoria (SV) undertook the lead role coordinating, supporting and expanding the delivery of Education for Sustainability in Victorian schools under the banner of ResourceSmart. ResourceSmart offers solutions to steer us towards a low carbon future and zero waste. In partnership with a range of educational specialists and other government agencies Sustainability Victoria is developing and delivering Resourcesmart Schools program and the AUSSI Vic program. This approach forms the framework for the suite of programs that are being offered to schools from 2008.

Dr. Philip Alviano & Mary A. Gates

The Master Builder Green Living Program

An Innovative Approach to Improve the Capacity of Domestic Builders to Respond to Sustainability Issues in the Construction of Houses

Many consumers only contact with the building industry is through a builder. The program identifies builders that view sustainability as an important part of their business. The program provides practical solutions on sustainability relevant at all stages of the construction process in an easy to digest format which in turn increases the likelihood of implementation.

Consumers interested in addressing sustainability issues during the construction or renovation of their homes can seek out these builders. By bringing together like minded individuals the chances of improved sustainability outcomes for everyone are increased.

Through education the Green Living Master Builder becomes a key advocate for the adoption of sustainable solutions.



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On successful completion of assessment the builder is awarded with a nationally recognised AQF level 4 unit of competency. Career pathways are opened subsequently for the builder who seeks opportunities in the field of sustainable construction.

Over 100 builders have been trained by Master Builders Victoria. Importantly 85% of those who complete the course sign a written commitment to incorporate sustainability objectives into their day to day operations which significantly increases the chances of the person putting a verbal commitment into action (Mohr and Smith 1999).

Dr. Diane Pearson

Illustrating the Importance of GIS in Environment Education: Using GIS in the Sustainable Utilisation of Species Harvested in Central Arnhem Land

GIS is part of the geography curriculum yet its full value to environmental education and contribution to sustainable development may often go understated. This paper illustrates the contribution it can make by demonstrating the usefulness of GIS and predictive habitat modelling to assist in quantifying the distribution of native plant species in the Northern Territory, Australia. Approximately half of the land in the Northern Territory is under Aboriginal Title or under claim and most of this land is being managed by the Aboriginal custodians, often for subsistence use. Landscapes in the Northern Territory are vast, centres of population few, access is difficult, and Aboriginal resources centres and communities have limited funds and infrastructure so determining an accurate representation of species by ground survey is difficult. Nevertheless, information on distribution of species is important for sustainable management, especially if they are to be harvested for subsistence or commercial utilisation. As a result, cheap, simple, automated methodologies to predict distribution of species are needed. The method applied here is to use GIS to make predictions of probability of occurrence using an inductive modelling technique based on Bayes' theorem. The study area is the Maningrida region of central Arnhem Land. Two plant species, *Cycas arnhemica* and *Brachychiton diversifolius*, were trailed using this modelling methodology. These plant species are currently being 'wild harvested' for enterprise development activity, namely whole plant sale for the landscape gardening industry and the arts and craft industry, respectively. The output from analysis predicts trends in species distribution that are consistent with ground validation and therefore illustrates the potential of GIS and predictive habitat modelling in gauging the extent of resource availability. This technique offers regulating bodies such as the Parks and Wildlife Service of the Northern Territory a good starting point for understanding the extent of the resource and monitoring impacts.

Mary Rowland

The importance of GIS in environment education: Using GIS in the sustainable utilisation of species harvested in central Arnhem Land.

Mary Rowland is a secondary science teacher who has been involved in natural resource management education since 1998. She is currently employed by the Queensland Department of Natural Resources and Water (NRW) and is President of the Science Teachers' Association of Queensland (STAQ). The project was funded under the DEST Enterprise Learning for the 21st Century program.



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Virginia Solomon

Accredited Permaculture Training for VET in Secondary Schools

Permaculture is a design and ethical decision-making system for sustainable human settlement of the Earth. In conjunction with Eltham College Training Services (the training arm of ELTHAM College of Education, Melbourne), two VET programs are now available for uptake by Secondary Schools. The courses focus on responsible resource and energy use and on self-restraint through informed choice in all things. Teachers have the opportunity to work in collaboration with permaculture trainers to develop programs which build on existing environmental education at their schools and culminate in an accredited Certificate I or Certificate II in Permaculture for their students. The focus is on working within an existing permaculture system, although opportunities for school garden/food production system development are also encouraged. Certificate I has been developed for middle years, and Certificate II for VET in Senior Secondary. Professional Development and teaching resources are available as well as full RTO support from ECTS.

Mia Christensen

Walking the Thin Green Line as a Guest Speaker

One of the issues that we face as environmental educators in the role of guest speakers or key note deliverers within formal education settings is how to present a lesson of work that is meaningful in terms of fulfilling curriculum requirements. The single lesson needs to deliver on a range of curriculum outcome requirements without turning into a unit of work or adversely, without being so surface skimming that it becomes meaningless. Furthermore, the lesson needs to ensure that the full time teacher is not left in a vacuum when the guest lecturer is finished as this is often a discouragement for teachers to be involved in subjects that they do not have expertise in.

Walking the fine line of this balancing act requires both a detailed amount of knowledge of the topic and an ability to link this knowledge with key curriculum components. These skills then need to be matched with effective communication skills that engage students from broad ranges of backgrounds and abilities. Underpinning this entire process are the underlying principles of environmental education and how we marry them with the role of the guest speaker. Using examples from across South East Queensland, EnviroCom explores these issues on a regular basis and this paper will investigate some successes and difficulties in fulfilling these requirements.

Lauren Appleby

Fun, food and (shhh - don't tell anyone) learning!

Do you get the feeling that sometimes you just mention the word education or learning and kids groan? Let alone mention educational buzzwords like outcomes... Using different ways of teaching adds excitement and interest and helps build on established learning techniques. Activities that generate fun and laughter also help participants bond and get to know each other.

Come along and participate in a shortened version of *Pine Rivers Shire Council's Living with the Environment Activity - Crazy Critters*.

This fun activity is enjoyed by kids and the young at heart and is always booked out well in advance. In the full activity we learn about native creatures while making yummy crazy critters from food. Lolly Praying Mantises, Spider Cakes, rice bubble Witchetty Grubs, Brown chocolate Snakes, Ladybirds and cupcake Burrowing Frogs are all on the menu at this fun activity.



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In this shortened version we will discuss techniques for adding interest to learning activities and practise making a few crazy critters.

Michael Burke & Andrew Cribb

The Tides of Change – Fisheries Education in Western Australia

Fisheries management in Western Australia has been undergoing a major focal shift over the past 5 or so years towards a more ecosystem-based regime - a major step forward from the management of fisheries of individual species in separate commercial and recreational sectors.

These changes in management regimes have also seen a change in the direction of education strategies used to foster social attitudinal and behavioral change. In the past, education has been largely targeted at the fishing sectors – with a focus on communication to encourage conformity with sustainable fishing practices. However management of fisheries – as well as other natural resources – is increasingly being influenced by the knowledge, values and attitudes of the wider community and the news media – and the influence this has on political decision makers and social policy directions.

This has led to a serious undervaluing and questioning of the science used to manage natural resources in the public arena – resulting in a preponderance of short-term social value-laden decisions, reductions in public funding for science, and the abandonment of knowledge-based decision making and management.

To address this issue the Department's education programs have been expanded to target the wider community and the formal education system, incorporating a focus on the science behind fisheries management. These science 'snippets' have become the foundations of our education programs. The challenge is to deliver in-depth and technical education messages to the community. This is being achieved through public involvement and interaction, place-based education at the new Naturalist Marine Discovery Centre and comprehensive regional education programs.

This presentation/workshop outlines the elements of these fisheries and marine education programs and the impacts of these programs for participants and fisheries management.

Emma Partridge & Jade Herriman

Understanding people's involvement in environment groups

One goal of environmental education is to encourage participation in environmental citizenship activities, including community environment groups. This paper presents selected findings of a recent survey conducted by ISF for the NSW Department of Environment and Climate Change, NCC and ACF. The survey canvassed the views of over 700 people in over 400 different environment groups, ranging from small-scale single issue or place-based community groups to national multiple-issue NGOs.

The paper focuses on factors that influence people's decisions to become involved with environment groups. Specific issues considered include prior knowledge of the group, stated motivations, influences and triggers for involvement, features of the group itself, and means of first exposure to the group. The paper also compares the experiences of those involved in advocacy groups with those in more 'hands-on' environmental restoration groups. The paper will be of interest to environmental educators seeking to better understand the interplay of personal, interpersonal and broader political factors that contribute to participation in group-based environmental citizenship activities.



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Emma Bliss & Senior Arrernte Women (Veronica Dobson, MK Turner, Marie Ellis & Roseanne Ellis)

Our land, our water, our life

Our land, our water, our life is a collaborative project involving the Department of Natural Resources Environment and the Arts, senior Arrernte women, and Department of Employment Education and Training. The project aims to connect students' cultural understandings with the scientific and technological aspects of water infrastructure and supply, to enable young people and other community members to contribute to water management.

Our work so far suggests that we need to create a culturally connective bilingual education resource which models sound educational pedagogy, encouraging team teaching between teachers and teacher assistants. This resource will provide a framework which can be locally contextualized and will engage community elders.

Jo Bishop

Manager, Environmental Education Unit

This workshop will provide participants with opportunities to experience some of the tools and techniques that have been an important part of the Growing New Skills approach to Professional Development (PD) and capacity building in Education for Sustainability (Education for Sustainability) being undertaken in South Australia.

This PD approach was developed to build a community of educators who can support the Australian Sustainable Schools Initiative South Australia (AuSSi SA) implementation throughout the state. A Working Group, comprised of state government agencies with metropolitan and regional Natural Resources Management (NRM) Boards, collaborates to develop a program that meets the capacity building needs of formal and non formal educators in Education for Sustainability.

Through an innovative suite of PD options that are constantly evaluated, reviewed and adapted, participants (including government and non-government education officers, communications officers, environmental policy officers, teachers and tertiary students) are given the opportunity to build Education for Sustainability knowledge, understanding, skills, values development, hands on practice and decision making capacity through information sharing, discussion, practical application and reflective practice.

The Growing New Skills program combines presentations by national and international Education for Sustainability leaders, seminars, workshops; both online and face to face discussion groups, a buddy system and journal writing to facilitate education officers share their learning and build social networks that support Education for Sustainability implementation in their work practices.

A case study demonstrating the benefits of this process in building synergistic relationships between AuSSi SA, the Department of Education and Children's Services, the Department for Environment and Heritage, the Adelaide and Mount Lofty Ranges NRM Board and NRM Educators will be introduced.

Come along and share your experiences in broadening the understanding and implementation of Education for Sustainability in your region. Workshop participants will also be encouraged to share their own experiences in attending and developing PD for Education for Sustainability learning.

For more information on the PD series go to the Growing New Skills website:
http://www.environment.sa.gov.au/dehaa/growing_skills.html



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Jo-Anne Ferreira, Juli Gassner, Birut Zemits, Greg Smith, Julie Davies, Lisa Ryan

Mainstreaming Sustainability in Teacher Education Research Project: Initial Reflections

ARIES is undertaking a research project that seeks to understand how education for sustainability can be mainstreamed in pre-service teacher education in Australia. Building on research findings from an earlier project, the 2006 ARIES *Whole-School approaches to sustainability: A review of models for professional development in pre-service teacher education project (Stage 1)*, the current research is piloting the model of change recommended in Stage 1 in two States, the Northern Territory and Queensland.

The model of change being piloted combines an action-research and whole-of-system approach that seeks to engage actors and decision-makers across the teacher education system (including Federal and State government agencies, teacher accreditation bodies, curriculum bodies, teacher educators, schools and community-based organisations engaged in sustainability within formal and informal education) in a process of learning and change.

The pilot-projects are taking a systemic approach in their efforts to mainstream sustainability in teacher education in the Northern Territory and Queensland. The ultimate aim of the project is to bring about multi-dimensional change within various components of the teacher education systems in each State (e.g. accreditation, policy, planning and practice) in an effort to embed change. To this end, the current projects are involving the key agents of change in a participatory process that enables them to appreciate the relevance of education for sustainability to their work in teacher education.

In this paper, key participants from ARIES, the Northern Territory and Queensland will present their initial reflections on the potential this model has for embedding sustainability in pre-service teacher education in the two States.

Faye Wilson-Hill, Chris Eames & et al

Action Competence in New Zealand Schools: Improving the Capacity for Understanding Student Learning in EFS

This paper will present the development of an analytical framework for understanding and identifying action competence as a key component of education for sustainability (EFS) in New Zealand schools. A framework has been developed and trialled as part of a two year project currently underway. This project has created partnerships between experienced researchers and practitioners in EFS in New Zealand involving members of the national EFS team, teachers and students in five NZ schools. The framework for analysing action competence, and some of the interim findings about its validity and how schools might utilise it will be shared. The timing of this research has also taken the opportunity to consider aspects of action competence in relation to the recently introduced new curriculum in New Zealand Schools. The development of the framework has been critiqued by the architects of action competence (Jensen and Schnack) and we look forward to further feedback on it.

Elaine Lewis

Hands on!

Preliminary Data from Research into Education for Sustainability at a Montessori School

This paper outlines education for sustainability, Education for Sustainability, at an independent Montessori primary school in Australia. The Montessori educational philosophy and curricula are discussed in terms of Education for Sustainability. A longitudinal analysis of Education for Sustainability at the school is presented: pre, during, and post 2005. The year of 2005 was a critical year for Education for Sustainability at the school because it was selected as one of the pilot schools involved in the national Sustainable Schools Initiative



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(SSI). Major developments occurred in Education for Sustainability at the school during this year. Education for Sustainability will be shown to be a growing feature of the Montessori educational experience.

Prudence Frost

Packaging and Recycling – The New Multi-Pronged Approach. Why Only Teaching about Recycling is Not Going to Resolve our Waste Issues.

The packaging supply chain is a complex web of needs, wants and values from a large number of stakeholders. Its roles and functions in our every day lives are vital to protect both the products it encases, the humans it comes in contact with and our environment.

The demographics, lifestyles and values of Australian society are changing, as are the needs of our environment. Solutions to packaging waste have for decades focused on recycling, and packaging reduction. But are these the only answers; are they now the most suitable? How do students know what is excessively packaged and what is not if they don't have a clear understanding of packaging has to do in the first place? What changes has the packaging supply chain already introduced to reduce waste that we are not aware of and not teaching our students? How can we expect them to make changes that make a real difference if we aren't exposing them to all the issues and possibilities?

Both consumer choice and the packaging production process are values based and all choices have an impact on the environment.

This workshop will explore the resources available to help students in primary and secondary schools gain a more complete understanding of a complex value driven and environmental issue. Media driven understandings of the impact of packaging will be challenged and other possibilities presented, allowing for teachers to encourage students to examine their own choices, business choices and suggest a variety of solutions that meet the needs of a more complex issue than previously thought.

Abstracts: Concurrent Sessions

Saturday 12th July 2008

Wayne Gumley

Business and Society developing a new curriculum for business students

NSW AAEE has undertaken the development of case studies to showcase what sustainability education is about. The four case studies include Environmental Champions in the rice industry; Watershed, Tom Thumb Lagoon Landcare and Youth Lead (OzGreen) were used to develop a guide to writing sustainability education case studies. The case studies with the guide will be available at the conference. The workshop will look at how to write up a case study for a sustainability education project.

NSW AAEE was also successful to obtain funding to run a series of workshops around NSW in 2008 with environmental education groups. This will be an opportunity to report on the success of these workshops.

Grahame Collier

'Capacity' is the paradigm of our time. It has replaced 'paradigm' itself as our word of the year. All our efforts to move the community to sustainability are related to 'capacity'.

But capacity is interesting – much more interesting than paradigm... Capacity for what?, Capacity to achieve what outcomes? What is the measure of our capacity?

This paper explores the notion of the capacity of sustainability education professionals in the light of the crises in our water and to our climate. It proposes some of the characteristics of a high quality educator – one who demonstrates the capacity of the super-professional required to take on the challenges of our time.

If the necessary outcomes of our education efforts are changes in behaviour and changes in structures and operations of our businesses and institutions, what is it that we have to know and do better to achieve these outcomes? How can we gain the necessary capacity to really make a difference and how can we prove our capacity to our manager and elected officials?

Through an overview of some of the theory and using the experience of all those participating in the session, the paper will guide participants through an investigation of their own skills and capacities and suggest ways to improve these.

While this abstract is for a conference paper, the time will be spent interactively with participants having the opportunity for a high level of involvement with the content, the presenter and each other.

Phil Smith

Sustainability as the New Utopia

Prescott Allen, in *Wellbeing of Nations* (2002) reminds us that *Making progress towards [sustainability] is like going to a country we have never been to before...We do not know what the destinations will be like, we cannot tell how to get there.* Thomas More's *Utopia* (1516) relates the adventure of Raphael Hythlodæus' return from an island where human life is organised in the best possible way – it is an ideal country.



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Prescott Allen's island is an unknown that, with a mixture of fingers-crossed and strategic approaches, we are travelling to, finding out where it actually is as we journey. Although some of his contemporaries truly believed the island existed, More's is a fantasy that comes down to us as a critique of political, economic and social practices: he is revealing some home-truths while clowning around.

How do we imagine our sustainability island to look? What can we learn from previous efforts to imagine ideal countries? This workshop will consider definitions of sustainability and utopia; it will draw comparisons between the two; and it will consider what drives us to conceive of utopian and sustainable societies. The workshop will look at means and ends: the paths taken – being taken – and the possible destinations.

Rebecca Miles

The Place of 'Place' in Environmental Education

As many in the field of environmental education would appreciate, "to know anything about the world is to know its places". (Gruenewald, 2006, p. 4). Sobel (1996) suggests that, in teaching about environmental education, using local places to teach about environmental concepts, such as ecosystems or the watershed provides students with a context for what they are learning. Cameron (2008, p. 303) further argues that "by implication, education, environmental sustainability and intercultural dialogue should not just take place into account, but they should be deeply grounded in place". As well as providing an opportunity for environmental education to become more participative, and encourage intercultural dialogue and community action, education that is grounded in places encourages students to look critically at their places, both natural and constructed, and consider the interconnections that occur within and through these places. Further, allowing students to investigate the influence of social, political and economical decisions on natural places incorporates the socially-critical and political action goals of environmental education. This session aims to give an overview of place-conscious education and its place in environmental education, in particular suggesting that environmental education has a central role to play in promoting a place ethic.

Jo Bishop

Growing New Skills: a response to meeting Education for Sustainability learning needs

This paper outlines a unique approach to Professional Development (PD) and capacity building in Education for Sustainability being undertaken in South Australia.

This PD approach was developed to build a community of educators with expertise in education for sustainability who can support the Australian Sustainable Schools Initiative South Australia (AuSSi SA) implementation throughout the state and other programs. A Working Group, comprises Department for Environment and Heritage and Department for Education and Children's Services with metropolitan and regional Natural Resources Management (NRM) Boards, collaborates to develop a program that meets the capacity building needs of formal and non formal educators in Education for Sustainability.

Through an innovative suite of PD options that are constantly evaluated, reviewed and adapted, participants (including government and non-government education officers, communications officers, environmental policy officers, teachers and tertiary students) are given the opportunity to build Education for Sustainability knowledge, understanding, skills, values development, hands on practice and decision making capacity through information sharing, discussion, practical application and reflective practice.

The program combines presentations by national and international Education for Sustainability leaders, seminars, workshops, both online and face to face discussion groups, a buddy system, journal writing and narrative performance stories to facilitate education officers to share their learning and build social networks that support Education for Sustainability implementation in their work practices.



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To compliment this program, senior decision makers in key government and non-government environmental and education youth agencies are invited to participate in high-level breakfast seminars to help build an understanding of Education for Sustainability in departmental policy and programs, as a priority.

A case study demonstrating the benefits of this process in building synergistic relationships between AuSSI SA, the Department of Education and Children's Services, the Department for Environment and Heritage, the Adelaide and Mount Lofty Ranges NRM Board and NRM Educators will be introduced.

For more information on the PD series go to the Growing New Skills website:
http://www.environment.sa.gov.au/dehaa/growing_skills.html

Bernard Holland

The need for joined-up thinking: connecting like minded schools and community groups

My Fellowship developed three main themes as the basis of embedding sustainability into education systems

1. co-literacy: The need for children to develop a relationship with their environment...the need for children to understand their direct and indirect impact upon the environment
2. Stewardship: The need to embed the principles of sustainability in school renewal plans to that improvement is ongoing, measurable, empowering and capacity building
3. The need for Joined-Up Thinking: Connecting like minded schools and community groups in initiatives is a key facet of broad community change programs.

Overall my presentation is affirmative of much of what is happening in Australia but also critical of our fragmented and at times unfocussed approach. Using my change management and leadership background I suggest ways to advance sustainability issues to the more mature stage of development.

Jeremy Mah & Janelle Thomas

Education about and for sustainability in Australian Business Schools

The **MBA Stage 3** program aimed to create change for sustainability in the learning and teaching focus of Australian business schools and in corporate activities. This year-long program brought together sustainability champions from five Australian business schools and corporate partners in a collaborative process of learning-based change. It aimed to achieve changes in business school pedagogy, resources and curricula and in the organisations' policies; involving partnerships among corporations and business schools, communities of practice and by identifying and sharing effective practices.

This program was funded by the Australian Government Department of the Environment, Water, Heritage and the Arts, and supported by Macquarie University.

Aim of this presentation

The presentation aims to give an overview of the program and share experiences and insights about applying education for sustainability processes and action research/action learning to achieve changes towards sustainability within the business school context. Presentation attendees will be encouraged to ask questions, share their own experiences and draw comparisons and contrasts.

Who this presentation is for

This presentation is for anyone interested in going beyond rhetoric and considering how to mainstream learning-based change for sustainability in education for business managers/leaders.

John Harris

EarthProbe: Integrated sustainability program for year 9's

In 2008, Donvale Christian College has launched their alternative program for Year 9 students. With an integrated curriculum of English and SOSE, Christian Studies and Life Skills along with Maths, and Science, another key component of this program is EarthProbe. EarthProbe is a core subject that is based around 10 projects that have aspects of sustainability as their foundation. Each project is organised as an "Eco-op" with students being involved in all areas of the project. The projects include Animal Awareness (with Alpacas and chooks), Reduce Reuse Recycle, Rural Environmental Mission, plant propagation and vegies. Some of the projects require students to "work" on weekends and holidays. EarthProbe has taken 4 years of development and promises to be an innovative and memorable part of the whole program. Each "Eco-op" will be described and student learning outcomes discussed.

Greg Hunt

Living with uncertainty

Climate change will bring big change, but just how big we cannot know. How hot will the earth become? Which bits of the earth will become the hottest? Will sea levels rise? By how much? What will happen in Victoria? How will positive feedback affect these changes?

We cannot know with any certainty answers to these questions. Yet we must respond to them. This paper will explore some responses to climate change in the Western Port region of Victoria, how an alliance of local governments is dealing with this uncertainty and it will present some examples of project responses and the thinking that underpins them.

We need a community that is prepared to embrace complex issues and is prepared to deal in best guesses. And we need a variety of responses to climate change and we need them now - or the changes will be just too big.

Frank Mitchell

How to calculate greenhouse gas emissions for an organisation

This paper will outline briefly how this "Short course in Carbon Accounting" was developed within the Australian Qualifications Framework (AQF). Copies of the two accredited Units which comprise the course will be provided at the conference, and a URL for web access will be noted in the paper itself. The main part of the paper will outline how a carbon inventory is developed for an organisation, in line with accepted international and Australian methodologies. The paper will conclude by discussing the potential implications for an organisation of its carbon inventory – including possible:

- Need for compliance with (or anticipation of) regulations;
- Compliance with the requirements of voluntary reporting arrangements already entered into;
- Opportunities for the organisation in its business planning.

Pat Armstrong & Jane Stewart

Tomorrow's leaders for sustainability – an innovative leadership program for primary & secondary students

Disturbing global trends continue to evidence that human activities threaten our ability to meet the needs of present generations without compromising the needs of future generations. However, according to Sir Nicholas Stern, "With strong and urgent action, governments, businesses and individuals, working together, can safeguard our future growth and prosperity. We must not waste this opportunity. The future depends on what we decide now" (Stern, 2006).



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The time has come for a new generation of leaders to step forward and move society onto a more sustainable path. But where will these leaders come from? How will they know what to do? How will they gain the knowledge and skills to guide others? How will they maintain their resolve to work through difficult situations?

It is with this strong desire to combine leadership training with principles of sustainability and to deliver this through hands-on vocational activities that our project was created. Tomorrow's Leaders for Sustainability (TLFS) is a new initiative that helps young people understand and appreciate the key principles and issues of sustainability, while also gaining the knowledge and skills to become leaders in their chosen career. The program's training in sustainability leadership is based on a holistic and interactive approach to learning that respects the student's prior experience, knowledge and skills.

A Pilot of the Tomorrow's Leaders for Sustainability Program was undertaken in a Melbourne Secondary School during 2007. This produced some great results and has been instrumental in the ongoing development of the program's content. Training for teachers is about to commence in Victoria.

Our ultimate goal is to have hundreds of students gain a deeper understanding of the world around them, and the ability to apply their new knowledge and skills in sustainability leadership in their daily lives and eventual workplaces. Rather than bombarding students with the doom and gloom views of the world, we believe they should learn positive and practical ways to handle current issues in a supportive learning environment. This paper will describe the background, approach and content of the program and our early learning's from the pilot.

Jennifer Pearson & Sharon Rose

City of Wanneroo adopt a bushland

The Adopt a Bushland program is a unique and innovative environmental education package developed by the City of Wanneroo. It provides material for Year 3 to 7 Primary School students educating them on the value of local bushland. The major objectives will be discussed highlighting the partnerships required to educate about a shared resource. A milestone reward program for students, teachers and schools will recognise their efforts in adopting a bushland within the City of Wanneroo. There are eight topics, covering bushland management, including: Setting the Scene. Why do we Need Bushland in Perth? Plant Communities, Habitats, Flower Designs, Bushland Weeds, Bushland Critters, & Putting Things Right, each topic includes technical information for teachers, information sheets, student activity sheets and reference material. Classrooms work their way through the topics over a one year using the program to meet their Science, Society and Environment or IT learning aspects. The program will be downloadable from the City's website.

Paul Dargusch & Adrian Ward

Enhancing the Learning Experience of Sustainable Enterprise Management Students at a Regional University Campus Through the Use of Collaborative Teaching Partnerships and Technology

This paper presents the findings of a study in which first year students enrolled in a Bachelor of Business degree majoring in Sustainable Enterprise Management at the 'regional' Gatton campus of the University of Queensland (UQ), were involved in a series of collaborative initiatives involving partnerships with industry and newly developed course delivery technologies. The aim of the initiatives was to enhance the learning experience of students. The partnerships with industry involved students engaging with senior managers of some of Queensland's largest firms on various projects concerning the sustainability of Australian businesses. This activity was facilitated through the 'SMART' initiative of UQ (www.uq.edu.au/smart). The newly developed course delivery technology involved recording lecture content, through the use of UQ's 'Lectopia' System, from core business courses delivered at the larger UQ campuses (such as those in 'Microeconomics' which has over 1300 students enrolled in 2008 at UQ's St Lucia campus) and replaying



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the content of those courses to the Sustainable Enterprise Management students at the Darwin campus, with the assistance of a tutor, specially trained in such delivery techniques. The Sustainable Enterprise Management students were interviewed by the authors at various times throughout the semester about their learning experiences. Grounded theory techniques were used to highlight some of the major aspects of the teaching initiatives that were contributing or detracting from the student's learning experiences and a series of recommendations for future implementation of the program have been suggested.

Note: The study on which this paper is based was funded, in part, by a grant provided by the Teaching and Development Institute of the University of Queensland.

Glenn Davidson

Saving the Planet by Sinking your School

With the support of the Department of Environment and Water Resources (Australian Government) and Sustainability Victoria, the Planet Savers and CERES team have designed a new generation program to help schools tackle climate change, reduce resources and greenhouse emissions, create school based carbon sinks as well as save money. This facilitated program, based on the successful AuSSI framework, is aimed at helping schools develop a Carbon Management Plan and embed positive action into curriculum, stimulate student leadership and develop successful and authentic community engagement partnerships.

This workshop will guide participants through:

- The fundamentals of school carbon management plans
- Have a practical look at gaining and managing school baseline data using SETS
- Collecting baseline data using gadgets and technology
- Making demand efficiency actions work
- Establishing a community future trust
- Using student democracy as a positive dynamic for the future
- Discussing the pitfalls of offsetting in schools
- Outlining the potential for carbon trading with schools
- Engaging business to work with schools on carbon abatement
- Exploring the processes to get your school to carbon neutral and beyond.

This workshop will also outline school case studies of Victorian schools that have successfully, or about to, reach Kyoto targets and have developed dynamic community, government and business partnerships.

Dr. Hilary Whitehouse & Dr Ruth Hickey

BirdNet: Using ICTs for Environmental Education in Rural Queensland

BirdNet is a collaborative, environmental education and ICT project which developed an online learning community site to showcase work from regional and rural schools in far north Queensland. Birds and biodiversity were its core themes. The aim of the project was to create and build a partnership between a teacher education institution and geographically diverse primary schools. Pre-service teachers from JCU were positioned as a motivational force - bringing their skills in ICTs and developing knowledge of environmental issues - into classrooms.

Our presentation will cover successes and obstacles we encountered, for example, lack of general knowledge about native birds, poor ecological understandings, difficulties schools had in developing protocols for using online environments, student protection issues and levels of school staff turnover. BirdNet was conceived as a sustainable innovation and our experience has enabled us to identify key components for making such community-based learning projects enjoy continued success.

BirdNet is managed by James Cook University, Cairns and was funded by an ASISTM grant 2006-2007. All attendees will receive a CD copy of the website.



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