

Our Spheres of Influence Uprooted

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The preparation for the 2006 release of the SSABSA Sustainable Futures courses allows us to take a watershed reflection (no pun intended) on our use of the environment. It involves a refocus on the environment after many years of neglect in the R-12 curriculum.

The social sciences have, over the last 10-15 years, become the scapegoat for timetable reductions for many schools. Separate History and Geography courses have been replaced with Society and Environment (SOSE) offerings. Other core subjects have retained their name and time.

Subjects such as Multimedia, Information Technology, Dance and other “life skills” courses are also filling up the curriculum, with reduced times coming from elsewhere. History has retained its popularity with anniversary celebrations of many events.

Where does that leave the environmental sciences? Geography needs to take back the timetable and engender environmental education and sustainable practice as a central element of student’s schooling experience.

Our Spheres of Influence Uprooted: The immediacy of the need for Environmental Literacy in our Primary and Secondary Schools or ‘Why every student should be studying Geography/Environmental Studies in the Compulsory Schooling Years’

Historical Background – Judeo-Christian Perspectives

The origin of the word pagan is from the Latin – paganus, meaning country dweller. It is interesting the Roman civilisation came to the distinction of country and city people. In this sense of the word, pagans were connected with the earth: the farmers or the agriculturalists of their time.

The disparaging terminology was used by the Romans who had shifted from being country dwelling people to that of the city and Empire, thinking of country people as being ‘uncivilised’. The very name of their civilisation emphasises the urbanisation of their culture.

With the shift of the Roman Empire to take on Christianity by Constantinople, Biblical texts were used to emphasise the role of humans in the Creation story. Christianity gave new meaning to the Genesis narrative: the Earth was present for human to use at their disposal. (Genesis 1:28-30¹)

Whilst the well known version of the creation story is put forward for a “human domination” of the environment, there is another account of the Genesis narrative (Genesis: 2:15²).

The ideas put forward, instead of the forthright use of the earth, we are instead seen as managers of it. The ancestral roots of our culture had a very close link to the land.

The First Nations – Wisdom from the Shamans

Indigenous cultures have always presented ideas of environmental management. Many North American Indian tribes have the seven generation idea for significant decision making: How would their ancestors of seven generations past have dealt with the decision and what will it mean for the seven of the future?

Other wisdom includes the quotes from the many Indian chiefs. Although this is through the pen of a screen-writer (Ted Perry from the 1972 environmental movie, Home), it is interesting summary of Native American life.

The quote is presented through the eyes of Chief Seattle (as an adaptation in his 1854 speech to 14th USA President, Franklin Pierce). It captures a part of Native American culture:

“You must teach your children that the ground beneath their feet is the ashes of their grandfathers. So

that they will respect the land, tell your children that the earth is rich with the lives of our kin. Teach your children what we have taught our children that the Earth is our mother. Whatever befalls the earth befalls the sons of the earth. If men spit upon the ground, they spit upon themselves. This we know. The earth does not belong to humans; humans belong to the earth. This we know. All things are connected like the blood which unites one family. All things are connected. Whatever befalls the earth befalls the sons of the earth. Man did not weave the web of life; he is merely a strand in it.”³

Our own indigenous culture presented Dreaming stories to remind the members of the yerta (family group) the various social and environmental laws of their culture. The Mulyawongk (the origin of the Murray Bridge Bunyip stories) in the Ngarrindjeri nation presents tales of community management of the landscape against the greed of individuals.⁴

These entertaining and informative stories were always presented with a meaning or message. In the strata of society, these or other stories were retold with greater meaning to present the workings of the environment and the meaning behind the events presented.

There are different levels of understanding and the amount of knowledge about a particular environment or process would depend on your level of responsibility.

Our contemporary culture is a very different one. There are elements of the ‘caring for creation’ (Christian) message. In other cultures within Australian society, especially the indigenous elements, these stories have not been valued; the message is not getting through or being shared in a care-free generation.

The instruction from our elders of ‘treading on the earth lightly’ has been lost in a sea of consumerism and the flood of agnostic Western culture. Whilst our students may be spiritual in various ways, they are not necessarily environmentally aware as traditional cultures have been.

We as educators need to combat this ‘shopaholic’ mentality of the late Twentieth Century and re-engage that tribal culture in an environmental capacity. To do that, we also need to look back at our environmental roots (and routes) in order to understand where contemporary society is going.

Cartography – Mapping the urbanised world

Our environmental perception has also come from the ancients as part of our culture. How we view and use the world around us came from our ancestry and has been combined with contemporary viewpoints.

Parts of that ancient heritage were the first maps. These were a necessity and crudely had three purposes. Firstly, we charted the earth – we found out what was in the world beyond our horizons and our paths in the physical environment. Secondly, it was to record human routes and paths within that recorded world. Thirdly, it charted power via territories amassed: the conquering of the physical environment and urbanisation of it.

One of the earliest symbols of civilisation and settlement has been the cross. Apart from the later Christian emphasis, this cross also indicated the crossroads or coming together of human paths. From these crossroads came many other developments: a simple village to the mega cities of today..

The crossroads were the root of this urbanisation. (The GTAV recognises the crossroads in their symbol of the orbis, the representation of the three major continents [Asia, Europe and Africa] in their logo).⁵

Reality television programs such as Survivor or Outback House⁶, despite the prying cameras, remind us of our dependence on urban life. The modern commodities of our Twenty-First Century Western lifestyle have made us soft.

We have not needed to utilise the environment around us as we make use of supermarkets, shopping centres or malls and credit as a ready commodity. Contemporary culture has also brought us the Fifth Element (a cultural reference and a reference to that blockbuster starring Bruce Willis)⁷, understanding that as well as having the four basic elements within our society, the missing element aside from these is love.

Four Spheres of the Environment	The Five Elements
Lithosphere Atmosphere Hydrosphere Biosphere	Earth Air Fire Water Love

Table 1: The missing Fifth Element

A comparison can be made of the elements of civilisation and the globe in which we live. There can be a direct and indirect comparison of these two sets of concepts. Our love of our surroundings can be encapsulated within environmental management.

But where is this placed within the curriculum? It is the responsibility of each educator, but especially of the environmental scientists and Geographers.

Knowing one’s local environment

To guarantee the provision of a quality education, we need to engage our students in the landscape that supports their life and lifestyle. In passing on this knowledge about the local landscape and its systems, we are empowering students to be responsible adult members of society.

We are also handing them their inheritance of the ‘common weal.’ The recent ideas of Mathis Wackernagel (the inaugural City of Adelaide Thinker in Residence) in ecological footprinting emphasises this message.⁸ Creating a caring and compassionate student body is not enough: giving life skills on how to care for the Earth to these students is critically important.

Vocabulary

How well do we know our local environment? Could we name the plants or animals (that we have left) within it? More importantly, could our students?

Do your middle school students know the difference between Eucalypt and Banksia species? Have they got any idea about the structure and different levels (seres) of vegetation? Could they identify the difference between an invasive weed and an indigenous plant in a vegetation quadrat?

Whilst these hypothetical questions may be trivial on face value, they have a more serious implication. Our biodiversity (both urban and rural) is critical to functioning of nutrient cycles and the operation of the four spheres of the earth's environment.

Human interaction with the environment has allowed us to interfere with these processes and in some cases, remove some processes altogether. We have not followed our pagan ways enough in being close to our environment.

Surveys such as the Wildlife Australia online poll accounted for the survival of some of our urban wildlife. It also gives an indication of those with an interest in our native environment.

Whilst an adult generation of Geography and Environmental Science teachers should be able to name the majority of the animal and plant genus in our environment, would we say the same of our students?

It is a primary and secondary priority for our students to have an environmental literacy as well as a vocabulary for other subjects.

Understanding Physical Processes around us

Students are inquisitive about the world around them. By giving students a vocabulary, we are empowering them to query further, to ask more about the environment around them.

After a glossary of terms, participation/activity in maintaining and managing the environment is paramount for student understanding. Tree planting has been the standard response of the media to focus in on caring for the environment.

The activity in itself is simplistic in nature but also simplistic in understanding what the environment is about: it is more than just major seres of vegetation. However, this is but one action in a list that students can be involved with.

Table 1 below lists possible activities your school may be involved with in some form of environmental education.

How was our link with the environment broken?

A Modern European Perspective

Industrial Revolution and the end of cottage industries around 1750 was the signal point for the end of the European links with its environment until the post industrial age.

With the concepts of mass production and consumption, respect for the environment was lost as utilitarian view of its resources was encouraged. The connection with the landscape disappeared with the divergence of Science and the Humanities. The Age of Reason and Darwinian Theory encouraged humans to harness their environment for the industrial age.

A problem such as air pollution with coal burning was solved with a utilitarian approach: the invention of the combustion engine and the use of oil as a replacement fuel (Kunstler, 2005)⁹.

A holistic approach was not taken; the impact of coal burning en masse and the pollution of the motor vehicle was not

Atmosphere	Hydrosphere
Airwatch Making weather instruments Carpooling Encouraging bicycle use Encouraging public transport Pollution inventory from different sources (with the national database as a comparison) Measuring air-conditioning temperatures in school classrooms Clothing and environment – fashionable or sensible attire?	Water use in the home/business - surveys: - water proofing homes (rainwater tanks; eco-garden/devices) - water use: recreation (eg: skiing/house boating) Waterwatch Creek testing: fieldwork for flooding or erosion damage Macro- or micro-invertebrates survey Cross sections of aquatic/riparian environments Land use assessment (seasonal/ different areas of the catchment) Marine trails (coastal or maritime) Creating a shipwreck database
Lithosphere	Biosphere
Soil testing Analysing erosion; suggesting management or controls Talus slopes: landslide risk in undulating/mountainous regions Riparian management: appropriate indigenous vegetation Land use survey: human or natural environments sustainability assessment on housing; schools or local industrial buildings	Vegetation transects Plant and animal identification Terrariums or herbariums Class or community gardens Tree planting Signed trails – sections of the Mawson or Heysen Trails Creating (or maintaining) a local history/ trail web site.

Table 2: Possible school Environmental Education activities



realised. With greater levels of technology at our disposal, we have realised the errors of our ways. However, as the age of peak oil comes nearer, we have not changed our ways to conserve these oil resources for alternative uses.

A paradigm shift for European communities has occurred on how Europeans view their environment in the Twenty First Century. In other areas of environmental use, it has not been until water quality, endemic disease such as foot and mouth, and other issues have arisen that Europeans have changed their ways.

Even so, there are still practices which continue that are harmful to their habitats. The previous 250 years uses of the environment, increasing urbanisation and globalisation have made people aware of their plight in Europe.

Australian Differences

Since our earliest history, Australians have had a link with the environment. Whether it was escaped convicts, bush-rangers, squatters, Diggers (with the soldier settlement scheme) or our current love of recreational vehicles, there have been few times we have not associated ourselves with the bush.

Unfortunately, this does not equate to a love of studying the environment (although perhaps we are 'bush practitioners' at heart with camping and 'outback' experiences.

As Stephen Matchett (2005) lamented we have lost the idea of the Renaissance person, bridging the gap between the Sciences and the Humanities.¹⁰ (*One wonders whether this fact can be attributed partly to the fact that Geography and Environmental Science does not have enough kudos within today's secondary curriculum, given the slash and burn approach to the Social Sciences in the 1980's and 1990's. See below*).

The point we as Geographers realise is that Geography can bridge that gap as a Social Science: We should be encouraging students to take up our subject and promoting an Environmental Science edge to it.

We should be revisiting the roots of culture & knowledge of the landscape with the contemporary information of our environment. Some of these areas are immediately relevant in the modern context.

The Age of Environmentalism – 1960's & 70's

Rather than the Age of Aquarius, the OPEC Oil Crisis of the 1970's brought many of our problems home to roost. The realisation of the days of inexpensive fuel had ended.

Environmentalism became a buzzword and Geography had a flourish of supporters as people realised their environment would change without the benefits fossil fuels.

The old SAIT [SA Institute of Teachers] meeting hall had 1000 Geography teachers for the Public Examination Board meetings during the late 1970's.¹¹ This was an indication of the swing towards environmental matters.

These recent 'glory days' of Geographical Education were whittled away by cultural, social and economic reasons. Whilst Geography and Environmental education does not have a monopoly on the topic, the past generation of environmental damage and environmental interest has been passed into other disciplines.

Less relevant topics (*and perhaps less interesting to secondary students: granite and karst landscapes may be an example*) in some of the earlier versions of the Year 12 Public Examinations Board course had reduced popularity during the 1980's.

The diversification of Stage 2 courses to a less exam based curriculum has vetted numbers, students less inclined to take up Geography Studies because of exams. Environmental Education has also broadened in its own right, with Tourism, Natural Resource Management and Studies of Societies and other related courses such as Agriculture also spread the numbers of senior students across a wider field.

Science has made inroads to the core Geography curriculum in senior and middle years. The expansion of SACE subjects such as 'Contemporary Issues and Science' has introduced topics such as 'Human Health, Disease, and Medicine' (*hmm, Dr Snow made his medical geography discoveries about cholera in 1854*), 'Chemistry and the Environment' (*with issues of soils, chemical contaminations and other chemical use*), and 'Aboriginal People and the Land' (*involving topics such as ecosystem management, bush tucker, indigenous health and development concerns*).

Middle school science subjects have been developed with ecosystems, endangered species and other environmental topics, highlighting humans' less than kind treatment of the Earth.

At the same time, other subjects have been introduced in middle schooling structures. Information Technology and related subjects such as Multimedia, the increase in the choice of languages (away from European-based languages), Outdoor Education (*another environmentally based subject*) and Dance have entered the mainstream curriculum.

As a way of diversifying the curriculum, Geography and History have been reduced in time or in most DECS schools, and have been converted to a SOSE curriculum. In independent schools, they have been reduced to an elective topic or had a reduced number of semesters.

Whilst History has had resurgence beyond this SOSE decision, Geography has struggled at times to attract a larger following.

Giving Credence to Environmental Education

The new age of education and society does need to come to terms with the world we live in. After 'ignoring' the environmental message for many years (obscured by the Gordon Gecko, 'Greed is Good' mentality of the 1980's and 1990's) Environmental Educators should be championing the cause.

The 'Ignore it and it will go away' mentality is true of our floral and faunal species, biodiversity and other resources on this planet. Instead of economics/accountancy, law & medicine being the well paid professions, should we be tweaking our mentalities to resource analysts and EIS researchers, environmental lawyers and naturopaths being the exclusive occupations?

There is certainly a greater environmental awareness in our society, but our students don't necessarily receive the understanding about the underlying processes

Fad movies come and go, (The Day after Tomorrow, Finding Nemo or Madagascar), but the deeper environmental message needs to get through if we are serious about environmental education and empowering the next generation to make wise environmental decisions.

Our students should be encouraged to choose Geography, Sustainable Futures, Agriculture or other similar subjects because they consider it as a first priority, not as part of a corollary of subjects which was 'too hard to get into'.

Below is a list containing the four spheres that make up the life on our planet with issues and subject content which could be immediately relevant to these categories.

The vocational aspect of many professions could be instituted here by students "working for the world" or their children's life rather than the 'get rich quick scheme' of other fields of employment.

Atmosphere

Anabatic and Katabatic winds in relation to heat islands
Heat and Pollution inversion layers
Energy sources: global warming / Globalisation –
Atmospheric conditions – Seasons & Indigenous Knowledge
Journeys and transport – burning "liquid sunshine" as opposed to other uses for crude oil

Biosphere

Native pets in Australian homes?
"Bush fires" in urban areas;
Courtyard homes and urban consolidation: excluding the natural environment in the suburbs?
Permaculture: previous generations and today's practice.

Hydrosphere

Current water supply and water quality;
Desertification: the drying out of the Australian continent
Water catchments: treatment and use;
Water recycling: grey water on a household and metropolitan level.
Aquifer Stormwater Recharge: ingenious thinking or the pollution of our groundwater?
Continental shelf environments and global warming: cooking our shallow waters in temperature change?
Overfishing – desertification of our seas?

Lithosphere

Salinity: Australia's sleeping giant
Soil erosion: losing our farming future?
Arid and semi-arid areas: our next resource plundered?
Australian Farming Practice: Europeans or indigenous ways?
The Kangaroo – the other red meat?

Decisions about our environment

Every decision we make is an environmental one. No matter what we do, we affect our body, the resources around us, and the wider environment by the decisions we make. We need to impart that knowledge to our students in a way which inspires them to conserve nature's resources.

Sustainability, like charity, begins at home. Environmental Educators desperately need to promote this to the next generation's parents, in an age of peak oil. By promoting the 'middle path' of environmental management on the local level, we are encouraging our regional and global neighbours to emulate our practice.

The hedonistic society and media savvy environment needs to confront its demons preferably sooner rather than later. The sustainability of our planet is short lived if we continue to live the Western lifestyle.

In economic issues, we are encouraging the developing world to become more reliant on their traditional social systems and not to encourage the life of excess we promote.

China's and India's emerging middle class populations are examples of populations the world needs to convince of the problems associated with excessive consumption and living beyond our means.

It would be a gratifying idea if the once 'colonised' area of Australia could be a leading example of how to live more sustainably. (South) Australia has been a social revolutionary with the women's vote and other social advances; this change would be pleasing as well.

Educational Imperatives of the Environment in our Curriculum

As practitioners within the environmental sciences, we need to seize the opportunity to take back the losses of the late 1980's. The future of the world around us is a greater long term issue than that of giving the necessary skills to become 'job ready' with the necessary skills from the core areas of English, Mathematics and Science.

Historical knowledge of the colonial era and the utilitarian approach to resources needs an increasing focus in the 21st systems and holistic thinking. Geographical and environmental education can do this as well as inform students about the processes occurring in the world around us.

Sadly, we can also no longer guarantee the parental relationship in students' lives to explain the workings of the world. The tribal knowledge must be passed through an educational system rather than ignored. This must be done via the visible curriculum rather than the hidden curriculum.

The key features to Geographical Education are about systems thinking: how various systems work – both natural processes and human interactions. The educational rationalists in our world, espousing logic and sequential learning should revisit Geography as a subject which can provide sequential learning processes. The advantage of the subject is that it can also be a conceptual subject as well.

Geography engages students to look at their world with different perspectives, viewing other cultures, historical viewpoints and the natural world as a contained subject. Whilst Geography reinforces many skills found in other subjects, it is a lynchpin: it enables us to view our world through an assertive management perspective.

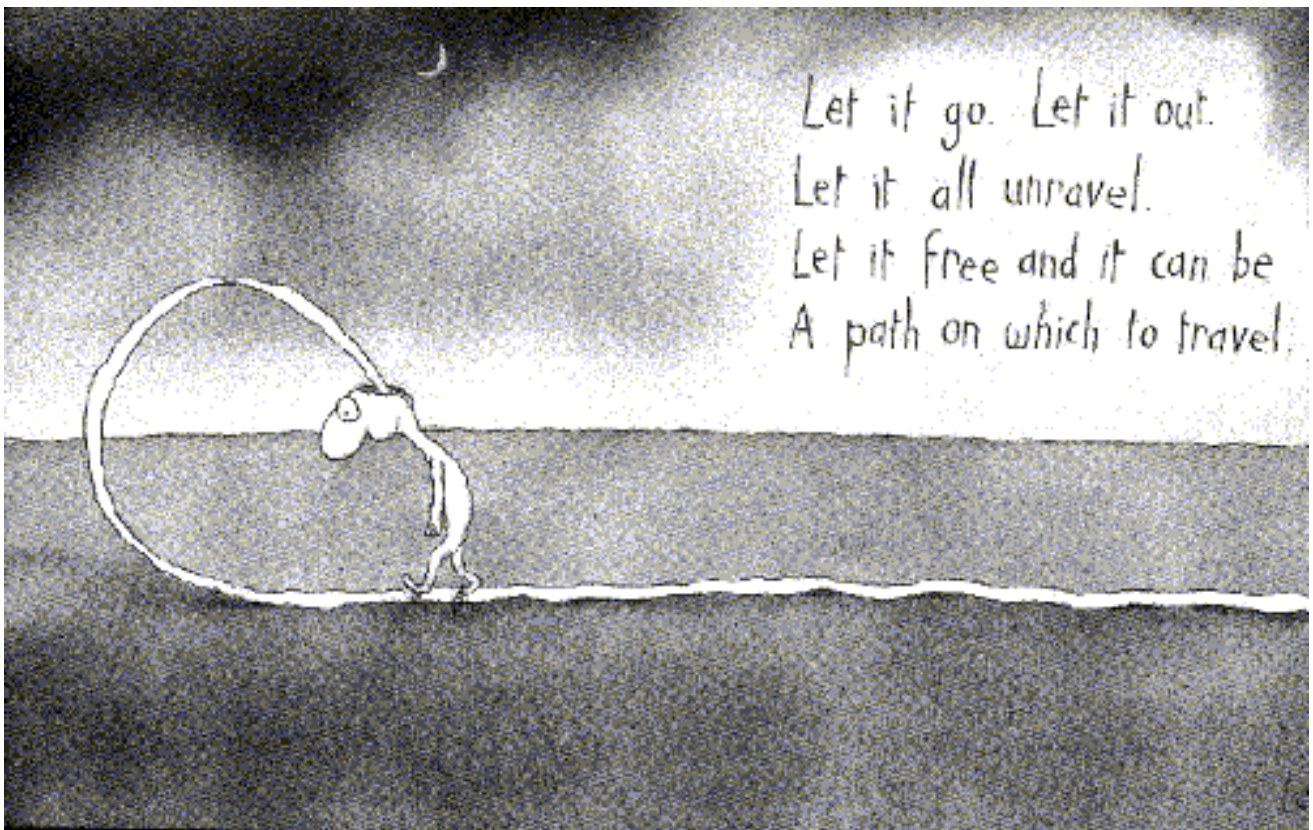
Geography can be taught from many different methodologies. It is part of the sequential learning process found in Mathematics: developing the various skills building on them in mapping elements (Butler, 1984)¹² and the development of fieldwork skills (Robertson, 2005: see Table 4).

The language methodologies of English include learning vocabulary, teaching various genres of writing and critical analysis. Geography does this too with functional and/or critical literacy, dependent upon the academic nature of the student and year level.

English is incredibly important in this age of visual communication. Spelling, expression and text production using different genres is done in a range of subjects. Geography has the advantage of being a language rich area but can also have a wide variety of text types.

Whilst Geography can be a more academic pursuit in understanding the theoretical concepts behind the world we live in, it does not mean it shuts out the less able students, unlike other conceptual subjects.

The language rich content can provide a social context to the physical and human environments around the students. Reports, surveys, essays, responses and multimedia text formats can all be potential assessment types and information technology resources can be utilised to scaffold appropriate text types.



Critical thinking is very much a part of the modern classroom: equipping students how to use their mental faculties to their best advantage. The more traditional methods of doing this via Bloom's Taxonomy and Gardner's Multiple Intelligences are well suited to the Geography classroom.

The problem solving, critical and analytical work in relation to issue studies and decision making can challenge students. The range of Gardner's Multiple Intelligences has a bias compared with other subjects in that it can confidently fit most of the Intelligence strands with mainstream content (See Table 3).

Students can be more adept at this style of learning with practice. Whilst the assessment setting needs to be precise to get a high standard, the differentiated curriculum allows for a greater amount of flexibility in catering for students learning needs.

Geography and Environmental Studies are the mortars which hold other subjects together, but they are also the keystone to educational theory. A prime reason for learning is to learn about the world in which we live and ultimately how to function within it.

Modern society is prone to throwing this keystone away as they engage in an urbanised rather than a physical-natural world. It is our duty as environmental educators to show the virtual banality of the modern world and that sustainability, not self indulgence, should be one of our prime concerns.

Practicalities: How can we get involved?

Sustainable Schools – Going that one step further towards environmental literacy

By taking a whole of school approach, facets of the environment can be split amongst year levels/curriculum areas and co-curricular groups.

SEdNet is an email listing recently set up by Jonathan Shankar-Noble, the Sustainable Schools Coordinator based in Flinders Street DETE Office and part of the Education Department's ESD team.

The web address for contact details and more information is: <http://www.schools.sa.gov.au/apcp/pages/default/esd/>

An EnviroBoard

Is there a spare noticeboard around the school which is not being used? Could one be installed near the Geography or Environmental Studies classroom? Information about environmental projects can raise students' awareness of environmental projects and various happenings within the community.

Advertising within the school newsletter also helps the wider school community be informed about local environmental projects. Families can be involved and it provides greater social capital. An email listing within the school could also save on paper wastage and provide greater communication rather than the traditional newsletter.

Class Projects

Individual themed units can be an inspiration to encourage students to change their and their family's ways. Information on the local environment can spur student on to carry out projects of their own or get involved with groups or the environment around them.

The concept of sustainability can permeate through these projects: creating a vegetable patch (on the way to a vegetable garden), replanning their resource use at home (be it petrol, electricity, water or other commodities).

When the class is brought out together for a common interest or project, the increase in success and motivation for students can increase exponentially.

The Northern Area and Barossa Water Catchment Management Board have examples of projects schools and communities have taken on to improve their local area. Gulfview Heights Primary, the Kaurna Plains School wetlands project and the Barossa Bush Gardens are but three examples.

Independent Projects

By looking at themed based environmental projects, students can investigate an area of interest in more detail. Encouragement of this type of activity in the middle schooling (Years 6 and 7) generates an interest and a commitment of environmental value systems.

If the students are more resilient in these situations, they are less likely to ignore environmental concerns at a later stage. Year 8 can also be an introductory year for secondary schools to engender an interest in geography as a subject, revealing something about the natural environment and the surprises that it holds.

These projects in the younger secondary years (Year 9 and 10) can also help with students planning and organization with their Independent Field Study for Geography Studies and other investigative studies.

Competitions

The Australian Geography Competition is a good starter to allow students to gain a greater interest in the world around them on a state, national and international basis. However, there are plenty of other ways in which to encourage students to be active and engage with their environment.

The Lord of the Weeds competition (see http://www.weeds.crc.org.au/for_schools/competition.html) is one such way, looking at how humans have modified their environments by the introduction of species from other parts of the country or other continents.

Utilising Local Resources

The local indigenous communities in South Australia have many aspects of environmental education ready at their disposal and have been doing so for thousands of years. The DECS Indigenous Education site (<http://www.indigenouseducation.sa.edu.au/>) has many

resources, ranging from dreamtime stories to professional development and guest speakers/activities for classes. The Ngarrindjeri nation is the most active in Southern South Australia and has a campsite, web site and other resources to look at how they managed their environment

Thinking Skills and the Diversified Curriculum

Some classroom methodologies have been guilty of focusing on map work as a solid basis for their curriculum. By widening the assessment tasks, pedagogical tools and assessment task choices, it will bring a wider appeal to Geography.

A diversified curriculum does not necessarily mean it is limited to the adaptive education students. Strategies such as the Multiple Intelligences/Blooms Taxonomy or other structures, can be scaffolds to work on to encourage students of all abilities to be involved with the environment, whether it is the local area or ecosystems half-way around the world.

Higher order thinking skills and systems thinking are key assets of the geography toolkit. They are there to be utilised for students to gain a greater understanding of their world and their place within it.

Stephen Sterling's Doctoral thesis (available at <http://www.bath.ac.uk/cee/sterling.htm>) is a model for systems thinking in an educational context.

Guest Speakers

Finding inspiration to generate interest in the local environment can be hard on an individual basis. If you find your confidence waning as a teacher to inspire students, getting someone else to do the motivation is a possibility.

Guest speakers are arranged for assessment tasks, the basis for teaching a unit or a review. Perhaps it is time to seize the opportunity to garnering that support into some action. This could be as simple as contacting your local council and seeking out the Environment Section or Education officer. Specialised topics can bring specialised guests.

visual/spatial	like to: view picture/slides; watch movies; play with machines. are good at: imagining things; sensing changes; mazes/puzzles; reading maps/charts learn best by: visualizing; dreaming; preferred assessment types: - map work/field sketching
Naturalist	like to: observe things recognise things; categorise things are good at: naming things around them; finding connections between objects; creating taxonomies & hierarchies; learn best by: investigating; observing; linking; analysing; experimenting; preferred assessment types: - fieldwork & analysis
Interpersonal	like to: have lots of friends; talk to people; join groups are good at: understanding people; leading others; organising; communicating learn best by: sharing; comparing; relating; cooperating; preferred assessment types: - interviews & surveys; group presentations
Intrapersonal	like to: work alone; pursue own interests; are good at: mediating conflicts; understanding self; focusing inwards on feelings/dreams; following instincts; pursuing interests/goals learn best by: working alone; individualised projects; self paced instruction; preferred assessment types: - independent studies; research projects
verbal/linguistic	like to: read; write; tell stories; are good at: memorising names, places, dates & trivia learn best by: saying hearing & seeing words preferred assessment types: oral presentations, research essays & tests; field trip reports
logical/mathematical	like to: do experiments; figure things out; work with numbers; question are good at: categorising; reasoning; logic; problem solving; learn best by: classifying; working with abstract patterns/relationships preferred assessment types: surveys and analytical reports; tests
bodily/kinesthetic	like to: move around; touch & talk; use body language are good at: physical activities; crafts; learn best by: touching; moving; interacting with space; processing knowledge through bodily sensations; preferred assessment types: fieldwork; experiments; models or displays
musical learners	like to: sing/hum/listen to tunes; play an instrument; respond to music are good at: picking up sounds; remembering melodies; noticing pitches/rhythms; keeping time; learn best by: rhythm; melody; music preferred assessment types: media journals (based on songs); writing/evaluating (protest) songs; poetry; oral presentations

Table 3: Multiple Intelligences in the Geography Curriculum

Local Regional National Global contexts	Recording Information	Text/Literacy Component of Field Studies	Practical Component Examples
Knowledge	Flora/Fauna species/architectural design Landscape features Identification of the system it represents: (Atmosphere, Biosphere, Hydrosphere, Lithosphere)	Proforma evaluation - Use of identification books	Sensory Perception /Field Excursion Flora/fauna identification exercises
Comprehension	Measurement and observation of landscape Identifying geographical processes in environment Identifying systems/cycles in environment	Field Trip Booklets: question answering & exercises (sketching; transfer of details, data recording) Field reporting – narrative and chronological details Basic analytical concepts	Field Excursion booklet: exercises Aspect and slope impact on vegetation exercise Creek cross section - wetted perimeter
Application	Observations of other environments: Drawing own interpretations of other environments Field notes for report writing - purpose driven contexts - compare/contrast sites	Scaffolded deductive and inductive methods Deductive method: field analysis of theoretical concepts Inductive Method: report writing from hypotheses	Bushfire risk assessment of properties Heritage trail through colonial style building space
Analysis	Issues based observation: Critical analysis of stakeholders and environmental conditions	Guided deductive and inductive method Environmental Impact Statements (social/local issues) (Problem/Issues-based) Field studies	Cemetery fieldwork:C19th and C20th child mortality
Evaluation	Decision making skills: Land use/new developments - urban impacts on the natural environment	Independent deductive and inductive method Environmental Impact Statements (local-global issues)	Site analysis for a proposed development (eg: housing estate; wind farm or transport route)
Creation	Modelling: (re)creating landscapes (virtual & actual) New concepts fitting into a sustainable futures model	Own hypothesis and modelling of work - comprehensive independent studies	Year 12 Independent Field Studies ; Environmental action after an issue study or fieldwork analysis/site evaluation

Table 4: Fieldwork and associated skills in relations to Bloom's Taxonomy

Final Thoughts

Our students are our future leaders. It is our responsibility to educate those students about the resources and the bio-physical interaction of our planet.

In a time when environmental change has been larger than ever before, it is critical that we maintain our natural and social systems as much as possible and foster its diversity. As others have observed, it is not ours to keep, but ignore it and it will go away...

References

- 1 Genesis, 1: 26-30
- 2 Genesis 2: 15 "Then the Lord God took the man and put him in the Garden of Eden to tend and keep it."
- 3 Perry, Home, 1971. This quote is often attributed to Chief Seattle but the true speech is more a comment on the unreality of Native American and white culture being able to integrate. For more information see: <http://www.synaptic.bc.ca/ejournal/muhisind.htm> or <http://www.synaptic.bc.ca/ejournal/wslibrtry.htm>
- 4: Department of Education, Training and Employment, Ngarrindgeri Dreaming Stories, Adelaide, 2001

- 5: GTAV website – <http://www.gtav.asn.au/>
- 6: For more information for those who do not have access to the Australian commercial networks, access the following internet sites:
The Colony: <http://www.sbs.com.au/colony/>;
Outback House:
<http://www.abc.net.au/outbackhouse/>
Survivor: <http://www.cbs.com/primetime/survivor/>
or <http://www.survivor.com/>
- 7: Luc Besson (director), *The Fifth Element* (1997), Gaumont/Sony, see:
<http://www.imdb.com/title/tt0119116/>
- 8: For more information on Wackernagel, refer to:
http://www.footprintnetwork.org/gfn_sub.php?content=whoweare
If you would like a copy of his PowerPoint from his 2003 presentation, I have a copy. A Robertson
- 9: James Howard Kunstler, *Book launch for the 'Long Emergency,'* New York, 2005
http://www.kunstler.com/spch_hudson.htm
- 10: Stephen Matchett, *Weekend Australian*, 11 – 12 June, 2005, Review section
- 11: Alan Simmons, GTASA Executive Meeting, March 2003
- 12: SA Geographer:
- 13: More information can be found for fauna permits at the following site:

http://www.environment.sa.gov.au/parks/fauna_permits/app_forms.html

Reference Materials:

The DECS Environmentally Sustainable Development Schools Page

<http://www.schools.sa.gov.au/apcp/pages/default/esd/>

GTASA Calendar of Environmental Events:

<http://gtasa.asn.au/events/2004/events.htm>

Backyard Birdwatch:

<http://www2.abc.net.au/science/birds/query.htm>

Geography Teachers Association of South Australia:

<http://www.gtasa.asn.au/>

Recommended Reading:

John Seely Brown Learning, Working & Playing in the Digital Age: 1999 Conference on Higher Education of the American Association for Higher Education
http://serendip.brynmawr.edu/sci_edu/seelybrown/seelybrown4.html, accessed, 24/10/2005

Geography Advisers and Inspectors Network (GAIN), *Raising Expectations in Geography- Expecting More*, UK Geography Association:

<http://www.geography.org.uk/download/AUgainraising.pdf>

