Finding a Place for Environmental Studies: Tertiary institutions as a locus of practice for education for sustainability.

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Abstract

Education for sustainability involves not only curriculum, but also responses in terms of management of resources and of grounds. It is asserted here that inclusion of education for sustainability in curriculum, whether in a school or university context, is hollow and insincere in the absence of practical and social action on site and perhaps beyond.

This paper focuses on perceived opportunities and barriers with regard to issues such as maintenance of grounds and management of resources in a tertiary institution context. A cohort of approximately 150 third year Primary Teacher Education students were surveyed to ascertain their views on the value of, barriers to, and opportunities for, practical sustainability projects in their tertiary context. The teacher education students were asked what importance they accord to environmental projects in a school context and in a tertiary context, and what the relative barriers and opportunities might be in each environment, and the value and potential for overcoming these at university.

Introduction

Education for Sustainability (EfS) has become a common mantra of recent times. Less appears to be known, however, about the extent to which practice matches rhetoric in terms of EfS or about cause and effect. Moreover, the aims of preservice education can be better understood in light of the contexts in which teachers will find themselves upon graduation. Therefore, an understanding of these school contexts and their own affordances and constraints will be of benefit to those implementing EfS for pre-service teachers. The project outlined here sought the opinions of a group of third-year pre-service teachers (n = 120) on conducting campus-based environmental projects.

Methodology and conceptual framework

This paper reports on one aspect of a larger study carried out at our university, that mapped the current extent, nature and depth of education for sustainability in the Bachelor of Education (Primary) program, and investigated barriers, opportunities and potential entry points for increasing and enhancing EfS in this program. The broader project involved interviews with staff members on the inclusion of EfS in their teaching and critically investigated related existing University policy documents. The component of the project being reported on

here set out to inform and enhance the learning experiences of students, through investigation of a hypothetical inservice context, thereby better preparing students to understand and deconstruct the opportunities and barriers that might exist for them in schools. The project also set out to investigate and enhance a sense of ownership of the environment among students.

This project investigated perceived consonances and dissonances in two contexts:

- Espoused and practised pedagogy;
- Primary and tertiary loci of practice.

Table 1 outlines this:

	Consonances	Dissonances
Espoused versus actual pedagogy in the preservice context		
Primary versus tertiary teaching/learning loci of practice		

Table 1: Context pairs

Given that there also may exist a dissonance between practising teachers' espoused and actual practices, this means a 'double dissonance' between what is espoused at University and what is practicable and practised in primary schools, as outlined below. In other words, there exist additional degrees of separation between a beginning teacher's recently-formed preservice views, and their actual practice. Given that the beginning years of teaching are such a demanding period, in a context of negotiating a multiplicity of new circumstances, cultural, structural, personal and professional, there would seem to be little opportunity for new teachers to reflect upon and question related assumptions, so university may be the best place for this to happen.

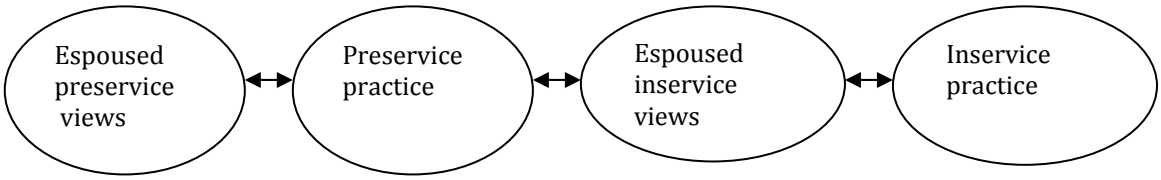

Figure 1: 'Double dissonance framework'

If graduates do not develop an awareness of the dissonance between their own ideals and practice, they enter the workforce unprepared to interrogate and deconstruct this mismatch in the workplace. All preservice experiences should be aimed at and focused on improving (inservice) practice.

Students in five tertiary third-year classes were surveyed on their views about the campus as a locus of practice for education for sustainability, and on undertaking environmental projects on campus. (See Appendix A – Scenario for student responses.) Responses were generated in groups. This generated 20 response sheets. There were several reasons for eliciting group responses. One was data reduction. Individual replies would have generated approximately 120 responses. The group response method also added another layer of anonymity to the responses. Response sheets were placed in a box rather than handed to the lecturer. Moreover, the responses benefited from the group discussions that took place. Students were offered two suggested models for reporting their responses, either listing pluses and minuses with regard to the scenario, or a PMI (Plus, Minus, Interesting, de Bono, 1992). They were free to respond in any form they chose, however. Documents produced by groups of students were analysed for patterns and outlying responses, and as part of a systemic analysis of the enablers and constraints with regard to EfS.

Context: the campus

The site on which this study took place is a campus of about 5000 students, of whom about 1000 study Education, in Sydney's North Shore, on or near the borderlands of the Gurringgai and the Kameraigal peoples. The site is virtually surrounded by bushland. The award-winning building, considered ugly by some, is tapered into the hillside, and so is masked by trees from most vantage points, even though it comprises six storeys and sits atop a ridge. It is located in the catchment of Turrumburra/the Lane Cove River, which flows into Sydney Harbour. The 1994 Bushfires consumed all surrounding bushland, and melted external light fittings into ghostly shapes.

The campus has been under threat of closure for some time, and this may dilute and diminish the will to invest in it environmentally. The recently-opened Epping-Chatswood Railway Line passes directly under the campus. Original plans incorporated a campus Railway Station, but a number of factors appear to have conspired to prevent this from being realised. From casual observations, it appears that most staff and many students drive to the campus.

Review of the Literature

Education for sustainability

The importance of sustainability education has been acknowledged for some time. At the time of writing it is ten years since the Australian Ministers of Education's *Adelaide Declaration* asserted the necessity for school leavers to have "an understanding of, and concern for, stewardship of the natural environment, and the knowledge to contribute to ecologically sustainable development" (DEEWR, 2009b).

Henderson and Tilbury focused on five international programs in 2004. They noted a number of features common to effective education for sustainability programs. These include whole-school participation, community and other

partnerships, cross-curricular integration professional development and a mechanism for monitoring, evaluating and reflecting on programs (p. 44). In 2005, The Department of Environment and Heritage (p. 7) observed that,

> environmental education for sustainability pervades all aspects of the school operations, curriculum, teaching and learning, physical surroundings and relationships with the local community … environmental education for sustainability is a core feature of the school ethos – the value structure of the school.

The same document advocates education about, in and for the environment (p. 6).

Education for sustainability is both a means to an end and an end with a number of means. The cognitive and affective abilities that contribute to and derive from EfS include investigation and research, lateral, analytical and creative thinking, collaboration, communication, literacy and reflection. It also develops traits such as courage and perseverance (Cheong, 2005). In addition, it 'recruits team members', in that it helps people identify with and subscribe to the membership of those who actively care and speak out for the environment. UNESCO (2004, p. 11) noted "a common consensus that education is a driving force for the change needed".

In an adaptation of the mantra 'act local, think global', Cheong (2005) has devised an educational approach she calls Community Problem Solving (CPS), which is described as "resolving or improving local [environmental] issues through a problem solving process" (p. 98). This contributes to students' agency and their awareness thereof. A further adaptation of the above mantra might be 'act local, think systemic'. Sterling (2004) for example, points out the limitations associated with the tradition of breaking systems down into their constituent parts, at the expense of identifying connections and thinking holistically or systemically. A systemic approach is also one of Hunting and Tilbury's (2006) six insights, the others being a clear, shared vision for the future, team building, critical thinking and reflection, and transcendence of stakeholder engagement and linear pathways. It would seem, then, that while deconstruction of phenomena into their constituent parts is helpful in terms of enhancing understanding thereof, a corresponding holistic or systemic approach is also needed in order to understand their totality.

A number of barriers to changed environmental attitudes and behaviours, that is, learning, have been identified. These include the pressures of time on teachers and teacher educators (Scott & Gough, 2007; Paige, Lloyd & Chartres, 2008), competition among multiple priorities (Moore, 2005), the siloing of subject areas (Dale & Newman, 2005) and the crowded curriculum (Pearson, Honeywood & O'Toole, 2005). With regard to the siloing of subject areas, it should be noted that the National Curriculum is currently increasing the division of subjects, particularly in the primary years, with the introduction of discrete history and geography, and eventually, civics and citizenship subjects, to replace what is known in NSW as HSIE (Human Society and its Environment).

It may be that claims of time pressures serve as a smoke screen for other excuses for inaction (ARIES, 2009b). Nevertheless, behaviour conducive to environmental sustainability must itself be sustained and sustainable, and requires sustenance, just as changes in dietary behaviour need to be more or less permanent to be efficacious. To extend the analogy, one possible barrier to sustained changes in environmental behaviours and attitudes could be called 'binge caring', or 'let oneself go', in the belief of having already done something benevolent for the environment, at some personal cost. More broadly, we may be tempted to salve our conscience by attending to the claims of special interest and lobby groups, such as the agriculture and fossil fuel industries. Such groups tend to argue that the burden on them is disproportionate to either the demands they place on the environment and/or their capacity to discharge the demands made of them.

There appears to be a popular clamour for governments to be (seen to be) 'doing something about' or 'fixing' environmental problems. This clamour becomes more muted, however, when the focus turns to the need for individual behaviour changes. Perhaps more than in most areas of study, in environmental education, words are not enough. It is impossible to avoid impacting the environment, and the extent to which and ways in which we do this will insist on their visibility.

Approaches to EfS include intra-subject delivery, usually in geography and science, cross-curricular delivery, and delivery via 'special events'. Hill (2005) points out that within and beyond educational contexts, environmental concerns are seen as an add-on, and advocates the development of holistic, integrated and complex solutions to complex problems. There is an argument for a 'natural curricular habitat' for Education for Sustainability. Arguably, some subject areas constitute a relatively unnatural site for the promotion of Education for Sustainability. Summers, Childs and Corney (2005) advise that education for sustainability at its best, entails "concepts, evidence, controversy and values – in an integrated, non-fragmented way" (p. 627). This, however, they point out, is at odds with the balkanised structure of many school curricula. Hill, Wilson and Watson (2004) speak of a learning ecology, a particularly apt term in this context. Survey and questionnaire responses gathered by Summers et al. (2005) illustrated that "while theoretical arguments for interdisciplinary implementation are strong ... such approaches are problematic for both schools and teacher education" (p. 624). Summers et al. (2005) raise the dilemma of a locus or 'habitat' for EfS, outlining its limitations if closeted in a subject of its own, or in only one or two subject areas, as opposed to its infusion throughout the curriculum, in which it might be owned by everyone and no one. They observe that a pan-curricular approach to education for sustainability presents "immense challenges" (p. 642). The objection of the crowded curriculum is arguably undefined, in that there seems to be no such thing as an uncrowded curriculum.

Summers et al. (2005, p. 629) used a framework devised by the Sustainable Development Education Program (Council for Environmental Education, 1998) that identified seven components of education for sustainability:

”interdependence; citizenship and stewardship; needs and rights of future generations; diversity (cultural, social, economic, biological); quality of life, equity and justice; sustainable change; and uncertainty and precaution in action”. ‘Interdependence’ was noted as the most common framework aspect of sustainable development. The only other two dimensions that scored significant responses were ‘sustainable change’ and ‘needs and rights of future generations’. Among their findings, it emerged that pre-service teachers had more highly developed conceptions of sustainable development than did their supervising teachers in schools. While at one level this is discouraging, in that one might expect experienced teachers to be more grounded in sustainability than their neophyte counterparts, it does offer the hope that the ‘new blood’ entering the profession offers greater capacity to address these issues. Geography teachers and preservice teachers identified more facets of sustainable development than did their counterparts in Science. Their small sample of geography teachers was also more likely to identify active and participatory teaching/learning methods, and was more confident than were their science counterparts in teaching sustainable development. This lends weight to the argument that geography is an appropriate locus for education for sustainability. On the other hand, a potential lack of understanding of the processes involved on the part of geographers as opposed to scientists is possible cause for concern.

Teacher-leadership is also important in the development of EfS. Just as Ramsden (1992) and others speak of deep and surface learning, Hill uses the dichotomy of deep and shallow leadership, or leadership (characterised by depth) as opposed to management (which is vapid in nature).

Tertiary institutions present particular barriers to education for sustainability. Summers et al. (2005) identified a number of barriers to EfS, including the crowded curriculum/time constraints, under-resourcing, marginalisation of education for sustainability and conceptual misunderstandings on the part of stakeholders. A further potential limitation emerged from limited competencies on the part of supervising teachers in professional experience (practicum) schools. According to Scott and Gough (2007, p. 112) the imposition of a policy on universities could be interpreted as a compromise to their intellectual freedom, “a special case of a wider process in which the university curriculum is subordinated to a kind of instrumentalism which is at best simplistic, and at worst self-defeating”. Convergent or coercive leadership do not appear to be highly conducive to systemic change. Leaders, “destabilize rather than stabilize” according to Plowman, Solansky, Beck, Baker, Kulkarni and Travis (2007, p. 354).

In what Lewis (1943) might call the abolition of [sic] man, Kemmis (2008) points out the tendency with modernity for the instrumental and pragmatic stance to displace people’s intrinsic worth as human beings. It might be, however, that this has always been the default to which humans inevitably regress in the absence of intervening factors such as education. If the logical consequence of this is Malthusian or post-apocalyptic in nature (Malthus, 1798) a logical response might be Hobbesian (Hobbes, 1968) or authoritarian. Just as Malthus argued that a point would be reached beyond which demand would outstrip supply of food and other resources, leading to a catastrophic end of civilisation, Hobbes argued

that the only form of leadership worthy of the name is absolute leadership. Is democracy and the freedom it affords an opportunity for or a threat to sustainable behaviour? Is there a case for an environmentally benevolent despot?

Despite and because of some of the concerns mentioned above, the mandate remains for education for sustainability. Bliss (2008) observes the need for "local-global citizenship that lays the foundations for lifelong engagement in contributing to the sustainability of the Earth" (p. 304). Citing Tilbury and Cooke (2005), Reynolds (2009) refers to the agency potential of Education for Sustainability, saying that related research indicates that EfS, "is about empowering people to contribute to a better future through mindset changes, critical reflection and building new skills" (p. 109). Mezirow, Taylor and associates (2009) use the term 'transformative learning' to describe that which fundamentally overturns our fundamental beliefs. Learning in this instance in transformative in a number of senses, however, in that it has the potential to transform our world as well as ourselves – both the external physical environment and the inner cognitive and affective one.

The 'site university' and sustainability

The University is a signatory to the Talloires Declaration, having signed up in 1998 (University, 2009a). This website sets out a mission statement for the University:

> Sustainability must be a holistic and permanent objective. So [this university] is taking a whole-of-university approach to respond to environmental concerns now confronting our country and our world. We aim to lead by example and show others that sustainability is a goal we must all attain.

The University has working groups, dedicated to each of the following six domains: energy; planning and design; procurement; transport; waste; water (University, 2009a).

The University has an Institute for Sustainable Futures, whose mission is "to create change towards sustainable futures through independent, project-based research" (ISF, 2009, p. 1). It conducts research degrees at Masters and Doctoral levels. The University's aims, with regard to sustainability are set out in its Environmental Sustainability Policy (University, 2009b). These include demonstrable leadership, partnership with other universities, industry partners and others towards sustainability, and the development of environmentally sustainable campuses. These aims, while lofty, do not appear to be supported by a statement of optimal practice in the achievement of these aims.

From time to tome, the University hosts free public lectures, such as that by Peter Madden, CEO of Forum for the Future, on Creating Sustainable Cities, on 12 November 2009. One of the authors of this report is currently co-supervising a doctoral student in education for sustainability.

Findings

Students were asked their opinions on a hypothetical proposal to introduce campus-based environmental projects. Because students were asked to indicate both advantages and disadvantages of such a proposal (see Appendix A), it is not possible to ascertain their final verdicts on the value of such a project. In any case, given that the responses were generated by groups, ascertaining a consensus response may have been difficult.

Students identified a number of advantages of such a program. Many groups saw the importance of such a project. None of the groups seemed to indicate that this would be simply be, 'doing the University's work'. It is impossible to know if this view emerged in initial discussions, but was dismissed prior to recording the discussions. In either case, it appears that there is a widespread view among the students that they have responsibilities to the environment in which they learn.

Perhaps the most commonly cited advantage of such a project is its practical nature. This was nominated by about half the groups in one form or another, and was expressed in a number of dimensions. Most commonly, it was conveyed in terms that assist students with their preparation for being teachers. References included "hands-on", "relatable and useful", "practical skills", "future teaching strategies about protecting and sustaining the environment", "ideas of how to implement in the classroom", since the "knowledge is transferable to the practical setting of schools". Another group observed that such a project "promotes the values you want teachers to have, e.g. environmental awareness, involvement in community…"

The practical assistance to the environment was another feature of the responses. One group responded, "if we did something 'real', it would feel important … it would be good if you're learning about the environment to actually help the environment". Another response described it as a "feel-good cause" and later referred to the "future generation". This practical aspect was couched in terms of service to the environment by one group.

Other groups seemed to identify the practicality in terms of relative enjoyment and engagement of such a project, their comments including "being outdoors" and "better than sitting in a classroom". One group indicated that this would be a valuable addition to a CV, and another said that it might be an attraction for year 12 students contemplating teacher education at the University. The collaborative nature of such a project was seen as another benefit. This could also be seen as another avatar of its practical nature. One group said that this would "give an understanding of how to organise and undertake a major project".

The learning that would derive from the project was also mentioned by some groups. One said that it would "open up people's minds and give a great insight into the particular environmental issue". Other comments included " increase awareness" and "a way of expanding your knowledge of relevant issues".

Such a project also affords a sense of and opportunity for agency, or in the words of one group, "gives power to make change". Another group referred to an associated sense of achievement, a third observing, "small steps can be taken to make a difference". Other positive aspects of this proposal included choice of projects on the part of students, and the student-directed nature of the projects.

The students also identified a number of disadvantages and limitations to the proposal. The most commonly-cited obstacle to such a project was time. This was referred to by 14 of the 20 groups. One group observed that, "tertiary students already have quite a lot on their plate".

The scenario did not specify whether the task would displace an existing assessment task or would be supplementary. Some groups indicated that their approval for such a project would be contingent on its being part of their current credentialing, rather than as a supplementary obligation. As one group observed,

> A negative viewpoint would be 'what's the point? It's not going towards our grades therefore it is time being wasted on something that does not directly affect us.' (Sad but the truth.)

Two groups suggested that the project could be an optional extra. Some groups raised the difficulties of concluding the project, or doing so satisfactorily, in a short timeframe such as a semester. One group suggested a year-long project. All of the Faculty's education subjects are currently of one semester's duration.

Only one group referred to the difficulty of assessing such a project. Subjects are graded, rather than assessed on a pass-fail basis in the BEd course. Conceivably, a project such as this could be an exception. Nevertheless, the scope of various projects would cause difficulty in terms of equity. It would be problematic to evaluate the relative merits and work input of, for example, an energy audit, care for a tract of land, or an educational or political campaign. Both inter- and intra-group equity are problematic, with responses indicating that the workload would reflect an individual's level of care, and would be uneven; "not everyone would feel that passionate", "not everyone pulls their weight" and "some students may see [it] as an opportunity to bludge". Another response indicated, "we are over [have had too much of] group work". Achieving consensus within a group was another issue identified by one group. Another group asked if it was the process and/or the outcome that would be assessed. This is a pertinent observation in that if only the outcome is assessed, students may opt for less risky, less imaginative, less effective projects that are more containable and easier to manage. While one group observed that "some students are desensitised", nobody appeared to suggest that a compulsory project of this nature would galvanise them into indifference or worse with regard to the environment. Nevertheless, this possibility should not be lightly dismissed.

Finding a 'place' and status for the projects was mentioned by several groups, in terms of integrating them with other subjects and with the degree as a whole. Linking with school subjects was another issue raised. Formal recognition of the work in the form of a subject accreditation was a *sine qua non* for several of the

groups. While none of the groups indicated that these projects would have to be completed within formal class time, this is another consideration. This has implications not only for students, but also for staff if projects need close supervision, especially so in the context of a highly casualised teaching staff.

One group of students suggested that this could be carried out in the students' own areas of residence. One student added that the reason for suggesting this is that s/he lives two hours' travel away from the University. While a 'home-based' undertaking would conceivably add to students' ownership of projects, it would render assessment even more problematic. Moreover, the benefits and learning outcomes deriving from collaboration would no longer accrue. A one-site locus of operation also allows for synergies between projects to emerge and be discussed, and the campus arguably offers optimal parallels with a school-based project. It might also be possible to showcase some of the students' projects to schools and their students, virtually or otherwise.

Support for the projects is another concern for some of the groups. One group observed that it "needs a high level of guidance and structure", while another asked, "who pays for it?" Some activities would require materials. Yet another group indicated that it would need high levels of organisation to be successful and profitable. These are valid observations and a budget would need to be established for such a program to take place.

Adding another dimension to sustainability, some groups asked what would become of the projects after the students conducting them had left. One group observed that such a program would necessitate personnel "to coordinate and maintain it for the future years". Another group asked on their response sheet,

> Would the project just be a project or would it be an ongoing thing? Why do all this work on the environment if it is not going to be sustained and maintained, may be viewed as pointless. If it was ongoing then that would be a great motivating force that could inspire students to do more.

As time goes by, it may also become difficult for students to devise a project that hasn't already been undertaken. Still, maintenance of a previously-established project may be one response to this. All of this needs to be further understood in the context of a campus that is currently for sale. This may generate cynicism on the part of students if they believe, rightly or wrongly, that they are simply undertaking 'working bees' in preparation for the sale of the site. It should be added, however, that none of the student groups raised this issue. The site would not be sold until after they graduate.

Lack of knowledge was identified by one group. This is of particular significance in the context of a short time frame for planning, conducting and evaluating a project. Students and their supervisors would need to be confident that the chosen project had environmental merit, and the time to research this may be considerable. Ensuring academic rigour was another concern for one group. Finding enough staff with sufficient knowledge to be supervisors would also be

difficult, but the undertaking may contribute to staff members' environmental knowledge and understandings.

For some groups, the exercise highlighted some of the current environmental deficiencies on the campus, including the need for more rubbish bins, and, ironically at a University of Technology, "better technology in all rooms so that handouts don't have to be given". One group suggested that this might displace more fundamental literacies. Presumably, though, these projects would also serve as a vehicle for supporting, being supported by and demonstrating the value of English literacy and numeracy.

None of the groups raised the question, "why don't *staff* have to take on an environmental project?" Nevertheless, this would be a valid question, and adds insights and a new perspective to some of the concerns raised by the students.

Conclusions

The study has identified a number of enablers and constraints with regard to the possibility of campus-based research projects.

It certainly appears that a large number of students are willing to be involved in practical on-site sustainability projects – or at least as willing as they might be with any assessment task. The students constitute a vast repository of energy to carry out such projects.

Among the constraints are those issues that would divert our attention and energy from such projects. These include an increasing preoccupation with basic skills testing at school level, and regimes such as 'league tabling' that might place teacher collaboration with competition.

One constraint as far as students are concerned is time. As the students pointed out, the projects would also need time and energy on the part of staff for their coordination. Staff knowledge and expertise would also be called on to evaluate the merit of projects, both in the planning and in the assessment stages. Many of the projects would also need a budget, as they would require materials. Occupational Health and Safety issues would need to be considered, as well. None of these issues is insurmountable, however, and most currently exist in relation to one or another aspect of academics' work, such as assessment or field trips. The budget issue could probably be justified, if not on environmental grounds *per se*, on its investment potential for the campus in various ways: environmentally, aesthetically, fiscally and in terms of staff and student morale and 'ownership', in a context where environmental concerns are assuming a higher profile in our thinking.

Of course, the students' responses are hypothetical, bringing us back to the 'double dissonance' question. Implementation of the program, if this proves feasible, will draw out from the shadows the students' actual attitudes to the value of the tasks at hand and their willingness to engage in these. Further

research again would allow a comparison between campus-based environmental projects and school–based ones.

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Appendix A: Scenario for student responses

On-campus environmental projects

Imagine Education students were required to undertake an environmental project on campus. How would you feel about this?

Positives	Negatives

Or:

Plus	Minus	Interesting