

*Journal of Teacher Education for Sustainability,*  
vol. 12, no. 2, pp. 5–16, 2010

## **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 demands responses in terms of management of resources and of grounds. It is asserted here that inclusion of education for sustainability in the 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. The present study focuses on students' views of opportunities and barriers with regard to maintenance of grounds and management of resources in a tertiary institution context. A cohort of approximately 140 third year primary teacher education students were surveyed to ascertain their views on the value of, barriers to and opportunities for practical sustainability projects conducted by students in their tertiary context. Such projects are a precursor to similar endeavours that could be undertaken in the students' school contexts.*

**Key words:** sustainability, education, environment, engagement, students' consultation

### **Introduction**

Education for sustainability (EfS) has become a common mantra of recent times. However, we know relatively little about the extent to which practice matches rhetoric in terms of EfS or about cause and effect. 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 programme. It investigated barriers, opportunities and potential entry points for increasing and enhancing EfS in this programme. 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 in-service 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. It is

exploratory in nature and will inform the content and assessment regime of an elective subject currently under development.

Conceptual framework and research questions

The research seeks to answer the following questions:

- 1. What are students’ perceived consonances and dissonances between espoused and practised pedagogy and primary and tertiary loci of practice?
- 2. What contributions can a student-driven approach offer?

Table 1. Outlines the context pairs of question 1, above

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

Given that there also may be a dissonance between teachers’ espoused and actual practices. This means a ‘double dissonance’ between what is expected at the 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 pre-service 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 needs to be increased an opportunity for pre-service teachers to reflect upon and question related assumptions. University should provide an opportunity for this to take place.

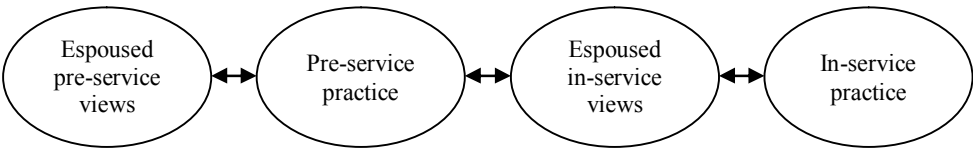


Figure 1. ‘Double dissonance framework’

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 their new situation, the workplace. All pre-service experiences should be aimed at and focused on improving in-service practice.

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 (2004) focused on five international programmes in 2004. They noted a number of features common to effective education for sustainability programmes. These include whole-school participation, community and other partnerships, cross-curricular integration, professional development and a mechanism for monitoring, evaluating and reflecting on programmes. 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.

EfS 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. In regard to sustainability, UNESCO noted “a common consensus that education is a driving force for the change needed” (2004, p. 11).

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 instance, 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, 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 Australian National Curriculum is currently increasing the division of subjects, particularly in the primary years, with the introduction of discrete history and geography and civics and citizenship subjects to replace what is known in NSW as HSIE (Human Society and Its Environment). In any case, studies of environment are currently and will remain an important component of school curricula in

the foreseeable future. It may be that teachers' 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.

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 EfS. Arguably, some subject areas constitute a relatively unnatural site for the promotion of EfS. Summers, Childs and Corney (2005) advise that EfS, at its best, entails "concepts, evidence, controversy and values – in an integrated, non-fragmented way" (p. 627). They point out, however, that this is at odds with the balkanised structure of many school curricula referred to above. 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 cloistered 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 and claimed by everyone and no one. They observe that a pan-curricular approach to education for sustainability presents "immense challenges" (p. 642). The objection to the crowded curriculum is arguably undefined, in that there seems to be no such thing as an uncrowded curriculum.

Summers et al. (2005) used a framework devised by the Sustainable Development Education Programme (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; 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 ensures a greater capacity to address these issues. Geography teachers and pre-service 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 and 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 a 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 (2005) 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 challenges 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 constraint emerged from limited competencies on the part of supervising teachers in professional experience (practicum) schools. According to Scott and Gough (2007), 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” (p. 112). 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).

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 beliefs. Learning, in this instance, is 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 of Technology, Sydney is a signatory to the Talloires Declaration, having signed up in 1998 (UTS, 2009a). The website asserts that “UTS is committed to sustainability and embedding it in our teaching and learning, research and throughout its operations” (UTS, 2009a, p. 1).

The University has working groups, dedicated to each of the following six domains: energy, planning and design, procurement, transport, waste and water (UTS, 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). The University’s aims, with regard to sustainability are set out in its Environmental Sustainability Policy (UTS, 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.

The Kuring-gai campus on which this study took place is a campus of about 5000 students, of whom about 1000 study education in Sydney's northern suburbs, on or near the borderlands of the Gurringgai and the Kameraigal peoples. The campus takes its name from the former of these groups. 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 within the catchment of Turrumburra/the Lane Cove River, which flows into Sydney Harbour.

## **Conduct of the study**

All five third year primary teacher education classes (approximately 140 students) were surveyed to canvass their views about the campus as a locus of practice for EfS and related projects. Possible examples were provided verbally, including regeneration of a tract of land, water, paper or electricity audit and/or an education campaign. This preamble included an assertion that most of us might consider it entirely appropriate for primary school students to engage in environmental projects. If this is the case, does it equally apply to tertiary students?

The students worked in groups of 5 or 6, generating 26 response sheets. The 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) (Appendix). They were free to respond in any form they chose, however. The anonymous sheets were placed in a box rather than handed to the lecturer. The responses benefited from the group discussions that took place.

The 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 projects on campus. The response sheets were codified and the codes tallied to illustrate frequency and patterns of responses.

## **Findings and discussion**

Many groups saw the importance and value of conducting an EfS project on campus. None of the groups seemed to indicate that this would simply be, 'doing the University's work'. There was a widespread view among the students that they have responsibilities to the environment in which they learn.

Two major outcomes clearly emerged, that of the projects' contribution to learning and to the environment itself. The most commonly cited advantage of such a project is its practical nature in terms of hands-on learning. This was nominated in one form or another by 20 of the 26 groups 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, for instance, environmental awareness and involvement in community...” One group indicated that the projects 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”.

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 matriculation 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 organize and undertake a major project”.

In the second outcome, the practical assistance to the environment featured prominently. 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”. One group couched this in terms of service to the environment. Four of these groups referred to the benefits for the campus and/or the University, but it was unclear in most cases whether this was environmental or in terms of prestige. In all, 13 groups (half of the cohort) made reference to one of this pro-environmental aspect.

Four groups referred to the projects’ potential for engendering agency; in that such an approach “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 16 of the 26 groups. One group observed that, “Tertiary students already have quite a lot on their plate”. One of the groups indicated that these projects should be completed within formal class time, and 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 workforce.

Several groups referred to the difficulty of assessing such a project. Subjects in this course 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 could cause difficulty in terms of assessment equity. It would be problematic to evaluate the relative merits and work input of, for instance, an energy audit, care for a tract of land, 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”. In all, five responses referred to an

aversion to group work. Achieving consensus within group work was another issue identified in one of the responses.

One 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.

The scenario did not prescribe whether the task would displace an existing assessment task or would be supplementary, but left either option open for students’ discussion. Formal recognition of the work in the form of a subject accreditation was a *sine qua non* for five of the groups. In various ways, they 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, with some groups adding that in the absence of this, there may be limited student interest. 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’.*

Finding a ‘place’ and status for the projects was mentioned by four of the groups, in terms of integrating them with other subjects and with the degree as a whole. Linking with school subjects was another potential problem raised.

Under the heading of ‘interesting’, three groups 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 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. A virtual approach might also alleviate some of the assessment- and dissemination-related difficulties.

Seven groups referred to the cost and resourcing of such projects, with one group asking, “Who pays for it?” Most simply wrote the word ‘cost’. A budget would need to be established for such a programme to take place.

The sustainability of maintaining such projects was raised by six of the groups. One group observed that such a programme would necessitate personnel “to coordinate and maintain it for the future years”. One 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.*

Two of the groups asked how projects would be maintained once the students graduated. Other 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. 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 and would address the problem of sustaining existing problems, which were raised above.

Lack of knowledge was identified by one group, who observed that it "needs a high level of guidance and structure". This is of particular significance in the context of a short time frame for planning, conducting and evaluating a project. The students and their supervisors would need to be confident that the chosen project had environmental merit, and the time to research the comparative merits of various projects may be considerable. Ensuring academic rigour was another concern for one group. While finding enough staff with sufficient knowledge to be supervisors would be difficult, the undertaking would also contribute to staff members' environmental knowledge and understandings.

One group suggested that this process 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.

For some groups, the exercise highlighted some of the current environmental deficiencies on the campus, including the need for more rubbish bins and "better technology in all rooms so that handouts don't have to be given".

None of the groups raised a straight 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 and implications for future practice and research**

Our students have 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. 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, for instance, 'league tabling' that might replace teacher collaboration with competition.

One major constraint as far as students are concerned is time. As the students pointed out, the projects also need time and energy on the part of staff for their coordination. Staff knowledge and expertise also need to be called on to evaluate the merit of projects, both in the planning and in the assessment stages. Many of the projects need a budget, as they

would require materials. Occupational health and safety issues need to be considered as well. None of these issues is insurmountable and most currently exist in relation to one or another aspect of academics' work, such as assessment or field trips. The budget issue could be justified in various ways: environmentally, aesthetically, fiscally (a reduction in utility costs) and in terms of staff and student morale and 'ownership', in a context where environmental concerns are assuming a higher profile in our thinking.

Returning to our double dissonance framework, the authors have shed light on the first element, that is, the students' espoused views and, to a certain extent, the second one, in terms of espoused in-service views – many of the students observed the potential for these projects as preparation for school teaching. Undertaking these projects will expose these espoused views to the stark light of practical reality. A longitudinal study with students who undertake such projects will test the theory further and investigate effects on their subsequent teaching with regard to school-based projects, as well as their attitudes towards sustainability.

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## Appendix

### *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

### **Acknowledgement:**

We are grateful to our students who provided us with these data. This paper derives in part from a paper delivered to the Social Educators' Association of Australia, Adelaide, February 19–21, 2010.

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