

EDUCATING FOR SUSTAINABILITY: A SPECIAL ROLE FOR DISTANCE EDUCATION

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ABSTRACT

Distance education is especially well-suited to deliver learning outcomes consistent with sustainability goals. Its emphasis upon access, the service of personal needs, and the support of life-long learning mirror the ways in which environmental values are best inculcated into personal and professional life. This paper compares and contrasts the central tenets of distance and environmental education, revealing the extent of shared values. It also addresses the lower carbon costs of distance education providers, in the context of adding legitimacy to campus greening and academic curricula.

INTRODUCTION: THE CHANGING FACE OF SUSTAINABILITY EDUCATION

Environmental education is “a process of understanding and clarification of the value of the environment and the relevance of environmental resources, with a view to encouraging people to use such resources in a more sustainable way” (Leal Filho, 1997, p. 80). The World Conservation Union (IUCN) definition is similar: “education which focuses on the relationship between humans and their environment with a view to promoting attitudes and behaviour compatible with safeguarding the environment and improving the quality of life” (Blackmore, 1998, p. 24).

The Compact Oxford English dictionary definition of “environment” refers to both “the surroundings in which a person, animal, or plant lives or operates”, and “the

natural world, especially as affected by human activity” (<http://www.askoxford.com>). Both aspects incorporate humans and their activities as features of the environment. Consequently, environmental education requires a variety of viewpoints and perspectives. It is among other things:

- Holistic
- Interdisciplinary – or even trans-disciplinary
- Integrative
- Empowering
- Values orientated
- Action orientated
- Experiential

(Ministry for the Environment, 1999; see also sustainability updates by the Ministry of Education at http://www.tki.org.nz/r/environ_ed/guidelines/key_concepts_e.php).

The currently accepted view of environmental education (summarised by Thomas, 2005) encompasses education *in*, *about*, and *for* the environment. Education *in* the environment provides for experiential experiences that ground an individual’s perceptions and values, while education *about* the environment deals with specific content knowledge. With successful knowledge acquisition, and a personal context in which it can be placed, education *for* the environment can occur, being an opportunity to advocate for alterations in lifestyle and behaviour in self and others, via personal change and commitment.

The meaning of “environment” in environmental education has evolved, from early terms such as “environment”, “environment and development”, and “sustainable development”, to more contemporary views of “education or learning for sustainability”. Just as corporate reporting now emphasises the inclusion of people, profits and pollution in sustainability reports, environmental education now encompasses a variety of stakeholder values (Cullingford, 2004). The result has been the inclusion of basic criteria in educating for sustainability, including (after Novo, 1998):

- the recognition of inherent value in living things
- vocational training regarding key concepts in management
- issues of equity, and access to resources
- consensus-building, both intra- and inter-generationally

DISTANCE EDUCATION AND SUSTAINABILITY: A SPECIAL NEXUS?

The New Zealand Parliamentary Commissioner's stock-take of environmental education initiatives (Parliamentary Commissioner for the Environment, 2004) showed that education for sustainability contains the following key characteristics: it contemplates learning for life, learning across boundaries of distance and discipline, and is transformative. Definitions and underlying theory in respect of distance education, if similar, would demonstrate a useful connection between the goals of sustainable education, and distance education as a useful method of delivery.

Distance education has been defined as "any formal approach to learning in which a majority of the instruction occurs while educator and learner are at a distance from one another (Verduin & Clark, 1991, p. 8), or "education imparted where the learner is physically separated from the teacher, in a planned and guided learning experience, consisting of two-way structure distinct from traditional classroom instruction". Verduin & Clark (1991) include further defining elements, being a separation of teacher and learner, the involvement of an educational organisation, the use of educational media, and the provision of two-way communication between learners and those who teach them. To this mix authors such as Baggeley (2008) add terms such as "flexible learning", normally associated with remote delivery alone, "blended learning", involving remote and face-to-face meetings, and "distributed learning", which is viewed as technology-mediated education made available to on- and off-campus students alike. A combination of technologies which best facilitate synchronous teaching delivery, largely via the internet, allows distance education to enter the realm of true "e-learning", as that term is used by authors such as Rosenberg (2001).

A review of the current literature on distance education reveals the following shared characteristics between distance education and education for sustainability:

1. Distance and sustainability education promote similar learning

The desirability of adopting an interdisciplinary approach to promote sustainability education has prompted research into how best to engage students in comparative and synthetic thinking at diverse levels. "Deep learning" is one approach which has been advocated (Warburton, 2003). It is associated with the use of analytic skills, referencing, imaginative reconstruction and independent thinking, and goes beyond rote-learning and simple description. Because it is internally motivated, it is especially well suited to situations where learning is made relevant, and personalised. Academic departments that provide teaching and study support, as well as a choice of

content and study methods, do best at deep learning (Warburton, 2003). These attributes are also lynchpins of successful distance education, in particular the way it allows self-directed learning, favouring curiosity, independence and enhanced personal meaning (see e.g. Verduin & Clark, 1991).

To the extent that an appreciation of environmental values is rooted in life experience and critical reflection, it lends itself to transformative learning. Such learning is shown where learners are led to reflect on and question something previously taken for granted, and thereby change their views or perspectives (Gunawardena *et al.*, 2006). Transformative learning is also a key characteristic of distance education, involving self-reflection upon meaning perspectives, resulting in different perspectives gained about the experience itself (Jarvis *et al.*, 1998).

2. Shared desires for access and life-long learning

In this context, colleges and universities are increasingly reaching out to remote residents, women, low-income groups, ethnic minorities, and international students, to provide education in a virtual learning environment (Rasmussen *et al.*, 2006). These are precisely the marginalised stakeholders that environmental education seeks to engage, and to empower through knowledge. Even in the absence of technology, distance education links sustainability by serving small communities, many of which are infused with traditional wisdom and struggling to recapture self-reliance where economic conditions are harsh, such as the Canadian Arctic (Robinson, 1992).

Distance education for sustainability is particularly relevant in developing countries, which include the most polluted cities. In Asia this has resulted in education policies which focus on city size, rate of growth, population and mobility (Tahir, 2001). Distance education has increased dramatically at university level in Asia, as a way to deal with increasing demands for higher education, where inequalities of access due to age, sex or race are evident. Among the many distance education providers surveyed by Tahir (2001), environmentally-related programme content has focussed on practical skills in agriculture extension, health, and other areas useful to students who are working in both rural and urban areas.

The experience of distance education in the latter half of the 20th century has shown that life-long access to education involves more than a conception of adult life as an alternation between work, non-work and education. A focus on the situated experience of student in their encounters with distance learning environments has

grown more crucial, as efforts have been made to understand the underlying reasons for empirical data associated with attrition rates, persistence, and progression. As more emphasis has been placed on individual development, more opportunities have emerged to show how distance education increases confidence and self-esteem, and, from an environmental standpoint, improvements in socio-economic circumstances of individuals, resulting in greater individual empowerment and social equity (Leal Filho, 1997; White, 2005). In this context, life-long learning is underpinned by individual approaches to learning, which can readily include the shaping of individual levels of respect for the environment (Blewitt & Cullingford, 2004).

3. Sustainability content is appropriate for distance education

Distance education courses on the environment have so far targeted a variety of groups, from business managers wanting to understand and address environmental issues in the workplace, to SME managers and employees, to generalist students from all walks of life with an interest in environmental issues (Blackmore, 1998). Programme development has involved varying degrees of collaboration between educational institutions, NGOs, business and industry.

Sustainability may become the operating paradigm in some disciplines, such as construction education. Murray & Cotgrave (2007) suggest that the industry is ripe for change, from the current UK model which emphasises construction education to reduce defects, costs, and construction time. There are now a number of professional bodies in the UK that cover disciplines such as architecture, surveying, construction management, engineering, and planning, all of which have links to sustainability. Linkages also are strong in New Zealand, where the “leaky buildings” scandal prompted changes to building legislation, which now requires consideration of sustainable development in the construction of new buildings (although this is more health-related than environmentally-related: Fisher, 2004). To the extent that unit standards offered by various Industry Training Organisations are delivered by distance (as they are in New Zealand), there is ample opportunity to meld sustainability concepts into distance modules.

Efforts have been made in various universities to integrate environmental issues into diverse academic curricula, using concepts of environmental responsibility, sustainable development and sustainable communities to underpin initiatives. Environmental management modules have been incorporated successfully into

business school BA programmes, many of which involve distance education (Holt, 2003).

Higher education initiatives that seek outcomes related to environmental sustainability include taught elements in environmental studies, environmental themes enunciated indirectly in other taught disciplines, and business decisions taken by institutions in energy conservation and recycling that lead to improved sustainability performance (Shephard, 2006). This has resulted in the desire to produce graduates who are knowledgeable about sustainability issues, possess skills to act sustainably, and display personal attributes to behave sustainably.

At the end of the day, how do you teach someone to care about the environment? Shephard (2006) refers to the training of health professionals, which involves the setting of learning outcomes that include affective attributes (ie learning related to values, attitudes and behaviours) and the use of learning and teaching activities that promote their attainment. The author suggests that e-learning can achieve affective outcomes, by way of online tutorials using role-play. Another way to teach students to care is by combining theoretical with vocational training, including the use of a trans-disciplinary case study (TCS) approach (Scholz & Lang, 2006).

4. Campus greening and distance education

Not surprisingly, institutions of higher education have attracted interest not only in terms of the education they provide, but also in terms of being role models for sustainability. There is now a considerable body of empirical literature (see, e.g. Keniry, 1995; Alabaster & Blair, 1996), and even a targeted journal, “International Journal of Sustainability in Higher Education”, that deal with various campus greening initiatives. Such initiatives give legitimacy to environmental studies programmes. In delivering such programmes, higher education institutions offer centres of empirical research without political intervention, capture a variety of viewpoints and expertise, are not so bound to financial bottom lines, and are free to concern themselves with ‘culture’, where that term is used in its broadest sense (Cullingford, 2004). Greener campuses also give concrete meaning to an institution’s “mission statements” and “environmental policies”, which otherwise may be mere greenwashing (Fisher, 2003).

Surveys of European universities by Leal Filho (2000) identify common barriers to uptake. They include views that sustainability is too abstract or too broad, resources

do not justify it, or that (at least at the time Leal Filho (2000) was published) the theme had no scientific basis. The importance of commitment by senior management cannot be overemphasised. It is extremely important in fostering campus-wide commitments to sustainable operations, by making the incentives for participation clear to the multitude of actors on any given campus (Thompson & Green, 2005). Overall impediments to uptake include cost, exposure to scrutiny, bad publicity if goals aren't reached, and general uncertainty about the added value to the institution of "doing good for the environment".

Institutions that rely wholly, or largely upon distance education delivery are almost inevitably going to be greener than those that don't, since travel comprises a significant fraction of the carbon budget of tertiary institutions (Roy & Potter, 2008). At one extreme, this allows a distance education provider to market itself as clean and green, without making any significant changes to its campus operations. The problems in environmental uptake noted above would vanish, as "doing good for the environment" means nothing more than "business as usual". At the other extreme, a savvy, forward thinking provider could re-position itself as a truly sustainable education provider, by embracing environmental values in its operations, and by greening its curriculum to take advantage of new niche opportunities. The case study which follows develops this theme more fully.

CASE STUDY: THE OPEN POLYTECHNIC OF NEW ZEALAND

There is a great deal of focus in New Zealand upon the environment. New Zealand has ratified a number of international treaties, including the Kyoto Protocol, and has promulgated a number of national policies in respect of many environmental issues, including waste, energy, water, and pollution.

The common elements of environmental education, as cited in the New Zealand National Strategy on Environmental Education (Ministry for the Environment, 1998) include:

- the influence of environmental education on values, attitudes and behaviour
- the multi-disciplinary nature of environmental education and the emphasis on linkages between the biophysical environment, social, economic and political activities
- the contribution of environmental education to protecting and managing the environment

- the range of learning activities encompassed by environmental education which include formal and non-formal education

The Strategy identifies the following key stakeholders in delivery:

- primary and secondary schools
- colleges of education
- tertiary education providers
- the Ministry of Education, via national curriculum statements
- government, including environmentally-related Crown Research Institutes, departments, local authorities
- other non-governmental actors, including NGOs, Maori-based organisations, community providers, unions, interest groups and other community organisations.

The New Zealand government sees its chief role in supporting formal education, promoting knowledge, and as a means to implement policy via better understanding of environmentally-related government actions.

The Open Polytechnic of New Zealand is the country's only specialist provider of open and distance education. It is one of New Zealand's largest tertiary institutions in terms of student numbers, with over 30,000 enrolments annually. It operates from a central base in Lower Hutt, with business centres in Auckland, Wellington and Christchurch. Approximately 450 staff are based at the main campus. Students comprise a diverse mix of national and international backgrounds. The majority of students are over the age of 25, and most are in paid employment. The Open Polytechnic works closely with Industry Training Organisations, and currently offers more than 130 programmes and 1300 courses, staircased from certificate to diploma and degree level. Most of the polytechnic's educational offerings are paper-based, delivered at distance to national and international students. A small number of programmes involve face-to-face teaching (Gehrke & Harms, 2002).

The Open Polytechnic, like other New Zealand institutions, bypassed the Talloires Declaration and other international initiatives for greening university campuses (see, e.g. Blackmore, 1998). In 1995, it was one of 28 universities and polytechnics in New Zealand to become signatories to a national programme called Environmental Responsibility in Tertiary Institutions (Treeby, 2001). The programme includes three key objectives:

- The sustainable management of the institution, including annual environmental performance reporting

- The promotion of environmental education across curricula
- The encouragement of sustainability in research programmes

Calls for the Open Polytechnic of New Zealand to consider becoming more environmentally friendly in its operations and teaching have come from various quarters, including:

- General interest in the environment as a consequence of the New Zealand government's National Strategy for Environmental Education, released in 1998, and the UNESCO declaration of 2005-2014 as "the decade of education for sustainable development"
- Specific interest in sustainability at tertiary levels, in the context of educational reform in 2002. This reform resulted in the creation of a national Tertiary Education Strategy. The Strategy requires every tertiary institution to produce a charter, which distinguishes it in terms of what it offers, and a profile, being a strategic road map which details how the goals of the charter are to be realised. Charters and profiles are assessed by the Tertiary Education Commission. In creating them, there has been an opportunity to consider incorporating sustainability into curricula and operations (Parliamentary Commissioner for the Environment 2004). Unfortunately, while the 2002 Tertiary Education Strategy includes environmental sustainability as a national objective, none of TEC's profiling criteria include reference to sustainability, so there is no absolute requirement to consider it in creating charters and profiles. Notwithstanding, the Open Polytechnic of New Zealand makes specific reference to sustainability in its charter, and is currently formulating a policy on sustainability.
- Provision by the Open Polytechnic of New Zealand of various industry standards related to construction, health and safety, and other environmental-related standards, as well as Certificate, Diploma and Degree studies in environmental studies. Distance education in these areas supports a variety of professionals working in local government and business, as well as the population at large in New Zealand and elsewhere.
- A small but active group of teaching and administrative staff with genuine interests in the environment, including the Polygreen environmental committee, which encourages various green initiatives.

How much greener is the Open Polytechnic of New Zealand than other, mainstream institutions? The question has not so far been posed by the institution in a comparative way. An internal environmental review of the main campus was

conducted in 2002, which benchmarked energy use, staff travel, waste and other factors (Gehrke and Harms, 2002). Travel was a significant component of environmental impact, with more than \$1.5 million spent on business travel, and an estimated staff travel of 8000 km/day. The Open Polytechnic is well-served by train, although staff use of alternative transportation has not been recently researched.

An updated, external audit was conducted in 2007 (referenced in the Open Polytechnic of New Zealand Annual Report 2007) which commended the polytechnic on several aspects of its environmental performance. Positive operational aspects include targeted environmental education, the integration of sustainability into many programmes, green supply chain practices, and several other initiatives. Although the polytechnic isn't registered with any formal carbon neutral programme, its main energy supplier is certified carbon-neutral. Similarly, although there hasn't been formal adoption of a sustainability policy by management, a statement supporting the concept of environmental sustainability and the monitoring of environmental performance is included in the Open Polytechnic Approved Charter 2005. In sum, there is evidence of genuine progress in greening the campus, which provides a basis for both future environmental performance, and the marketing of that performance should the polytechnic wish to do so.

The potential for institutions such as the Open Polytechnic of New Zealand to market themselves as green education providers has been made much easier by the growing international focus on climate change, and by the rising price of oil. Comparative research is still at a very early stage. The only research to date on the environmental impacts of different higher education course production and delivery systems has been conducted at the Open University in the United Kingdom (Roy & Potter, 2008). The Open University shares several features in common with the Open Polytechnic of New Zealand. Both institutions offer similar mixes of distance and face-to-face learning, within a supported open learning environment, involving print-based materials, supplemented by computer-based technologies.

A key result in Roy and Potter (2008) was that distance learning courses led to 87 percent less energy and 85 per cent lower CO₂ emissions than full-time, face-to-face, campus-based courses. The paper distinguished print-based and on-line courses. Surprisingly, print-based courses did not attract as great an energy penalty as might be expected if on-line delivery truly results in "de-materialisation". On-line courses showed a 20 per cent reduction in energy and 12 per cent reduction in CO₂ emissions compared to print-based courses. The authors conclude that, at best, on-line delivery produces only marginal improvements in energy and CO₂ emissions over print-based

distance learning, presumably due to the overwhelming influence of other factors, notably travel costs and built infrastructure.

CONCLUSIONS

Due to the current world situation respecting climate change and oil prices, distance education institutions like the Open Polytechnic of New Zealand are likely to find themselves in very fortuitous circumstances. In the first instance, they are almost certain to be in a position to capture greater student market share if rising oil prices begin to impact significantly on the direct cost of travel associated with attending classes, merely be experiencing the benefit of decisions made by students to forego travel in favour of studying at home. In addition, dedicated distance education providers will benefit from any public perceptions that they are greener, so that taking distance education courses becomes “the right thing to do for the environment”.

These are potentially rich, yet so far unexplored areas of marketing research. Also unexplored is the extent to which travel costs and carbon budgets will drive mainstream institutions to alter whatever mix of distributed learning technologies they now use, to other options which will allow students to get by with less in the way of face-to-face contact. It is extremely unlikely that they will be able to catch up with dedicated distance providers, which have a considerable head start in many areas, including niche marketing, experience with the logistics of getting material to and from students, existing study guides, rosters of professional tutors, and experience in mastering complex, often nettlesome on-line software

Several other questions remain unanswered. Will there be a role for teaching unions? Trade unions have a long history of campaigning on environmental issues, at least insofar as they relate to traditional areas of concern such as safety and health, particularly pesticides and asbestos. There is little guidance available, however, on the best way to foster union involvement in education staff environmental training, environmental audits, or other aspects of the employment dimension of environment policies (Roome & Oates 1996).

Another unanswered question is how to incorporate sustainability into unit standards for a variety of qualifications where such knowledge is not a required component of study. Is it the distance education provider’s obligation to liaise with an Industry Training Organisation to rewrite standards, and what happens if there is disagreement

about the relevance of sustainability within a variety of largely unconnected disciplines?

Perhaps the most compelling question is whether the pursuit of technology in e-learning distance education initiatives is actually helping the environment. What if technology, including the requirement for computer upgrades with short shelf lives, and associated electricity costs, produces sustainability problems? The validity and branding value of so-called green distance education would be seriously undermined.

At the end of the day, a decision about the extent to which a distance education institution chooses to market itself as a green alternative will depend on the legitimacy such a claim adds to its existing environmental curriculum, and the institutional interest in pursuing more sustainable practices. This study shows the special nexus between sustainability and distance education. Quite irrespective of climate change, distance education is eminently suited for delivering environment-related curricula. The relationship is one that will no doubt continue to be fostered, as environmental issues gain ascendancy in our personal and professional lives.

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