

Journeys in/with ‘sustainability literacy’: possibilities for ‘real world’ learning in higher education contexts.

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Recent reports from the higher education sectors of the UK and Australia¹ suggest that graduates from higher education institutions should be *sustainability literate*. Conceptualisation of *sustainability literacy* is emerging, complex and contested, providing significant curriculum and pedagogical challenges for higher education institutions. Research in sustainability pedagogy emphasizes the need for interdisciplinary or other innovative approaches to sustainability education and sets a cultural, structural and curricular challenge for the higher education sector. This paper focuses on *pedagogical* possibilities from the standpoint of research findings that demonstrate the importance of holistic, ‘real world’ learning for understanding the complex and problematic nature of *sustainability* and *sustainable development* in theory and practice. Through

¹ Australian Research Institute in Education for Sustainability (ARIES, 2005); Higher Education Academy (HEAC, 2006); Higher Education Partnership for Sustainability (HEPS, 2004).



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the paper I explore *potentials and problems* for outdoor environmental education pedagogy, in higher education contexts, to contribute to sustainability literacy. While the focus of the paper is an exploration of processes and outcomes of a post-graduate expedition conducted for an outdoor environmental education programme in Scotland, it is also, in a sense an expression of my own, ongoing journey of engagement with the concepts and issues relating to sustainability education and, in particular, the notion of sustainability literacy.

Introduction

With global warming and economic 'melt down' vying for the attention of governments, citizens and corporations throughout the world, the urgency to address issues of environmental and social sustainability is clear. Of these two issues, representatives at the United Nations Climate Change Convention in Poznan, Poland, now recognize that global warming must take priority (The Age, 2008). This significant recognition will be welcomed by scientists such as Tim Flannery (2008), who urge Governments and the public to recognize the serious consequences of global warming: 'There is no real debate about how serious our predicament is: all plausible projections indicate that over the next forty to ninety years humanity will exceed ... the capacity of Earth to supply our needs...' (p. 2). Flannery asserts that humans, with the capacity of intelligence and self-awareness, can act in the twenty-first century as Gaia's² 'brain' (p. 6). With our increasing understanding of the carbon cycle and its effects on thermo-regulation, he hypothesises that humans can assist rather than hinder, the Earth's regulatory process to maintain a balance that supports life. This requires a new understanding of humans as an *integral* part of the natural system and new ways of thinking that incorporate moral and philosophical considerations about *how to live well* with scientific knowledge about *how the world works*. Flannery's view is supported by environmental educators such as Orr (1992) who advocates a change of paradigm from a hubristic *planetary management* approach to one of *stewardship* (p. 161), a closer, caring relationship with 'nature'. Both authors recognise that such deep change will require different approaches to knowledge development, specific ecological knowledge and generic interpersonal skills to tackle emerging problems creatively. Such knowledge and skills constitute *sustainability literacy*, a notion that is central to this paper.

Given this context, there is a critical imperative for education to develop curricula, pedagogy and educational systems to engage with *sustainability* and/or *sustainable development*. While recognizing that these terms are highly contested, (Jucker, 2002; Redclift, 2005), it is not the intention of this paper to pursue the controversies in any depth since an analysis of these discourses is not the main purpose of the paper. However some of the key issues are highlighted to provide a context for the discussion of sustainability education and sustainability literacy in higher education and in outdoor and environmental education. The paper is written in an international educational milieu where the higher education sector has only recently paid serious attention to the sustainability education agenda. However with UNESCO's declaration that 2005-2014 is the Decade of Education for Sustainable Development (DESD), and increasing Government imperatives to address this, more focused attention has been paid to policy, management and curriculum development in this sector (Holcombe, 2005; Parkin, S., Johnston, A., Buckland, H., Brookes, F. & White, E. 2004b; Tilbury, Keogh, Leighton & Kent, 2005). This

² Based on James Lovelock's notion of the Earth as 'Gaia', earth goddess, whereby the planet is a self-regulating, evolving organism.



paper focuses on curriculum development and pedagogy in a higher education context, where *pedagogy* is used broadly to encompass different approaches to teaching and learning, including adult learning (or andragogy).

Sustainability and sustainable development

Clearly the notions of sustainability and sustainable development raise questions of what is to be sustained, by whom and for whom or what purpose? These questions highlight the inherently subjective and political nature of the terms. Although the Brundtland Commission's (1987) definition of sustainable development has been commonly adopted³, contemporary discourse tends to emphasise the ambiguity of both terms⁴. While this ambiguity can cause confusion and lack of direction, Leal Filho (2000) asserts that it is, to some extent essential, since they are contextually situated concepts, necessarily evolving as they are shaped by culture, politics and landscapes. The significance of contextuality is well understood by Jucker (2002), Sauv  (1999) and Redclift (2005), however, like many environmental educators, they are concerned that the breadth of the notion of sustainability, encompassing environmental, social and economic dimensions, leaves interpretations open to hijacking by economic interests so that sustainable development may mean sustaining the growth of a business or industry. This 'economisation' of sustainable development underpins the debate around the oxymoronic (Sauv , 1999; Redclift, 2005), juxtaposition of the terms *sustainable* and *development* in a dominant culture where the growth principle of development, seems to be at odds with sustaining ecological balance in a finite planet.

The modernist economic agenda also exacerbates issues of social inequity that underpin the notion of *sustainability*, particularly where the needs of people in 'developing' countries are influenced (often negatively), by the changing 'needs'⁵ of more affluent populations. Some discourses extend this social justice agenda further to embrace environmental or ecological justice (see Bowers, 2001 for example). In this context Redclift (2005) argues that notions of *needs* and *rights* should be examined in relation to 'post sustainability discourses' (p. 225), since social realities and relationships are continually reconstructed as new technologies, communication systems and environmental issues arise, thus changing the ways in which we comprehend and interact with, the social and physical world:

As the human subject itself is changing, then might the notions of citizenship, democracy and entitlements also change? In the new world, materiality and consciousness bear an increasingly complex relationship to each other. As species boundaries are eroded, and genetic choice dictates policy, are the 'environment' and 'sustainability' even valid categories any longer?
(Redclift, 2005, p. 224)

Redclift's (2005) discussion of the interplay between 'materiality' and consciousness, resonates with Gough and Sellers' (2004) notion that humans and 'the world' experience each other in a

³ 'Sustainable development is development that meets the needs of the present without compromising the ability of future generations to meet their own needs.' (Brundtland, 1987: 43)

⁴ The Higher Education Partnership for Sustainability (HEPS) Report (Parkin et. al. 2004a: 8) is an exception since it states that ' HEPS has underlined that, as a concept, sustainable development is not complex, defining it as progressing our social, economic and environmental goals *at the same time*.' The ambiguity of the word *progressing* is of course contentious and anything but simple!

⁵ The inverted commas are used with 'needs' to highlight the socially constructed nature of the term and the 'blurring' of *needs* and *wants* in more affluent populations where basic survival needs have been met.



'mutually constitutive' way. This concept blurs the boundaries of identity and 'otherness' thus offering a conceptualisation of being in the world that may be helpful for thinking about sustainability in innovative ways. This notion obscures distinctions between nature and culture offering a conception of sustainability and sustainable development as *relational* concepts emphasising *connectedness* and *creativity*.

Dale and Newman's (2005) epistemology of *reconciliation* offers a similar perspective:

The basic premise of sustainable development is that human and natural systems are dynamically interdependent and cannot be considered in isolation in order to resolve critical issues. Human societies and ecological systems are so connected that they are co-adaptive, reacting to each other and to previous interactions and reactions in a network of feedbacks.

(Dale & Newman, 2005, p. 352)

Notwithstanding the view that to propose alternative paradigms for 'development' is naïve or 'politically illiterate' (Jucker, 2002; Sauvé, 1999), a *relational* or *reconciliatory* perspective on sustainable development may offer a way out of the impasse created by the modernist interpretation of 'development' and common understandings of ecological and social sustainability. Although this relational perspective is emergent and therefore 'vague', it is ontologically and epistemologically aligned with the integrated, multi-disciplinary nature of the sustainability concept. It challenges normative notions of 'sustainable development' by embracing uncertainty, adaptability and co-evolution, thus drawing attention to *processes* as well as content. Dale and Newman (2005, p. 352) argue that this approach to sustainable development education (SDE), grounded in a 'complex adaptive systems epistemology', requires interdisciplinary and/or transdisciplinary thought, thus differentiating SDE from traditional discipline-based enquiry.

This brings us to questions of how and whether, education should address issues of unsustainability. The relational view outlined does reconcile teaching and learning *processes* with knowledge and skill development for *sustainability literacy*, so, for the purposes of this paper, any reference to sustainable development is made with this conceptualisation in mind. The paper is primarily concerned with an *ecological* approach to sustainability education since it is framed around an example of outdoor environmental education practice which draws on elements of this perspective. This ecological approach is congruent with the relational or reconciliatory perspective referred to above and to the notion of *sustainability as discourse* (Alvarez & Rogers, 2006) explained subsequently.

Sustainability Education

ESD is fundamentally about values, with respect at the centre: respect for others, including those of present and future generations, for difference and diversity, for the environment, for the resources of the planet we inhabit. Education enables us to understand ourselves and others and our links with the wider natural and social environment, and this understanding serves as a durable basis for building respect. Along with a sense of justice, responsibility, exploration and dialogue, ESD aims to move us to adopting behaviours and practices which enable all to live a full life without being deprived of basics (UNESCO, 2004).

This notion of moving people towards 'adopting behaviours and practices ...' is highly contentious since it puts decision-making about values at the centre of sustainability curriculum discourses. Again the language used is critical as it reflects different underlying value systems.



The United Nations documentation refers to education *for* sustainable development (ESD) which not only encompasses the arguments around the term *sustainable development*, but implies an instrumental approach to education. Educators such as Jucker (1992) prefer to use the term *education for sustainability* (EFS) as it deemphasizes economic development and, arguably, allows for balanced consideration of environmental, social and economic dimensions. However both concepts are disputed for different reasons. Jickling (1992) for example, is well known for his objections to educating *for* sustainability or *for* sustainable development, arguing that this approach is a righteous form of indoctrination rather than education. Instead Jickling advocates a dispassionate appraisal of the issues so that young people are well informed and able to make up their own minds.

On matters of value judgement, environmental educators such as Bowers (1993, 2001), Fien, (1993, 2001), Orr (1992, 2004) and Sterling (2004) are less equivocal, arguing that the ecological crisis is such that we cannot afford to waste time or take a 'business as usual' approach to ESD. These authors argue for a transformative approach to education that develops new priorities and ways of thinking about our place in the world, or as Sterling puts it, 'a fundamentally different story about the way the world works' (2004, p. 49). All are concerned with critical re-examination of deep cultural assumptions and practices, arguing for an *ecological* educational paradigm emphasising relationships based on connection and interdependence, participation and empowerment:

But what seems most appropriate both to understanding the complex cultural processes we now recognise to be part of the educational process and to preparing students to be more responsible citizens of a community that includes trees, grasses, birds, and all other life forms, which make up the energy and food chains of life, is the analogue of an ecology (Bowers, 1993, p. 157).

In advocating an ecological approach to education, Sterling (2004) uses the term *sustainability education* to represent a form of education based on this holistic, ecological metaphor, where educational structures and practices are aligned with the philosophy. This transformative approach to sustainability education is unapologetically ideologically driven, as a response to the critical environmental and social issues dominating international and regional agendas. As such it is open to critique as somewhat deterministic and perhaps at odds with emergent and dynamic conceptualisations of sustainability and related issues. This argument however, can be countered by pointing to the consequences of inaction: 'Reform does not require a master plan before it begins; but it needs to be guided by a clear sense of the direction in which we must move and a full awareness of the consequences if we fail.' (Bowers, 1993, p. 217).

A different view is put by Dale and Newman (2005) who assert that debates around values in sustainability education are 'diversionary' (p. 354). They see the aim of sustainability education as developing *sustainability literacy* skills needed to tackle future problems. This process, they argue, should develop critical thinking so that students can recognise and work to reconcile, competing values and ideologies. Rather than being 'diversionary', it seems to me that this approach puts values and ethics at the *centre* of the educational process since any reconciliation of values requires careful thought about the implications of particular values in practice. In 'real life' issues ethical dilemmas inevitably arise and, with competing environmental, social and economic interests, are not easily resolved. Critical thinking requires paying attention to the logic of arguments and to the values and assumptions that underpin those arguments in order to evaluate their merit *in relation* to the issues and the context. It is hard to envisage how



sustainability education, even if carefully constructed to allow for examination of multiple perspectives, freedom of thought and expression, can avoid being construed as being *about* values. In fact one could argue that *all* education, whether its aims are reproductive or transformative, is value laden and, arguably, a form of social and cultural inculcation,⁶

The tensions between instrumental, positivistic approaches to sustainability and more holistic, integrated approaches, represent an issue in sustainability education that may impede curriculum and pedagogical development. There is however broad agreement that sustainability is a complex notion that requires the application of interdisciplinary and, possibly transdisciplinary⁷, knowledge and skills to address issues from multiple perspectives (Parkin et. al. 2004a and b; Tilbury et. al. 2005). In order to embrace the range of approaches, I refer in this paper to *sustainability education*, deliberately acknowledging multiple interpretations while acknowledging some uneasiness with the term education for sustainable development (ESD)⁸ for the reasons previously outlined.

Environmental Literacy

Clearly language and its interpretation are significant in conceptualizing and communicating broad notions such as *sustainability* or *development* and the same could be said about *environment*. Understanding language and its meanings is a function of literacy and of cultural reproduction and transformation. The understanding of language as a 'socially constructed system of signs' has expanded conceptions of *literacy* to encompass the ability to interpret 'a wide range of social systems and artifacts' as texts (Stables, 1996, p. 189). This socially critical perspective has spawned 'new' terms such as 'scientific literacy', 'computer literacy', 'ecological/ environmental literacy' and now, 'sustainability literacy'. Consequently the nature of the *texts* being interpreted has broadened to include numerical codes, visual images and, in the case of environmental literacy, the environment itself. Arguing from this perspective, Stables (1996) asserts that the degree to which a particular environment such as a street, garden or landscape can be 'read' as text depends on the extent to which it is socially constructed. He argues that in many instances, particularly in Britain, even 'wild' landscapes have been significantly shaped by human activities and as such are open to interpretation as social constructs. Similarly, in Australia, where vast areas are deemed 'wilderness' through European constructs of landscape, most of the landscape has in fact been shaped physically or symbolically, by humans over thousands of years (Langton, 1998).

This conceptualization of environment *as* text renders the world 'a network of shared meanings which gives sense and shape to new experience' (Stables, 1996: 190). Stables & Bishop (2001) assert that this enables a *strong* conception of environmental literacy, cognizant of cultural, aesthetic and personal dimensions of environmental issues. The authors argue that this has several implications for environmental education. Firstly, the notion of 'reading' environments as socially constructed entities implies an examination of human values and subjectivities. The significance of this perspective is that it shifts the emphasis from a single discipline (usually physical science) framework for understanding environments to a

⁶ For more on this see Fien (1993), chapter 2.

⁷ Transdisciplinary knowledge refers to new knowledge, 'transcending' the disciplines and possibly, conventional thought.

⁸ ESD is used frequently in the literature, particularly in government documents and as such needs to be considered in educational discourse.



multidisciplinary approach including the social sciences and arts. It does *not* however, deny knowledge that develops understanding of physical elements of environments,⁹ rather it adds to the 'story' of a place. Secondly, reading the environment as text implies *interaction with* environments which can engage cognitive and *affective* responses or 'hearts and minds', (Stables, 1996; Stables and Bishop, 2001, p. 96). This holistic interaction is particularly important since it's more likely to facilitate care for the world in a way that conventional or scientific approaches to environmental education rarely achieve on their own. Thirdly, Stables & Bishop (2001) assert that this interaction creates a 'dialogue' with the biophysical world that blurs the distinction between 'reading' and 'writing', thus *action competence* necessarily becomes a component of *environmental literacy*.

This need for dialogue with the natural world and for affective as well as cognitive learning are central to Orr's (1992) groundbreaking notion of *ecological literacy*: 'Knowing, caring, and practical competence constitutes the basis of ecological literacy' (Orr, 1992, p. 92). Orr's ultimate educational aim is to develop citizens that understand the need to live sustainably and have the *intellectual* and *practical means* to do so. He argues that these competencies require both *knowledge* and *experience* of healthy ecological systems in order to develop an 'affinity for the living world' (p. 86) or 'sense of place' (p. 89). This, Orr (1992, p. 86) asserts, requires both 'indoor' and 'outdoor' learning, the latter being a means of instilling or maintaining a 'sense of wonder' that is 'rooted in the emotions'. Such experiences, he argues, have more potential to motivate students to 'make the leap from "I know" to "I care" to "I'll do something"'. However, like Dewey, Orr (1992, p. 147) warns that not all experience is educationally worthy and that 'carefully designed experiential education which reinforces intellectual and personal growth will require a deeper understanding of what kinds of experience catalyze what kinds of learning'.

This latter issue lies at the heart of this paper. If, as Orr asserts, direct experience of natural environments is essential for engendering environmental concern and action, what kinds of outdoor education experiences (if any) might help higher education students to become more ecologically and/or sustainability literate? How can we as educators know how students interpret their experiences? Are some educational experiences more likely to engender environmental (and perhaps social and economic) concern than others? Importantly, the notion of engaging the 'heart' as well as the mind in order to develop environmental concern is a key theme in outdoor and environmental education literature where the direct experience of natural environments is seen as being crucial for the development of 'care' and, possibly, environmental action (Nicol & Higgins, 2005; Martin, 2004).

Gough (1993) however, is more sceptical about the claims for the value of 'direct experience' of 'nature' for environmental education purposes. From a poststructural perspective, he cautions outdoor and experiential educators to consider the notion of *intertextuality*, that our interpretations of the world are mediated by our previous encounters with 'texts' thus any 'direct' experience of 'nature' is not 'pure' but socially and culturally constructed. Gough exhorts experiential educators to consider carefully, the ways in which language and technologies are used in educating in/about/for 'natural' environments and to pay '...particular attention to narratives, myths and rituals which have sustained and reproduced human society's alienation from the earth' (1993, p. 13). Such critical awareness requires understanding of how culture shapes ideas and values, in other words 'cultural literacy'. Bowers (1993) provides a detailed analysis of the role of education in perpetuating the cultural 'myths' that drive the dominant culture and our exploitation of 'nature'. He

⁹ Such as ecology or geology for example.



argues that 'cultural knowledge' must become '...part of the natural attitude of the teachers and students...' (p. 121). Bowers asserts that educators must critically examine how 'root metaphors' such as anthropocentrism and individualism and rationalism, work to create and perpetuate the ecological crisis. By developing this awareness students are empowered to challenge exploitative values and practices and create deep level change:

The intellectual genealogy of a "man-centred" universe, and the accompanying assumptions that the future represents a progressive advance over the present and that continued expansion of human choices and power is limitless, have framed ... how the nature and purpose of rational process has been understood (Bowers, 1993, p. 51).

Sustainability Literacy in Higher Education

The notion of *sustainability literacy* is gaining currency, particularly in the UK (Murray, Brown & Murray, 2007), with the UK sustainable development strategy, *Securing the Future* (2005), The Higher Education Academy (2006) and the Higher Education Partnership for Sustainability (HEPS) (Parkin et. al. 2004a) suggesting that all graduates from UK higher education institutions should be *sustainability literate*. This notion is an extension of environmental or ecological literacy, encompassing knowledge and skills for understanding the symbiotic relationships between *environmental*, *social* and *economic* dimensions of sustainable development and the ability to assess and make decisions by taking these three dimensions into account simultaneously (Parkin et. al. 2004a, p. 9). The Australian Research Institute for Education for Sustainability (ARIES) review of environmental education in Australian higher education institutions also advocates sustainability literacy, proposing the development of generic skills such as: dealing with uncertainty and complexity; action-oriented skills; stakeholder engagement skills, appreciation of multi-cultural understanding; practical problem-solving and project management skills (Tilbury et. al., 2005, p. 16). The authors describe these 'literacies' as 'transdisciplinary skills' which should be addressed across the curriculum and educational sectors (p. 16).

Similarly, in a report for senior managers of higher education institutions, The Higher Education Academy (HEA) (2006, p. 6), takes further the recommendation that graduates should be sustainability literate, by identifying examples of 'literacies' that could be attained. The tensions between different conceptualizations and interests in sustainability is very clear on the first page of this report where the rationale for developing sustainability literacy is taken from the UK Government sustainable development strategy (2005),

To maintain a more competitive economy, to compete internationally and build ourselves sustainable communities, we need to improve the knowledge and skills base of everyone, including professionals and others in the workplace. ...the [sustainable development] strategy sets out how we are planning to upgrade public sector skills for sustainable development, help businesses with corporate social responsibility and develop strategy for sustainable development within the work place, but we need to make "sustainability literacy" a core competency for professional graduates (*Securing the Future*, 2005, in HEA, 2006, p. 2).

Here we see economic and social imperatives apparently aligned and, of particular interest, is the omission of reference to environmental responsibilities in this selective quotation. This raises questions about the primary motivations and agenda of the HEA in developing the following set of competencies and the extent to which it reflects authors' perceptions of the interests of the audience for whom the report was prepared. Like the ARIES proposal, the sustainability literacies



suggested here tend to be generic attributes, to be addressed across discipline areas and which emphasise action-oriented knowledge and skills suitable for the needs of future employers:

- An appreciation of the importance of environmental, social, political and economic contexts for each discipline
- A broad and balanced foundation knowledge of sustainable development, its key principles and the main debates within them, including its contested and expanding boundaries.
- Problem solving skills in a non-reductionist manner for highly complex real-life problems
- Ability to think creatively and holistically and to make critical judgements
- Ability to develop a high level of self-reflection
- Ability to understand, evaluate and adopt values conducive to sustainability
- Ability to bridge the gap between theory and practice; in sustainable development, only transformational action counts
- Ability to participate creatively in inter-disciplinary teams
- Ability to initiate and manage change (HEA, 2006, p. 6).

The intention is that each institution works out how best to ensure that these literacies are addressed and the HEA provides advice on barriers and solutions for facilitating this process. Based on case study research, the report also recommends particular pedagogical approaches likely to enhance the effectiveness of the sustainability education process. Specifically, *experiential learning*, *problem solving* and *work-based learning* have been identified as important in translating theory into practice¹⁰ as has the role of educators as role models and learners for putting sustainability principles into practice (HEA, 2006).

While these proposals may be reasonable in principle, the translation of these statements and attributes into curricula and teaching practice, is complex and problematic. The enormity of the challenge is perhaps reflected in the findings of a survey of student perceptions at the University of Plymouth which revealed that, while most students expressed positive attitudes towards the notion of 'sustainability', many had a limited understanding of the breadth and complexity of the concept. A majority associated sustainability and sustainable development with *environmental* concerns but were relatively unaware of the social and economic dimensions (Kagawa, 2007). The survey also highlights a dissonance between attitudes and actions, with students tending to agree with critical or radical statements relating to social and environmental justice but *not* reflecting these attitudes in their behaviour or proposed behaviour. Additionally Kagawa identified mixed feelings amongst students about the future and suggests that, in addition to a multi-dimensional approach to sustainability education curricula, facilitation of *affective* as well as cognitive learning is important (thus reinforcing the views of Orr, 2002, 2004 and Martin, 2004).

While there is some commonality in the types of knowledge and skills identified by the different proponents of sustainability literacy, the fundamental values underpinning the transformative, 'ecological' change proposed by Bowers (2001), Orr (1992, 2004) and Sterling (2004), contrast the more pragmatic approaches to sustainability education in higher education. With such fundamentally different value systems underpinning sustainability literacy discourse, it is clear that the processes for determining what literacies should be addressed and if in fact, a 'literacies' approach is the best way to address sustainability issues through higher education, are

¹⁰ HEAC Subject Centre for Geography, Earth and Environmental Sciences, 2005



problematic. On what basis would universities decide which knowledge and skills should be attained, how they should be developed, who should be responsible and how they should be evaluated? Such issues merely 'scratch the surface' of the complexities involved in developing a 'sustainability literate' culture in the higher education sector let alone the wider community with which it interacts. Nevertheless work already undertaken by enthusiastic academics and administrators reveals considerable potential for innovative curricula and pedagogies to respond to these imperative.

One such example is the work of Alvarez & Rogers' (2006) which demonstrates how the multiple dimensions of sustainability might be developed in higher education contexts and the kinds of knowledge and skills (or literacies) that can be attained. The authors identify three key approaches to work on sustainability, all of which have informed their work with tertiary students:

- (i) definitions of sustainability – histories and comparisons
- (ii) managerial – focused on implementation and typified by check lists, measurement and indicators
- (iii) sustainability as discourse – accepts that it is contested and claimed by competing interests.

Alvarez and Rogers (2006) explain how, through their work with students, their conceptualization of sustainability has shifted from the first two approaches to the third, *sustainability as discourse*. This shift occurred mainly as a result of their observations of student learning during field trips to farms and community sites where students' encounters with local people grappling in their own ways with 'real life' issues of 'sustainability', revealed a 'messy', complex and often contradictory set of circumstances and values. On reflection, Alvarez and Rogers realized the value of students learning 'out there' in the community, since some of the insights gleaned could only come from the local people themselves and be understood in the particular context:

After seven years of taking students into the field the authors now see themselves as facilitating a process where learners (both teachers and students) are exposed to different understandings of sustainability and are able to recognize the messy and complex reality of sustainability on the ground... to think about sustainability as a complex set of discourses and practices that interweave through and over people's lives giving both meaning and legitimacy to their practice in some cases, while in others challenging their sense of certainty and assumptions about place...' (Alvarez & Rogers, 2006, p. 183).

This sustainability as discourse approach has strong resonance with Dale and Newman's (2005) reconciliatory approach and, possibly, Gough and Sellers' (2004) 'mutually constitutive' being. These conceptualizations also provide a strong conceptual framework for the example of outdoor education practice that is explored in this paper.

In this context the identification of experiential or problem solving methods as effective pedagogies for developing sustainability literacy, highlights the *potential* for outdoor education to make a contribution to developing sustainability literate graduates. Bearing in mind the range of approaches to sustainability education and concepts of sustainability or environmental literacy, I explore some possibilities for outdoor education to contribute to sustainability literacy through engendering participants' abilities to 'read' environments (both natural and cultural) in ways that *may* engender the sense of environmental affinity described by Orr (1992) and/or offer 'new' forms of knowledge, attitudes or skills as suggested by Gough and Sellers (2004). I also consider



the possibilities for learning relevant to the social and economic, as well as the environmental, dimensions of sustainability issues. I focus on outdoor education curricula and pedagogy in higher education since graduates from this sector have the potential to exert broad influence on the wider community via a long term 'ripple effect' *if* graduates later use knowledge and skills developed during their higher education programmes. I draw on a particular UK example to illustrate how an expedition, informed to some extent by particular understandings of sustainability and environmental education, seems to have contributed to students' ecological or sustainability literacy.

Outdoor education, sustainability and ecological literacy

Like sustainable development, outdoor education is a somewhat vague and eclectic term that has multiple interpretations, draws on a range of practices, philosophical approaches and disciplines and skills. Outdoor education objectives range from broad personal and social development goals to those underpinned by social justice principles and, more recently, to environmental and sustainability education imperatives (Lugg, 2004, Martin 2004, Nicol, 2002). Although practices vary significantly there is general consensus amongst practitioners and researchers that outdoor education pedagogy usually employs experiential, problem solving or reflective pedagogies in outdoor (predominantly non-urban) environments. It is this interaction with natural environments and processes that underpins most claims for outdoor education's relevance (and perhaps significance) for environmental and sustainability education. Environmental education (particularly Significant Life Experience) research and some outdoor education research tentatively suggests that direct experience of 'natural' environments *can* (but may not) initiate environmental sensitivity, feelings of connectedness with particular places and enhanced understanding of ecological processes (Rickinson, Dillon, Teamey, Morris, Mee Young, Sanders, & Benefield, 2004).

Martin's (2004) and Stewart's (2004) research with students undertaking a B. A. in Outdoor Education in Victoria, Australia, suggest that carefully crafted outdoor education experience can offer a powerful forum for critical reflection on how we live our lives, particularly in relation to the values and knowledge that underpin human relationships with 'nature' in general (Martin 2005), or with particular places (Stewart, 2004). Martin's research also points to the establishing of deep emotional connections with particular 'natural' environments over time and, in some instances, through engagement in outdoor activities. This observation resonates with the views of British educators; Higgins, (1996), Nicol, (2004) and Shallcross (1996) who, like Orr (1992), argue that emotional identification with nature is crucial to developing an environmental ethic and that this dimension has been overlooked in outdoor education research. They assert that educational experiences in outdoor environments can develop this emotional connection in several ways (i) through sensory immersion in natural landscapes thus emphasizing human connectedness with 'nature' (Nicol, 2004); (ii) through direct experience of the consequences of our actions (Higgins, 1996) and (iii) through holistic outdoor experiences that emphasise a fusion between the affective, cognitive and physical modalities (Shallcross, 1996). Common to all these outdoor educators, is the understanding that the role of the educator is crucial in facilitating the experience in ways that might engender critical reflection and environmental sensitivity.

Although the research literature linking outdoor education with sustainability education is scarce, the possibilities for outdoor education to contribute to the sustainability agenda are becoming recognized at both an individual and Government level, particularly in the UK where Government policies and agencies are promoting outdoor learning as a means of improving



physical and mental health and for engaging young people in developing *environmental awareness* and *citizenship* skills. The Scottish Executive goes a step further in identifying outdoor education as a vehicle for sustainability education (*Learning for Our Future*, 2006, p. 7), recognizing its potential for developing environmental awareness, citizenship and for *linking* different strands of the school curriculum (p. 7). This is an important step towards *publicly* and *formally* recognising the role of outdoor learning in environmental and sustainability education and provides real impetus for the development of interdisciplinary curricula incorporating outdoor education pedagogy. Bearing in mind this political climate, in the UK at least, there is fertile ground for research in the role of outdoor environmental curriculum and pedagogy as an innovative approach to sustainability education and sustainability literacy development.

Conceptual links between outdoor education and sustainability literacy are evident when we consider the knowledge and skills suggested by the HEA with the three skill identified as integral to ESD in Scotland's *Learning for Our Future* (2006): (i) *joined-up thinking*, (ii) *participative working* and (iii) *reflective practice*. These generic skills strongly reflect those advocated by UK outdoor educators such as Higgins, (1996), Loynes, (2002) and Nicol, (2002, 2004) in their arguments for development of concept-based outdoor education practice underpinned by ecological and sustainability objectives. Their arguments are based around the potential for outdoor education to emphasise human interconnectedness with 'nature', holistic and constructivist learning principles and critical reflection processes. These processes also echo the criteria used by O'Connell, Potter, Curthoys, Dymont & Cuthbertson, (2006) as a basis for demonstrating the potential for sustainability education through outdoor recreation education and practice. Their work is based on Lefebvre's (2000) criteria for evaluating sustainability education pedagogy which they see as pertinent to outdoor recreation practice:

- (1) interconnections between social, environmental and economic aspects of issues covered,
- (2) emphasis placed on interacting and learning with nature,
- (3) teaching methods and strategies develop skills and attitudes to enable reflection, critical thinking, collaboration and action for social change,
- (4) materials and curricula support community involvement and participation towards contextually and culturally appropriate learning .

Demonstrating a 'double-barrelled' conceptualization, O'Connell et. al. (2006, p. 91) see sustainable development as both a necessary 'good' in terms of outdoor recreation curriculum planning and as a means of maintaining or 'growing' the 'industry'. Although several unexamined assumptions underpin this argument, the four criteria outlined are also similar to those often advanced as a rationale for *outdoor environmental education*. Again, the possibilities for convergence between aspects of sustainability education and outdoor education emerge.

It is worth noting at this point that the sustainability literacies identified by the HEA (2006), emphasise personal and interpersonal skills rather than specific environmental knowledge or skills. Traditionally the most persistent rationales for inclusion of outdoor education in education curricula has related to personal and social development objectives. However the strongest arguments for outdoor pedagogy in *sustainability education* have so far related to *environmental learning* (see Nicol, 2002, for example). By considering how outdoor pedagogy might be useful for sustainability goals, opportunities open up to integrate personal and social skill development with environmental learning. Such a convergence will require creative thinking and open minds but, as suggested by O'Connell et. al. (2006), such opportunities may serve the agendas of sustainability, outdoor and environmental education.



In light of the above observations it should be noted that some studies such as Odgers' (2007) quantitative study of pre-service teachers' environmental attitudes and behaviours, point to possible limitations in the *transformational* effectiveness of experiential approaches to environmental and sustainability education. In this study students' attitudes and behaviours were determined via a questionnaire administered before and after an environmental education course which involved practical outdoor elements such as a water quality investigation and revegetation of the catchment area. Findings revealed that the pre-service teachers' environmental attitudes became even more positive after the course but their behaviours did *not* change significantly. While these results raise questions about the effectiveness of this particular example of 'real world' pedagogy, the data was too limited to infer any particular reasons. Nevertheless such findings alert outdoor/environmental educators and researchers to pay particular attention to the characteristics of pedagogical and research processes and, perhaps, the environments in which learning takes place, if transformative learning is the goal.

Sustainable Outdoor Education Practice?

Context

In this section I focus on an example of outdoor education practice that illustrates how, in a higher education context, students may learn about sustainable living and develop particular sustainability literacies through 'real world' pedagogy. In this example post-graduate students plan, implement and evaluate a three-week expedition in the north-west of Scotland by employing experiential and problem-solving methods as advocated by the HEA (2006). The participants undertook this expedition in June 2006 as the final component of the Post-Graduate Diploma in Outdoor Education (PGDOE), at the University of Edinburgh (where I was teaching at the time). The programme is a one-year, full-time programme incorporating theory and practice in outdoor and environmental education. It includes courses in ecology studies, environmental interpretation, environmental philosophy, community building, personal and social education and professional practice as well as a 'Competency Programme' to develop practical skills in areas such as hillwalking, canoeing, climbing, mountaineering and expeditioning.

Method

The following is an outline of the expedition – aims, activities and outcomes – based primarily on the expedition report, *A Pannier Full of Porridge*¹¹ (Bassant, Davidson, Fedouloff, Saunders, Sylvester, Sedman, Watters, & Webborn, 2006), written by the students and submitted for completion of the module. Some findings are also gleaned from participant responses to questionnaires (on their perceptions of learning from the whole PGDOE programme) that I emailed to them four months after the expedition and the GDOE programme had finished. Although I was a staff member and did teach these students, I was not involved in the expedition module or its assessment. For the purposes of this paper I aim as much as possible, to allow the reader access to the students' words and images. I have therefore included direct quotations (in Arial font) and selected photos to depict aspects of the journey. These words and images are filtered firstly by the participants' own interpretations of the experience, by what they see as fitting for inclusion in the report and by my own interpretations and selections. I have also made

¹¹ This is the title of the expedition report (see reference)



some observations based on my initial analysis of the expedition report and responses to the questionnaire. Themes highlighted are a combination of those highlighted in the report and themes that I have identified as emerging from the text. Therefore I offer a version of the journey that draws on different 'stories' of the experience.

The Expedition

The expedition is the culmination of the programme, and is framed as a self-sufficient activity where students assess their collective resources and motivations to develop a journey in which they can all participate meaningfully without requiring external expertise. Students meet regularly during the academic year to plan the expedition. This process is loosely guided by a staff member who also evaluates the expedition plan, provides feedback and participates in 4-5 days of the expedition. Fundamentally however, this is a student-led process in which learning relates as much to the planning and negotiation processes as the experience of the expedition itself. Once the expedition is completed the students write a group report which is submitted to complete the module.

Eight students, aged between twenty-three and thirty-six years, were involved in the expedition. Four participants were male and four female. Seven were British (five English, one Irish, one Scottish) and one American. Their previous academic, professional and personal backgrounds varied considerably (thus a common knowledge and skill base cannot be assumed). The rationale for this expedition was:

- to explore northern Scotland using methods of travel that made
- a low impact on the environment, and allowed us to be close to the
- wilder areas of Scotland as well as bring us close to the
- human landscape of the country (Expedition Report, 2006, p. 1).



The students identified their aims as to:

- Encourage experiential learning about the landscapes and people we passed.
- Show to what extent local produce was available during a trip in the area, and whether this was a feasible priority of the trip.
- Bring us closer to the environment by incorporating local issues, history, nature and food producers into the trip as much as possible.
- Establish to what extent 'expeditions' are worthwhile educational trips.
- Be as environmentally sustainable as possible.' (Expedition Report, 2006, p. 1).

To put these aims into practice they decided to travel by bicycle (incorporating a train and ferry where necessary) around the northern Scotland, travelling as far as the Orkney Islands.

Planning and 'doing'

Students undertook different planning roles, taking responsibility for particular needs and aims. One student conducted a CO₂ audit of the whole trip (including human respiration) and calculated how many trees needed to be planted to absorb this amount of carbon dioxide from the atmosphere. After the expedition the students met to plant these trees.

Another student contacted local organic farmers and organised to buy food from them en route. Others organised equipment, campsites, investigated historical sites and cultural events and so on. Distances cycled varied from 20-70 km per day but the emphasis was on being able to enjoy the landscape and take time out to rest, talk to people and take in the experience rather than to cover big distances. A significant feature of the trip was the nature and availability of food. In addition to buying locally produced food, some students took a great interest in harvesting 'wild' food, so considerable time and energy was spent in searching for sea foods such as mussels, crayfish, fish and periwinkles which were available in varying degrees of abundance.

While on the Orkney Isles, the students arranged to visit an organic farm and spent three days building a stone-wall in exchange for food and accommodation. The expedition also happened to coincide with the Orkney Islands Folk Festival so they were able to spend a day or two absorbing the local artistic culture and local beverages! Time was also built in to visit the ancient ruins and standing stones for which the Orkneys are famous.

*Energy Use and CO₂ Emissions*

Often forgotten are the unseen and indirect environmental impacts. These extend from the first expedition meeting ... to the actual expedition. At every step of planning we consumed energy directly through computer use, the lighting and heating of meeting rooms and transport to these meetings. Indirect energy consumption occurred in the manufacture of every piece of equipment used whether paper, pens, computers or phones (Expedition Report, 2006, p. 17).

We do not think that carbon offsetting is the sole answer to the problems of global warming, however until we live in a society

that as a standard produces zero emissions through clean, renewable energy sources, we believe it is better to do something than nothing... expedition allows an ideal opportunity to explore modern day environmental problems highlighting the complexity yet allowing group members to realise that everyday decisions can have a positive impact and even if it is small it genuinely means a lot to those concerned (Expedition Report, 2006, p. 21).

Food and Agriculture

Conscious Omnivory

A personal challenge for the future (Jack¹², Expedition Report, 2006, p. 27).

Wherever possible food was sourced from producers, reducing 'food miles' and the use of local, organic of pesticides, herbicides and manufactured fertilisers...we would have liked to source all our food locally and organically however three weeks on just seafood, meat and dairy products would no doubt have compromised our health and mental sanity... Although this compromised our efforts it was realised as a necessity and when positively reframed we were supporting local businesses (Expedition Report, 2006, p. 18).

Despite his methods being in compliance with organic certification S... is no longer in support of the 'organic' label, since this carries with it the expense of certification, and prefers his greens to be known as 'normal' or 'home grown', highlighting that good food need not be the exception (Expedition Report, 2006, p. 14).

'Wild' food harvesting



The search for wild food is a journey back through time, every single plant and animal that is used for food descended from a wild ancestor... Exploring in this way is an education that taps and nourishes inquisitiveness, a delight in the natural world that we have sensed for millenia ... gathering these fruits of the wild is where the adventure lies. It takes one off the roads into the water up to your knees, around an unknown hill, onto a tidal island, to places with detail and beauty, on a visit to the homes of secretive creatures with their own quirks and complexities (Expedition Report, 2006, p. 16).

Inadvertently our complete lack of success in catching mackerel taught us a simple lesson in the seasonality of food. We wanted to catch fish, but the fish weren't there... the history of Helmsdale's herring industry highlighted our present disconnection from the seasons... there are few examples of transhumance in tune with nature's migrations today. We are unlikely to experience this harmony while our friends, the supermarkets, thrive on providing all our favourite products just where you found them last week... The homogeneity is not just unresponsive to seasonal inspiration, the familiarity may foster lethargy in the consumer. On the other hand, why don't we just embrace the extraordinary array of choice that we now have, and eat what we want, when we want, because we can? (Expedition Report, 2006, p. 15).

Landscape and Cultural History

Everywhere we travelled there were indications of the clearances. The landscape itself shows the effects of centuries of grazing and upon that land many ruins of what were crofting communities. The wild landscape which Scotland is famous for, and has inspired writers and groups like ours to journey through it, may not be as 'wild' and 'natural' as I once thought.

¹² Where individuals have been quoted pseudonyms have been used to maintain their anonymity

Thousands of years of human influence has changed the land, beautiful still, to the treeless and rugged and sparsely populated places we visited...'

(Expedition Report, 2006, p. 23).

Throughout the expedition I have learned a great deal about birds, rocks and plants. For me these pieces of knowledge will always be linked by association to the places where I discovered them for the first time. This link between knowledge and landscape is particularly relevant to me because of my training as a geographer (Bob, Expedition Report, 2006, p. 27).



Community

I found it particularly interesting being the only Scot in the group and much of the time I felt like a tourist in my own country. I guess it gave me a new way of looking at things and a new appreciation of what is special about Scotland. The majority of people we met were surprisingly not from Scotland, leaving their home to live a way of life that once thrived in the Highlands until the clearances. In many ways, it pains me to say they may be just as Scottish as I (Jim, Expedition Report, 2006, p. 29).

C... is an artist and member of a co-operative who own a shop ... where members and community artists sell their wares. This was not the first time we had encountered community owned property during our trip. On our way north we had journeyed through the North Assynt Estate, which covers 21,000 acres and was our first encounter with community ownership of land...other community-focussed farming projects have sprung up all over the Highlands... we were also in touch with 'Food for Thought', a lottery-funded project addressing issues of food and health ... such is the enduring kindness among the people in touch with the land, from whom we received many gifts of food, drink and advice along the journey, we can only hope that these communities thrive for a long time yet (Expedition Report, 2006, p. 15).

Conclusions on Sustainability

The expedition as the active process showed how it took commitment and that many choices which were more environmentally sustainable were harder in a group than as an individual. It also demonstrated that the infrastructure of Western life does not make it easy to be sustainable however it is possible to make choices which have less environmental impact, although you have to be prepared to pay more and have reduced choice (Jill, Questionnaire response, 2006).

Contrary to Geddes' time-honoured maxim, perhaps we should try to 'think local and act global' - since all our actions have the potential to impact on the world, let's focus on realistic, achievable goals that have tangible benefits to our community... (Jack, Expedition Report, 2006, p. 27).

So much of the disconnection with the natural world ... is to do with a disappearing connection with food and its production... a radical *and* long term effort has to be made to prevent food "illiteracy". Indeed the PGDip expedition was largely about food, local sourcing and the waste we produce. It is totally unsustainable for communities to survive in a supermarket-oriented world... a simpler, more frugal existence living in harmony with seasons... resonates very strongly now



...and I have begun to change my modest consumer "power" (Ron, Questionnaire response, 2006).

Outcomes – Sustainability Literacy??

The expedition report offers a glimpse into the expedition and the ways in which it was experienced by the participants at the time. Undoubtedly, with hindsight, participants would tell a somewhat different story. However, based on the evidence at hand, it seems that this expedition did have a significant impact on all members of the group – each individual experiencing it differently, weaving it into their own 'stories' as Gough might suggest. It is difficult at this point to determine the extent to which the expedition contributed to the participants' sustainability literacy but there are some connections between the types of knowledge and skills suggested by the higher education reports mentioned earlier in the paper and the observations made by the students. The significance of this of course depends on the extent to which we accept those particular attributes as being indicative of *sustainability literacy*.

It is not possible to claim any specific connections between notions of sustainability literacy and learning outcomes expressed in the expedition report since any such connections are far too tentative to be meaningful. However I think it is reasonable to make some general observations, based on the report. Clearly participants encountered social, economic and environmental issues (often interrelated) throughout the planning and expedition process. This indicates the potential for at least superficial engagement with these broad dimensions of sustainability as applied to a specific context. There is also evidence that participants drew on knowledge from a range of disciplines to make sense of their encounters with places and people as well as to make ethical decisions and to solve problems (such as the level of CO₂ emissions produced throughout the expedition). This both reflects research findings that call for multi-disciplinary approaches to sustainability education and also to the reality of encounters and situations that call for different ways of understanding and responding.

Evidence from the report suggests that the expedition processes offered the following learning opportunities:

- (i) It created a 'space' for participants' to grapple with the different dimensions of sustainability issues with real, immediate consequences for them personally, as a group and as a member of a broader community. This notion of immediate and tangible consequences reflects one of Higgins' (1996) key arguments for outdoor learning as a medium for sustainability education.
- (ii) It enabled deliberate observation of landscape features (e.g. through food foraging, site visits...) and sensory immersion in the landscape (through cycling, camping, washing...). This holistic engagement enabled a gradual 'uncovering' of its 'stories' as participants interacted with places in various ways. This reinforces Nicol's (2004) argument for the value of sensory immersion in landscapes and perhaps, Gough's (1993) and Stables' (1996) notions of environment as text.
- (iii) It facilitated critical thinking about some previously 'taken for granted' notions (e.g. organic farming as a 'good', food quality and availability, Scottish landscape as 'wilderness', identity and ethnicity...). An important catalyst appears to have been participants' interactions with local people, initiating new conversations and insights relating to ways of being with others and the land. This learning reflects Martin's (2004, 2005) arguments that outdoor education experiences *can* provide powerful contexts for critical reflection on personal and societal values. Participants' emerging understandings of the complexities and



problems associated with 'sustainability' in practice echoes the *sustainability as discourse* approach of Alvarez and Rogers (2006) and emphasises the importance of these encounters with people and non-human beings in their own 'habitats'.

Perhaps some of this learning might have occurred without participating in an expedition of this nature and undoubtedly learning emerging through different contexts and methods, is likely to manifest and develop in different ways. However I suspect that a rich and varied learning experience such as the 'Pannier Full of Porridge' expedition will continue to engender valuable insights and connections that will contribute to participants' learning for some time to come. The relationships, memories, images and ideas engendered through this experience are likely to reverberate in unpredictable ways, rewriting stories and creating new meanings, perhaps in the 'mutually constitutive' way suggested by Gough and Sellers (2004). Research focusing on the relationships between *processes* of learning in 'real life' situations such as these and the kinds of meanings that emerge relating to 'sustainability', may be worthwhile. Having said that it could be argued that, for the participants, this expedition did not reflect 'real life' in that they come mainly from urban environments and lifestyles. While there is not scope to pursue these arguments around 'reality' and relevance here, it may offer another avenue for research.

Pedagogical Questions

Before concluding I would like to make some observations about participant perspectives on their learning processes before, during and after the expedition. While these are not proposed as recipes for teaching to enhance sustainability literacy, this summary is based on observations made by participants in the expedition report, in some instances by more than one person. Participants highlighted the following processes as important influences on their learning:

- Importance of participant planning and decision-making processes
- Direct experience *with* landscapes and communities
- Slow movement and time for contemplation
- Sensory engagement with self & landscape
- Learning from peers and local people
- Food foraging - seasonality, niche habitats, close observation
- Community volunteer work - 'contributing to' rather than 'taking from' the local communities visited

These observations lend support to the findings of the HEA (2006) and ARIES (Tilbury et. al. 2005) that experiential, participatory and holistic methods of learning are important for effective sustainability education. It seems that the detailed planning phase was perhaps just as important as the expedition itself and that learning from peers and other people encountered during the journey was equally significant. Student references to the planning process throughout the report suggest that this process has been a significant part of their 'journey'. It is worth remembering that staff had minimal input into the details, decisions and implementation of the expedition. In the main the process was student led thus allowing for significant decision-making and ownership of the experience. The possibility for this situation is a particular feature of the higher education context. Since the students were adults with a collective breadth and depth of experience and skills, it was possible and probably desirable to provide this degree of autonomy. The opportunity to create and implement a 'self-guided' learning experience such as this is



unlikely (although not impossible)¹³ to be feasible for younger students in schools but could be adapted for specific groups and situations.

While it is possible to glean certain benefits of this 'journey' approach to sustainability pedagogy there are also likely to be several disadvantages or issues around such an approach. One issue, identified in some outdoor education literature, relates to the relevance of journeying in remote places, far from where we live and to which we may never return. Arguments proposed by Brookes (1998) and Stewart (2004) for example, suggest that it is more valuable and respectful to know, intimately, local places or those that will be regularly revisited and which have particular educational significance. This issue also raises social justice questions around access to outdoor experiences and who is able to participate. These are significant issues for educators contemplating the value of remote outdoor journeys for sustainability education goals and I raise these as possibilities for further investigation. The notion of what constitutes a 'journey' for example, might form part of this conversation.

Concluding Remarks

The intention of this paper was to explore possible connections between the notion of sustainability literacy and outdoor pedagogy by focusing on a specific case as an example of such potentials. Given the educational imperative to address issues of sustainability and to develop skills for addressing these issues there is much scope for research into pedagogies that may offer possibilities and alternative perspectives. While creative, interdisciplinary approaches to outdoor education or outdoor learning are not the 'norm' in higher education contexts, such programmes do exist in outdoor education and other discipline areas. There is considerable scope within higher education institutions to develop pedagogies for sustainability literacy through outdoor as well as indoor contexts. It seems to me that, any pedagogy oriented towards developing sustainability literacies might take advantage of a range of learning contexts in order to enrich and extend student experiences and creative learning opportunities. The example of the expedition in the north of Scotland is but one approach to sustainability and outdoor pedagogies that may offer some insights, other possibilities abound.

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¹³ It does occur in schools where students undertake expeditions for the Duke of Edinburgh award for example.



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