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'Out There Gain': An Education for Sustainability Work Integrated Learning case study

Rebecca Patrick and Teresa Capetola; Deakin University

Abstract
Like many educational institutions, Deakin University has recently faced the challenge of meaningfully incorporating environmental sustainability into the curriculum. The university chose the education for sustainability framework, considered one of the more effective ways to educate and empower students around complex issues of sustainability including climate change, consumerism and peak oil. This article discusses the experiences of health students who undertook an education for sustainability work integrated learning project at Deakin University in 2009. The purpose of the study was to demonstrate the value of work integrated learning in building graduate competencies and dispositions for environmental sustainability. Methodologically it describes a participatory action research process involving case study design principles. Participation in the work integrated learning projects assisted students to deepen and integrate their newly developed competencies for practice in the area of environmental sustainability. The study also highlighted themes in the literature about the value of mutually reinforcing pedagogies associated with education for sustainability and work integrated learning, namely experiential learning. The paper contributes to the debate about the benefits and challenges of engagement to building sustainable communities positing intensive, work based experiential learning experiences are valuable for achieving multiple sustainability and educational goals.

Key words:
education for sustainability, work integrated learning, health
Background

The participatory action research (PAR) project discussed in this paper was implemented at a time of heightened awareness of the impacts of climate change on human health and the need for a global shift towards sustainable, low-carbon living. Australia had signed the Kyoto Policy and there was international debate over policy frameworks and the benefits and challenges of particular actions in the lead up to the United Nations Copenhagen Climate Change conference. It was also in the middle of the United Nations Decade of Education for Sustainable Development (2005-2014). The Australian Government had released *Living Sustainably: the Australian Governments National Action Plan for Education for Sustainability* (Commonwealth of Australia, 2009), in which reorienting education systems to sustainability was one of four major objectives outlined. Transformative education approaches, whole-of-institution engagement, innovative teaching and learning and changing the curricula were central to the vision of a sustainable Australia.

Literature in the field emphasized that universities had the potential and capacity to equip students with the competencies required to address urgent environmental issues such as climate change (Cortese, 2008; Saugier, 2009). Authors such as Chase (1998) had identified the need to rethink curricula and assist students to attain skills, knowledge and values for creating a sustainable society. Breyman (1998, p.119) argued that universities should integrate environmental sustainability into their curricular and that "no single discipline has hegemonic purchase on analysis and resolution of environmental problems... multi and interdisciplinary curricula are indispensable if the ecological literacy necessary for construction of sustainable societies is to be achieved". Chase (1998) and Haigh (2005) had highlighted multiple barriers to interdisciplinary approaches and subsequently the building of sustainable communities. They recognised that universities, like
many of society’s organisational structures, are constrained by discipline oriented systems.

At the same time, education for sustainability (EfS) had emerged as the preferred framework to educate and empower students around highly complex issues associated with sustainability. The purpose of EfS was to challenge students to think about how society can change widely held views about social, economic and environmental constructs whilst implementing systemic change within the community, government and industry (Tilbury, Keogh, Leighton, & Kent, 2005). The premise of EfS was that through developing dispositions for lifelong learning and engaging students in systems change, the goal of building sustainable communities could be advanced. There was also shifting emphasis in university curriculum designs toward graduate attributes rather than a degree in a specific field (Harvey, 1999). In Australia, work integrated learning (WIL) – “an umbrella term for a range of approaches and strategies that integrate theory with the practice of work within a purposefully designed curriculum” (Patrick, Peach, Pocknee, Webb, Fletcher, & Pretto, 2008 p.iv) - was being touted as a key curriculum strategy for producing graduates with generic employability skills, such as being confident communicators, critical thinkers, team oriented and problem solvers (Harvey, 1999; Crebert, Bates, Bell, Patrick, & Cargnolini, 2004). Indeed the emergent paradigms of WIL and EfS shared the pedagogical approaches inherent to constructivism including: critical thinking and reflection; life long learning; experiential and participatory action learning (Gazi, 2009). They also resonated with core principles for practice in public health and health promotion, namely community participation in decision-making; equity and access; reciprocity; importance of developing life skills and the value of intersectorial collaboration (World Health Organisation, 1986). The World Health Organisation had released a series of reports outlining the harmful effects of environmental change and ecosystem impairment on human health and the need to link health and environmental agendas
Although the nexus between health and sustainability practice had been identified, the integration of EfS into higher education health curricula had not been widely adopted (Corvalán, Hales, & McMichael, 2005). Masterman-Smith, Sheahan, Dunphy and Harvey (2010, p. 4) in their national study of health care workers and academics found that "the literature on health-related EfS is a small and embryonic sub-field of the broader EfS scholarship that requires substantial development". There was a dearth of empirical research regarding health graduates' experiences of EfS curriculum as well as their perceptions' and attitudes towards incorporating environment sustainability into health practice (Rotstein, 2009).

**EfS curriculum at Deakin University**

In 2008 the authors responded to these challenges and emerging imperatives in health, education and sustainability by facilitating a series of cross-faculty partnerships and EfS capacity building projects. The main curriculum development project was *Explain, Sustain, Remain* (ESR): *Securing the future for a climate change world*. ESR was a pilot interdisciplinary EfS research project designed in collaboration with staff from all of Deakin's faculties and delivered to over 100 undergraduate third-year students during trimester two, 2009. Table 1 highlights the key features of this 6 week curriculum.

<table>
<thead>
<tr>
<th>Week</th>
<th>Activity</th>
<th>Key Activities</th>
<th>Learning Objectives</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>State of the current world situation</td>
<td>Presentations by local and international climate change &amp; sustainability campaigners. Film &amp; dramatic performances on sustainability issues.</td>
<td>Awareness of actions for environmental sustainability at local and global levels; Inspiration and motivation</td>
</tr>
<tr>
<td>2</td>
<td>State of the current world situation</td>
<td>Workshop presentations supported by readings; group work on ‘backcasting’.</td>
<td>Understanding of environmental sustainability concepts &amp; principles.</td>
</tr>
<tr>
<td>3</td>
<td>Connectivity of issues</td>
<td>Film called Story of Stuff; workshop activity on interconnectivity of issues</td>
<td>Thinking &amp; communication within &amp; across different disciplines; Understanding of...</td>
</tr>
</tbody>
</table>
### Table: Interconnection Between Key Environmental Resources

<table>
<thead>
<tr>
<th>Change for Sustainable Futures</th>
<th>Workshop Activities Involving Students Identify and Discuss Their Own Spheres of Influence.</th>
<th>Ability to Transfer the Deakin Generic Competencies to Environmental Challenges; Ethic of Personal Responsibility &amp; Stewardship Towards the Environment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Enabling Change for Sustainable Futures</td>
<td>Personal Responses to an Apocalyptic Future i.e. Nihilism, Fundamentalism or Activism; Discussions &amp; Role Plays.</td>
<td>Ability to Engage With &amp; Understand Differing Worldviews.</td>
</tr>
<tr>
<td>Enabling Change for Sustainable Futures</td>
<td>Group Presentation for Creating Sustainable Futures. 'Meet and Greet' the Employer and Campaigner in a Green Jobs Expo</td>
<td>Ability to Implement Futures Thinking to Environmental Challenges; Understanding of Potential Job Roles</td>
</tr>
</tbody>
</table>

ESR received two Deakin University teaching and learning awards and was pivotal to the university's decision to make "an awareness of environmental issues and the contribution of the field of study to address such issues" (Deakin University, 2010, para. 5) a generic graduate attribute. The ESR pre and post program survey and focus group results demonstrated that the classroom-based curriculum initiated understanding, developed knowledge and promoted awareness amongst participating students of a diverse range of environmental sustainability concepts and issues. The results highlighted an increase in students' level of optimism, motivation, confidence and contribution to environmental sustainability (Nuttman, Patrick, Capetola, Noy, & Freeman, 2009). Despite these outcomes, students felt they needed to do a practical project or undertake work experience if they were to fully develop these new competencies (Nuttman et al., 2009). This need was confirmed by Leicester-Smith (2010) in another post ESR program longitudinal study of health students' attitude and behaviour change toward environmental sustainability issues.

Given these insights about the challenges of engagement for building sustainable communities and the value of classroom based EFS...
curriculum, the authors designed and implemented the 'Out There Gain' (OTG) work integrated learning project. The main aim of this project was to explore the value of WIL in building graduate competencies and dispositions for environmental sustainability. This paper will compare health students' experiences and perceived value of the classroom based ESR with that of the work based OTG project. In doing this, the paper traverses another question within this issue; the benefits and challenges of engagement to building sustainable communities.

Method
The OTG participatory action research project (PAR) was undertaken by a health promotion teaching/research team from Deakin University’s School of Health and Social Development between September 2009 – February 2010. The project was conducted with approval from the Human Research Ethics Committee of Deakin University.

The PAR drew upon qualitative case study research design principles to explore the value of work integrated learning in building health graduate competencies in the domain of education for sustainability. The PAR approach was deemed appropriate for exploring the potential of a WIL curriculum in EFS because “it affirms that experience can be a basis of knowing and that experiential learning can lead to a legitimate form of knowledge that influences practice” (Kolb, 1984, as cited in Baum, McDougall, & Smith, 2004).

Participants and Recruitment
Seven participants - from a list of health students who had voluntarily completed the classroom-based EFS curriculum - were purposefully selected (Patton, 2002). Participants selected represented students who: were completing an undergraduate program in the health faculty; had participated in the pilot ESR curriculum; and were seeking opportunities to develop competencies in environmental sustainability.
Given that the target audience for ESR were third year students, the participants in this study where characteristically preparing for graduation. All of the students were female aged between 19 and 25 years, had majored in health promotion and were enrolled either in a health science or a public health/health promotion degree. The students were known to teaching staff of ESR and had recently undertaken or were about to undertake a 100 hour practicum within a health-related setting. Participants were recruited using personal communications, a research project outline, emailed invitations and an information session. Participants were told that OTG was an extension of the ESR curriculum and entailed a community-based project for environmental sustainability. They were advised that the PAR project would give them the opportunity to: develop their emerging competencies in health and sustainability; network with potential employers; gain work experience; and provide feedback on curriculum design. In accordance with PAR principles, they were given various options including: working individually or in groups; setting up their own project external to the university; or developing a proposal from a pre-existing project from within the university setting. Subsequently, seven of ten possible students agreed to participate and completed the consent. The participants were given a $50 voucher for their participation in the study.

Data Collection

Table 2 provides an overview of the PAR process matched to the data collection and analysis.

Table 2: PAR cycle and data collection techniques

<table>
<thead>
<tr>
<th>Reflective</th>
<th>Conceptualization and resourcing of the OTG initiative and subsequently</th>
<th>Review of findings from ESR</th>
<th>Document analysis</th>
<th>Perspectives changed during ESR program?</th>
</tr>
</thead>
<tbody>
<tr>
<td>Planning the change (Kemmis &amp; McTaggart,</td>
<td></td>
<td>Consultation with</td>
<td>Pre-</td>
<td></td>
</tr>
</tbody>
</table>
In keeping with case study design principles, multiple sources of information were used including interviews, documents and observations (Creswell 1998). Semi-structured interviews were undertaken face-to-face before and after the implementation of the WIL projects. A series of open ended questions (see Table 2) centered on a schedule of topics were used to prompt responses about the participants' experiences, perceptions and knowledge pertaining to the research topics (Patton, 2002). The interviews, of which three were individual interviews and four were group interviews involving two participants, varied in length (20 – 60
minutes). A total of seven recordings were transcribed by a professional transcription service.

Unfortunately, the option of keeping a reflective journal was not taken up by the participants as it was deemed too time-intensive. Instead, the students provided drafts of proposals and correspondence, project reports and organisational documents. These documents augmented the data pool and formed the basis of an analysis of what Denzin and Lincoln (2005, p.25) calls “artefacts, documents and cultural records”. The purpose of collecting these texts was to: develop a description of each project; cross check what the documents reveal about the competencies students were using; and identify any issues pertinent to the WIL process of learning.

Consistent with PAR and qualitative case study methods, an ongoing dialogue between the researchers and participants was developed using email, telephone and face-to-face contact. This was enabled by the researchers being content supervisors to the participants in the implementation of their projects. Evidently this close contact with participants also meant that observation was occurring, however, owing to ethical constraints this has not been included as a supplementary data source.

In order to organise the information, the data was constructed into four cases (corresponding with the four student projects that were bounded by time and place (Creswell, 1998)) within the main OTG case study. Table 3 provides a summary of each case highlighting the data sources used vs. the project setting vs. participant educational background.

Table 3: Case profiles

<table>
<thead>
<tr>
<th>Participants</th>
<th>Interviews</th>
<th>Pre &amp; post</th>
<th>Pre &amp; non-recorded post communications</th>
<th>Group pre &amp; post</th>
<th>Group pre &amp; post</th>
</tr>
</thead>
<tbody>
<tr>
<td>Autumn 2011</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td></td>
</tr>
<tr>
<td>Setting for project</td>
<td>Environmental organisation</td>
<td>Business within the University</td>
<td>School within the University</td>
<td>Community arts &amp; sustainability organisation</td>
<td></td>
</tr>
<tr>
<td>Relevant Previous studies</td>
<td>ESR, health sciences (major in health promotion)</td>
<td>ESR, public health / health promotion degree</td>
<td>ESR, public health / health promotion degree</td>
<td>ESR, health sciences/arts degree (major health promotion)</td>
<td></td>
</tr>
<tr>
<td>Project length</td>
<td>100 *</td>
<td>50*</td>
<td>100</td>
<td>80</td>
<td></td>
</tr>
</tbody>
</table>

* 1 student in each of these cases opted to use the placement for academic credit in their 3rd year health practicum unit

**Data Analysis & Representation**

Data analysis and representation drew upon the procedures of case studies and involved a manual process of grouping and then reading through texts, highlighting key words and themes as well as making margin notes. The analysis technique reflected Stake's (1995) system for data analysis and representation – description, analysis and interpretation (assertions). The descriptive stage involved developing a chronological profile of the work of each group (i.e. four cases within the main case), their settings and their programs and practices. The analysis stage highlighted specific themes within a case i.e. defining themes of a case and between cases i.e. similarities and differences between cases. The purpose was to conduct a holistic analysis by finding patterned regularities from the various data sources (Yin, 2009). The final step taken was to interpret the core themes by asking the question 'what is to be made of this?' for EIS.
Results

*ESR classroom vs. OTG placements*

The following table (Table 4) highlights the students' perspectives on the relative value of the classroom based *ESR* and the work integrated learning *OTG*.

Table 4: Key themes for the relative value of ESR and OTG

<table>
<thead>
<tr>
<th>ESF theme</th>
<th>Opinions</th>
<th>Reflections</th>
<th>Impact</th>
</tr>
</thead>
<tbody>
<tr>
<td>Consciousness raising of key environmental sustainability issues.</td>
<td>'raises your awareness of being environmentally sustainable' (C3p2). Though 'skimmed the surface' (C3p2)</td>
<td>Broadening of perspective.</td>
<td>'It's just giving me a different perspective [on working effectively with communities] (C3p2)</td>
</tr>
<tr>
<td>Increasing interest in 'ES' on a personal level i.e. ethic of personal responsibility</td>
<td>'Everyone needs to adapt this as a way of life' (C2p2)</td>
<td>Reinforcing personal and professional relevance</td>
<td>'I can now recognize that is so relevant within our life just from being around that sort of people' (C3p2)</td>
</tr>
<tr>
<td>Increasing interest in integrating 'ES' principles into future professional roles i.e intention to act</td>
<td>'I might apply it more to my work ethics and the way I do things' (C2p1). 'It made me see how I could try and</td>
<td>Developing confidence to act in future professional roles</td>
<td>'My confidence, I could use these skills to implement something in a workplace in the future' (C3p2)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Increasing knowledge</th>
<th>Incorporate principles into any job or career path' (C1)</th>
<th>Increasing understanding of connectivity of issues</th>
<th>In talking about the links...'I am more aware of recycling and food and water and things like that' (C1)</th>
<th>'I now see how they are very interconnected (C3p1)</th>
</tr>
</thead>
</table>
| Affirming attitudes/values | 'Sort of validates some of your own thoughts and feelings on issues' (C1) | Increasing understanding of the link between environmental sustainability and health. | 'I am interested in using creative methods and using it in the communication of issues in general' (C4p2) | 'I can see the benefit of working in an organization like that, with my sort of skills or my skills form my degree (c1) 'Build my confidence to use...'

*Autumn 2011*
<table>
<thead>
<tr>
<th>Competency</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>time or knowledgeable enough or able to articulate myself to argue (C1)</td>
<td>Building generic competencies 'I really liked the interdisciplinary approach...Our group conversations were amazing' (C4 p1)</td>
</tr>
<tr>
<td>these competencies to implement something (C3p1)</td>
<td>Building generic competencies 'Networking definitely' (C4p2), 'negotiation' 'research skills', 'analysis', 'communication' 'presentations' 'Report writing (C3p1,2)'</td>
</tr>
<tr>
<td>different way (C3p2)</td>
<td></td>
</tr>
</tbody>
</table>

Case 3 pre and post interviews highlighted some of the key comparative themes about the value of the class-room based ESR and the WIL model of OTG. These students felt that the ESR changed their perspective on their role in addressing environmental sustainability and provided them with fundamental knowledge in this area.

Prior to undertaking the ESR module I didn’t really think about it [climate change & sustainability] but I knew that it was important and that it was happening so it really just opened my eyes to the reality...to having an appreciation and understanding and trying to do my bit (C3p1).

Through the OTG, they developed their understanding of the link between health and environmental sustainability. The impacts for them
were “it’s broadened my view” (C3p2). They felt that the benefits lay with:

increasing my skills and being able to put what we have learnt into practice... I could use these skills to implement something in a workplace in the future (C3p2).

Case 1 student stated:

The combination of the ESR and OTG experiences created a shift on how environmental sustainability and health issues were conceptualized; i.e. instead of seeing them as two separate fields with synergies, to viewing them as more or less one and the same.

There was some level of disagreement between individuals and cases. Case 1 emphasized that learning was consolidated in the WIL project, whereas cases 3 and 4 felt that they learnt new skills in the WIL project. On the other hand there was agreement that the size of the placement was adequate for meeting their goals of: “networking” (C4), “making relationships” (C4), “developing my resume” (C3), “getting practical experience that is transferable to anything” (C3) and “making a contribution” (C1).

**Sense of Empowerment**

Another theme was a sense of empowerment and confidence born from: leading and owning a project; being valued for bringing a new or different perspective; and being valued for a set of new competencies to a program.

Working in an environmental organisation, case 1 stated “I thought these people actually listen to me and they asked my opinion on a couple of things” (C1).

Working in the university business setting:

It gives you more confidence to do things again. It gives you the confidence to go out and say “oh yes, well this business here we
helped turn green" and then maybe someone will listen to you instead of saying "when I studied this" and it's not exactly relevant (C2p1).

Working in an academic department:

It's been a good thing having to apply our health knowledge in an area that we wouldn't have normally... And even though it has only been a short time, we still feel that the relationship worked and they respect us [for the work we did] (C3p1).

Career aspirations and dispositions

The placements influenced their career aspirations and intentions to incorporate sustainability principles into their practice in different ways. The student in case 1 moved from not looking for a job in this area to seeking opportunities in the environmental sector. The student who led the project in case study 2 after completing her placement organised a conservation volunteering opportunity abroad. In case 3 both students spoke of their intention to integrate the principles inherent to environmental sustainability in their future health promotion roles. The two students in case 4 found the placement experience to be affirming that they would like to, if not now but in the future, find work at the nexus of health, creative arts and sustainability. Case 1 pre and post program comments highlight this shift:

I wouldn't say that I'd specifically go out looking for a job that was completely to do with environmental sustainability... I don't really know yet [if this is the area I want to work in]. I suppose I will know more when I start.

In the post program interview (C1) said, "I think it has confirmed that I definitely could work in the environmental sector... I wouldn't hesitate".

OTG experience and generic competencies.

The ways in which the students were approaching their placement work and how they spoke about their experience of both programs was
indicative of: critical thinking and reflection; active engagement with different perspectives and working collaboratively; and creative thinking and problem solving for complex, inter-related problems.

The students’ ability for critical thinking and reflection was highlighted in the study. For instance, the student in case 1 commented about the organisation “they were quite focused on behaviour change” (C1) and were lacking in the area “evaluation” (C1) and that they could learn from “health promotion capacity building” (C1). The students in case study 4 in reflecting upon the similarities for practice in health and environmental sustainability pointed out “A part of it is linking services to each other rather than having to create a whole new one” (C4p1). Another point of critical reflection about the education process itself was by (C4p2) who stated: “the theory from our course has helped us to relate to the action and the action has helped solidify our theory”.

Engagement through an interdisciplinary experience

The interdisciplinary experience – which resonates with point 2 in the section above - was highly valued by the students. In the pre program interviews (C2p1) stated: “I liked working with people from other disciplines” and (C3p1) said, “having a cross campus discussion with other students that I’d never had the opportunity to meet before and hearing their views coming from a non-health promotion background”. (C4p2) in the post-program interview stated, “just different backgrounds and seeing it from a different perspective in a different setting...and look at a business stand point as well.”

In reporting back about their OTG experience these students highlighted the development of interdisciplinary skills for communication. They talked about the initial discomfort and difficulty associated with trying to transfer their health knowledge to benefit the organisation and the processes that led them to finding a common language.
It was quite hard for us to verbalize and inter relate how our knowledge could be useful to them. I think because we come from different backgrounds... However, we used a lot of basic theory to communicate how the organization was health promoting...a lot of stuff they do is actually applying health promotion theory without them realizing it, so it was interesting for us to back track (C4p1).

**Discussion**

The discussion centralises around those themes the authors deemed would make a useful and timely contribution to the development of EFS curriculum. Despite the relatively small size of the project the paper concludes with recommendations for embedding WIL into EFS curriculum.

**Benefits of WIL in Higher Education**

What the students valued and gained from the OTG project was consistent with the literature on the benefits of WIL. The sense of empowerment that students experienced in their project resonated with Rickard (2002) who asserts that placements contribute to personal development and help graduates in their understanding of work roles. The study demonstrated that generic and discipline specific skills (i.e. in this case health promotion needs assessment and program evaluation (AHPA, 2009)) relevant to professional practice were learnt and enhanced through the placement (Gibson, Brodie, Sharpe, Wong, Deane & Fraser, ND). The OTG experience increased the students' commitment and motivation and assisted the students to clarify career directions (Rickards, 2002; Patrick et al., 2009).
**Benefits of WIL in EfS**

Student feedback suggested that their learning about environment sustainability was enhanced and deepened by the placement. The classroom ESR was useful for developing at a surface level their knowledge of key concepts and theory, whereas the placement developed their skills and knowledge at a deeper level. This is consistent with literature on WIL and EfS. Patrick et al. (2009, p.31) believe “WIL helps students to engage more deeply as they create meaning from content knowledge in an applied professional environment”. In the literature on EfS, student-centred learning approaches such as learning through community problem solving are valued. Fein (2003, p.12) asserts “such approaches encourage authentic or ‘deep learning’ rather than the ‘shallow learning’ of rote recall and memorisation”. Fein (2003, p.12) argues that authentic learning experiences also “create enthusiasm, insight and reflection as well as compassion, energy and commitment to working individually and with others to build a sustainable future”. All of these were identified in the interview responses after the implementation of the OTG and are necessary for practising in the area of sustainability.

**Benefits of WIL for integrating new competencies**

The students' were able to integrate their knowledge from their major studies in health and/or the arts with new knowledge about environment sustainability. The WIL experience provided a platform to adapt and transfer their learnt knowledge from one context to another. This is important in the context of graduate employability, given that employers want graduates to be adaptive in transferring knowledge, whether that is university knowledge or knowledge gained from voluntary work experience (Moreland, 2005). The need for graduates who can adapt, integrate and transfer knowledge is also a core principle within EfS and is known as lifelong learning. According to Hill (2000) nothing is learnt finitely and, due to evolving information in the area of...
sustainability, there is a need for individuals to renew and reconstruct knowledge, values and behaviours. The results of this study highlighted that students were developing a disposition and competencies associated with lifelong learning.

**Benefits of experiential learning in EfS**

Both the ESR and OTG emphasised learning by doing and critical reflection as a means of developing students' competencies and dispositions in the domain of EfS. Figure 1 illustrates the range of experiential learning activities used in both programs. The right hand side of the figure highlights the more intensive experiential learning experiences associated with the OTG project.

![Sample spectrum of experiential learning activities used in ESR and OTG curriculum](adapted from Domask, 2007, p.55)

The results of the OTG and the two ESR related studies by Nuttman et al. (2009) and Leicester-Smith (2010) indicated that the experiential learning activities provided the students with the opportunity to enrich and learn generic skills relevant to professional practice. These include interpersonal and communication skills, teamwork skills, research skills, project design and working to a
They also developed skills that are valued by employers in the area of sustainability including an ability to “act in an ethical manner, demonstrating political, social and cultural awareness” (De Lange, 2002, cited in Coll et al., p.175). The study demonstrated that the students had developed their capacity for lifelong learning and the professional skill of critical reflection. The presence of these skills can in part be explained by the student’s exposure to a range of experiential learning techniques.

The health students’ ability for critical reflection, evident in their emergent ability to integrate the EFIS concepts with disciplinary knowledge, was enhanced in their work placement. These findings are consistent with Domask (2007, p. 65) who posits a multidimensional experiential learning approaches in sustainability studies “can provide profoundly more enriching experiences than the purely lectured based approach”. The findings also resonate with a study of MBA students’ EFIS work-based program by Rowe and Wehrmeyer (2010, p.145) who found that “students action learning in the workplace is a teaching pedagogy that enhances critical thinking”.

**Achieving multiple EFIS educational goals**

The intensive experiential approach facilitated the achievement of other inter-related education goals, including: connecting the academic with practice; fostering an interdisciplinary curriculum; linking students to work experience and job opportunities; and engaging and empowering students (Domask, 2007). The WIL projects in the OTG provided a unique experience for both the health academics and students to engage with sustainability experts. Through the process of supervision and project implementation, the “academic literature truly came to life” (Domask, 2007, p. 61). In relation to Domask’s (2007) second point, both the ESR and OTG initiatives highlighted that issues of environment sustainability are complex and hence require interdisciplinary solutions (Eisen & Bartlett, 2006). The work placement provided the health
students with an intensive interdisciplinary EfS experience that they would not normally experience in their undergraduate degree. Their experiences resonated with Wals and Jickling (2002, as cited in Domask, 2007 p.62) who found “being in such a situation can certainly be unsettling, but ultimately the rewards of bringing to light other dimensions and other disciplines pertinent to the problem or issue at hand far outweigh the risks”. Consistent with Domask’s (2007) third goal, the OTG project successfully linked graduating health students with work experience as well as new job opportunities. The students testified to the fact that the placement had shown them diverse job pathways and provided them with something extra to put on their resume. This resonates with literature on graduate employability and Deakin University’s stated obligations for preparing job ready graduates (Deakin University, 2010). Finally, the study findings also resonated with Domask’s (2007, p.63) final point that “the most profound impact that these types of learning experiences have is that of engaging and empowering students”. The students ascribed their sense of empowerment to the fact that they were: encouraged to actively participate in decision-making; valued for their skills and dispositions; and able to work collaboratively in a non-health setting. Again this confirmed the benefits of an approach to EfS that draws on experiential learning approaches from within the class-room through to more intensive transformative experiences in work placements.

**Mutually reinforcing education and research strategies**

Alternative explanations for the study findings can be found in the use of the mutually reinforcing educational and research paradigms, namely social sciences, health promotion and PAR. For instance, all of the students in this study were oriented towards occupations in social services, arts and communications. Kolb (1999) has found that these professions comprise of people who are primarily ‘diverging’ in their learning style. The diverging style’s dominant learning abilities are
'concrete experience' and 'reflective observation' and perform well in situations that call for generation of ideas and team work. They appreciate personalised feedback and are characteristically imaginative, open minded and interested in people and culture. These dispositions may in part explain why these seven students responded positively to the OTG experience. Further, health promotion as a discipline and distinct area of public health education recognises the interdependent relationship between people and the environment (WHO 1986). Health promotion graduates are typically prepared for practice with a value base in social justice and community engagement as well as competencies in inter-sectorial collaboration. It may be surmised that the values and competency base that these students possessed enhanced their experience of the curriculum. The fact that a PAR approach was used may also explain the sense of empowerment and overall satisfaction with the WIL experience. By its very nature PAR is engaging, empowering and experimental and entails a collective and reflective approach to enacting change (Baum et al., 2006).

Limitations of the study
An inherent limitation of this study design was that external supervisor perspectives were not formally documented in this project. Formal data from the stakeholders in the two external organisations and the owner of the business in case 2 may have assisted the researchers to consider additional themes. An inquiry of this nature may also have confirmed the notion that the OTG programme generates a similar effect, i.e. the development of lifelong learning skills and dispositions for sustainability, amongst external stakeholders. However, given that the authors had already conducted a cross sector, community stakeholder study on competencies required for action on climate change (Patrick et al., 2008), it was deemed more important to focus on student perspectives and engagement issues. The group interviews may have
limited the scope of feedback given that some participants seemed to conform to the views of the others in the interviews. The fact that the students had graduated by the time the authors were able to prepare the manuscript meant that 'member checking' was limited to one participant. The inherent ethics, time and funding constraints of the project also meant that potentially valuable techniques such as 'participation observation' could not be implemented. In future iterations of PAR projects these techniques would be included along with the perspectives of external stakeholders.

**Conclusion**

This case study suggests that the WIL projects assisted the health students to deepen and integrate their newly developed competencies for practice in the area of environmental sustainability. Together the classroom-based ESR and OTG experiential learning also helped them to build graduate skills and dispositions for practice that enables the development of sustainable communities. The authors found that intensive experiential learning approaches were useful for engaging academics, students and key stakeholders in developing interdisciplinary approaches to EfS. In terms of the research design, the PAR process was a mutually reinforcing and empowering strategy which was in keeping with the tenets of EfS and health promotion. The findings were consistent with emerging literature on the value of experiential learning techniques within EfS curriculum and the benefits of experiential approaches in overcoming broader barriers to building sustainable communities. By engaging students at this level and facilitating dispositions for lifelong learning necessary for action on environmental concerns, the programme was contributing to the goal of building sustainable communities. The take home message for the authors, in their ongoing effort to rethink the educational and institutional paradigms at Deakin University, was that WIL should be an inherent feature of EfS curriculum and a vehicle for broader university -
community engagement strategies directed at building healthy and sustainable futures.

References


students/handbooks/2011/introduction/attributes-deakin-graduate.php


Haigh, M. (2005). 'Greening the University Curriculum: Appraising an International Movement', *Journal of Geography in Higher Education,* 29 (1) 31-4


Retrieved from
http://www.who.int/globalchange/environment/en/
Health Promotion*, First International Conference on Health
Promotion, Ottawa, Canada, WHO, Geneva.