

**Sustainability in Higher Education:  
Managing the Contradiction  
with Transition Edinburgh University**

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## **Abstract**

This dissertation explores ways of embedding institutional change for sustainability in Higher Education Institutions (HEIs) using organisational learning (OL) as a theoretical framework. The literature review establishes that aspects of OL can be useful to initiatives working to embed institutional change for sustainability in HEIs. Action research (AR) is used as a methodological approach guiding my work as a project assistant with Transition Edinburgh University (TEU) working to embed the Carbon Conversations course at the University of Edinburgh. The AR process shows that time and participation were significant barriers to the ability of TEU to embed Carbon Conversations. The development of the Engagement Team (ET) through the AR process helped address these barriers. Themes emerging from the AR process show that working for sustainability in HEIs can mean managing contradictions at individual, organisational, and institutional levels. Managing these contradictions became more viable with expanded and meaningful participation of multiple stakeholders in TEU. The data suggest that with adequate time and resources built into the structure of sustainability initiatives, the likelihood of adequate participation increases, which in turn can positively affect the likelihood of sustainability initiatives becoming embedded in HEIs.

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**Acronyms:**

AR: Action Research

ET: Engagement Team

EUSA: Edinburgh University Student Association

CCF: Climate Challenge Fund

HEIs: Higher Education Institutions

OL: Organisational Learning

TEU: Transition Edinburgh University

## **1. Introduction: Rationale, aims, and scope**

Working as a community organiser in Michigan I became concerned with the prevalence of individualized solutions offered to solve collectively created environmental problems. While pursuing an MSc in Outdoor Environmental and Sustainability Education at the University of Edinburgh, I came across sociologists who share this concern. In his 2007 book *Shopping Our Way to Safety: How We Changed from Protecting the Environment to Protecting Ourselves*, sociologist Andrew Szasz coins the term 'inverted quarantine' to refer to the plethora of individual consumer solutions intended to build a personal commodity bubble for ones' body. Like a conventional quarantine, the goal of inverted quarantine is to provide protection from disease. Unlike traditional quarantine, which confines the threats from disease to a specific area, inverted quarantine sees threats everywhere. Therefore, the objective of inverted quarantine is to build small safe zones within the larger landscape afflicted with industrial pollution (Szasz, 2007). Szasz's critique of consumer responses to collective environmental problems raises questions relating to inequality, sustainability, and consumer culture. He argues that an individualized approach to collective problems reduces the urgency the public feels about environmental issues, and therefore reduces government action (Szasz 2007). Individual focus denies the ecological reality of complexity and interdependence. Equating spending habits and personal choices with empowering civic action reduces the likelihood of structural reform and state regulation of production processes that are the fundamental source of environmental pollution. Political anaesthesia becomes the most insidious consequence of inverted quarantine (Szasz 2007).

Agricultural scholar Julie Guthman draws conclusions similar to Szasz's when she criticizes the recent trend in the Slow Food movement to advocate for a focus on what people eat and how to connect with local growers. Guthman (2007) states,

Thus, while I grant that I take my personal eating choices seriously, I see them more as a way to opt out, than a road to change. In other words, I don't harbour the fantasy that individualized, yuppified, organic, slow food consumption choices are the vehicles to move towards a more just and ecological way of producing and consuming food. To the contrary, I think that structures of inequality must necessarily be addressed so that others may eat well (Guthman, 2007 p. 263).

Guthman warns of an encroaching "neo-liberal anti-politics that devolves regulatory responsibility to the consumer via their dietary choices" (Guthman, 2007 p. 264). This warning echoes my own frustrations with many environmental campaigns and approaches to environmental education,

and it helps to introduce my research. I agree with Guthman and Szasz. I see a need for environmental educators to connect individual change with collective effort. Individual actions marketed as solutions to collectively-created environmental problems are ineffective and disempowering. However, effectively engaging in collective solutions is difficult. Consumer responses to environmental problems have proliferated in part because social change is a contentious undertaking, whereas telling someone to spend their money on a trendy reusable shopping bag strikes a comfortable, harmonic chord with consumer culture.

Data have been collected and analysed for decades with the intent of justifying sustainable economic and social systems yet we continue to support unsustainable institutions (Diamond, 2005; McNeill, 2000). I agree with Szasz and Guthman that this is because public attention has been drawn away from the structural causes and collective solutions required to address pressing environmental concerns. For my research I will narrow my exploration of this phenomenon. It's not within the scope of this endeavour to offer an in-depth discussion of contending concepts of sustainability or fully expound upon the myriad of underlying reasons as to why it's difficult to implement social change. Instead, I am using my research to find out what *can* be done to embed sustainability initiatives on a manageable scale from within my own experience. My focus is not on individual behaviour change for sustainability; instead it's on institutional change for sustainability with the intent of drawing attention to structural approaches to collective problems.

My research is guided by principles of systems thinking, in which political and economic structures are seen as responsible for the perpetuation of social arrangements. According to systems thinking, if change is desired, (and it is if we are to move towards more sustainable systems), we must recognise political and economic structures and to transform them in conjunction with changing individuals' world views (Flood, 2010). I will show through my literature review that establishing conditions for continued organisational learning (OL), a framework which is theoretically linked to systems thinking, can be helpful to efforts to embed successful institutional change.

My research delves into the process of making institutional changes for sustainability, using an OL framework. To conduct my research on a scale appropriate to an MSc dissertation and to ground my research in my own experience, I have focused on sustainability in Higher Education Institutions (HEIs) through the Transition Edinburgh University (TEU) project at the University of Edinburgh. I have focused my research further by examining TEU's work to embed their Carbon Conversations programme within the structures of the University of Edinburgh. Action research (AR) is employed as a methodology appropriate to both my role as a TEU project assistant and OL as a theoretical framework. I will then discuss the implications of my findings for the field of sustainability within HEIs. As my introductory

references to Szasz and Guthman imply, I posit that collectively working to embed institutional change is necessary to the process of creating more sustainable human systems.

### 1.1 An introduction to TEU

TEU is a staff and student initiative that has received £339,000 from the Scottish Government's Climate Challenge Fund (CCF) to facilitate carbon reduction projects at the University of Edinburgh. TEU is organised around four main aims: to investigate carbon emissions at the University of Edinburgh and record achievements in reducing them, to raise awareness with the 37,000 staff and students on climate change and peak oil, to take action to cut carbon and 're-localise' the University community, and to build and transfer a set of tools to support other Transition groups (TEU Handprints and Footprints, 2009).

TEU received funding from the CCF to compile a carbon calculation study of the University of Edinburgh in summer 2009. The study gave staff and students a picture of where individual carbon emissions come from, and added to data on the carbon footprint of the whole University of Edinburgh. This pilot study estimated that individuals at the University of Edinburgh are responsible for lifestyle emissions equivalent to 8.3 tonnes of CO<sub>2</sub> (TEU Handprints and Footprints, 2009).

The data justified the second funding bid that TEU submitted to the CCF. Because 85% of the University of Edinburgh's carbon footprint is attributed to the lifestyle emissions from the homes, travel habits, consumer products, and leisure activities of staff and students, TEU designed AR projects and peer-learning programmes to cut 10% of these lifestyle emissions in 2010. A 10% reduction in these emissions amounts to a cut in carbon emissions of 4,000 tonnes of CO<sub>2</sub>. TEU's project proposal was funded to fulfil its aims during a sixteen month period between December of 2009 and March of 2010 (TEU 2009).

TEU uses the Transition movement's approach to building communities to take action in response to Climate Change and Peak Oil. The Transition movement originated in 2005 in Kinsale, Ireland and encourages energy descent plans to help communities overcome the challenges posed by Climate Change and Peak Oil. Each Transition community finds their own solutions to obstacles; however, underlying principles guide the movement. These include positive visioning that is clearly expressed; inclusion and openness; resilience—referring to the capacity of businesses and communities to deal with political and economic shocks associated with Climate Change and Peak Oil; the call for a paradigm shift—understanding that the challenges we face are not the result of a mistake in our technology, but a direct result of our world view and belief system; and a systems approach to address more than singular failures (Transition Network, 2010). TEU has adopted these organising principles to the University of Edinburgh (TEU Funding Bid, 2009).

### 1.2 Introduction to Carbon Conversations

TEU will enrol 300 individuals in 30 Carbon Conversations groups of around 10 members each, resulting in estimated carbon savings of 300 tonnes (TEU Funding Bid, 2009). Carbon Conversations is a peer-learning course developed by psychotherapist Rosemary Randall from Cambridge University. It consists of a series of six meetings in which participants address Climate Change by focusing on values, emotions, lifestyle, and identity. It has been effective, with 360 people reporting an immediate one tonne savings in carbon emissions following the course, with plans to reduce emissions by up to 50% over a two to five year period (Clark, The Guardian, 2009). Carbon Conversations takes the approach that sustainability has to be experienced at an affective level and not just an intellectual level. The course helps participants work through the emotional and psychological aspects of changing to a low-carbon lifestyle.

### 1.3 Research Questions

Now that a rationale for my research has been established, and I have given a summary of TEU Carbon Conversations, I will introduce my research questions:

- How does OL relate to embedding sustainability in HEIs? This question will be answered in my literature review.
- Do the structures of Carbon Conversations and TEU share characteristics with double-loop learning and second order change that OL literature suggests will help embed sustainability programmes in HEIs?
- Given the relationship between OL and embedding sustainability in HEIs, what impact will Carbon Conversations have in its efforts to embed sustainability at the University of Edinburgh?
- What are the implications of my findings for embedding sustainability initiatives in HEIs?

I will now move on to my literature review, with the intent of justifying my use of OL as a framework through which to evaluate successful institutional change for sustainability in HEIs.

## **2. Literature Review**

### 2.1 The role of HEIs and sustainability: An overview

In the literature review I will establish a link between OL and sustainability in HEIs. First it's necessary to discuss the role of HEIs in society and give an overview of sustainability initiatives in HEIs. I will be using the terms HEIs and universities interchangeably. HEIs occupy an important position in society by shaping the next generation of leaders and decision-makers. HEIs are recognised as critical to working towards a more sustainable society (Lemons 1995; DFE, 1996). HEIs are as diverse and multi-faceted as society itself. The roles that universities play are broadly defined by the needs they fulfil. Some people define these needs as acquiring or teaching marketable skills which will be in demand upon graduation. Others see the purpose of HEIs as impossible to prescribe—instead it's an open-ended process that cultivates critical thinking with no ulterior motive (Gough and Scott 2007). Universities can be looked upon by society as institutions designed to seek knowledge and truth, and apply that knowledge and truth to the complex problems of society (Brubacher, 1977). Given the social status of universities, and the pivotal leadership role that they can play in shaping and reflecting societal norms, HEIs have been criticized for failing to adequately incorporate sustainability across the curriculum and within day to day operations (Bowers, 2001; Clugston 1999). Universities are major consumers of resources, they own large tracts of land, have vast real estate holdings, and are often the mainstays of local economies.

Although HEIs aren't seen as having the same environmental impact as major polluting industries, their environmental impact can still be far reaching given that they are responsible for educating the next generation of decision makers. Some have argued that the most significant environmental impact of HEIs is the current production of environmentally illiterate graduates (Walton 1997; Jucker 2002). David Orr (1992) chastised institutions of HEIs by pointing out that environmental degradation is not the work of ignorant people, "rather, it's largely the work of people with BA's, B.Sc.'s, LLB's, MBS's, and PhD's" (Orr, 1992, p. 7). Expanding his criticism to the operations and facilities of HEIs, Orr goes on to point out the hidden curriculum entrenched in university structures often justifies unsustainable behaviour. According to Orr (2004), "The curriculum embedded in any building instructs as fully and as powerfully as the courses taught in it." (p. 42). He continues,

If a building uses energy wastefully, the building tells its users that energy is cheap and abundant and can be squandered with no thought of the morrow...The lesson learned is mindlessness. The building teaches that disconnectedness is normal. Try as one might to teach

that we are implicated in the larger enterprise of life, standard architectural design conveys lessons to the contrary (Orr, 2004 p. 42).

## 2.2 International declarations and sustainability in HEIs

HEIs reflect societal values and can be a part of changing them. Therefore, HEIs reflect some of the barriers to sustainability and provide examples of how to overcome them. It's not surprising then, that the path to sustainability in HEIs has been a slow one. Sustainability declarations in HEIs were developed during the 1970s. In 1972, the Stockholm Declaration designed 24 principles of sustainability. Education was included in principle 19, with the justification that an educated population is necessary for the environmental protection (UNEP, 1972). The Tblisi Declaration followed, and it called upon colleges and universities to integrate environmental concerns within the framework of HEIs (UNESCO-UNEP, 1977). It served as a model for subsequent declarations by asking universities to develop environmental curricula, provide training, engage staff in environmental awareness, and educate the public regarding environmental issues. The Rio Declaration also addresses the importance of sustainability in HEIs. It identifies a worldwide lack of environmental literacy, and supports plans to promote research and teaching approaches for sustainable development (Rio Declaration on the Environment and Development 1992).

During the 1990s, declarations regarding sustainability in HEIs began to be drafted by HEIs, as opposed to international organisations and NGOs. The following table is drawn from Wright (2004). It enumerates the more prominent declarations, and lists some of the common principles of sustainability:

Declaration	Moral Obligation	Public Outreach	Sustainable Physical Operations	Ecological Literacy	Develop Interdisciplinary Curriculum	Encourage Sustainable Research	Partnership with NGO's, government, and Industry.	Interuniversity Cooperation
Tblisi	x	X		X		X	X	
Talloires	x	X	X	X	X	X	X	X
Halifax	x	X		X			X	X
Kyoto	X	X		X		X	X	X
Swansea	X	X	X	X		X		X
CRE- COPERNICUS	x	x		x		X	x	
Thessaloniki	x	X		x	X		x	
Luneburg	x	x				x	x	x

Table I: Principles in HEI sustainability declarations. Drawn from Wright, T. (2004). The evolution of sustainability declarations in HEIs, in Cocoran, P. & Wals, A.E.J., (eds) (2004). *HEIs and the challenge of sustainability: Problematics, promise, and practice*. The Netherlands, Kluwer Academic Publishers.

There are two themes common to these declarations. The first is the moral obligation that HEIs have to become more sustainable institutions. The second is the need for public outreach activities. It's interesting to note that only two declarations, Talloires and Swansea, identify sustainable physical operations as a priority (Wright 2004). However, reviews of the implementation of these declarations show that they do not encourage sustainability in HEIs. The Toyne report shows that the Talloires declaration had little influence in the U.K. (Ali-Khan 1996). Walton found that environmental policy statements are not sufficient proof of environmental commitment for institutions that have signed the Talloires Declaration or the European COPERNICUS charter (Walton et al, 1997). The environmental response of HEIs depends on the frameworks within which staff and students operate. Without institutional frameworks that provide guidance and support—and most importantly, justify the allocation of resources—then environmental initiatives work on a small scale for a temporary length of time. Sustainability initiatives will fail if individual actions are not embedded into institutional strategy, policy, or management (Walton et. Al 2000). As Walton (1997) found,

Changing university culture is a complex undertaking that often pits tradition against trends: a struggle that can lead to polarization, retrenchment, and discontinuity. Implementation of recommendations cannot be assumed to be taking place automatically or smoothly, particularly

given that HEIs are struggling with enormous funding pressures as well as the explosion of information technology, restructuring, widening of access, and other issues (p. 202).

### 2.3 The call for a paradigm shift in HEIs

As the literature shows, signing internationally and nationally recognised sustainability declarations does not have a practical impact on sustainability in HEIs. Given that these formal policy statements have not changed institutional behaviour, what *are* the factors that create institutional change for sustainability in HEIs? How do we move beyond the small scale environmental initiatives that work for a temporary period of time?

Sterling argues that working towards sustainability in HEIs requires a change in the fundamental epistemological approach of whole institutions. Instead of sustainability being relegated as another issue to be added into an overcrowded curriculum, he argues that sustainability should be an organising principle framing curriculum, pedagogy, organisational practice and policy (Sterling 2004). The superficial integration of sustainability into existing operating systems is not enough, because this approach is a reactive and adaptive response. Instead, Sterling calls for the transformation of HEIs towards a more integrative whole that organises itself around a systemic view of sustainability in education and society (Sterling 2004). Other authors have joined Sterling's call for a systemic transformation of HEIs, with the justification that the fundamental purposes and objectives of HEIs fail to take into account the limits of our ecosystem (Orr, 1992; Jucker 2002; Gough & Scott 2007; Filho 2002).

The shift that Sterling identifies is often described as a paradigm shift—one in which learning is organised around the ontological view that socio-economic systems are subsystems of the encompassing ecosphere, upon which they are entirely dependent (Brown, 1992). If we accept that HEIs are organised around a dominant ontological position that has given rise unsustainable relationships with the ecosphere, then the answer to the crisis of sustainability in HEIs cannot be a simple tweaking of policy and practice. Indeed, HEIs have continued to educate legions of individuals, and yet pollution and the exhaustion of natural resources have continued to increase. This on-going contradiction highlights the need for a paradigm shift within HEIs (Schumacher, 1993). Simply stated, superficial approaches aren't working. To make HEIs sustainable we need to do more than expand recycling programmes and save energy—we need to orchestrate institutional changes akin to a paradigm shift. Ushering in a paradigm shift defies a prescriptive solution that can be applied universally to HEIs. If it's to occur it will probably be in a piecemeal and incremental fashion. The literature suggests that a deep and reflexive OL

process leading to sustained institutional change can be an integral part of a paradigm shift towards sustainability in HEIs.

#### 2.4 Single-loop and double-loop learning: OL theory relating to institutional change in HEIs

OL theory describes a learning process through which institutions are able to make changes at both at superficial and deeper levels. OL theory describes learning as serving either a self-correcting purpose, in which learning happens to correct a problem within a system to it keep stable, or serving a meaning-making purpose, which enables a system to change to a new state in relation to its environment (Senge, 1990; Argyris 1999; Sterling 2004). These two types of learning have been referred to as 'single-loop learning', and 'double-loop learning' (Argyris & Schon, 1978; Argyris 1999, Senge 1990).

Single-loop learning applies to what is already known and leads to what Argyris describes as 'first order' changes. Single-loop learning makes existing techniques better (Argyris 1999). An oft-cited example of single-loop learning would be the functioning of a thermostat. A thermostat 'learns' when it's too hot or too cold and responds by turning the heat on or off. The thermostat performs the task because it receives information about the temperature of a room and takes corrective action. However, the thermostat cannot question why the temperature of the room is set to 22 degrees Celsius. The thermostat is limited to single-loop learning because it's incapable of questioning and changing the underlying premise of its function. The purpose of single-loop learning is to implement current institutional policies and goals.

Other examples of single-loop learning include modifying strategies, altering procedures or practices, and combining or separating existing processes. These outcomes are first order changes, and they do not question the underlying assumptions and values of the system in which they operate (Argyris 1999). Single-loop learning is not critically reflective. It's based on the normal operating procedures of an institution. It keeps systems stable through negative feedback loops, which dampen change. Clark (1989) refers to single-loop learning as, "change within changelessness. It's geared towards effectiveness and efficiency, towards doing things better rather than doing better things"

(Clark, 1989 pp. 236). Many successful sustainability efforts in HEIs to-date could be described as applying a single-loop learning process in which procurement practices are changed, courses involving sustainability are added to the curriculum, and energy-saving measures are instituted (Shriberg, 2002). These changes implement goals that match with existing HEI structures. They do not lead to questioning the role of sustainability as an organising principle for the institution as a whole.

Double-loop learning is another response leading to second order change. It requires the learner to question underlying assumptions (Argyris 1999). It's characterised by positive feedback loops between a system and its environment, whereby both the system and the environment achieve a new state of being (Banathy, 2000). Ison and Russell (2000) describe double-loop learning leading to second order change as creating, "a change that is so fundamental that the system itself is changed. In order to achieve this it's necessary to step outside the usual frame of reference and take a meta-perspective" (Ison and Russell, 2000, pp. 229). OL theorists describe second order change as transformational and irreversible because it changes the underlying theory and values of an organisation. (Greenwood and Hinings 2000; Kezar and Eckel, 2002; Argyris 1999). Second order changes are changes in an institution's mission, culture, structures, processes, performance, and behaviour (Boyce 2003). Although OL theorists posit that second order changes are irreversible, this hasn't been quantified yet in practice. However, it's important to make a distinction between double-loop learning leading to either first-order or second-order changes. Double-loop learning creating first-order change is a temporary change, and therefore less desirable in efforts to orchestrate a paradigm shift within an institution (Argyris 1999; Kezar and Eckel, 2002). Double-loop learning creating second-order change would be a significant step towards a paradigm shift because of its transformative outcomes. Clark (1996) has applied OL theories to the field of HEIs and describes what double-loop learning leading to second-order change in HEIs:

Significant innovation in the character of a university means that some core tasks and deep structures are altered to the point where the long-term course of the organisation is changed. Such transformational work must be done locally, in the university itself. It must extend over years that often become decades. The sustained work calls for collective action leading to new practices and beliefs, steps that are entrepreneurial in character, with much risk taking and flexible adjustment along the way (p. 429).

Beyond descriptions of first order change, systems thinkers recognise a learning level closely related to double-loop learning leading to second-order change. This is referred to as either transformative learning or epistemic learning (Bateson, 1972). Some have argued that this type of learning is essential to sustainability in HEIs because learning within a fundamentally unsustainable paradigm will not create a more sustainable institution. The unsustainable paradigm must be recognised and critically analysed (Sterling, 2004; Bateson, 1972).

Transformative learning recognises an unsustainable paradigm. It enables deconstruction/reconstruction towards a new paradigm, and creates the possibility of lasting institutional change. Transformative learning involves the whole person, changes values and beliefs, and engages with learners emotionally. It's systemic, but creates a way of thinking independent of the strict content of systemic concepts (Bateson, 1972). These learning levels can be described as 'doing things better,' (single-loop learning) 'doing better things,' (double-loop learning) or 'seeing things differently,' (epistemic learning), (Sterling, 2004). To relate these learning levels to sustainability in HEIs, we can describe the learning levels with the following examples: improving recycling rates on campus, (single-loop learning/'doing things better'), changing procurement policies so fewer heavily packaged and disposable products are purchased, (double-loop learning, 'doing better things'), work towards creating a zero-waste campus in which solid waste is not produced, (epistemic learning/'seeing things differently').

## 2.5 OL leading institutional change in HEIs

OL can provide an effective theoretical framework for institutional change for sustainability within HEIs, however the literature shows that institutional change through continued OL is difficult (Burke, 2005; Kotter, 1996). HEIs tend to be loosely organised, with multiple decision-making apparatuses and goal ambiguity (Boyce, 2003). This structure encourages small institutional changes in a responsive manner, but makes it difficult to sustain major changes throughout the institution (Weick 1982, 1995). It's difficult to co-ordinate institutional coherence to facilitate strategic action when objectives between departments are divergent, power is diffuse, and leadership roles are shared (Boyce, 2003). Research has shown that this type of loose decision making can lead to incremental change, but more substantive partnerships between higher management, internal organisational staff, and external community members is necessary to foster long term success (Dennis et al 2001). Bergquist (2008) specifically identifies competing cultures within universities: collegial, managerial, developmental, and negotiating. According to Bergquist (2008) these cultures exist in tension with each other, and these tensions are expressed through institutional domains of structure, process, and attitude. Bergquist stresses that process change should be coupled with structural change to ensure that institutional change is self-perpetuating. In short, he calls for organisational change in all three institutional domains of structure.

Institutional change can happen incrementally, through a process of evolution, or radically, through a process more akin to a paradigm shift. Given the gravity of environmental problems, a radical paradigm shift seems more appropriate. Greenwood and Hinings (1996) have identified institutional vision, initiative, and the capacity for action as the most important characteristics for drastic institutional change. The capacity for action is defined as the internal organisational capacity to manage the transition process to a new institutional template. Successful change involves designing and embedding new institutional structures and systems to accomplish the stated vision, which in turn implies significant investment of time and resources (Greenwood and Hinings 1996). The new organisational template could be interpreted as analogous to a paradigm shift, or second-order change, brought about by double-loop learning processes.

Much of the institutional change within HEIs tends to be of Argyris' first order variety and therefore delivers changes primarily in terms of outcomes. Focus on organisational actions and outcomes can produce big changes, but these changes tend to be temporary (Boyce 2003). Without questioning the underlying 'theory in use,' of an institution, the learning is limited (Argyris 1999). Sustaining organisational change depends on HEIs ability to engage in double-loop learning and second-order change. This type of change is more difficult and requires a more in-depth form of institutional inquiry. Huff and Huff published a study in 2000 in which they developed a model for both individual and organisational change grounded in theories of OL. Their description of change is applicable to institutional change within HEIs in that it calls for an institutional inquiry that is based on paying attention to unanswered questions, a realisation that a current institutional framework is no longer adequate, examining the assumptions of an institutional framework, and exploring alternatives to the framework (Huff and Huff 2000). The literature suggests other specific practices for creating second order institutional change through OL as well. These are: on-going inquiry and dialogue, continuously critical action-learning, and institutionalising and embedding changes in the structures, systems, and cultures of an institution (Senge, 1990; Dixon, 1999; Bergquist 2008; Revans, 1983; Reason & Bradbury 2008). These practices play an important role in implementing successful sustainability initiatives in HEIs. However, for the purposes of focusing my research within the TEU project at the University of Edinburgh, I intend to focus on the practice of embedding changes within institutions.

## 2.6 Embedding change for sustainability in HEIs through OL

The literature suggests that to embed any sustainability programme within HEIs, a change to underlying cultural values of HEIs is required. Sustainability initiatives in HEIs must also be long-term processes. They will likely be fraught with unforeseen difficulties. Therefore, embedding institutional

change for sustainability in HEIs is the key to supporting these initiatives through long-term, contentious processes. Embedded changes are a reflection of a commitment to systemic change. What do embedded institutional changes for sustainability look like? In practice, these changes have been manifested successfully as clear incentive and reward structures, changed mission and goal statements, changes in operating procedures, and a change in annual reporting metrics and organisational decision-making procedures (Shriberg, 2002). Clark's study of successful change in universities showed that long term change is possible when it has an institutional carrying vehicle and well defined organisational footing (Clark, 1996). Lipschitz and Popper echo Clark's findings in their 2000 study of OL in the field of health care. They show the need to embed change in institutional structures, and they describe the need to create a 'learning culture,' in which there is an institutional commitment to learning with a priority placed on the development of valid organisational information, transparency, and accountability. This learning culture is characterised by shared values—these shared values are vital to the implementation of OL mechanisms that allow institutions to systematically collect, store, disseminate, and use information relevant to changing the performance of the institution (Lipschitz and Popper 2000).

Curry (1992) and Levine (1980) have produced two influential studies regarding innovation and institutional change in HEIs. Curry (1992) studied institutionalized innovation designed to foster multiculturalism at the University of Massachusetts, Amherst, and the University of Massachusetts, Boston. Her 90-page study also covers cultural restructuring innovations at the University of Michigan and the University of Wisconsin. Levine (1980) focuses on institutional innovation at the State University of New York, Buffalo, and the replacement of traditional curriculum with a progressive, student-focused curriculum at Stanford University and Brown University. Both studies show that the underlying cultural values of an institution are the deciding factors in the ability of an institution to maintain long term change. Curry's model for innovation involves three stages: mobilization, implementation, and institutionalization. She stresses the institutionalization stage as the most important for creating long-term change. In this case, institutionalization is analogous with embedding.

Curry (1992) describes institutionalization as blurred boundaries between a pilot project and organisational goals. When an innovative programme matches with the norms and values of the institution, the innovation becomes embedded within the institution. These studies are particularly relevant to the field of sustainability in HEIs because of the aforementioned calls for a paradigm shift in HEIs. A paradigm shift implies a change to underlying cultural values of HEIs and embedding these changes in perpetuity. Curry and Levine's work can be interpreted to describe a mutually supportive relationship between a paradigm shift and long-term institutional change for sustainability in HEIs.

## 2.7 It's a bit more complicated than that: Critiques of OL leading to institutional change

The popularity of OL theory has increased in recent decades. This popularity has been reflected in the multitude of ways in which OL has been classified and applied. Communities that practice OL have not resolved the different definitions, leading to what Mackenzie (1994) calls, “An OL jungle, in which the past thirty years of effort have not made any discernable progress” (p. 249). Despite its popularity, OL lacks a unified theoretical and empirical foundation (Huysman, 2010).

There are two critiques of OL as a theoretical framework with which to evaluate institutional change. The first is that OL research is not cumulative, because there is no theoretical integration due to the multiplicity of definitions. The second is that OL does not provide practical knowledge for practitioners—instead it’s primarily theoretical (Prange, 1999). Aside from these critiques of OL as a theory, it’s often criticized in practice because specific institutional changes have not been adequately correlated with OL. In some cases, when organisations implement OL, it’s not clear that OL leads to improved performance (Huysman 2010; Sun and Scott, 2003; Carley and Harrauld, 1997).

These criticisms indicate that OL is heterogeneously applied and that researchers do not agree on the theoretical basics. They also indicate that the field of OL has not generated prescriptive solutions that can be applied universally. These are valid criticisms, yet they point to a positivist ontological approach that describes an objective social world that can be accurately discovered and described—a world in which the multi-faceted approach of OL could be seen as creating unnecessary confusion (Prange, 1999). Approaching these criticisms from a pluralistic and interpretive perspective in which social reality is co-constructed suggests that OL can offer an opportunity for participants and practitioners to create a new ways of knowing and doing. The interrelation of individual actions within this socially constructed perspective can result in an improved collective understanding of both problems and solutions. Such constructions are case-specific and not generalisable. Indeed, relating to the un-unified critiques of OL, Weick (1995) postulates, “The search for one unifying theory that explains human behaviour is fruitless, because there is no such theory” (p.14). The critique of OL as non-cumulative, as well as the critique of the dearth prescriptive OL solutions, tends to come from theorists that take a positivist and objective approach to social sciences (Prange, 1999). Using an interpretive paradigm in which reality is socially constructed and solutions are not generalisable, OL can be a useful lens to create and describe pathways to sustainability, as opposed to a theory that will allow for prescriptive measures to be implemented.

There is also debate, and sometimes confusion, surrounding the role of individual learning within OL. Some have described the formation of a ‘collective mind’ that is a pre-requisite for OL. This is a relatively small group of contributors who treat OL as something that happens independent of

individuals. This group of theorists is not representative of the field (Huysman, 1999). Others argue that OL is clearly related to individual learning because individuals are the entities that must learn and act for change within an organisation—taking this perspective, individuals are defined as the primary learning entity, and groups of individuals create the organisational forms that enable learning in ways which facilitate organisational transformation (Dodgson, 1993). Argyris and Schon (1978) show that organisations do not literally remember, think, or learn. If individual members' theories and memories are not embedded as organisational theories, then the individual may have the opportunity to learn, but the organisation does not. This distinction implies that individuals may learn for sustainability within HEIs, but HEIs will not make significant organisational change for sustainability without embedding this individual learning in underlying organisational theories.

Descriptions of OL as an activity made of up individuals have been accused of having an 'individual action bias,' that can overlook the role played by structural conditions such as institutional forces, organisational histories, group structures and power structures (Huysman, 1999). I agree that organisational norms and values pose constraints on individual activity. A pragmatic way to navigate the debate surrounding the role of individual learning within OL is to acknowledge that individual learning is not free from preconceptions. OL must take place through the actions of individuals, although these actions are simultaneously constrained by institutional forces. To create change, the actions of individuals must take into account systemic variables like organisational history and structures.

These critiques are pertinent to my use of OL as a theoretical framework with which to explore the efficacy of TEU's work to embed Carbon Conversations at the University of Edinburgh. These critiques will inform my approach in two important ways. First, from a theoretical perspective, I am applying OL as a theory within a relativistic ontological position in which knowledge is co-created as opposed to discovered and applied in a prescriptive sense. From these ontological and epistemological perspectives, the ongoing debate regarding a prescriptive definition within the OL community does not negate its usefulness as a theoretical approach. Second, I will work to explore aspects of individual initiative within the TEU project while acknowledging that individual actions will inevitably be affected by the systems in which they operate.

### **3. Methodology**

#### 3.1 Research Questions

For the purposes of my research I have adopted an AR methodology to address my research questions:

- How does OL relate to embedding sustainability in HEIs? This question has been addressed in my literature review—OL has been shown to help embed institutional change in HEIs. Given that sustainability involves institutional change, it follows that OL can be a useful theoretical framework through which to explore efforts to embed sustainability in HEIs.
- Do the structures of Carbon Conversations and TEU share characteristics with double-loop learning and second order change that the OL literature suggests will help embed sustainability programmes in HEIs?
- Given the relationship between OL and embedding sustainability in HEIs, what kind of impact will the Carbon Conversations project have in its efforts to embed sustainability at the University of Edinburgh?
- What are the implications of my findings for embedding sustainability initiatives in HEIs?

#### 3.2 Action Research

From within the field of qualitative research, I have employed AR as a methodology. The multiple definitions of AR are a product of the nature of AR, which is designed to create practical knowledge through a participatory process that is specific to the location and participants involved in real-world problem solving (Whitehead & McNiff, 2008., Somekh, 1995., Zuber-Skerritt 1996). This approach is appropriate given my role as an embedded project assistant working for TEU. AR is grounded in the values of those who carry it out, and I as an active participant working with others to achieve the goals of TEU I share the values of my colleagues and have explicitly allowed them to shape my research. AR is also case-specific, and the different definitions of AR relate to the variety of different situations in which it can be used.

TEU is designed to incorporate a process of AR in its structure (TEU Funding Bid, 2009). Three staff members are referred to as 'AR Facilitators,' and they are tasked with incorporating a reflective process that allows effective changes to be made to their work based on a participatory process. AR is a part of the Big Green Makeover and Carbon Conversations (TEU Funding Bid, 2009). For the purpose of my research I have incorporated a definition used by Peter Reason and Hilary Bradbury (2008) into the AR structure already extant at TEU:

AR is a participatory, democratic process concerned with developing practical knowing in the pursuit of worthwhile human purposes, grounded in a participatory world view which is

emerging at any given moment in time. It seeks to bring together action and reflection, theory and practice, in participation with others, in the pursuit of practical solutions to issues of pressing concern to people, and more generally to the flourishing of individual persons and their communities (pg. 4).

I will incorporate the five key dimensions of AR outlined by Reason and Bradbury (2008), and give examples of how these key dimensions are a part of TEU. The first dimension addresses the primary purpose of AR and my work with TEU. The purpose of this study is to produce practical knowledge that is applicable to people's everyday lives. Therefore, I have endeavoured to show how to practically cut carbon emissions and contribute to sustainability at the University of Edinburgh. This quotidian purpose is intended to contribute to a wider purpose of contributing practical knowledge to efforts that will create more equitable and sustainable social, political, and economic systems. I am working to produce practical knowledge on how HEIs can move towards sustainability, which has implications for more equitable social, political, and economic systems, albeit on a relatively case-specific small scale.

The second dimension guides efforts of AR to create new forms of understanding. Embedded in this second dimension is a reflective component of AR that allows the participants involved in the process to give context to action and provide guidance rooted in experience. I have reflected on my learned experiences through my journaling efforts and through dialogue with TEU colleagues as well as critical colleagues.

The third dimension is a participatory. AR is only possible if many stakeholders are involved in guiding the research process and interpretation of the data collected. Through semi-structured interviews and a consistent reflective and inclusive process built into the organisational structure of TEU, participation has been an integral aspect of my research. Related to the participatory dimension of AR is the fourth dimension, described as emancipatory. This dimension is possible through the implemented actions and full democratic participation of stakeholders. Because the goal of AR is to produce useful knowledge based on the every-day experiences of participants, the process is as important as the outcomes. TEU is organised as a non-hierarchical institution and the full participation of University staff, students, as well as interested community members is fully integrated.

The fifth dimension of AR is the culmination of the action and reflection process which allows communities of inquiry and communities of action to nurture new abilities to create knowledge. This dimension of AR will help TEU participants create their own framework for generating new forms of knowledge long after the initial process of action and reflection has been initiated. This dimension has been more difficult to implement given the short time frame of the TEU project, however we have worked to embed the learning and knowledge created throughout the project in some form within the University of Edinburgh's institutional infrastructure, and the work at TEU contributes to the whole Transition Network.

The five dimensions of AR provide accommodate the context-specific nature of AR. AR is cyclical and integrated, as opposed to prescriptive and programmatic; however there are broad stages that

comprise successive cycles that can be used to elucidate the process. To clarify the structure guiding my AR methodology I have used a description of these four stages of AR provided by Altrichter *et. al* (2008):

1. Find a starting point.
2. Clarify the situation.
3. Develop action strategies and put them into practice.
4. Make practioners' knowledge public.

The four stages of AR are applied to my work at TEU in the Data and Analysis section. The second and third stages relate to each other --the situation is further clarified as action strategies are put into practice. TEU action strategies have been continuously refined and developed as the situation changes. As Somekh (1995) points out, there is no divide between the data collection, analysis, and interpretation in three of these four stages of the model. This guides the AR process in an integrated way.

### 3.3 Theoretical links between AR, OL, and Sustainability

There is a strong link in the literature between AR, OL, and sustainability in HEIs. In his 2002 inaugural professorial lecture at the University of Bath, Peter Reason—a preeminent authority on AR—described a challenge to HEIs. He called for the twin crises of justice and sustainability to be placed at the centre of educational and research efforts (Reason, 2002). Given the scope of this undertaking, even within one University, Peter Reason indicates that AR is an appropriate methodology with which to embed justice and sustainability as central organising principles in HEIs. In turn, OL shares similar characteristics with AR in that its intent is to usher in a fundamental paradigm shift within institutions. Hence, OL has been identified as an appropriate theoretical framework for institutional change within HEIs (Sterling 2004). Given the intensely reflective nature of OL as a theoretical framework, it's well suited to the use of AR as a methodology. For example, OL proposes that meaningful understanding comes from building up whole pictures of a phenomenon, as opposed to breaking phenomenon into parts. (Flood, 2010; Senge 1997). Methodologically, AR is well suited towards this whole-picture approach in that it's designed to navigate the complexity of fostering sustainability in HEIs—involving competing world views, the nature of sustainability, transformative change, and policy and practice.

### 3.4 Qualitative Grounding

My research is based on my work as a project assistant with TEU. As such, my goal is to fulfil the obligations of TEU, and as an embedded researcher my goal is to facilitate a process of reflective inquiry applied to action to help co-create knowledge that will make the TEU project more effective as it evolves. My research is considered qualitative for three key reasons related to the definition of qualitative research as defined by Jennifer Mason (1996). The first reason is that my research is concerned with how the social world is interpreted—the project specifications of the TEU project require us to work with a diverse group of people within Edinburgh University, each with their own interpretation of their role in the University and their responsibilities regarding the reduction of carbon

emissions. The second reason relates to the methods of data generation I have used—I have used AR to generate my data, which is flexible and sensitive to the social context in which the data has been produced. Data has been generated through journaling, reviewing extant University documents, conducting semi-structured interviews, and using materials produced by TEU. I have provided data analysis with intent to create an explanation reflecting a multi-layered and holistic interpretation of a specific social reality.

My role as an embedded project assistant with TEU is related to field of ethnography, but it differs in important aspects. Ethnography requires participation either overtly or covertly in peoples' lives for an extended period of time. The ethnographer studies the every-day context instead of creating conditions to facilitate research, a range of data is collected from informal sources and through an unstructured process, and an in-depth study is produced usually focusing on a single-group of people (Hammersley & Atkinson, 2007). These are shared characteristics between AR and ethnography. However, ethnography takes an exploratory role that does not have a pre-determined outcome. Although the ethnographer is embedded, they don't necessarily work to change the object of their study through the application of their findings. As an AR practitioner, I am working to put my findings into practice which in turn creates data that I am analysing. This distinguishes my work as an embedded Action Researcher from ethnography.

### 3.5 Coding

To analyse the multiplicity of data sources I've collected I applied a system of coding to the themes that developed during the research process. The codes assign meaning to the different types of descriptive and inferential information compiled during the project. I developed the first set of a priori codes from my initial research questions and theoretical framework. I re-read the data and developed an expanded list of patterned codes to identify more inferential themes as they emerged. This process consisted of four stages in which I read the text of my data sources as a whole to identify major themes and categories, re-read the texts and marked them with codes developed after the first reading, re-arranged and re-assigned codes systematically to identify interesting groupings, and I finally related theoretical ideas to the themes that emerged through the coding of my data (Miles and Huberman 1994; Mason, 1996; Ryan and Bernard, 2003). Appendix A includes a table of my codes, a timeline of the AR process, and a table specifying the University documents, TEU materials, journaling, interviews, email exchanges, meeting notes, and semi-structured interviews that I coded as data. Appendix B includes an example of notes that have been coded.

## **4. Findings and Analysis: Results of AR with TEU**

### 4.1 The effect of AR on the development of the ET

The Engagement Team (ET) was developed through an AR cycle involving my input with TEU staff. I differentiate between the AR cycle that created the ET and the AR cycle devoted to embedding Carbon Conversations. Although the two cycles occurred simultaneously, they were designed to achieve different aims. The ET was designed to focus on increasing enrolment in programmes, including Carbon Conversations, whereas work to embed Carbon Conversations focused on identifying institutional avenues at the University of Edinburgh and creating the mechanisms that would lead to Carbon Conversations running through these avenues after TEU's funding expires. The ET had a significant impact on TEU's work to embed Carbon Conversations, so it's worth analysing.

Analysis showed that participation in TEU's practical projects was our biggest challenge. These concerns were based on low participation in Green Week 2010 and limited enrolment in TEU programmes during the initial six months of the project. Without meaningful participation of more people, we would be unable to meet our carbon reduction goals, and we wouldn't be able to embed Carbon Conversations.

I predicted this challenge given my past experience as a community organiser. I worked with staff member Joseph Farthing to change the communications tactics used by TEU. In my previous experience, face to face communication, meticulous data collection, continual re-evaluation of communications methods and messages, and personal follow up with individuals is the best way to get people involved in a project. Joseph Farthing took my recommendations, as well as input from the rest of the TEU team, and designed a communications programme specific to TEU's needs. Based on this first reflective cycle of the AR process, we launched the ET. As Joseph Farthing stated in meeting on June 4<sup>th</sup> 2010, "We can't sit back in our office and hope that people will come to us." Since then, my work with TEU has focused on working with the ET. The ET drastically increased participation from staff and students. By soliciting more participation from a wider variety of individuals, TEU was able to identify more avenues through which to embed its projects. This outcome is explored further in the discussion section.

Traditional communications methods were used at the start of the TEU project. Time and money were allocated to print sources, (fliers and posters), traditional media (press coverage), and the use of existing channels of communication (University newsletters and representatives). Reflection and testing

showed these methods to be less effective than personally talking with people and inviting them to participate in TEU projects. In fact, personal conversations were more than five times as effective as any other method of communication (TEU Project Report, 2010). Posters and fliers were particularly ineffective, and while press coverage did tend to result in more hits to the TEU website, these were from people outside of Edinburgh and did not yield any increase in programme enrolment. The TEU public report (2010) concludes that face to face communication as well as continuous data collection and reflection on communications methods are the most effective ways to engage the University of Edinburgh staff and student populations in sustainability programmes.

As of October 2010, our data shows that 90% of programme enrolment is a direct result of the ET. Within the two months since the launch of the ET, TEU has spoken with more than four times the number of people that it spoke with during the initial six months of the project. Communications success has been defined as enrolment in projects and not strictly coverage. Using project enrolment as a metric of success, we've shown that face to face communication is drastically cheaper than traditional methods. Posters cost between £10 and £47 per sign-up, fliers cost between £6 and 15£ per sign-up, and the work of the ET costs about .21pence to £7 per sign up (TEU programme report, 2010).

#### 4.2 The effect of AR on work to embed Carbon Conversations

The AR cycle, consisting of reflection combined with action based on the outcomes of the reflection, has shown links between embedding Carbon Conversations and OL. To summarize the data, I framed my findings using the four steps of AR as defined by Altrichter et al (1998). These are referred to as steps 1 through 4 below. To further clarify the process there is a timeline of the project in Appendix A.

##### 1. The first stage of AR: Identifying avenues for embedding Carbon Conversations

To begin the process I conducted semi-structured interviews with TEU staff and two key project assistants to gauge group consensus on the best way to embed Carbon Conversations. I reviewed the TEU funding bid and the University's Sustainability and Social Responsibility Strategy and Strategy to assess how Carbon Conversations relates to the University of Edinburgh's sustainability goals. There were two incentives guiding this approach: i) to gain group consensus on the best way to move forward with 'embedding', and ii) to evaluate whether or not our efforts aligned with aims of the TEU included in the funding bid, as well as the stated institutional aims of the University of Edinburgh.

The first avenue identified for embedding Carbon Conversations was through a stronger Edinburgh University Student Association (EUSA) partnership in which Carbon Conversations course could become a part of the services offered by EUSA to students. This option was included in interviews with Rosie Sullivan and Joseph Farthing on July 6<sup>th</sup> 2010. On July 20<sup>th</sup>, 2010 Pam McLean identified a second avenue: offering Carbon Conversations as a course run through the Office of Lifelong Learning. An interview with David Somervell on July 16<sup>th</sup> suggested a third option through the continuing professional development programmes offered to staff at the University. I suggested to the TEU team the idea of working with friendly staff to include Carbon Conversations as supplementary course material in taught MSc programmes and other related courses, however the TEU team felt that this tactic should not be relied on too heavily as the Carbon Conversations could become the purview of a small contingent of already 'converted' staff members and fail to reach a broader audience within the University. I agreed with this conclusion. We decided to focus on embedding Carbon Conversations through a stronger EUSA partnership, through the Office of Lifelong Learning, and through the continuing professional development programmes offered to staff.

Coding showed that using these avenues to embed Carbon Conversations is consistent with the TEU funding bid, as well as with the University's Sustainability and Social Responsibility Strategy (SSRS), however the coding also revealed that there are broader contradictions between the stated aims of the Carbon Conversations course and the University of Edinburgh's four year plan. These will be examined further in the discussion. Coding also showed that there were significant barriers and hurdles relating to TEU staff time, as well as staff time from other University departments during the summer holidays, which impeded the ability of these avenues to be fully explored during the summer months.

## 2. The second stage of AR: Practical considerations and time constraints

Based on the findings of the first stage of the AR cycle, an action plan to embed Carbon Conversations was implemented. Coding of staff emails sent during July and August of 2010 revealed that participation of academic and support staff is essential for embedding sustainability projects at the University of Edinburgh. However, during the summer months it proved to be difficult to find time with many key staff. As my journaling shows, I had six unreturned emails and three unreturned phone calls relating to embedding Carbon Conversations during this time period.

Time constraints were a consistent theme in coding of journal entries, email exchanges, and meeting notes. EUSA became less of a focus during this stage given that other TEU projects, like the Big Green

Makeover, were a better fit with EUSA aims. Sion Lanini and Pam McLean scheduled a Carbon Conversations course to be run during the first semester through the Office of Lifelong Learning, although it's not clear that the course will be offered again. I worked with Rosie Sullivan and David Somervell to schedule a meeting with Dr. Alan Taylor in August to discuss offering Carbon Conversations through the continuing professional development curriculum for staff, but we were unable to confirm a meeting due to time constraints. I noted in a journal entry that it would be interesting to explore whether time constraints were the main impediment to progress, or whether they were more of an excuse used by individuals not interested in prioritising work with TEU. However, this query is conjecture without data to back it up. Regardless, it took more time than expected to deal with professed time constraints in our work to embed Carbon Conversations.

3. The third stage of AR: changing tactics to embed Carbon Conversations based on time constraints and the need for more participation

Coding shows that our action plans for embedding Carbon Conversations were modified during the months of June, July, and August to accommodate the findings during the second stage of AR. Based on these initial results, new plans focusing on outreach to staff, programme enrolment, and facilitator training were implemented during the beginning of September and throughout the first semester of the academic year of 2010.

As we worked to embed Carbon Conversations during the third stage, two more limiting factors to the success of the programme were revealed along with the previously identified need to more meaningfully involve staff. The first most restrictive factor was the number of trained facilitators available to run Carbon Conversation courses, and the second was enrolment in the courses. To address these factors the ET focused recruitment on Carbon Conversations enrolment, and Rosie Sullivan and Pam McLean trained 22 course facilitators. On a positive note, during the third stage of AR TEU staff had had time to build relationships with staff. This resulted in increased participation in the project, which created previously unidentified opportunities. Coding of data from meetings with new partners at TEU showed that participation is an important factor in the success of TEU efforts to embed Carbon Conversations. The necessity of participation to the success of embedding Carbon Conversations is related to the role that participation plays in OL theory. This will be further explored during the discussion.

Two more metrics of success are repeated in the coding of team meeting notes and my own individual notes between July and September 2010: full enrolment in Carbon Conversations courses, and

successful logistical handling of the courses leading to positive experiences for the participants. Perceived success of the project was equated with full enrolment. As Rosie Sullivan stated during our initial semi-structured interview, “Why would the University agree to take steps towards embedding a programme that nobody was interested in to begin with?” The ET has been the lynchpin of increasing enrolment in Carbon Conversations, which is related to the AR cycle initiated by me and Joseph Farthing. As of October 27<sup>th</sup>, 2010, 72 of the 81 Carbon Conversations programme sign-ups have been a result of the ET’s work. Rosie Sullivan and Britta Huss have followed up with course participants to capture both the carbon cuts associated with the programme, and qualify the experience of participants in order to communicate the success of completed courses. Recruiting and training enough volunteer facilitators has proven to be incredibly time consuming—revealing that time was again a limiting factor. Segregating the work of enrolment, which was devolved to the ET, and the coordination of logistical concerns, which became the main focus of Rosie Sullivan and Britta Huss, proved helpful in overcoming these obstacles.

#### 4. The fourth stage of AR: Sharing outcomes and recommendations of my AR findings

The fourth stage of AR consists of making my findings public. I will be making my findings public with the submission of my dissertation, and I plan on sharing my dissertation with students conducting research on TEU, and research on sustainability in HEIs more generally. I’ve solicited feedback from TEU staff on drafts of my work. My research has been a co-created effort involving the whole TEU team, and it’s important to note that my reflections and findings are a result of collaboration with the staff, volunteers, and students that I’ve worked with throughout the process.

At this stage I will include recommendations for TEU. AR showed that time management and professional relationships are key variables affecting our ability to embed Carbon Conversations. I recommend focusing work plans with these variables in mind throughout the duration of the project. As of October 2010, we have enough volunteer facilitators and adequate enrolment in Carbon Conversations courses to report success in to the CCF. However, as this research is concerned with institutional change, I am interested in working to embed the programme at the University of Edinburgh. Based on the impact time restrictions have had, I will work with TEU to focus on developing relationships with staff that will be able to facilitate Carbon Conversations after TEU ends. We have identified in-roads in the Office of Lifelong Learning and with HR’s continuing professional development programmes, and at this point I recommend that TEU secure explicit support from key staff that will be able to handle logistics of running courses after March. An embedding working group has been recommended by Professor Tom Bristow, and I agree with his recommendations to develop easily deliverable Carbon Conversations communications materials that we can pass on to our successors.

## **5. Discussion**

Three themes emerged from the process of coding and reflecting upon data analysed during the AR cycle: managing the contradiction, structure, and participation. A discussion of these themes reveals key factors affecting the ability of TEU to embed Carbon Conversations at the University of Edinburgh. These themes also have implications for the field of sustainability in HEIs.

### **5.1 Theme I: Managing the Contradiction**

Sustainability in HEIs is often described as a process, as opposed to a concrete goal to be achieved. This is due to contentious and competing definitions of sustainability and to the complex nature of navigating institutional change (Corcoran and Wals, 2004). While reviewing my data, a theme relating to this process of moving towards sustainability emerged as 'managing the contradiction.' Managing the contradiction refers to the conflict-ridden process in which competing pressures for institutional change for sustainability conflict with the inevitable need to co-exist within unsustainable systems. David Orr has described this theme as walking north on a southbound train. He continues, "The train of economic globalization is barreling south. We, the advocates of sustainability in HEIs, are taking significant steps to create a more humane and sustainable path for globalization. But as we walk north, we are still passengers on this accelerating train moving southwards" (Orr, 2003 p. 349). Being forthright and clear about the inherent contradiction of advocating for sustainability while living and working in unsustainable systems is necessary to managing the contradiction, and therefore it's necessary to working towards sustainability. I have identified this theme operating at three different levels within the TEU project: individually, organisationally, and institutionally.

Managing the contradiction individually:

We are often faced with individual decisions that contradict our credibility as environmental advocates. For example, a participant leaving a TEU sponsored photo exhibit stopped by the ET's table to vent her frustration. She complained, "I don't understand why you aren't fighting to get rid of all these coke machines!" Her point was that Coca-Cola has an abominable record when it comes to sustainability, and we were acting like hypocrites by telling the students and staff to get involved with TEU while offering our tacit approval for students purchasing Coke products. She was pointing out the contradiction of environmental advocates drinking Coke. She was right—it's a hypocritical contradiction. However, as has been discussed, we are continuously being forced to act hypocritically by advocating for sustainability within unsustainable systems. Managing the contradiction at the individual level can mean navigating the best way around the *inevitable* contradictions while still encouraging people to take action. In this particular case, I told the participant that I agreed with her, and I asked her if she'd like to work with us to get more sustainable food and drink options offered at the University—to even work towards ending the University's contract with Coke. Managing the contradiction individually at TEU means that we have to work through the aspersions cast on our credibility by the inherently contradictory nature of our work, while simultaneously inspiring people to be advocates for sustainability. This is challenging because individual efforts can be easily undermined when implemented from within unsustainable systems.

Managing the contradiction at an individual level is not prescriptive, as each individual will respond to different situations in different ways. The data suggest that Carbon Conversations can play a helpful role in managing the contradiction at an individual level. It has been specifically developed to help participants manage contradictions through a peer-learning process. Carbon Conversations acknowledges variables relating to social identity, cultural values, and political and economic pressures that affect the ability of people to make cuts in lifestyle carbon emissions. Instead of allowing these individual contradictions to be continually used to justify a passive response, Carbon Conversations facilitates an exploration the complexity involved in behavior change, and works to help individuals make personal decisions about the steps that they are willing to take to cut carbon emissions. For example, during a Carbon Conversations facilitator training one participant noted that, "Carbon Conversations helps people really pick apart why making the environmental choice can be complicated, instead of inundating people with information in an effort to guilt trip them into making the 'right' choices. It's like, it helps everyone decide what the right choices are in the first place, which makes it a lot more likely that people will make them."

Institutional structure can have a profound impact on managing individual contradictions. I sent an email about the aforementioned Coke-inspired exchange to TEU staff without making an explicit ask for action to address the contradiction, and within 12 hours I had a forwarded email in my inbox from Karen Bowman, the Head of Procurement for the University, questioning the University's contract with Coke. I was surprised at the responsiveness of the University to a passive action on my part—an email to friendly co-workers. My surprise was based on the fact that it took a controversial five year campaign at the University of Michigan to end their Coke contract (Samilton, National Public Radio, 2006). Granted,

the University of Edinburgh hasn't ended their Coke contract yet, but this shows them to be more institutionally responsive to sustainability concerns than I was expecting, which in turn leads me to believe that it may not be as difficult to resolve individual contradictions from within supportive institutions.

Managing the contradiction organisationally:

TEU faces organisational contradictions between its funding through the CCF—which strictly limits sustainability metrics to cuts in carbon emissions—and the organising principles of the Transition Network, which call for community-based social change akin to a paradigm shift. Applying an OL framework suggests that measuring sustainability efforts according to a carbon emissions reductions requires single-loop learning leading to first order change, whereas the paradigm shift called for by the organising principles of the Transition Network is more akin to double-loop learning and second order change.

A common pitfall of sustainability efforts within HEIs is an over reliance on eco-efficiency indicators as the sole assessment tools, instead of working towards a more cohesive process of sustainability (Shriberg, 2002). Eco-efficiency indicators stress material utilisation, environmental performance, and regulatory compliance. Using an OL framework, these indicators can be categorised as single-loop learning endeavours leading to first order change. Therefore, the CCF's strict focus on cuts in carbon emissions could be categorised as a limiting eco-efficiency metric. As Onisto (1999) succinctly states, "the danger of relying solely on eco-efficiency standards comes from the appearance that something substantive is being done. Eco-efficiency standards alone lull people into feeling that the environment has been adequately considered" (Onisto, 1999 p. 41). In contrast, sustainability indicators stress issues at the nexus of the environment, society, and the economy—these indicators would measure ecological literacy of graduates, question the financial contribution that a University makes towards a sustainable regional economy, and examine the sustainability of professions chosen by graduates (Shriberg 2002; Orr, 2000). These sustainability indicators could be categorised in an OL framework as double-loop learning endeavours leading to second order change. To accurately identify levers for institutional change for sustainability, we have to ask "how and "why" HEIs pursue sustainability, addition to measuring "what" they are doing (Shriberg 2002). In other words, measuring outcomes without exploring processes and motivations will not provide the necessary conditions for second-loop learning and second order change.

The Transition Network's principles provide a framework for moving beyond eco-efficiency, and therefore provide an opportunity for pursuing double-loop learning and second order change. However,

the CCF funding bid's strict reliance on carbon emission reductions as the sole measure of success creates tension and contradiction in the TEU project. Managing this organisational contradiction has been difficult, although as staff member Joseph Farthing puts it, TEU has worked to show the CCF that "building community cuts carbon." Joe was indicating that TEU has worked to show that the best way to reduce the carbon footprint of an institution is to work towards a creating a community-based paradigm shift. Joe was insinuating that by working to do *more* than strictly reducing carbon emissions, we will also succeed in reducing carbon emissions. This could be described as achieving first order change as a by-product of double-loop learning and second order change. In theory, this is a motivating way to describe the sticky management of an organisational contradiction. However, in practice, pursuing the TEU project as a community building exercise that happens to also cut carbon emissions has been limited by other structural considerations—such as the time and funding allotted the TEU project, the itinerant student population that does not have a clear incentive to invest in community building efforts, as well as the need to focus TEU staff efforts on credibly quantifying carbon reductions within their programmes. This suggests that the adherence to reductions in carbon emissions mandated by the CCF places restrictions on the ability of TEU to work towards double-loop learning and second order change, and therefore limits the ability of TEU to work towards embedding Carbon Conversations at the University of Edinburgh. I will address these structural considerations further in my discussion.

#### Managing the contradiction institutionally:

Stephen Sterling (2004) acknowledges that, "what is actually possible in any institution will be partly conditional upon the wider context within which that institution operates" (p. 67). Examining the wider context in which TEU operates highlights contradictions between TEU and the University of Edinburgh—the institution that TEU is both a part of and working to change. Ignoring the system of which TEU is a part of hampers the ability of the project to work towards institutional sustainability. So, in order to assess the ability of TEU to embed Carbon Conversations within the University of Edinburgh it's important to explore these institutional contradictions. As Illich (1972) states, "Any attempt to reform the university without attending to the system of which it's an integral part is like trying to do urban renewal in New York City from the twelfth story up" (p. 171).

Two glaring contradictions between TEU's goals and University of Edinburgh are found in the University of Edinburgh's 2008—2012 strategic plan. The first contradiction is between the University's 'enabling strategy' of expanding internationalism amongst students, and TEU's mandate to explicitly cut international travel of staff and students. As an international student myself, I'm aware that this institutional contradiction operates on an individual level in my own life, and is quite difficult for me to personally manage. The second contradiction is between the University's commercialisation of fossil fuel technologies through the £138 million sale of the oil field technology firm MTEM Ltd, and stated

aims of TEU to help the University continue reducing its environmental impact (University of Edinburgh 2010; TEU 2010). The University of Edinburgh's website touts the success of MTEM Ltd's technology stating, "in the UK sector of the North Sea alone, it's estimated that more than a billion barrels of additional oil could be located and produced using this technology" (University of Edinburgh, 2010). This definition of success contradicts the University of Edinburgh's strategic theme of promoting equality, diversity, sustainability, and social responsibility, as well as the aims of TEU.

The University of Edinburgh has offered welcomed support to TEU—through the staff time dedicated by Energy and Sustainability Advisor David Somervell, in-kind financial contributions, support from sympathetic staff, and enthusiastic support from the EUSA. The University of Edinburgh clearly states its support for TEU in Action 2.4 of the 2010 SSRS, declaring that it intends to, "deliver on the TEU Project aiming to cut the emissions from the 37,000 staff and students by 10% in 2010 in response to the challenges of climate change and peak oil—delivering the 10:10 campaign undertaking" (University of Edinburgh, 2010). However, if TEU were designed to achieve this goal by addressing larger institutional contradictions that support could be characterised differently. In other words, if TEU projects were affecting the University of Edinburgh's ability to capitalise on the expansion of fossil fuel technologies and recruit international students, the relationship between the two could change.

Managing these larger institutional contradictions is difficult for TEU, because they fall outside the remit of the organisation. Because the structure of TEU is not designed to address them its relationship with University of Edinburgh is less prone to conflict. The data suggest that if the project were funded to continue beyond its sixteen month timeframe, then confronting these institutional contradictions could become more of a priority, maybe even inevitable, but meeting the immediate CCF funded goals takes precedence over tackling larger institutional contradictions. For example, coding showed that during meetings between the months of June and September Pam McLean continuously called for staff efforts to focus on securing travel pledges. She made this request twelve times. In order to meet the goals of the CCF funding bid this is an important prioritisation to make, but it inherently draws staff time away from approaches that could lead to formally questioning the administration's recruitment of international students. The constraints placed upon TEU in managing larger institutional contradictions quickly draws attention to the second theme that emerged from the data: Structure.

## 5.2 Theme II: Structure

Applying OL theory to TEU requires us to examine the stated aims of the project in terms of how they relate to the structure of the project. The structure of TEU can be described in a variety of

ways. However, because time was the most oft-cited the limiting aspect of TEU's structure, I have chosen to focus my discussion of structure on time allocated to the project and its effect on TEU.

Data from meetings with staff on the task of embedding Carbon Conversations, data collected from staff meeting notes, a staff engagement research report prepared by staff member Mike Snyder, and my own Green Week evaluation prepared during the month of February 2010, all suggest that the sixteen month structure of TEU does not allow for the amount of time that it takes to accomplish the organisation's stated goals. These sources all conclude that sixteen months a difficult time frame within which to cut the amount of carbon emissions listed in the CCF funding bid, and it limits the projects ability to embed Carbon Conversations in the University of Edinburgh. For example, data sources identify time as the limiting factor in the ability of TEU staff to build relationships with other key University staff, identify creative ways in which to embed TEU programmes institutionally, build relationships with an itinerant study body, learn to efficiently navigate University bureaucracy effectively, hold personal conversations with an adequate volume of students to enrol them in TEU projects, effectively communicate TEU goals and generate community feedback on TEU projects to create 'buy-in,' and tailor TEU projects to fit with the busy schedules of staff and student lives in which time is often cited as the limiting factor in participating in sustainability initiatives. These barriers listed are all surmountable—but they require an adequate time investment to overcome within a divided and dynamic institution such as the University of Edinburgh. The TEU public report (2010) remarks that it took almost a year to iron out the organisational kinks enough to clear path towards progress on embedding TEU projects in University infrastructure:

The first ten months of the project have been a mixture of planning, design, piloting, AR, re-design, and engagement. Our final six months will be spent engaging with as many people as possible and leaving the legacy of our programmes so that they can be furthered and embedded in the existing student and staff infrastructure at the University of Edinburgh (p. 3).

Feedback from a June 8<sup>th</sup> staff introduction to TEU revealed that a common assumption amongst staff is that TEU's role is to make University buildings and institutional activities more sustainable, when in fact TEU's main role is to address the lifestyle carbon footprint of individuals associated with the University of Edinburgh. Feedback from this same session called for, "a more inclusive 'go-around' of some sort to ensure effective introductions and networking." Both of these insights are useful, and were elicited almost six months into the life of the project. They suggest that communicating TEU's purpose effectively is a time-intensive challenge. Explaining TEU's purpose accurately is surely a starting point for involving staff and students in TEU projects, which is in turn a structural imperative of the initiative. To sum up the finding: it took time to clarify that it would take even more time than expected to embed TEU projects, including Carbon Conversations, at the University of Edinburgh.

TEU's relatively short time frame adds to the difficulty of managing the individual, organisational, and institutional contradictions of working for sustainability. OL theory suggests that the mismatch between stated aims of TEU and the time-restricted structure will make achieving the aims of TEU difficult. Velazquez et. al (2005) also cite time as one of the most important limiting factors in deterring sustainability initiatives in HEIs. Reflecting on the structural limitations relating to time suggests sustainability initiatives in HEIs should be designed to take into account the amount of staff and student time that embedding institutional change requires. As Clark (1996) showed, institutional change in HEIs requires on-going work over a period of years that can stretch into decades. Structurally prioritising long-term time investment, and therefore resources, in HEI sustainability initiatives allows for the meaningful participation of a variety of stakeholders, which brings us to the last theme of the discussion.

### 5.3 Theme III: Participation:

The situation-specific grounding of OL theory and AR shows that a participant-led approach to institutional change for sustainability is important. A participatory approach should involve a variety of stakeholders engaged in a forthright and meaningful process. Therefore, policies designed to encourage institutional change for sustainability should focus on encouraging a variety of voices, including marginalized ones, to play a meaningful role in designing sustainability initiatives, instead of focusing solely on behaviour outcomes (Wals et. al 2008). As Jessen and Walker (1994) note, "Participation in problem assessment and solution design greatly enhances widespread understanding and commitment to change" (p. 203). Forthright participation implies an acknowledgement of the problem, which is the first step in creating change in any context. A relatively simple way to discourage institutional change is to disengage, to not participate, in creating change. From an administrative standpoint this could mean withdrawing from the process of designing, implementing, and evaluating sustainability initiatives. From an individual standpoint this could mean ignoring invitations to attend events, groups, and programmes geared towards sustainability. This finding mirrors the participation theme that emerged from my data. The data suggests that the process of embedding Carbon Conversations would have benefitted substantially from a structure that allocated more time to encourage the meaningful and forthright participation from a variety of stakeholders.

As noted in the data and analysis section, we developed the ET after the AR process showed that participation in TEU projects was an important challenge to address. Given that time has been TEU's most limiting factor in enlisting meaningful participation from a variety of stakeholders, the ET is strictly devoted to recruiting new staff and students for enrolment. Although the ET was not officially rolled out until August of 2010, its work to encourage participation has been successful and heartening. The data from the ET shows that investing time in face to face recruitment pays off—more people participate as a result. The TEU September report to the CCF shows that of the 3,404 people contacted by TEU, 914 have become involved. Over 600 of the 914 have signed up via direct contact with a member of the ET.

Aside from the work of the ET, as TEU has had time expand its circle of relationships within the University, meaningful participation of new individuals has created new opportunities. As Carbon Conversations facilitator Rosie Sullivan stated after a conversation with Professor Tom Bristow on efforts to embed Carbon Conversations, "He identified people I never would have thought to contact and new avenues to try out because he has been around forever. He knows certain people who have targets relating to corporate responsibility that relate to our work. I wish that we had spoken with him sooner. He has such a practical way forward, but I wish that time wasn't such a limitation." This finding suggests that a widened circle of participation benefits TEU's work to embed Carbon Conversations. Expanded participation also increases the likelihood of unpredicted, but beneficial, outcomes. For example, the participation of MSc student Catriona Laird in Carbon Conversations has led to her development of the course for implementation in Calgary. Although this won't lead to Carbon Conversations being embedded at the University of Edinburgh, its deployment as an educational tool in the Canadian province that is home to the Tar Sands is a welcome achievement. As more people meaningfully participate, it's more likely the project will succeed and expand in unexpected ways.

#### 5.4 Conclusion:

To refer back to my original research questions, I've shown that the structures of Carbon Conversations and TEU share some characteristics with double-loop learning and second order change that OL literature suggests will help embed sustainability in HEIs. These characteristics could be summarised as the solicitation of meaningful participation from a variety of stakeholders in a process that can lead to questioning the underlying institutional values that drive unsustainable practices. However, the work of embedding Carbon Conversations is hampered by the structure of the TEU project which does not allocate adequate time and resources. Themes drawn from my AR process show contradictions in working for sustainability in HEIs are unavoidable. However, the likelihood of success increases by designing the structures of sustainability initiatives to allow for enough time to generate robust participation.

The People and Planet Going Greener Guide states, “A Carbon Footprint study by TEU found that only 15% of their emissions came from the institution itself, compared with 85% from the community’s lifestyle,” (People and Planet 2010, p. 4). Reflecting on the work of Szaz and Guthman used to introduce my research, this quote seems to misrepresent the influence that institutions have on personal choice. It could be used to absolve the University of Edinburgh of responsibility to provide more structural incentives and disincentives to encourage sustainability. For example, how quickly would carbon emissions of short haul flights drop if the University refused to fund short haul flights for research within the UK? Although the quote pulled from the TEU carbon footprint survey devolves some institutional responsibility from the University of Edinburgh to individuals, TEU’s programmes and association with the Transition Network simultaneously insinuate the need for collective approaches to institutional change. Peer-learning processes in Carbon Conversations reveal that “Lifestyle” does not consist of people making choices on an equal playing field. If it’s more time consuming and difficult to make a sustainable choice, especially when it brings up contradictory issues relating to identity and cultural values, then people will be less likely to make that choice.

I’ve shown that providing institutional incentives requires embedding institutional change, and an innovation that does not become embedded will inevitably fail (Curry 1992; Levine 1980). Double-loop learning and second order change help describe how institutional change can become embedded. TEU’s Carbon Conversations project can facilitate double-loop learning on an individual level, helping participants identify the need to work towards second order change. As Catriona Laird explained, “Although Carbon Conversations takes an individual approach to behaviour change, talking about what really stands in the way of changing individual choices quickly shows that institutional barriers have to be removed. The bigger picture becomes clear when you have space to explore what is really going with personal decision making and sustainability.” TEU’s work to embed Carbon Conversations at the University has been structurally restricted by time limitations of the overall project, yet with adequate participation from a variety of stakeholders the likelihood of continuing the work increases.

Using AR to embed the Carbon Conversations project of TEU at the University of Edinburgh has revealed a variety of contradictions, and has helped show that working towards sustainability means learning how to manage these contradictions. Managing the contradictions of working for sustainability in unsustainable systems has suggested that the structure of organisations must take into account the amount of time needed to solicit the *meaningful* participation of as many stakeholders as possible. Meaningful participation from multiple stakeholders within a structure that allocates adequate time and resources to sustainability initiatives can help manage the contradiction of working to live within the ecological limits of systems that do not recognise ecological limits.

Because change won't happen quickly, it's important to be upfront about the inevitable contradictions of working for sustainability in unsustainable systems. This work involves forays into moral grey areas. However, the complexity of the process should not be used as an excuse for disengaging. Change *is* action, and institutional change for sustainability in HEIs is a process requiring the action of as many people as possible. We do not need more research to justify involvement in sustainability initiatives; instead, we should participate whole-heartedly in sustainability initiatives and reflect upon our work as advocates in order to make it more effective. AR can provide a helpful structure to facilitate this process. Managing the contradiction means navigating a constantly shifting space that allows for individuals with contradictory opinions to reach consensus on the best ways forward, while taking a strong stance as an advocate when necessary. We need to engage with others, to make links between the general and the particular, and to explore basic orientations and values. We need to create a sense of control by taking action.

In closing I would like to reflect on the links that I've made between my past professional life as a community organiser and my work with TEU. I had the opportunity to make these links while sitting in the audience during a presentation given by Joseph Farthing to University staff on the success of TEU's engagement strategy. As a community organiser, you are taught that your main goal is to make sure that lots of other people can do your job better than you can. It's better to have someone else standing at the microphone, to have someone else take your idea and make it their own, to have someone else get the credit. The idea is to increase participation, to build other people up, and to give power to important ideas by helping lots of people feel they have helped create them—and if you've done your job right then other people do help create those ideas. I have been privileged to have that experience in my work with TEU. As a part of the ET with Joseph Farthing, Mike Snyder, Neus Garcia, Amy Clarke, Emily Nicol, and Matt Lawson, I've watched my advice, ("Just go talk to people!"), flourish into a programme better designed, implemented, and monitored than anything I could have created. It is no small feat to fully grasp the power that systematic, direct, face-to-face communication has in uphill battles for sustainability. As a part of the ET we've had the experience of working with a tool that is effective—one that can help embed institutional change. We'll take that knowledge with us as we go on to work for sustainability in other institutions. This is enough of a success to keep me going in the face of so many contradictions.

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**Appendix A: Timeline of AR process, codes applied, table specifying material qualified as data**

Timeline of TEU activities during research process:

<b>Week of June 28<sup>th</sup> 2010:</b> Review of Engagement Team applications at TEU, scheduling of event at the Chrystal Macmillan Building, Carbon Conversations session 2.
<b>Week of July 5<sup>th</sup> 2010:</b> Interviews for TEU engagement team, two-hour review of progress of TEU project thus far, using the evaluation matrix. Individual semi-structured interviews with Pam McLean, Joe Farthing, and Ben Miller for dissertation purposes.
<b>Week of July 12<sup>th</sup> 2010:</b> Interviews for the engagement team, development of engagement team materials, team review of micro evaluation in preparation for August reporting.
<b>Week of July 19<sup>th</sup> 2010:</b> Staff engagement event at the Chrystal Macmillan Building, Individual semi-structured interviews with David Somervell, Ric Lander, Sion Lanini, and Joy Palmer.
<b>Week of August 2<sup>nd</sup> 2010:</b> Carbon Conversations session 3, semi-structured interview with Rosie Sullivan for dissertation purposes, discuss findings from Chrystal Macmillan event with Sion Lanini to develop the “energy advice clinic,” and re-vamp engagement materials for use with the Engagement Team.
<b>Week of August 9<sup>th</sup> 2010:</b> Two-day engagement team training including a launch of activities, preparation for the Festival, and initial preparation for Fresher’s Week—list of considerations to test during the Festival in preparation for Fresher’s Week, continuing work with EUSA to embed TEU projects during the upcoming academic year.
<b>Week of August 16<sup>th</sup> 2010:</b> Carbon Conversations session 4, Carbon Conversations facilitator training, Meeting with Dr. Alan Taylor rescheduled to discuss Carbon Conversations as continuing professional development option, preparation with Engagement Team for Fresher’s Week, feedback from findings of Festival work.
<b>Week of August 23<sup>rd</sup> 2010:</b> Coffee morning engagement strategy with staff, with a focus on sign-ups for Carbon Conversations. One coffee morning scheduled at the William Robertson building on Thursday the 26 <sup>th</sup> .
<b>Week of August 30<sup>th</sup> 2010:</b> Presentation of TEU programs with OE/OESE students, coffee hours scheduled at the Adam Ferguson Building, and held at the DHT.
<b>Week of September 6<sup>th</sup> 2010:</b> Planning for fresher’s week engagement strategies.
<b>Week of September 13<sup>th</sup> 2010:</b> Fresher’s Week—focus on events at Pollock Halls, the EUSA student societies fairs, the free shop, the campaigners BBQ, the Hard Rain exhibit, and the Big Green Makeover energy workshop.
<b>Week of September 20<sup>th</sup> 2010:</b> Informatics building coffee morning, Visions of Change event—prime opportunity for staff engagement.
<b>Week of September 27<sup>th</sup> 2010:</b> Carbon Conversations facilitator induction meeting, meeting to set up a TEU appraisal process. Continuing work with engagement team to follow up with contacts generated from outreach efforts.

Coding applied to data:

Action Research	Common Engagement Responses	Barriers and Hurdles	Internal Context/Dynamics	External Context	OL
AR: Opportunity: AR/O	CER: Too busy: CR/TB	BH: time + Uni constraints: BH/TU	IC: carbon reductions: IC/CR  IC: procedural delay and external interventions: IC/PDEI	EC: participation in the TEU process: EC/P	OL: single-loop: OL/SL  OL: conflicting world views: OL/CWV
AR: Intentional Feedback Session: AR/IFS	CER: inexperienced: CER/IE	BH: time + work pressures: BH/TWP	IC: office dynamics and office space: IC/ODOS	EC: estates and buildings: EC/E&B	OL: first order change: OL/FC
AR: Implementation: AR/I	CER: duplicating efforts: CER/DE	BH: time + personal pressures: BH/TPP	IC: evaluation targets: IC/ET	EC: Sustainability and Social Responsibility: EC/SSR	OL: double-loop: OL/DL
AR: Missed Opportunity: AR/MO	CER: intentions unclear: CER/IU	BH: Money and funding: BH/MF	IC: time constraints: IC/TC	EC: Sustainability and environmental advisory group: EC/SEAG	OL: second order change: OL/SC
AR: Time Constraints: AR/TC	CER: not personally relevant: CER/NPR	BH: contradictory word view: BH/CWV	IC: contrasting views of roles and responsibilities: IC/RR	EC: Climate Challenge Fund: EC/CCF	OL: epistemic learning: OL/EL
AR: explicit OL overlap: AR/OLO	CER: not professionally relevant: CER/NPRR	BH: internal political hurdle: BH/IPH	IC: healthy working environment: IC/HWE	EC: Scottish Parliament: EC/SP	OL: paradigm shift: OL/PS
		BH: participation: BH/P	IC: Carbon Survey: IC/CS	EC: Changeworks: EC/CW  EC: Teu participation in external decision making: EC/IC	OL: opportunity capitalized on: OL/O  OL: resources barrier: OL/RB
		BH: contrasting vision: BH/V	IC: Funding Bid Vs. Experience: IC/FBE  IC: events and outreach: IC/EO	EC: 10:10 campaign: EC/1010	OL: missed opportunity: OL/MO
		BH: transient population: BH/TP	IC: staff training: IC/ST  IC: travel: IC/travel	EC: People and Planet: EC/P&P	OL: time barrier: OL/TB

Materials included as data:

Edinburgh University Strategic Plan 2008—2010

Edinburgh University Sustainability and Social Responsibility Strategy 2010

Semi-Structured interviews conducted with: Pam McLean, Joseph Farthing, Rosie Sullivan, Ben Miller, Sion Lanini, David Somervell, Ric Lander, Caro Overy, and Joy Schlageter.

Green Week Evaluation 2010

Staff Participation Report—researched by Mike Snyder and commissioned by TEU

Personal journals kept June 2010—October 2010

TEU email correspondence between February 2010—October 2010

TEU CCF reporting documents

TEU CCF Funding Bid

TEU Public Report, September 2010

TEU team meeting notes February 2010—October 2010

**Appendix B: Examples of coded notes:**

Appendix C: Graph of programme sign-ups showing Engagement Team impact, compiled by Joseph Farthing

