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UNIVERSITY OF SOUTHAMPTON

FACULTY OF HUMAN AND SOCIAL SCIENCES

Southampton Education School

**An action research approach for embedding education for
sustainability in a university undergraduate curriculum**

by

Gisela Cebrián Bernat

Thesis for the degree of Doctor of Philosophy

February 2014

UNIVERSITY OF SOUTHAMPTON

ABSTRACT

FACULTY OF HUMAN AND SOCIAL SCIENCES

Education

Thesis for the degree of Doctor of Philosophy

**AN ACTION RESEARCH APPROACH FOR EMBEDDING EDUCATION
FOR SUSTAINABILITY IN A UNIVERSITY UNDERGRADUATE
CURRICULUM**

By Gisela Cebrián Bernat

Research on sustainability in higher education has tended to focus on environmental management of university estates and operations, and case studies and examples of good practice, without presenting the coherent theoretical or methodological approaches required to look at the change processes of universities seeking to embed sustainability. Although the value and contribution of university initiatives has been articulated, little holistic and structural transformation of universities has been achieved so far. This doctoral research aimed to examine organisational learning and change processes to build education for sustainability into the university curriculum by developing its theoretical basis, and by developing qualitative methodology. The original contributions to knowledge of this doctoral thesis are the exploration of organisational learning processes towards sustainability in higher education, the exploration of action research as a research method to foster organisational learning towards sustainability, and the development of an evidence-based model on how to embed education for sustainability in the undergraduate curriculum at the University of Southampton. The integration of different theoretical approaches to organisational learning such as organisational learning theory, the idea of expansive learning at work, the learning organisation ideal and transformative learning theory provide the theoretical foundations for this study. Therefore contributing to the understanding of how individuals in organisations can transform their mental models in order to change current practice leading to organisational learning towards sustainability in higher education. At a methodological level, an action research approach guided by participatory and emancipatory approaches was used. The researcher aimed to learn from real practice through acting as a facilitator for curriculum development in education for sustainability within an interdisciplinary group of academic staff members. A critical friend position was acquired within a community of practice to implement a programme which attempted to embed sustainability within the student experience. An evidence-based model (the I3E Model) has been developed with four overarching components that can support the University of Southampton in its aim to embed education for sustainability within the undergraduate curriculum. These integrated components are: Inform the university community about sustainability; Engage the different university stakeholders in the change process towards sustainability; Empower individuals and groups to make change happen within their sphere of influence and action; and Embed sustainability within existing university structures.

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DECLARATION OF AUTHORSHIP

I, Gisela Cebrián Bernat, declare that the thesis entitled 'An action research approach for embedding education for sustainability in a university undergraduate curriculum', and the work presented in the thesis are both my own, and have been generated by me as the result of my own original research. I confirm that:

- this work was done wholly or mainly while in candidature for a research degree at this University;
- where any part of this thesis has previously been submitted for a degree or any other qualification at this University or any other institution, this has been clearly stated;
- where I have consulted the published work of others, this is always clearly attributed;
- where I have quoted from the work of others, the source is always given. With the exception of such quotations, this thesis is entirely my own work;
- I have acknowledged all main sources of help;
- where the thesis is based on work done by myself jointly with others, I have made clear exactly what was done by others and what I have contributed myself;
- parts of this work have been published as:

Cebrián, G., Grace, M., & Humphris, D. (in press). Academic staff engagement in Education for Sustainable Development. *Journal of Cleaner Production*.

Cebrián, G., Grace, M., & Humphris, D. (2013). Organisational learning towards sustainability in higher education. *Sustainability Accounting, Management and Policy Journal*, 4(3), 285-306.

Cebrián, G., Grace, M., & Humphris, D. (2012). Developing people and transforming the curriculum: Action research as a method to foster professional and curriculum development in Education for Sustainable Development in Higher Education. In W. L. Filho (Ed.), *Sustainable Development at Universities: New Horizons* (pp. 273-284). Frankfurt: Peter Lang Scientific Publishers.

Signed:.....

Date:.....

Acknowledgements

I would like to sincerely thank my doctoral thesis supervisors Dr Marcus Grace and Professor Debra Humphris for their unconditional support. Their help and discussions have contributed immeasurably to my development as an academic. I am pleased to have had them as my supervisors, their expertise, and for their trust in my work and my potential.

To all the staff and students at the Southampton Education School, and especially to Professor Melanie Nind and Professor Ian Bryant, I extend deep gratitude for providing their expertise in action research, and for motivating me in the early stages to believe that placing my research within this tradition was possible and practicable. Thanks also go to the community of practice that we formed with other doctoral students' peers at the Southampton Education School, especially to Joanna and Eva. This process would not have been the same without them, for all the great moments we have shared together and, I hope, to continue sharing.

Further thanks go to the participants, who committed to this project by providing their time and enthusiasm, and because without their involvement and commitment this research would not have been possible.

I am also grateful to the Research Group Complex, especially to Mercè Junyent, who was my master's supervisor and friend, and Ingrid, companion in academic adventures and friend, I appreciate your absolute support and help.

More thanks go to all the new friends I met that have helped me to enjoy the good things of life during these three years at Southampton, particularly to the Catalan members of the university (it's always great to feel as home even though being away), and to Maria, Marco and all the nice people in Cranbury Avenue for taking care of me and making me feel supported and loved during the last months of the writing-up. I do not know how I would have gone through these last months without them. Special thanks to Rich and Joanna, for their friendship and proof-reading this thesis, and for helping me learn new things and improving the writing quality of my thesis. I cannot thank them enough for this.

To my family and friends back home, for loving me unconditionally and ensuring that I have a great time, and that I disconnect every time I see them, to go back to work with more energy. Specially to Eric, Juli, Mireia, Júlia, Guillu, Judith, Xell, Illa, Adri, Manola, Kamatxin, Ramonet, Aida, Loko,.. and so many others. For sharing with me so many moments during this process and for making me feel supported, even across long-distance.

Finally, to my family and specially to Bernat, Ma José, Goretti, Alex and Ruth, sources of inspiration in my life. I have no words to thank my parents and sister enough. I could not have gone through this process without their support and love. For their patience and emotional support. For always believing in me and for always being there no matters what happens.

Particularly to little Ruth, the new-born of the family, one of the best things that has happened in my life during the doctorate. For awakening in me new feelings of love that I have not experienced before. It was magic seeing you for the first time, and for making me smile during the last difficult moments and remembering that there is life waiting for me after the doctorate. I am looking forward to see you growing.

Acronyms and abbreviations

AASHE	Association for the Advancement of Sustainability in Higher Education
ACTS	Australasian Campuses Towards Sustainability
ALC	Action Learning Conversation
AISHE	Auditing Instrument for Sustainability in Higher Education
ARIES	Australian Research Institute in Education for Sustainability
ARIUSA	Iberoamerican Network of Universities for Sustainability and the Environment
BEES	Business Environment and Ethics Students
BRASS	Centre for Business Relationships, Accountability, Sustainability and Society
CIP	Curriculum Innovation Programme
CHAT	Cultural-Historical Activity Theory
CPD	Continuous Professional Development
DEFRA	Departments for the Environment, Food and Rural Affairs
DfES	Department of Education and Skills
EAR	Emancipatory Action Research
EAUC	Environmental Association for Universities and Colleges
EfS	Education for Sustainability
EMS	Environmental Management Systems
ESD	Education for Sustainable Development
GASU	Graphical Assessment of Sustainability in Universities
GHESP	Global Higher Education for Sustainability Partnership
GUNI	Global University Network for Innovation
GUPES	Global Universities Partnership on Environment and Sustainability
G8	Group of Eight
HE	Higher Education
HEI	Higher Education Institution
HEA	Higher Education Academy
HECM	Higher Education Carbon Management
HEFCE	Higher Education Funding Council for England
IAS	Institute of Advanced Studies
IAU	International Association of Universities
ISO	International Organization for Standardization
ISCN	International Sustainable Campus Network
LIFE	Learning in Future Environments
LSC	Learning Skills Council
NOCS	National Oceanography Centre Southampton
NUS	National Union of Students

NGO	Non-Governmental Organisation
PAR	Participatory Action Research
PDCA	Plan–Do–Check–Act
PRiME	Principles for Responsible Management Education
ProSPER.Net	Promotion of Sustainability in Postgraduate Education and Research Network
QAA	Quality Assurance Agency for Higher Education
REF	Research Excellence Framework
RCE	Regional Centre of Expertise
RS	Reflective session
SAQ	Sustainability Assessment Questionnaire
STARS	Sustainability Tracking, Assessment and Rating System
STAUNCH	Sustainable Teaching Audit for University Curricula in Higher Education
SUSU	University of Southampton Students’ Union
TEDx	Technology, Entertainment, Design
UCCCFs	Universities and Colleges Climate Commitment for Scotland
ULSF	University Leaders for a Sustainable Future
UK	United Kingdom
UN	United Nations
UNCED	United Nations Commission on Environment and Development
UNCSD	United Nations Conference on Sustainable Development
UNDESD	United Nations Decade of Education for Sustainable Development
UNECE	United Nations Economic Council for Europe
UNEP	United Nations Environment Program
UNESCO	United Nations Educational, Scientific and Cultural Organization
UNU	United Nations University
UUK	Universities United Kingdom
WSSD	World Summit on Sustainable Development

Chapter 1: Introduction

1.1 Rationale

Today's society faces many global challenges, such as dealing with the economic crises, climate change, desertification, deforestation, environmental degradation, inequalities, wars and poverty eradication (United Nations, 2012). In this global context, the idea of sustainability or sustainable development has gained widespread international recognition as the way forward to ensure quality of life, equity within and between current and future generations, and environmental health (DEFRA, 2005; UNESCO, 2009). Although the conceptualisation of sustainability remains controversial, with different perspectives and definitions of the term existing (Bell & Morse, 1999; Dresner, 2002; Eichler, 1999), there is political agreement on the need to build awareness and develop strategies and action plans to deal with current societal global challenges (HEFCE, 2009; United Nations, 2012). Sustainability has also gained an academic focus; different subject areas, such as environmental sciences, economics, sociology, ethics and politics, are continuing to generate and advance scientific knowledge, as well as other forms of knowledge (Filho, 2011). Advocates of sustainability face environmental, social, economic and communication challenges (Martin, Martin, Jucker, & Roberts, 2008).

The past decade has witnessed increasing recognition and political agreement over the role of education as a major agent to transform current society into a more sustainable, equitable and socially just one (UNESCO, 2005; United Nations, 2012). This has been reflected in international and national strategy and policy development, for example the Declaration of the United Nations Decade of Education for Sustainable Development (abbr. UNDESD, 2005-2014) in 2005, and the United Nations Economic Commission for Europe (UNECE) Strategy for Education for Sustainable Development (ESD) in 2011. The Declaration of the UNDESD in 2005 acted as a catalyst to the processes of integrating the principles of education for sustainability (Efs) into all levels of education (UNESCO, 2005). According to UNESCO (2009, p. 2) Efs is based on *'values of justice, equity, tolerance, sufficiency and responsibility'*, with respect as its core. The existence of diverse views of sustainability and diverse ways to embed Efs are acknowledged as a positive element to ensure that new developments are culturally and locally relevant but with *'consensus around a range of key principles covering the scope, purpose and practice'* (Wals, 2009, p. 25). In a recent expert review, Tilbury (2011) highlights important Efs learning processes, such as collaboration, systems thinking, innovation, and active and participatory learning. Higher education (HE) is a principal agent for addressing the

current sustainability challenge that society is facing, because of its key mission of knowledge generation and transfer through research and teaching (UNESCO, 2005; United Nations, 2012). So for instance, in the United Kingdom (UK), the Higher Education Funding Council for England (HEFCE) in 2005 published its first Sustainable Development strategy, and in 2010 set up a Carbon reduction target and strategy for higher education institutions (HEIs) in England (HEFCE, 2009, 2010).

Sustainability in HE calls for interdisciplinary and innovative practice to promote sustainability in all its activities (Cotton & Winter, 2010; Dawe, Jucker, & Martin, 2005; Jones, Selby, & Sterling, 2010b; Tilbury, 2012). Many academics in the field of sustainability in HE claim a paradigm shift – an epistemological change - is needed towards sustainability that is based on holism, critical subjectivity and relationalism (Jones, Selby, & Sterling, 2010a; Sterling, 2004; Tilbury, 2004). Two of the key texts on sustainability in HE (Corcoran & Wals, 2004; Gough & Scott, 2007) give special attention in their first chapters to the role and purposes of HE in the current society. They argue that there is a need to rethink the existing paradigm of HE and to engage the university community in the debate about the purposes of HE in the current society (Bawden, 2004; Gough & Scott, 2007). The curriculum, pedagogy, structure, organisation and ethos are shaping dimensions of education; therefore embedding sustainability implies a cultural change rather than an add-on to existing curricula and structures (Sterling, 2004).

Education and learning can stimulate the critical reflection necessary to challenge existing worldviews and current unsustainable practices (Huckle & Sterling, 1996). Efs can foster a sustainable social transformation, through the clarification and reassessment of values; it should be creative, innovative and constructive, culturally appropriate and action-orientated (Sterling, 1996; Tilbury, 2004; Tilbury & Wortman, 2004). As discussed earlier (Cebrián, Grace, & Humphris, 2012) participatory and emancipatory approaches such as action research can be a transformative strategy and research approach to foster individual, professional and organisational learning in Efs in HE. Therefore *'one needs to appreciate that sustainability is more a journey than a checklist as worldviews pervading thinking and practice need to be questioned'* (Tilbury, 2012, p. 19).

Thus sustainability in this research is defined as a learning process that encourages transformative learning, the capacity to challenge existing patterns and worldviews, to construct new knowledge collectively, to rethink current practice, and to critique and examine sustainability issues (Sterling, 2001). Universities have played significant roles as agents for

social transformation in the past (Cortese, 2003) and nowadays are critical in addressing the current sustainability challenge that society is facing (HEFCE, 2009; Sterling, 2013). However, while universities are envisioned as part of the solution, they can also be seen as part of the problem. According to Orr (2004, pp. 7-8) environmental degradation *'is not the work of ignorant people. Rather, it is largely the result of work by people with BAs, BSs, LLBs, MBAs and PhDs'*. Political leadership in the national and international arena is likewise led by individuals who hold university degrees. Policy-makers have failed so far to mainstream the challenge of sustainability into global and local action (Martin & Jucker, 2005). This is probably because sustainability is a multifaceted concept which involves dealing with ambiguity, complexity, multiple stakeholders, worldviews and values, and is difficult to solve because it is an evolving and moving target (Martin et al., 2008). Nevertheless HE is in a privileged position; its commitment and action is critical towards achieving a sustainable society (Clugston & Calder, 1999; Cortese, 2003). However, as a previous step to reach the ideal of universities contributing genuinely to sustainability, they need to rethink their current structures and social purposes and, in essence, to transform themselves (Tilbury, 2012; Velazquez et al., 2006).

Many universities have signed international and national declarations and have publicly committed to work towards achieving sustainability in their estates and operations, research, outreach and curriculum (HEFCE, 2010; Wright, 2002). However sustainability in HE is a rather recent and emerging research area (Wright, 2010). Most of the research in the field has focussed on: environmental management and greening of university estates and operations; descriptive case studies and examples of good practice of universities; embedding sustainability in specific courses such as environmental sciences, business and engineering; theoretical developments on teaching and learning approaches towards sustainability; university and policy analysis (Barth & Rieckmann, 2013; Cotton et al., 2009; Fien, 2002; Wright, 2010). The lack of theorisation of research conducted in the field has been criticised for often leading to descriptive and non-theoretical accounts (Corcoran, Walker, & Wals, 2004; Fien, 2002). It could be argued that the focus has been on explaining part of the stories of transformation, as papers have concentrated on the achievements and positive experiences without paying sufficient attention to the barriers to progress and the process of change per se (Velazquez et al., 2005). The environmental management and greening of campus operations and estates has seen much more progress than curriculum development (Jones et al., 2010a). Despite the emerging literature, the signing of international declarations and the creation and development of university strategies and policies, little implementation and holistic

transformation has been achieved in the curriculum arena so far (Thomas, 2004; Wright, 2002).

The existing body of literature reports different universities' experiences on implementing sustainability, but HE organisations have failed so far to bring about the necessary structural changes required for the paradigm shift and transformation advocated by EfS experts (Sterling, 2004; Tilbury, 2012). Most of the research reported to date has focussed on small-scale projects and examples of good practice that show the potential in creating organisational learning and in HE becoming a leader and innovator to advance sustainability (Albrecht, Burandt, & Schaltegger, 2007; Beringer & Adomßent, 2008). These projects have been proved to be successful but they are often fragmented and happen in the margins of the organisation (Sharp, 2002). They tend to involve a small portion of the university community without connecting strategies and actions and without effecting the required social and cultural transformation of HE (Tilbury, 2012). As Tilbury (2012, p. 19) stresses *'attempts to mainstream this agenda across HE have so far failed to have impact'*. Hence it is mainly champions and enthusiastic university staff who are leading this agenda (Jones et al., 2010a; Policy Studies Institute et al., 2008).

Institutional commitment, allocation of resources for innovative projects, leadership and the professional development of staff, amongst others, are needed for holistic curriculum change towards embedding sustainability (Ryan, 2011). Emergent areas of research on sustainability in HE are those of the professional development of staff, organisational learning and change processes, and leadership, which have been largely overlooked so far (Thomas, 2004; Tilbury, 2012). There exists a lack of lessons learned and the application of these derived from successful organisational change projects in HE (Ryan, 2011). According to Thomas (2004, p. 41) *'to develop EfS, we need to recognise that the scope of curriculum change we are looking at is in essence organisational change'*. Hence understanding organisational processes, rethinking organisational practices that inhibit organisational learning and change, and becoming learning organisations is crucial in the process of embedding sustainability in the curriculum (Gudz, 2004). In becoming learning organisations, universities have the power and potential for achieving structural and systemic change (Sharp, 2002). A learning organisation is based on lifelong and team learning amongst its members (Senge, 2006).

Thus universities face two main challenges in becoming learning organisations towards sustainability: the fact that sustainability is an evolving and moving target, and the need to *'become skilful at the process of change itself'* (Sharp, 2002, p. 129). Further research is needed

to understand the processes of organisational change and learning towards embedding sustainability in HE curriculum (Thomas, 2004). Little empirical research on EfS has documented the key issues, processes and learning generated through organisational change processes in itself (Tilbury, 2010; Velazquez et al., 2005). There is a need to promote research in curriculum and staff development within an organisational environment if we are to truly aim for the implementation of the principles of EfS within university curriculum and for the generation of holistic organisational change (Barth & Rieckmann, 2012; Holdsworth et al., 2007). Within a university success in embedding sustainability depends on learning at an individual and organisational level. This involves the empowerment of its members and the creation of spaces for collective and interdisciplinary reflection and collaboration, which encourage learning, critical reflection on existing practices and worldviews, and creative and innovative action (Sterling, 2004).

Through my research I aimed to explore the organisational learning processes linked to curriculum development in the area of sustainability in HE, taking the case of the University of Southampton as the focus of my study. The overall aim of my research was to inform future developments and actions of the University of Southampton in terms of curriculum development and organisational learning towards sustainability, through the proposal of a model on how to embed EfS within the undergraduate curriculum.

1.2 Research aims and contributions

The purpose of my research was to develop an understanding of how EfS could be embedded within the undergraduates' curriculum across the University of Southampton. My research concentrated on two key aims concerning EfS within the University of Southampton.

My first research aim was to better understand the factors influencing academic staff engagement in EfS, and their views and visions in relation to EfS. Although the factors influencing embedding sustainability within HE have been comprehensively studied elsewhere (Corcoran & Wals, 2004; Dawe et al., 2005; Moore, 2005a; Policy Studies Institute et al., 2008), each individual HEI is culturally and socially different (Coghlan & Brannick, 2005). Very little research exists that has studied in-depth staff understandings, attitudes, and challenges faced when thinking about embedding the principles of EfS within their professional practice (Cotton et al., 2009). Stage I of my research design was conceived as an exploratory phase and as a

necessary initial step to gain a deeper understanding of the organisation, the challenges encountered and the opportunities envisioned by its academic staff members (see Figure 1.1). The need for the integration of sustainability in the different levels of education has been advocated nationally and internationally (DEFRA, 2005; UNECE, 2009; UNESCO, 2005, 2009), however in order to achieve this goal university teachers' understanding and views in teaching sustainability need to be explored (Reid & Petocz, 2006). One of the objectives of this exploratory stage was to identify possible participants for the subsequent research stages, and to inform the research design and development of the subsequent research stages.

In Stage II of the research I adopted a facilitator role for curriculum development on EfS (see Chapter 7 Research design and processes). I worked with an interdisciplinary group of five academic staff members from different subject areas to critically reflect and act towards embedding EfS in their teaching practice. This was conceived as an exploratory study that used an emancipatory action research (EAR) approach to learn from the factors that emerged from real practice, the impact of the method used, and my role in generating organisational learning towards sustainability.

My second research aim was to establish whether a model to embed EfS within the undergraduates' curriculum could be developed at the University of Southampton (see Figure 1.1). Several publications have reported on projects and initiatives worldwide that have sought to embed sustainability within the curriculum for specific subjects such as geography, environmental sciences, business studies and engineering; however for subjects such as linguistics, history, humanities and health sciences it could be considered to be more difficult to embed sustainability into the curriculum (Policy Studies Institute et al., 2008; Sterling, Maxey, & Luna, 2013). Current research concerning EfS in HE lacks focus in a holistic curriculum approach (Jones et al., 2010a). Tilbury et al. (2004) carried out a participatory action research project in order to engage HE academic staff members to explore ways to change the curriculum towards sustainability. This was undertaken using an innovative and interdisciplinary approach to promote professional development, curriculum and organisational change in Australian universities. In the UK, a report on EfS and holistic curriculum change commissioned by the Higher Education Academy (HEA) has been recently published (Ryan, 2011). Ryan (2011) reviews holistic curriculum change processes at twenty universities around the world. She also conducts an in-depth study of the cases of three leading UK HEIs to inform on the keys for holistic curriculum change towards embedding sustainability. In this report the holistic curriculum approach includes the practices, policies,

and strategic actions that contributed to curriculum development and organisational learning to embed the principles of sustainability.

My research focussed on the development of an organisational learning model to embed EfS within the undergraduate curriculum at the University of Southampton. This research was conceived as an exploratory action research (see Figure 1.1) because it seeks to: (i) bridge the gap between theory and practice; (ii) allocate an active role to the researcher who becomes a research instrument; (iii) empower the research participants; (iv) generate learning and action through the research process in itself; and (v) explore the impact of the method and the roles adopted in generating organisation learning towards sustainability (Carr & Kemmis, 2009; Noffke, 2009; Somekh, 2006). I therefore engaged in a methodological experimentation process to study the complex topics of EfS and organisational learning in HE (Lotz-Sisitka, 2012b). My aim was to learn from real practice through acting as a facilitator for curriculum development by working with an interdisciplinary group of five academics seeking to develop their teaching practice on sustainability (Stage II). In stage III, I adopted the role of critical friend within a community of practice seeking to implement a programme that attempts to embed sustainability within the student experience. The aims of this research were to:

- Identify key factors, strategies and conditions necessary to embed EfS within the undergraduate curriculum at the University of Southampton, taking a holistic and organisational perspective;
- Identify existing contradictions, resistances, and challenges and opportunities faced when trying to work with academic staff in changing thinking and practice;
- Promote a critical self and group reflection which facilitates acquiring new perspectives and discourses;
- Generate personal, professional and organisational learning towards sustainability amongst the research participants.

The following research questions guided my research:

- 1. What are the factors influencing academic staff engagement in education for sustainability?**
- 2. What are the views and visions of academic staff in relation to education for sustainability?**
- 3. How can a model be developed for the University of Southampton to embed education for sustainability within the undergraduate curriculum?**

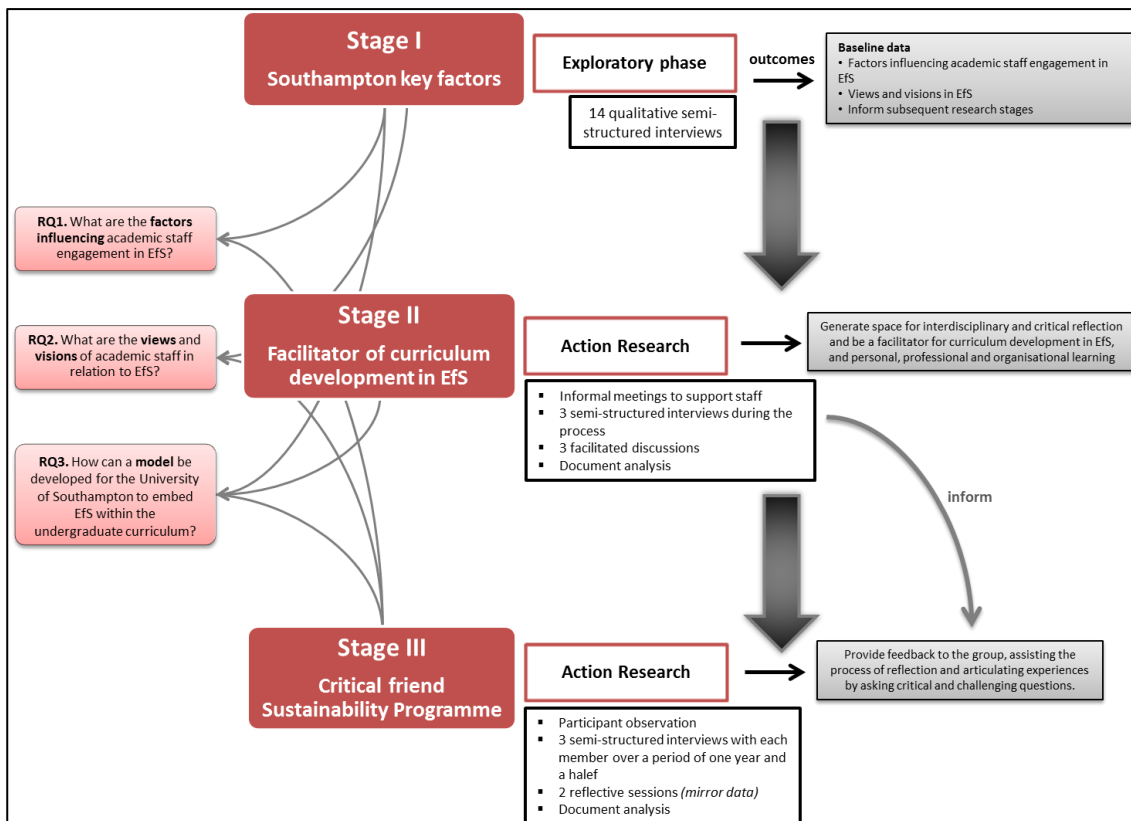


Figure 1.1 Research design

Through the design and conduct of this research I aimed to make the following contributions (see Figure 1.2):

- **Exploration of organisational learning processes towards sustainability in higher education**

The use of systems thinking and organisational learning theory to better understand the change-processes of universities towards embedding sustainability have been recommended in the literature (Sharp, 2002; Thomas, 2004). However while an extensive set of publications on the lessons learned and descriptive case studies exists (Corcoran et al., 2004), little research has been conducted on the process of change itself (Tilbury, 2010; Velazquez et al., 2005). Organisational learning theories that inform this research are discussed in Chapter 4. The use of this theoretical approach helps to identify key issues, challenges and opportunities, and the learning processes of the research participants to foster learning organisations' ability to rethink their structures and cultures in order to embed sustainability in the curriculum (Argyris, 2006; Cebrián, Grace, & Humphris, 2013; Henderson, 2002). This research aims at contributing

to generating knowledge on organisational learning processes in HE in the context of sustainability, through researching with academic staff members trying to embed sustainability within their teaching (Stage II) and with a community of practice, which I refer to as the 'Sustainability Programme', implementing a change programme at the University of Southampton (Stage III).

▪ ***Exploration of action research as a research method to foster organisational learning for sustainability***

Action research is a methodology that can contribute to the transformation of professional practice, generate new knowledge and promote the progress of the current state of EfS in HE (Cebrián et al., 2012; Warburton, 2003). According to Kemmis (2010) action research can contribute to making a better world through inquiry within the real world, providing new ideas for practice, new ways of thinking, new ways of doing and new relations (to others and to the world). Action research has been acknowledged in the literature on EfS as the suitable research methodology for its ability to promote learning through action and reflection (Cebrián et al., 2012; Tilbury, 2004; Warburton, 2003). Research for sustainability in HE has, over the last decade, become more focussed on: interdisciplinary practice; transforming rather than informing; having social impact; social and structural change; researcher as a partner; and research with people rather than on people (Tilbury, 2012). These movements observed in this research area are aligned with more participatory and action-orientated research paradigms (Kemmis, 2010; Kemmis & McTaggart, 2005). An action research approach can offer opportunities to engage academic staff members in a learning-by-doing process, where critically reflecting on existing worldviews, clarifying values and acting towards sustainability in a practical, but also in a theoretical way, are the core elements (Somekh, 2006). EAR, placed in the critical theory paradigm (Carr & Kemmis, 1986, 2009), can contribute to the generation of new ways of seeing the world. Other research and doctoral theses have also used action research on the field of sustainability to foster professional and organisational learning in different organisational contexts (Barasa Atiti, 2008; Marsh, 2011; Tilbury et al., 2004) but further research on the area of EfS in HE is needed, particularly in combining different research methods and using innovative tools (Lotz-Sisitka, 2012b). For this reason I used action learning (Pedler, 2011b; Revans, 2011) as the research method to run the group discussions for Stage II, and I adopted a facilitator and critical friend role for Stage II and III of the research (Bambino, 2002; Kember & Associates, 2000). Therefore I make a proposal on a framework of EAR to

work with academics on curriculum development for EfS. Through this research I aimed to evaluate the potentialities and limitations of this framework, what it may have the potential to achieve and the contribution that the use of this methodology and research method can make to organisational learning on sustainability (Coghlan & Brannick, 2005), contributing to the literature on critical friends and facilitator's role in assisting organisational learning towards advancing curriculum development in EfS in HE.

▪ ***Development of a model that emerges from real practice in a research-led university***

My research has aimed to bridge the gap between theory and practice identified in the field of EfS in HE (Cotton et al., 2009; Moore, 2005a; Thomas, 2004). In research conducted on staff perceptions of EfS Cotton et al. (2009) found that the pedagogical literature on EfS does not encounter, and tends to discount, the experiences and everyday life of academics, which are not necessarily in line with EfS educational ideals. My research emerged from the necessity to mirror and connect the everyday experiences and issues that academics face in real-practice when trying to embed sustainability within their teaching (Stage II). This research acknowledged the importance of reflective practice from all the participants in the research, including myself as an early-career researcher. In the UK, teaching-led universities are the ones that are leading the sustainability agenda in HE, rather than the research-led Russell Group universities (Williams, 2010). This research also attempted to inform on the contextual issues, challenges and opportunities that have emerged from real practice when embedding sustainability within a research-led university such as the University of Southampton.

▪ ***Development as an early-career researcher and the need to 'walk the talk'***

When I arrived at the University of Southampton to start my doctoral research in January 2011 I engaged in the Research Training Programme, provided by the Southampton Education School, and in several academic discussions on topics such as philosophical issues, research methodologies and practices. I still remember some of the questions that the lecturers on the training courses for new doctoral students posed to the group to challenge our thinking and help us reflect: What kind of researcher are you or do you want to be? How do you understand knowledge and its generation? What do you enjoy doing more?

Previous personal, professional, educational and research experiences influenced my choice of approach and the type of research I conducted. I was willing to put into practice what I had read in several publications on EfS during my Master's research and through my participation in different conferences. This research attempted to put into practice the principles that have been widely advocated in the literature on EfS in HE, which are further discussed in Chapter 3, by working with academic staff members from different disciplines, creating spaces for interdisciplinary discussion, critical reflection, and collaboration (Corcoran & Wals, 2004). In her doctoral research Moore (2005a) identified as one of the barriers to creating sustainability programmes in universities the difficulty to 'walk the talk' of sustainability. Moore (2005a) conducted a participatory action research in her university and envisioning it as an activist research and a political journey. For my research I chose to walk the talk and engage in a participatory, collaborative and transformative learning process. I sought to empower the research participants and foster critical reflection to generate new discourses and practices on sustainability in HE. As an international student I had little knowledge of the UK HE system and it was fundamental to me to learn from people's experiences and understand contextual factors working with them within a participatory and emancipatory paradigm. I envisioned my research as a journey and as a transformative learning process to foster organisational learning. I engaged in a critical reflective process with my participants, which meant I was willing to challenge my own assumptions and develop new understandings on how to embed EfS within the undergraduate curriculum. Placing my research in the critical theory paradigm (Carr & Kemmis, 1986, 2009) has allowed me and the research participants to engage in this process of critical reflection. The conduct of the doctoral research has given me opportunities to engage with the existing literature in critical social theory and action research, and learn from its application to the real world and real practice situations, which has transformed me as a researcher and as an individual.

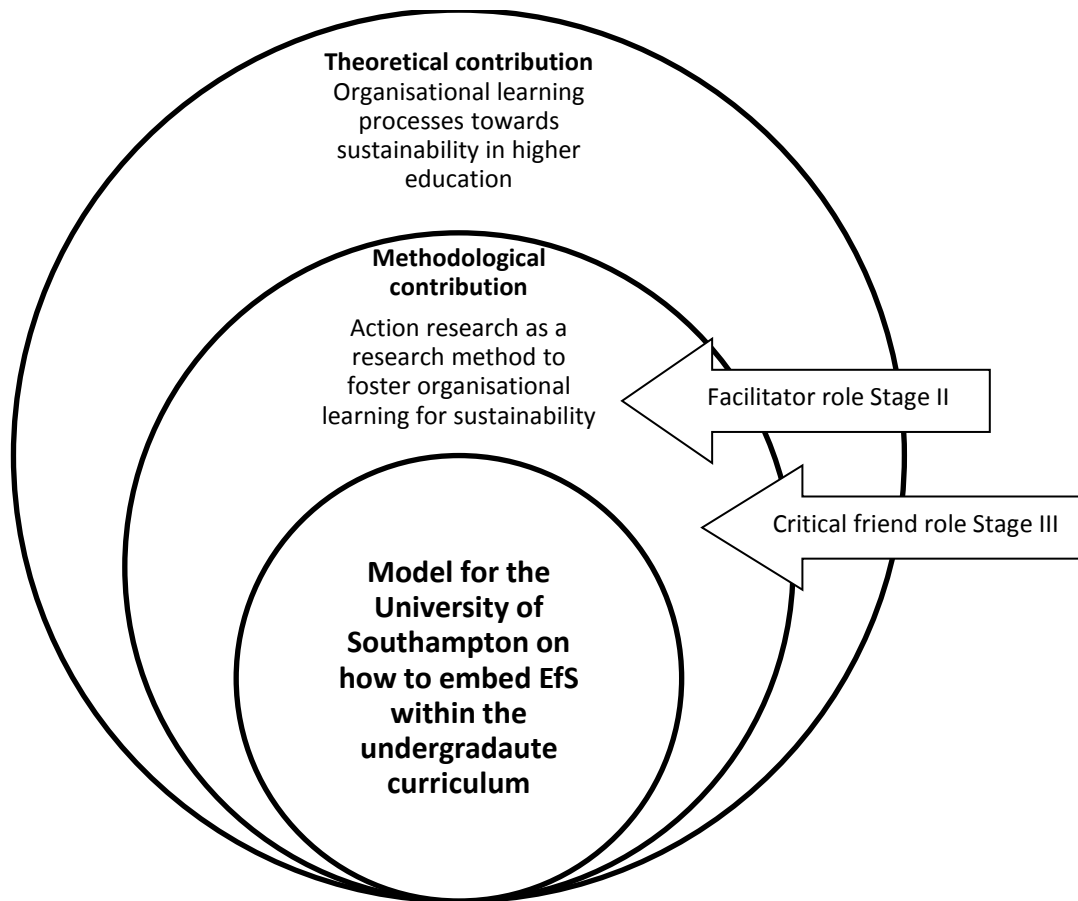


Figure 1.2 Research contributions

1.3 Outline of the thesis

In **Chapter 1** of the thesis I have introduced and placed the research in the broad body of knowledge, outlined the research domain, and described the key contributions that the research has attempted to make. In **Chapter 2** I present the context of the research, reviewing international and national milestones in the field of sustainability in HE and in the UK context. In **Chapter 3** I review the existing literature and developments on sustainability in HE. I highlight key achievements, main areas of development and progress made so far and I also discuss what the emerging research areas are and what needs further exploration. In **Chapter 4** and **Chapter 5** I outline the theoretical foundations of the study. In **Chapter 4** I discuss organisational learning theory, the concept of the learning organisation, cultural-historical activity theory and transformative learning, which are the theoretical lenses that inform this research. I suggest an integrative theoretical approach on organisational learning towards sustainability in HE. In **Chapter 5** I outline critical theory and the fundamentals of EAR placed

within the critical theory paradigm. The research methodology is presented in **Chapter 6**, where I discuss the fundamentals of action research, the method chosen to conduct this research. In **Chapter 7** I outline the overall research design, processes and techniques as well as how ethical, quality and validity issues are encountered in this research. In **Chapter 8** I outline the research findings for Stage I, Stage II and Stage III of the research. I also discuss the findings in terms of impact of method. **Chapter 9** draws attention to reflexivity, my reflections on the research process, the learning derived from my roles acting as a facilitator and critical friend, key actions and key learning gained through the process. **Chapter 10** provides a theoretical discussion of the research findings with respect to the research questions and the theoretical framework used to guide this research. It also presents the conclusions of the study, where I suggest a model on how the University of Southampton can embed EfS within the undergraduate curriculum and become a learning organisation towards sustainability. Limitations of the research, its contributions to knowledge and implications for further research are also outlined in **Chapter 10**.

Chapter 2: Background and context of the study

2.1 Introduction

During the 1960s and 1970s an environmental movement was initiated due to the emergence of different social concerns: growing pollution and environmental degradation, poverty in non-developed countries and existing inequalities. Due to the increasing social concerns about the environment, inequalities and development, the first United Nations Conference on the Human Environment was held in 1972 in Stockholm. It was the first time that the link between development and environment was internationally and politically recognised and therefore the need to ensure environmental protection and development of non-developed countries as the means to alleviate poverty. Forty years later, in the recently held United Nations Conference on Sustainable Development (UNCSD, Rio de Janeiro, June 2012) the Heads of State and Government reaffirmed their commitment to economic, social and environmental sustainability (United Nations, 2012). Over the last decades an increasing international and national commitment on the sustainability agenda, and its direct link with education, has been acknowledged. This is evidenced by several world summits: the United Nations Conference on Environment and Development (known as Earth Summit, Rio de Janeiro, 1992); the World Summit on Sustainable Development (known as Rio+10, Johannesburg, 2002); the World Conference on Education for Sustainable Development (Bonn, 2009); and the United Nations Conference on Sustainable Development (known as Rio+20, Rio de Janeiro, 2012) (See Appendix 1 for a comprehensive rationale of sustainability and its place in the international scene).

Sustainable development was defined for the first time in 1987, when the United Nations created the World Commission on Environment and Development (WCED) to establish 'A global agenda for change'. In 1987, in its report *Our Common Future*, also known as the Brundtland Report, an explicit link between the social, economic, cultural and environmental issues was made, and sustainable development was conceived as '*the development that meets the needs of the present without compromising the ability of future generations to meet their own needs*' (WCED, 1987, p. 43).

The definitions of sustainability given by international and national agencies have been criticised for being vague, abstract, ambiguous, contradictory and non-operational, because they do not clarify what methods and innovative processes are required to cultivate sustainable communities (Bell & Morse, 1999; Dresner, 2002; Kates, Parris, & Leiserowitz, 2005; Lele, 1991). One needs to accept that there exist different worldviews and definitions of sustainable development or sustainability, and according to Eichler (1999, p. 182) *'there is consensus that there is no consensus on the meaning'* of sustainability as concept. Therefore different perspectives and definitions are provided by different disciplines, such as politics, economics and environmental sciences. The lack of agreement and understanding of sustainability as a concept has also been highlighted in the literature as a challenge for embedding sustainability in HE. The controversies related to the notion and definition of sustainability obstruct its uptake as a serious, operational concept; it is often seen as a political construct that is vague, or even meaningless, for some academics (Filho, 2011; Policy Studies Institute et al., 2008). Thus the sustainability debate is also a debate about current socio-economic systems where present values such as progress and quality of life need to be re-evaluated. Moreover a debate exists around 'strong' sustainability and 'weak' sustainability, the former focussing on ecological and environmental issues, and the latter focussing on economic and financial issues (Bell & Morse, 1999; Dresner, 2002; Neumayer, 2013). I decided to use the term sustainability throughout my thesis as I consider that this term emphasises the environmental and social sides of sustainability, while sustainable development emphasises the developmental and economic side. I agree with Gough and Scott (2007) in that one needs to acknowledge and accept the presence of multiple different definitions instead of imposing a definition as true and definitive. However the ambiguity of the term can be seen as one of its main weaknesses (Lele, 1991). I used the following as the operational definition throughout the research, as I felt it embraced the different understandings of sustainability, and allowed its contextualisation according to different subject areas.

“Sustainability relates to ways of thinking about the world, and forms of social and personal practice that lead to: ethical, empowered and personally fulfilled individuals; communities built on collaborative engagement, tolerance and equity; social systems and institutions that are participatory, transparent and just; and environmental practices that value and sustain biodiversity and life-supporting ecological processes” (Hill, Wilson, & Watson, 2004, p. 63).

Thus I personally see the flexibility of the term as an opportunity for creating open and dynamic processes of participation, discussion and reflection to be adapted to different contexts and situations (Kates et al., 2005). This intrinsic characteristic enables dialogue and cooperation amongst people from different disciplines and sectors with different worldviews and interests to reinterpret, redefine and adapt sustainability to concrete situations and contexts.

2.2 International commitments and landmarks in sustainability in higher education

The HE sector has taken action to mainstream sustainability within its activities and operations. A number of international declarations concerning sustainability in HE have arisen over the last decades and numerous universities are signatories of one. Table 2.1 summarises the international and European declarations and landmarks on sustainability in HE.

Several papers have reported on the international declarations and regional initiatives and have discussed their impacts and reviewed and critiqued progress made (Bekessy, Samson, & Clarkson, 2007; Calder & Clugston, 2003; Lozano, 2010; Wright, 2002, 2004). These reviews highlight the role of universities in:

- their moral and ethical responsibility in addressing environmental, social and consumption challenges, and building sustainable communities;
- encouraging the inclusion of sustainability in the curriculum, research, operations and outreach;
- fostering partnerships and promoting collaboration and engagement with the wider community and with stakeholders;
- and enhancing interdisciplinary and transdisciplinary work.

Table 2.1 International and European sustainability declarations and charters in higher education (adapted from Peoples' Sustainability Treaties (2012))

Year	Declaration	Partners involved	Short description
1990	Talloires Declaration	University Leaders for a Sustainable Future (ULSF)	First official statement of the HE sector. A ten-point action plan to incorporate sustainability in operations, research, education and outreach.
1991	Halifax Declaration	Consortium of Canadian Institutions, International Association of Universities (IAU), United Nations University (UNU)	Recognition that universities have ethical and moral obligations to address sustainability.
1993	Kyoto Declaration on Sustainable Development	IAU	Call for sustainability action plans. Related to Agenda 21 and the United Nations Commission on Environment and Development (UNCED) Rio Conference in 1992.
1993	Swansea Declaration	Association of Australian Government Universities	Emphasis placed on the commitments made in the previous declarations.
1994	COPERNICUS University Charter for Sustainable Development	Association of European Universities (Copernicus Alliance)	European universities are called to action towards sustainable development.
2001	Lüneburg Declaration	Global Higher Education for Sustainability Partnership (GHESP)	Preparatory document for the 2002 World Summit on Sustainable Development (WSSD) celebrated in Johannesburg.
2002	Ubuntu Declaration	UNU, UNESCO, IAU, Third World Academy of Science, African Academy of Sciences and the Science Council of Asia, COPERNICUS-Campus, GHESP, ULSF	Call for the creation of a global learning environment towards EfS. Importance of creating networking and Regional Centres of Expertise (RCEs).
2005	Graz Declaration on Committing Universities to Sustainable Development	COPERNICUS CAMPUS, Karl-Franzens University Graz, Technical University Graz, Oikos International, UNESCO	The Bologna Process as a lever for creating opportunities to embed sustainability across HE.
2008	G8 University Summit Sapporo Sustainability Declaration	G8 University Network	Framework for discussion with G8 leaders and society on the importance of global sustainability and the responsibility of universities.
2009	World Conference on Higher Education	UNESCO	Call to governments to encourage regional cooperation and diversity and investment in HE to bring in social needs.
2009	Turin Declaration on Education and Research for Sustainable and Responsible Development	G8 University Network	Critical role of scientific research and HE organisations in assisting local, regional and global sustainability.
2012	Commitment to Sustainable Practices of Higher Education Institutions on the Occasion of the UNCSD	UNESCO, UNU, UNEP, The Global Compact, Principles for Responsible Management Education (PRiME) initiative, Academic Impact	Document created because of the United Nations Conference on Sustainable Development (UNCSD) Rio+20 Conference.
2012	People's Sustainability Treaty on Higher Education	Copernicus Alliance, UNU, IAU	Call to a transformation of HE. Document generated to influence UNCSD Rio+20 Conference.

These declarations promote similar values and principles, such as environmental awareness, environmental literacy amongst students, promotion of research, and partnership with the community, governments, business, NGOs and other universities. Few of these declarations make a strong reference to the promotion of interdisciplinarity in the curriculum or of students' experience (Wright, 2004). A common requirement of institutional change is to address sustainability issues in the purposes, estates management and teaching and learning for sustainability (Scott & Gough, 2007). Over 1000 universities have committed to work towards sustainability, making it a central focus of all their activities (Corcoran, Calder, & Clugston, 2002). However it should be noted that the declaration of good intentions and commitments has not necessarily translated into action and implementation (Wright, 2004); they are non-binding declarations (Bekessy et al., 2007) and most of them do not involve any further action (Thomas, 2004). The Halifax Declaration is the only one that involved a commitment to action. Therefore crucial aspects for the implementation of these declarations are: the creation of accountability, monitoring and reporting tools; the recognition and adaptation to the different cultural, economic and political contexts; long-term budget; leadership; and action (Corcoran et al., 2002; Lozano, 2010). The adoption of these declarations has failed to have a transformatory impact on the HE sector so far, rather has had what could be considered as a merely greenwash event (Bekessy et al., 2007; Tilbury, 2012). Despite this fact these declarations show the importance assigned to sustainability by international agencies such as the G8 and the different United Nations agencies.

Several partnership, collaboration and networking initiatives exist that seek to involve HEIs in coordinating efforts, and sharing good practices and research developments. As an illustration of some of these partnerships, in 2000, the Global Higher Education for Sustainability Partnership (GHESP) was formed to unify efforts in promoting and supporting sustainability in HE. The partners of this initiative are: the Association of University Leaders for a Sustainable Future (ULSF); COPERNICUS-Campus; the International Association of Universities (IAU); and the United Nations Educational, Scientific and Cultural Organisation (UNESCO). In North America, in 2008, the Association for the Advancement of Sustainability in Higher Education (AASHE) was established to promote the transition of universities to more sustainable practices.

In Europe, the COPERNICUS Alliance is a network of European HEIs that aims at re-orientating HE towards sustainability. Its origins are rooted in the COPERNICUS University Charter for Sustainable Development, developed in 1993, and in the COPERNICUS-Campus initiative, which was rebranded as COPERNICUS Alliance in 2010. Another interesting network is the Promotion of Sustainability in Postgraduate Education and Research Network (ProSPER.Net), which is coordinated by UNU-IAS and is an academic network of HEIs in Asia and the Pacific to work on the integration of sustainability into postgraduate education. Regional Centres of Expertise (RCEs) networks were created in response to the UNDESD 2005-2014 and are coordinated by UNU-IAS. The purpose of these networks is capacity-building and the development of research to address local sustainability issues. These networks link formal and informal educational organisations in order to work together on delivering EfS in local communities that build into the global network. Currently 117 RCEs centres exist worldwide and in many cases these are hosted by universities. Other existing partnerships and networks addressing sustainability in HE are: the Australasian Campuses Towards Sustainability (ACTS); Global Universities Partnership on Environment and Sustainability (GUPES); Iberoamerican Network of Universities for Sustainability and the Environment (ARIUSA); and International Sustainable Campus Network (ISCN).

2.3 The United Kingdom policy context

The United Kingdom has also made visible its commitment to, and support for embedding sustainability in HE through the adoption of a set of declarations, strategies and action plans by national governmental bodies and HE external agencies. Table 2.2 summarises the statements and agreements made over the last decade in sustainability in HE in the UK.

Table 2.2 Declarations and agreements on sustainability in higher education in the United Kingdom (adapted from Mulà Pons de Vall (2011))

Year	Declaration	Government body	Key outcomes
2003	Sustainable Action Plan for Education and Skills	Department of Education and Skills (DfES)	Sets the sustainability agenda for the different education sectors including schools, universities and national agencies. The importance of embedding sustainability in the operations and provide teaching and learning opportunities is stressed.
2005	Securing the Future: Delivering UK Sustainable Development Strategy	UK Government	Outlines a set of sustainable development goals and the guiding principles to achieve the strategy. It underscores the importance of embedding these principles in the educational system of the country.
2005	From Here to Sustainability: The Learning and Skills Council's Strategy for Sustainable Development	Learning Skills Council (LSC)	LSC's commitment with sustainability is reflected in the strategy. LSC seeks to foster sustainability through the provision of learning opportunities, engagement with stakeholders, outreach activities and the management of resources.
2006	Education for Sustainable Development and Global Citizenship – A Strategy for Action	Welsh Assembly Government	Strategy and action plan to deal with sustainability for the educational sector. It includes the HE sector.
2008	UK Climate Change Act	UK Government	Establishes a target to reduce greenhouse gas emissions by 2050. It also outlines a set of actions such as support and funding developments, the creation of structure, and committees to achieve this target.
2008	Greening Spires / Universities and the Green Agenda	Universities United Kingdom (UUK)	This report captures the HE sector work and contribution to the greening of the sector.
2009	A University Leaders' Statement of Intent on Sustainable Development	UUK	Commitment made by HE senior managers to support leadership towards sustainability in HE.
2009	Sustainable Development Strategy for Higher Education	HEFCE	The strategy of HEFCE in leading the sustainability agenda and how it promotes it through its work with the HE sector.
2010	Carbon Reduction Target and Strategy for Higher Education in England	HEFCE, UUK, GuildHE	Commitment of the HE sector to meet carbon reduction targets set by the government; of 34% by 2020 and of 80% by 2050 against a 1990 baseline. HEIs have been asked to develop their own carbon strategies and action plans to ensure the continuity of their funding by external agencies.
2010	Learning for Change: Scotland's Action Plan for the Second Half of the UNDESD	Scottish Government	As a reaction to the UNDESD the Scottish Government has developed an action plan. It outlines specific recommendations for all the different levels of education, including HE, on how to progress on embedding sustainability.
2010	Universities and Colleges Climate Commitment for Scotland (UCCCCS)	Scottish Government	The HE sector commits to the challenges derived from climate change and environmental degradation.
2012	UK Quality Code for Higher Education	Quality Assurance Agency for HE (QAA)	Chapter B3 Teaching and learning of the new UK Quality Code for HE includes EfS, citizenship and ethical behaviour as cross-cutting themes to be embedded in the curriculum.

In England, the HEA and the HEFCE have made significant efforts to support the integration of sustainability in English universities. In 2005, HEFCE published its first strategy for Sustainable Development and an action plan, which was updated in 2008 (HEFCE, 2009). In the 2008 update of the HEFCE's 2005 report the vision of HEFCE (2009, p. 3) is declared as such:

“Within the next 10 years, the HE sector in this country will be recognised as a major contributor to society's efforts to achieve sustainability – through the skills and knowledge that its graduates learn and put into practice, its research and exchange of knowledge through business, community and public policy engagement, and through its own strategies and operations”.

HEFCE aims to encourage and support English universities' journey towards sustainability. Despite the good intentions and the support given to HEIs to integrate sustainability in their curriculum, pedagogy, operations and policies, several criticisms and controversies among academics around this strategy have emerged (Scott & Gough, 2007). One of the most sounded criticisms to this new agenda was made by Peter Knight, vice-chancellor of the University of Central England, in considering that government and funding councils should not interfere into university business, preserving academic freedom to teach and research (Knight, 2005).

Other criticisms have also reported on the attempts of governmental agencies to colonise education and university purposes and knowledge with social and governmental policies and objectives (Williams, 2010). This indicates a misunderstanding by part of the academic community on what sustainability in education is all about as EfS processes encourage critical thinking and reflection, seek empowerment, values clarification, future and systems thinking and applied learning (Tilbury, 2011). EfS processes (see Chapter 3 section 3.3) are not about buying into a certain doctrine of sustainability. EfS seeks to develop graduates that are critically aware and empowered to become change agents for sustainability, making their own informed decisions through critical reasoning (Thomas, 2009).

Other issues and controversies have emerged related to the processes required to deal with sustainability in HE, the role of HEFCE in promoting it and the role and purposes of HEIs in general. For these reasons, HEFCE has adopted the role of facilitator and catalyst to the integration of sustainability without giving a mandatory definition. HEFCE's position has made it difficult to make real progress towards embedding sustainability in the HE sector (Jones et al., 2010a; Sterling & Scott, 2008). Furthermore, HEFCE recognises the diversity of views on sustainability and the diversity of ways to embed it in the curriculum as positive elements

(Policy Studies Institute et al., 2008). It is seen as a complex topic and different ways and views can contribute to enrich and generate new knowledge in the area. During the aforementioned HEFCE consultation process, support was given to develop a carbon strategy (HEFCE, 2008). In 2010 HEFCE developed a Carbon reduction target and strategy for HEIs in England. The sector has committed to a reduction of carbon emissions of 34% by 2020 and 80% by 2050 (HEFCE, 2010). Although much progress has been made in the environmental management of estates, and more recently in the development of carbon management strategies and plans, little progress has been made in systematic and holistic institutional and curriculum change (Jones et al., 2010a; Policy Studies Institute et al., 2008; Sterling & Scott, 2008).

In 2010 a set of projects to promote the implementation of the sustainable development strategy was funded by HEFCE through its Leadership, Governance and Management Fund. These were 2 year projects and the outcomes were delivered by the end of 2012. This scheme was aimed at funding projects delivering either long-term gains or 'quick wins'. Some of the projects funded¹ sought to: promote leadership for sustainability (by Bournemouth University); the place of quality enhancement and benchmarking in curriculum change for sustainability (by University of Gloucestershire); and the development of a Sustainability Exchange platform to share good practice (by Staffordshire University). HEFCE also funded two Centres for Excellence in Teaching and Learning on sustainability: the Centre for Sustainable Futures (CSF) at the University of Plymouth and the Centre for Sustainable Communities Achieved through Integrated Professional Education (C-SCAYPE) at Kingston University. The HEA ESD project and its network of 24 discipline-based Subject Centres have also contributed to generating linkages, disseminating good practice and promoting curriculum innovation and staff development on teaching and learning towards sustainability (Sterling & Witham, 2008). Due to recent changes in HE funding and landscape, the HEA Subject Centres have closed. This could compromise the EfS momentum gained through their work over the last decade (Chalkley & Sterling, 2011).

Furthermore HEFCE and the HEA have commissioned and funded a number of research projects and innovative change initiatives (see for instance Dawe et al., 2005; McCoshan & Martin, 2012; Policy Studies Institute et al., 2008; Ryan, 2011; Sterling, 2012). The outcomes of these projects are fully discussed in Chapter 3 Sustainability in HE. Despite good intentions, and the support given to different research projects that seek to embed EfS into the HE curriculum, further research in the area is still required (Policy Studies Institute et al., 2008). By

¹ For more information on the projects funded please see:
<http://www.hefce.ac.uk/whatwedo/lgm/lgmprojects/sustainabledevelopment/>

contrast, practically all HEIs have their own environmental managers and environmental policies, usually more focussed on the environmental management and carbon reduction targets of the university itself (Jones et al., 2010a). One reason that could explain this situation is that for environmental managers, the implementation of sustainable practices is seen to lie within their professional services role, while for academics introducing sustainability into the curriculum is seen as added work without real relevance to their professional development or academic career (Jones et al., 2010a).

2.4 Strategy and policy at the University of Southampton

2.4.1 Nature of the organisation

The University of Southampton is located in the City of Southampton, in the South East region of the United Kingdom. It is one of the top-research universities in the UK and is a member of the Russell Group of Universities. It has over 22,000 students and around 5,000 staff members. The mission of the University of Southampton², outlined in its *University Mission Statement*, is:

- The advancement of knowledge through critical and independent scholarship and research of international significance.
- The communication of knowledge in an active learning environment involving staff at the forefront of their disciplines.
- The application of knowledge for the benefit of society, both directly and by collaboration with other organisations.

In the *University Mission Statement* the following values are acknowledged:

- Freedom to push the frontiers of knowledge forward, within an ethical framework, for the global good of humankind
- Success and ambition for excellence within a professional setting
- Creativity and critical independence
- Inclusiveness which enables all staff, students and potential students to achieve their full potential
- Openness within a caring and supportive working environment

² For more information on the vision and mission of the University of Southampton please visit: <http://www.southampton.ac.uk/>

In recent years the University of Southampton has gone through a process of restructuring, a ‘transition’ programme aimed at reducing costs in order to deal with government funding cuts, which has led to the restructuring of academic units into eight faculties and the restructuring of administrative positions (see Appendix 2).

2.4.2 Milestones in sustainability at the University of Southampton

Since I started my doctoral research in January 2011 there has been a number of changes and developments at a strategic and policy level within the university. Table 2.3 summarises the key achievements and actions conducted by the organisation that explicitly relate to the sustainability agenda.

Table 2.3 Milestones in Sustainability at the University of Southampton

Academic year	Milestones in sustainability at the University of Southampton
2000/01	Travel Plan (<i>New Plan approved in 2009/10</i>)
2004/05	Creation of an Environmental Manager Position
2005/06	First Environment Policy approved (<i>Updated in 2007/08 and 2009/10</i>)
2005/06	Joined the HE Carbon Management Programme
2005/06	Sustainable Buildings policy and guidance approved
2006/07	Sustainable Procurement Policy
2006/07	University of Southampton became a Fairtrade University
2007/08	Environmental Management System (EMS) ISO 14.001 achieved at National Oceanography Centre Southampton (NOCS)
2010/11	Graduate Attributes contained in the Employability Statement of the University Quality Handbook. Two are closely linked to sustainability: global citizens recognise the value of meaningful contribution to an interconnected global society and aspire to realise an individual’s human rights with tolerance and respect; ethical leaders understand the value of leading and contributing responsibly to the benefit of their chosen professions, as well as local, national and international communities.
2010/11	Second Carbon Management Plan is approved (2011-2020)
2010/11	Creation of the Environment and Sustainability Advisory Group
2010/11	Vice-chancellor’s PhD scholarship on embedding sustainability within the undergraduate curriculum.
2010/11	Appointment of a Sustainability Champion in the organisation
2010/11	Funds for achieving carbon reduction targets

2010/11	Multidisciplinary Research Strategy. Sustainability Science at Southampton as one the University Strategic Research Groups.
2010/11	Participation in the HEA Green Academy programme (see sections 2.4.3 and 3.4.6)
2011/12	Sustainable Catering Policy and Action Plan
2011/12	NOCS Environment and Sustainability Policy
2011/12 2012/13	Pilot and implementation of the Curriculum Innovation (CI) modules which comprise interdisciplinary optional modules, such as: Living with Environmental Change; Global Challenges; Local and Global Sustainability; and Global Health.
2011/12	Appointment of a Sustainability Programme's assistant
2011/12	Sustainable Procurement and Waste Management Plan
2011/12	Environment and Sustainability Strategy (2012-2015). Includes Green Academy, Carbon Management Plan, Sustainable procurement and waste management, travel plan and management of estates and infrastructure.
2011/12	A <i>Globally Responsible University</i> campaign is initiated; different posters are placed around the university, announcements are made in the e-Voice, the Sustainability website is renewed, and awareness-building activities are conducted, such as the Roadshowcase, seminars and training sessions.
2011/12	1 st Southampton Blackout Event. Energy audit conducted by groups of staff and students that take part in an evening event to switch-off all office equipment left on unnecessarily.
2011/12	Biodiversity Policy and Plan
2012/13	Achievement Platinum EcoCampus certification (bronze awarded in March 2012 and silver in December 2012).
2012/13	Halls Waste Wars. Waste Audit. Students work in teams across the Halls of Residences to conduct a waste audit.
2012/13	TEDx Southampton University Sustainability conference. Day event with sustainability talks organised by the Sustainability Science Research Group at Southampton.
2012/13	2 nd Southampton Blackout
2013/14	Flexible Learning project at Southampton. Sustainability Minor offered to students starting in Humanities or Single Honours programmes in Social Sciences, Geography or Education.
2013/14	Business Environment and Ethics Students (BEES) project, awarded by Student Green Funds by the National Union of Students (NUS). Partnership project that will engage staff and students on ethics and sustainability initiatives with local businesses.

The profile of sustainability at the University of Southampton has increased over recent years as Table 2.3 shows. This means that staff and students will need to recognise the increasing commitment of the university and translate this vision into their everyday practices. This is visible because of all the strategies and actions since 2010. Environmental management of the estates and operations has seen more progress than the curriculum. In terms of curriculum, the elective interdisciplinary modules offered as pilots since the academic year 2011/2012 and the option of Sustainability Minors offered to students since 2013/2014, are the main

achievements of the university in terms of embedding EfS within the curriculum. Both initiatives provide optional learning opportunities for students who have an interest in sustainability and global challenges.

2.4.3 The context for an action research project

Since I started my doctoral research in January 2011, sustainability has increasingly become an important feature at the University of Southampton. Some indications of this are the creation of the university sponsored PhD that I have undertaken, whilst the institution supports the group of practitioners who engaged in the HEA Green Academy programme 'Curricula for Tomorrow'. The HEA Green Academy programme was an innovative initiative launched by the HEA ESD Project, in association with the Environmental Association for Universities and Colleges (EAUC) and the National Union of Students (NUS), to help institutions achieve sustainability in the curriculum goals (McCoshan & Martin, 2012). The environmental manager, three academic staff members and one student formed the University of Southampton group that participated in the 2011 edition of this HEA programme. Although this group, which I refer to as the 'Sustainability Programme', was in the early stages of the project when I arrived, it was hoped that it would develop into a long-term sustainability strategy for the university.

In addition, the leader of this group was also in charge of designing a Sustainability module, part of the Curriculum Innovation (CI) modules at the University; this was implemented in the academic year 2012/2013. The CI gives the opportunity to second year undergraduate students to take innovative and interdisciplinary modules taught across the university. Some of these modules are: The Management of Risk and Uncertainty; Jekyll and Hyde: How Events Dictate the Character of Discovery; Global Health; Living with Environmental Change; The Human Brain and Society; Work Futures in Global Contexts; Global Challenges; Sustainability in the Local and Global Environment; Sink or Swim; Education for Health and wellbeing. This was an innovative programme within the university that sought to create personalisation of learning, open-up choices and increase the opportunities for students to learn beyond their selected disciplines, with an aim to preparing the graduates for the inevitable complexities they will face in the future. According to my understanding and definition of what EfS might be, the CI modules contribute to the fostering of EfS in the University of Southampton.

Therefore some visible and enthusiastic agents in the university were already working on sustainability and interdisciplinary approaches when I arrived at the University of

Southampton to conduct my research. Other people were likely already embedding sustainability into their subjects at the same time; however they did not refer to it as such. Likewise there were other staff who were interested in doing so, but did not know how to do it. There were teaching fellows and lecturers that used innovative and 'unorthodox' approaches aiming to improve their practice and their students' learning towards sustainability, so there was a potential community of practice. According to Bawden (2004) the engagement in communicative and critical reflective spaces within a community of practice can lead to the deep and transformative learning required to change the existing paradigms associated with sustainability.

Some informal interviews with key agents at the University of Southampton right at the very beginning of the research, plus the new Sustainability Programme, initiated some months after my arrival, provided the case and suitable context to conduct an action research project, that would allow me to research with others the processes, and outcomes, of learning from their experiences on implementing a change programme (Stage III – Sustainability Programme) and developing thinking and teaching practice (Stage II – Interdisciplinary group of five academic staff members) to embed sustainability in the organisation. The Sustainability Programme represented an opportunity to learn from an innovative curriculum change programme taking place while the research was conducted, which allowed learning through the implementation of change towards sustainability in HE. This, as I have previously argued, has thus far been overlooked and under-researched (see Chapter 1).

Chapter 3: Sustainability in higher education

3.1 Introduction

In this chapter I review the existing literature on sustainability in HE for the purpose of clarifying the context in which I conducted the research and the rationale for exploring organisational learning processes towards sustainability in HE (see Chapter 4). I identify the current state of the art and current trends of research and practice in this area, drawing special attention to key projects and achievements made, emerging research areas and the initiatives and developments within the context of the United Kingdom.

The first question that we need to pose when thinking about sustainability in HE is: what is education for? This is related to its very purposes and the role of universities within current society (Gough & Scott, 2007). Universities are experiencing several economic and external pressures which might affect their purposes and identity (Bawden, 2004). To date, few studies have explored the knowledge of sustainability or the perceptions of university stakeholders in the role of HE in sustainability (Wright, 2010).

The current changing landscape of HE could be seen as an opportunity to ensure that HE is not reproducing unsustainable practices and is contributing to university stakeholders' engagement to generate new knowledge in order to build sustainable communities (Clugston & Calder, 1999; Cortese, 2003; Sterling, 2013). As I outlined in Chapter 2, international and national commitment and efforts to tackle sustainability issues are plausible. Therefore global and local societies might stimulate universities to rethink their social purposes and their role within current society, contributing to climate change mitigation, poverty eradication and global health through research and education (Lotz-Sisitka, 2012a). Whilst increasing international and national efforts and the integration of environmental practices in universities, few debates on the change of epistemology or the purposes of HE in current society have arisen so far (Scott & Gough, 2007), and sustainability in HE is seen somehow as a recent and emerging research area (Wright, 2010).

It should be noted that in recent years, with the economic crises and subsequent changes in government policy, a tension between the traditional academic role and the more skill-based, instrumental role of preparing graduates for the workplace and society has emerged, particularly in the UK HE context (Sterling, 2013). In 2010 the Browne report recommended changes in the HE funding scheme – to move from state-funded grants to student loan funds

(Browne, 2010). These changes in the UK HE funding scheme reinforced an economic view of HE, where students have become to be perceived as customers, this could therefore potentially have an impact on the redefinition of the purposes of HE towards sustainability (Sterling, 2013). This could be in contradiction to the idea of a sustainable university, which is further explored in the next section. Sterling (2013, p. 25) in citing Heila Lotz-Sistika's view of what a sustainable university is states:

“The sustainable university is one that contributes to, and serves its community and the future challenges of society in multiple ways; through transformational learning, research and active engagements with community members on a regular basis”.

Several are the authors that have modelled and defined the key features of a sustainable university (Sterling et al., 2013; Velazquez et al., 2006). In this chapter, first I review the main areas of development, which have been on environmental and sustainable practices such as environmental management, carbon management plans, assessment and benchmarking. Second, I discuss the pedagogy of EfS, the teaching and learning strategies associated with it, student learning outcomes and sustainability literacy. Third, I outline the main trends in curriculum development in EfS, and highlight key projects that have contributed to generating holistic curriculum change. Fourth, I present existing research on academic staff issues. Fifth, I review existing literature in academic and organisational culture in EfS. Finally, I summarise the implications that the existing literature in sustainability in HE have for my study.

3.2 Modelling the sustainable university

3.2.1 Emerging models

An important field of research in the area of sustainability in HE has been the modelling of sustainable universities. Several research papers discuss and identify the key features of a university committed to sustainability in all its activities (Adomßent, Godemann, & Michelsen, 2007; Ferrer-Balas et al., 2008; Heck, 2005; Lukman & Galvic, 2007; van Weenen, 2000; Velazquez et al., 2006). All these models share the following similarities:

- Sustainability is seen as part of all the activities including education, research, outreach, community service, management and operational practices, and university leadership (institutional vision and mission, structure and action planning).

- Universities are conceived as complex systems where all university activities and their interdependencies need to be taken into consideration. All draw on ideas of systems theory to model the sustainable university.
- Transformation of current institutional structures and the organisation is seen as necessary.
- Networking, partnerships, stakeholder and community engagement and outreach are regarded as pivotal in the development of more sustainable universities.
- Interdisciplinary and transdisciplinary collaboration is regarded as crucial.
- Models are presented as non-prescriptive tools with the aim of fostering discussion and promoting action, and new developments acknowledge the relevance of the cultural and social context.
- Monitoring, assessment and reporting are seen as necessary. Two suggest the use of the Plan–Do–Check–Act (PDCA) cycle as a tool to monitor and coordinate continuous improvement (Lukman & Galvic, 2007; Velazquez et al., 2006).
- These models are created on the basis of existing case studies of universities or use case studies and experiences of universities as pilots for validation.

It should be noted that one of the weaknesses of these models is that they have not been applied; therefore no empirical research exists on their application and outcomes. Velazquez et al. (2006) defined four implementation phases to achieve a sustainable university from strategic to operational action: development of a sustainable vision; development of a mission; creation of committees and policies, targets and objectives on sustainability; and development of initiatives and strategies in research, community outreach, campus and education. Velazquez et al. (2006) surveyed eighty universities and concluded with a discussion on the difficulty to embed sustainability holistically, as none of them accomplished all the implementation phases. Other papers have outlined the concrete strategies and actions taken by universities. These are descriptive case studies and accounts of the policies and implementation strategies in university activities including campus sustainability, research, academic development and education (Christensen et al., 2009; Ferrer-Balas et al., 2004; Heck, 2005; Lozano-García, Huisingh, & Delgado-Fabián, 2009). For example Adomßent et al. (2007) outlined the development project *'Sustainable University – Sustainable Development in the Context of University Remits'* at the University of Lüneburg (Germany) where they used transdisciplinary research methods and a transformative approach, stressing the importance of a systems approach that encompasses all the university activities all at once. The Graz Model for Integrative Development (Mader, 2013) has established five principles and their different

levels to assess the transformative capacity of sustainability initiatives and processes. The five transformative levels are: transformational leadership; transdisciplinary research; generative learning; decision influencing; and innovation network (Mader, 2013). I feel projects such as this are particularly relevant because they explore the complexity of universities through systems thinking, and transdisciplinary and transformative approaches to research and learning, which are needed for creating sustainable universities (Sterling, 2013).

Assessment and monitoring are recognised as key in progressing the sustainability agenda (see section 3.2.4 of this chapter); however these have proved more difficult to establish than expected (Adomßent et al., 2007; Sammalisto & Lindhqvist, 2008). Some authors have also noted the importance of forward-thinking (Adomßent et al., 2007) and the existing lack of envisioning by part of the university community of what a sustainable university actually is (Velazquez et al., 2006). As Temple (2012, p. 105) states, a university dealing with sustainability faces the *'classical example of supercomplexity in action'*. This implies a participatory leadership, a shift in the decision-making processes whereby universities become learning organisations, which engage the different stakeholders involved in HE (students, educators, staff, researchers, managers and executive groups, benchmarking agencies, external bodies, local community, NGOs and businesses amongst others) in their decision-making and actions (Temple, 2012). Therefore, universities are struggling to progress equally in their activities. Empirical research is lacking on environmental management processes of universities and on the incorporation of sustainability into research and education (Sammalisto & Lindhqvist, 2008).

Universities have signed international and national declarations and have publicly committed to work towards achieving sustainability in their campuses, research, outreach and curriculum (Wright, 2002). However sustainability in HE is a rather recent and emerging research area (Wright, 2010). Most of the research to date has focussed on: environmental management, carbon management plans and greening of university campus; descriptive case studies and examples of good practice of universities; embedding sustainability in specific courses; theoretical developments on teaching and learning approaches towards sustainability; and university and policy analysis (Barth & Rieckmann, 2013; Cotton et al., 2009; Fien, 2002; Wright, 2010).

3.2.2 The change process towards embedding sustainability

Most of the papers reporting on the sustainable university are lessons learned but the studies often lack a coherent and clear theoretical and methodological basis (Corcoran et al., 2004). These whole university models often refer back to the experiences and learning gained through sustainability strategies, initiatives and policies, but the in-depth study of the processes of change has been overlooked (Moore, 2005a). It has been difficult to move from theory to action (Cotton et al., 2009; Moore, 2005a). These papers tend to speculate on the barriers and possible opportunities and recommendations (Christensen et al., 2009; Moore et al., 2005). Academic culture, academic freedom, disciplinary working environments or lack of interdisciplinarity have been referred to as existing barriers to sustainability by several authors (Ferrer-Balas et al., 2004; Holmberg & Samuelsson, 2006). Some other barriers identified are: misconceptions on sustainability; time and resources; and lack of funding. The main drivers are identified as: networking and connecting; coordinative and cooperative agencies or projects; funding; professional development; transdisciplinary research and teaching; participatory projects and evaluation; and leadership and commitment from senior managers (Ferrer-Balas et al., 2008; Filho, 2011, 2009; Holmberg & Samuelsson, 2006). With the current economic crises and HE change situation, the allocation of funding and resources has become more of a challenge (Brown, 2010). While institutional commitment and leadership, allocation of resources for innovative projects, leadership and staff professional development amongst others are needed for holistic university transformation towards embedding sustainability (Ryan, 2011).

In a recently conducted comparative study on the process of integrating sustainability amongst different universities, Barth (2013) has identified three distinctive patterns of implementation: student-led initiatives (bottom-up); sustainability as environmental management of the estates and operations; and sustainability as an institutional approach (top-down). In my judgement, bottom-up and top-down approaches are needed to foster organisational learning and change on sustainability in HE, and I agree with Brinkhurst et al. (2011) in acknowledging the critical leadership role that the 'middle' (faculty and staff) of the organisation can offer in achieving sustainable practices across all the university activities and operations. According to Lozano (2006a) it is worth looking at Rogers' innovation theory (Rogers, 1995) when thinking about incorporating and institutionalising sustainability within HE. Diffusion of innovations theory (Rogers, 1995) focuses on understanding change processes and the introduction of new ideas and practices in social organisations. Rogers (1995) views four stages of the innovation process: invention, diffusion (or communication), time and consequences. In his view

information, and networks within the organisation and leaders play a key role in the adoption of any innovation or change. An adoption lifecycle is likely to happen in any innovation, which starts with innovators to then engage early adopters, to early and late majority, and finally to involve laggards (Rogers, 1995). This is in line with the four phases of sustainability adoption outlined by Policy Studies Institute et al. (2008): grass roots enthusiasts - bottom-up approach; early adopters - beginning as an organisation; getting really serious - important organisational and operational changes; and full commitment - sustainability integrated in the core business of universities. Sustainability innovation is: placed in the idea category rather than product or process ones; radical rather than incremental; about holistic understanding of all university agents; involves building awareness, interest and motivation; based on experimentation and implementation; and incrementally engaging of different stakeholders moving from a collection of enthusiasts and early adopters to a majority of the community (Lozano, 2006a).

Effective organisational communication is key for the success of new ideas such as sustainability in universities (Djordjevic & Cotton, 2011). Little research has been published so far on the communication of the sustainability message in universities (Djordjevic & Cotton, 2011; Franz-Balsen & Heinrichs, 2007). Therefore having a clear institutional message and vision is critical towards sustainability being institutionalised and part of the organisational culture. In the UK, champion universities have their own sustainability offices and senior managers and have created their own institutional unique approaches. However, they all share a holistic understanding of sustainability and a whole institution approach (Ryan, 2011). Some examples are: the 4C Model³ at the University of Plymouth, which involves curriculum, campus, community and institutional culture; the Promising Futures Sustainability Strategy⁴ at the University of Gloucestershire, the goal of which is to 'embed sustainability in the DNA' of the university; and Ecoversity project⁵ at the University of Bradford, which is a culture change programme focussing on formal, informal and physical curricula.

Furthermore, emergent areas of research on sustainability in HE are those of staff professional development, organisational learning and change processes, and leadership, which have been overlooked so far (Thomas, 2004; Tilbury, 2012). There exists a lack of lessons learned and the application of these derived from successful organisational change projects in HE (Ryan, 2011). However it should be acknowledged the work that different networks and partnerships have

³ For more information please visit: <http://www1.plymouth.ac.uk/sustainability/Pages/teachingandlearning.aspx>

⁴ For more information, please visit: <http://insight.glos.ac.uk/sustainability/Documents/stratpromisingfutures.pdf>

⁵ For more information, please visit: <http://www.brad.ac.uk/admin/ecoversity/>

done to establish the change processes required to embed sustainability⁶. In this area the Peoples' Sustainability Treaty on Higher Education (Peoples' Sustainability Treaties, 2012) has also provided essential transformation steps towards integrating sustainability into HE: transforming current paradigms and university structures; new vision and purpose; communication platforms; development of indicators; using participatory processes, funding and rewarding; partnerships; professional development; and coordinated efforts and effective leadership for sustainability amongst others.

In *Turnaround Leadership for Higher Education* Fullan and Scott (2009) draw out effective change management for HEIs. This can be extrapolated to sustainability and any university change process, creating resilient organisations that are able to move from:

“A propensity to engage in ready, ready, ready (have a subcommittee conduct a review, etc.) to ready, fire, aim – a process in which ready is a need to act, fire is to try out a potentially viable response under controlled conditions, and aim is to articulate what works best and scale this up once it has been tested and refined” (Fullan & Scott, 2009, p. 85).

Fullan and Scott (2009) identified a series of levers for building more change-capable universities. In 2012, building on from that work and for the case of sustainability in HE, Scott et al. (2012, pp. 3-4) conducted a study which reported on ten key steps identified by current EfS leaders that universities could take to embed sustainability holistically:

1. Acknowledge the distinctive challenges and complexity of EfS leadership.
2. Sharpen the focus and understanding of EfS across the HE system.
3. Context counts: ensure organisational integration and system alignment to support EfS and its leaders.
4. Track and improve EfS program quality more systematically.
5. Put in place the right incentives.
6. Engage the disengaged and the institution's senior leadership.
7. Apply the key lessons on successful change management in HE.
8. Focus on the change leadership capabilities.
9. Review EfS leadership position descriptions, selection processes and succession strategies.

⁶ See for example the Sustainability Transitions Research Network: <http://www.transitionsnetwork.org>

10. Apply the most productive approaches to leadership learning to the professional development of EfS leaders.

To create successful change processes in HE, both Fullan and Scott (2009) and Scott et al. (2012) assign a key role to the training and development of leadership capabilities, contextualisation, participatory processes and engagement, and implementing, monitoring and benchmarking systems. Several projects have shown the potential in generating organisational learning and in HE becoming a leader and innovator to advance sustainability (Albrecht et al., 2007; Beringer & Adomßent, 2008). These projects have proved to be successful, however they are often fragmented and happen in the margins of the organisation (Sharp, 2002). As Tilbury (2012, p. 19) stresses *'attempts to mainstream this agenda across HE have so far failed to have impact'*. In Chapter 4 I introduce an integrative theoretical framework on organisational learning towards sustainability in HE, which has guided my study and which includes effective leadership on sustainability and organisational learning theories. This framework can support other universities in their aim to incorporate sustainability within their activities.

3.2.3 Key achievements environmental management

Much of the progress achieved on sustainability in HE has been on the environmental management of the estates and operations, with the purpose of reducing the carbon footprint and bringing economic savings to the organisation (Sammalisto & Lindhqvist, 2008). Evidence of these achievements can be found in various universities' websites (Tilbury, 2012). Practically all HEIs have their own environmental managers of their estates, and their own strategies, policies and plans in this area (Jones et al., 2010a; Policy Studies Institute et al., 2008). Many universities have implemented Environmental Management Systems (EMS) and ISO 14.1001 (Lozano, 2011). These provide a systematic structure to manage and improve the environmental performance of the organisation. Several stories of transformation of universities in terms of environmental management of the estates and operations can be found in the literature (Downey, 2004; Nicolaidis, 2006; Sammalisto & Lindhqvist, 2008; Sharp, 2002). In the UK a specific EMS for the HE sector, named EcoCampus⁷, was established and funded by HEFCE in 2005. The University of Southampton is part of this scheme and achieved its silver award in December 2012 (see section 2.4.2).

⁷ For more information on EcoCampus, please visit: <http://www.ecocampus.co.uk>

Carbon management has been another growing area of development over the last years because UK universities have been targeted by external agencies to reduce their carbon emissions (HEFCE, 2010). The actual carbon emissions and the transport, climate change and carbon reduction strategies and action plans of universities are reported in their websites and in several papers in the literature (Atherton & Giurco, 2011; Button, 2009; Cleaves et al., 2009; Rauch & Newman, 2009; Riddell et al., 2009). Universities can play an important role as stakeholders in decision-making and in assisting regional and national policy developments to meet the climate change challenge (Coffman, 2009).

In the UK, the HEFCE, on behalf of the UK Government, developed a carbon reduction target and strategy in 2009 (HEFCE, 2010) with the aim of meeting the government's climate change targets. Since then most of the UK HEIs have developed their own carbon management plans to reduce their greenhouse gas emissions by 80% by 2050. Several HEIs have joined the Carbon Trust's Higher Education Carbon Management (HECM) Programme⁸ which supports them in the creation of their own carbon management strategies, policies and plans. Several institutions, such as Imperial College London, Manchester University, Keele University, Cambridge University, University College London and University of Bristol, have been part of this programme. Associated external funding and benchmarking based on meeting these carbon reduction targets by HEFCE demonstrates the impact that the benchmarking of external agencies has on universities' leadership, strategy and action.

Corporate social responsibility and procurement practices are other areas of development in HEIs that are seeking to become more sustainable in their activities. A recent review of the information available on the websites and the annual reports of the top 10 leading universities in the world concluded that all showed a commitment to, and practices on social responsibility (Nejati et al., 2011). Students' engagement and working with the community is an important feature of putting social responsibility in place (Downey, 2004). Another initiative promoted by the Fairtrade Foundation is the Fairtrade Universities and Colleges scheme⁹. It started in 2003 with Oxford Brookes University (UK) becoming the first Fairtrade University; there are now more than 160 organisations in the UK that are part of this scheme.

Papers reporting environmental and sustainability initiatives have drawn on organisational learning theory (Albrecht et al., 2007; Gudz, 2004; Sharp, 2002). Sustainability projects can encourage organisational learning to take place (Albrecht et al., 2007). However projects to

⁸ For more information about this programme, please visit: <http://www.carbontrust.com/home>

⁹ For more information on Fairtrade Universities and Colleges scheme please visit: http://www.fairtrade.org.uk/get_involved/campaigns/fairtrade_universities/default.aspx

date have tended to be small-scale, led by enthusiasts and believers of sustainability without transforming and impacting on the current organisational structures and thinking (Sharp, 2002; Thomas, 2004). Universities aiming to embed sustainability need to rethink their existing organisational learning processes and become genuine learning organisations (Sharp, 2002). Therefore organisational learning theory can inform the transition of universities to more sustainable organisations that encounter complexity and integration of its activities to create a shared vision and action (Gudz, 2004) leading to a cultural and structural change towards sustainability (Tilbury, 2012).

3.2.4 Monitoring, benchmarking and assessment tools

Monitoring and assessment tools have been regarded as levers and important features of organisational change processes in sustainability (Ryan, 2011; Thomas, 2004). For this reason the development of monitoring, benchmarking and assessment tools has become an important area of research, however few universities have reported to date their sustainability performance (Lozano, 2011; Shriberg, 2002). Some of the tools that have been developed are: Auditing Instrument for Sustainability in Higher Education (AISHE) (Roorda, 2001); Graphical Assessment of Sustainability in Universities (GASU) tool (Lozano, 2006b); The Sustainability Tracking, Assessment & Rating System (STARS) (AASHE)¹⁰; Sustainability Assessment Questionnaire (SAQ) (ULSF)¹¹; and the Sustainability Tool for Auditing University Curricula in Higher Education (STAUNCH) (Glover, Peters, & Haslett, 2011). STAUNCH was developed by the Cardiff University's Centre for Business Relationships Accountability, Sustainability and Society (BRASS) and is a software package focussed on the curriculum, auditing the sustainability content of HE curriculum. A review of eleven cross-institutional tools was conducted by Shriberg (2002) who concluded that they were contributing to effectiveness, support, operationalisation, communication, and improvements on sustainability. However, because of their limited application, in the early stages of implementation, development and validity, the focus was on the process rather than on the impacts (Shriberg, 2002).

¹⁰ For more information on STARS please visit: <https://stars.aashe.org>

¹¹ For more information on SAQ please see: http://www.ulsf.org/programs_saq.html

In the UK, Learning in Future Environments (LiFE) (EAUC)¹² and the Green League Table (People & Planet)¹³ intend to report the performance made by universities through benchmarking their achievements in this area.

3.3 Educational processes towards sustainability in higher education

International and national agencies have recognised the role of education in building societies based on values of equity, social justice and sustainability, and have developed strategies and action plans (DEFRA, 2005; HEFCE, 2009; UNESCO, 2005, 2009; United Nations, 2012). The declaration of the UNDESD 2005-2014 represented a lever for the integration of sustainability in HE across the globe. This is evidenced by the existence of several papers and publications that have reviewed the policy context and contributions that different countries and regions are making to the UNDESD (Naeem & Peach, 2011; Ryan et al., 2010; Sherren, 2008). The UNDESD encourages and offers leadership, recommendations and guidelines to embed the principles of EfS within educational policy and programmes; however it is not a mandatory law, hence the systematic implementation and evaluation of advancements internationally and nationally remain as great challenges (Martin et al., 2008; Wright, 2002).

A differentiation has been made between education about sustainability, EfS and education as sustainability or sustainable education (Sterling, 2001). EfS, the approach adopted by international and national agencies, has been criticised for being value-laden and based on a known definition of what sustainability is and the values required (Sterling, 2001). I refer to EfS throughout my thesis but as I have discussed previously I understand it as a paradigm shift that challenges existing educational patterns for a transformative learning experience and on learning communities and educational institutions that are participatory, collaborative and transformative (Foster, 2001). It would correspond to sustainable education that is contextual, innovative and constructive, focussed and infusive, holistic and human scale, integrative, process oriented and empowering rather than product oriented, critical, balancing, systemic and connective, ethical, purposive, inclusive and life-long (Sterling, 1996, pp. 22-24).

¹² Universities that Count programme was rebranded into the LiFE programme, for more information please visit: <http://www.thelifeindex.org.uk>

¹³ People & Planet is a student organisation that has developed the Green League table. For more information please see: <http://peopleandplanet.org/greenleague>

However this integral educational process as part of an entire social process of transformation, which would lead to sustainability, is very difficult to enact within the current political and socio-economic circumstances (Sterling, 2001). A more comprehensive review and critique of the different understandings of sustainability in education and the international frameworks of EfS can be found in Appendix 3. I envision EfS as an education for a sustainable social transformation, which stimulates problem-solving, critical reflection and the clarification and reassessment of values, and which should be innovative and constructive, multi-method, culturally appropriate and action-orientated (Huckle & Sterling, 1996; Tilbury, 2004). Central components of EfS are futures thinking, critical and creative thinking, participation in decision-making, partnerships, interdisciplinarity and systemic thinking (Tilbury, 2011; Tilbury & Wortman, 2004).

In a recent expert review commissioned by the UNESCO (Tilbury, 2011) key learning processes aligned with EfS are those of collaboration and dialogue, engagement with the 'whole system', innovation, and active and participatory learning. Collaboration and dialogue are seen as the means to build the capacity required to deal with sustainability and create more sustainable futures. These processes can contribute to promote active participation and problem-solving, where multiple stakeholders and cultural dialogue and cooperation are key. Engagement with the system as a whole involves taking a holistic approach, connecting educational practices to other influencing factors such as professional issues and management. It is necessary to look at the whole system and its interconnections in order to build a whole picture that leads to comprehensive action. EfS is about building awareness (knowledge, values and theories related to sustainability) but it looks also at generating innovative ways of learning, challenging current worldviews and promoting active and collaborative learning. It encourages value clarification and is action-orientated. It is an education that aims to transform the individual and promotes social and organisational learning and change. Active and participatory learning approaches have been extensively discussed as contributing to learning for sustainability as they inspire critical reflection and thinking, value clarification, envisioning constructive futures, systemic thinking, linking theory to action/practice, and illuminating past cultural and social customs and new ways of knowing and doing to progress sustainability. My research was designed to enrich the EfS processes at the University of Southampton that enhance collaboration, critical reflection and dialogue amongst academic staff members, engaging them in an innovative, participatory and action-orientated process (see Chapter 7).

Integrative and interdisciplinary teaching and learning approaches that can foster sustainability skills, such as problem solving, critical thinking, action competence and systems thinking

amongst students seem appropriate because of the complexity that sustainability presents (Jones et al., 2010b; Stibbe, 2009). Furthermore transformative social learning is required to deconstruct existing ways of knowing and understanding, to critically reflect on the values, beliefs and worldviews that underpin them, and to co-construct new shared meanings that can contribute to sustainability (Sterling, 2001; Wals, 2010; Wals & Corcoran, 2006). If we think about sustainability as a learning process, lifelong learning is essential as the means to learning to know, learning to do, learning to live together and learning to be creating generative learning communities towards sustainability (Blewitt, 2004; Delors, 1996). Systems thinking has been widely discussed as a fundamental element of EfS. The ability to see the interconnections between different dimensions (environmental, development, social, economic, cultural) and the complexity of systems and situations can contribute to the effective problem-solving of sustainability issues (Sharp, 2002; Sterling, 2004). Systems thinking offers *'the potential both to critique current educational theory and practice and to provide a basis in which it may be both transformed and transcended'* (Sterling, 2001, p. 17). EfS is about providing real-world learning opportunities, engaging people in the affective, cognitive and practical domains, and it therefore requires a shift of current thinking, values and practices of individuals, organisations and society (Sterling, 2012).

Sustainability in HE is an interdisciplinary process that requires innovation, holism and participation towards a curriculum approach (Tilbury, 2004) to find new ways of understanding, thinking and doing. Thus the ability to take steps towards building a more sustainable self, community, society and world requires far more than knowledge about sustainability, it requires sustainability literacy among the students (Stibbe, 2009). Sustainability literacy is a set of skills, attitudes, competencies, dispositions and values that are necessary for key learning outcomes in EfS. Experiential and active learning, referring to self-reflection, self-directed enquiry, learning-by-doing, engagement with real life problems and issues, and learning collaboratively within communities are required (Moore, 2005b). HE needs to provide students with innovative learning opportunities that can contribute to foster these skills. Therefore in my judgement the complexity of sustainability makes of innovation, critical reflection, collaboration and action-orientated processes critical processes in the journey of embedding EfS within universities (Cebrián et al., 2012).

3.3.1 Pedagogical strategies: sustainability in teaching and learning practice

A considerable amount of the literature on sustainability in HE has focussed on pedagogical aspects related to sustainability (Cotton et al., 2009). EfS is concerned with the 'what' and the 'how', therefore it is about innovation in pedagogy (Ryan & Cotton, 2013). The integration of sustainability within HE implies shifts in current pedagogical strategies moving from: transmissive learning to discovery learning; teacher-centred to student-centred approaches; and theoretical learning to practice-oriented learning that links both theory and practice (Sterling, 2004). It involves active and experiential learning, interdisciplinary approaches to phenomena and the link with the local community and stakeholders as part of the students' learning experience. Existing teaching and learning approaches for sustainability in HE are based on educators as role models and learners, experiential learning and holistic thinking (Dawe et al., 2005, pp. 4-5).

According to Policy Studies Institute et al. (2008, p. 34) *'in general, good sustainable development pedagogy is often simply good pedagogy'*. The literature suggests a number of teaching and learning approaches to sustainability. Tilbury (2007) highlights learning based change approaches such as participative inquiry, action learning and action research. Participative inquiry is based on collective research and learning on relevant sustainability issues within the local community to encourage questioning and new action. Action learning is about reflecting on a real problem to develop a plan and implement it, to then evaluate it to learn for future action and from the process and experiences. Action research is a cyclical research process that links action (change) and research (understanding) through planning, acting, observing and reflecting, and promotes innovation.

Transformative sustainability learning has been widely discussed in the literature as a suitable pedagogy in EfS (Moore, 2005b; Sipos, Battisti, & Grimm, 2008; Wals, 2010). It is about the cognitive, psychomotor and affective domains of learning (Sipos et al., 2008). It seeks to engage students in challenging existing worldviews, beliefs, feelings, values and assumptions based on past experiences (Wals, 2010). Based on a process of critical reflection, decisions are taken collectively about new ways of understanding. Four main elements in transformative learning are identified: individual experience, critical reflection, dialogue and a holistic orientation (Mezirow, 2009).

Providing real world learning opportunities through the use of student-centred approaches such as problem based learning and experiential and active and participatory learning,

referring to self-reflection, self-directed inquiry, learning-by-doing, engagement with real life problems and issues, and learning collaboratively within communities are required (Thomas, 2009; Moore, 2005a). Problem-based learning is a teaching and learning strategy that develops the capacity to apply knowledge to real world problems and situations, and to search and critically appraise different sources of information in order to solve real problems. For these reasons it is also envisioned as a suitable pedagogy for EfS (Bessant et al., 2013; Thomas, 2009). It is action orientated and reflection on the process is key. It promotes conceptual knowledge and problem-solving skills. Students acquire knowledge and learn the difficulties in implementing or generating solutions to sustainability challenges, and are thus able to understand the broad picture and the connection between different aspects such as environmental, social, cultural and political. It promotes the ability to learn how to learn, to develop teamwork skills, and to develop professional skills.

Other learning strategies and methods commonly used to promote learning for sustainability in HE that have been recently documented are: role plays and simulations; group discussions; stimulus activities (i.e. videos, newspapers, photos); debates; critical incidents; case studies; reflexive accounts and personal development planning; critical reading and writing; fieldwork; and modelling good practice (Cotton & Winter, 2010) (see Appendix 4).

3.3.2 Learning outcomes, competencies and sustainability literacy

Emergent research in the field of sustainability in HE has explored the learning outcomes and competencies that educational programmes need to seek to develop in students for them to become change agents towards sustainability (Mochizuki & Fadeeva, 2010; Sipos et al., 2008; Svanström, Lozano-Garcia, & Rowe, 2008; Weik, Withycombe, & Redman, 2011). However it is not possible to describe a mandatory set of competencies for sustainability because of the variety of the definitions of the terms sustainability and competence in educational settings (Mochizuki & Fadeeva, 2010). Despite the divergence in the usage of different concepts such as abilities, learning outcomes and competencies, and the existence of some criticisms around the usage of these terms, there is a need to define competencies in sustainability in order to foster curriculum developments on EfS (Weik et al., 2011). Wals (2010) introduces the elements of the sustainability competence or *Gestaltungskompetenz*. This term has been used by German educators in the field of sustainability and is based on Gestalt, which means mind-set. It expresses the abilities and competencies of students in contexts of sustainability and can

be defined as the ability to shape future scenarios by active participation in modelling and transforming society towards sustainable practices (Barth et al., 2007). According to Wals (2010, p. 386) the elements of sustainability competence are:

- Competence to think in a forward-looking manner, to deal with uncertainty, and with predictions, expectations and plans for the future.
- Competence to work in an interdisciplinary manner.
- Competence to achieve open-minded perception, transcultural understanding and cooperation.
- Participatory competence.
- Planning and implementation competence.
- Ability to feel empathy, sympathy and solidarity.
- Competence to motivate oneself and others.
- Competence to reflect in a distanced manner on individual and cultural concepts.

In my judgement developing these competencies amongst graduates is particularly critical to the development of sustainability literacy (Stibbe, 2009) and students becoming positive change agents in their workplace and personal lives (Sipos et al., 2008). I believe that the use of certain type of pedagogies, and teaching and learning approaches and strategies (see section 3.3.1), foster the competencies or skills necessary to deal with sustainability, such as critical and creative thinking, problem-solving skills, action competence, collaboration, and futures thinking, therefore creating empowered and globally responsible citizens and professionals who can become active change agents (Wals, 2010).

In terms of learning outcomes, Sipos et al. (2008) developed the transformative sustainability learning (TSL) framework and conducted three case studies on courses related to sustainability and citizenship. They concluded that courses that were engaging students in a cognitive, psychomotor and effective sphere enhanced TSL (Sipos et al., 2008). Weik et al. (2011) conducted a literature review on existing studies and frameworks on competencies on sustainability and developed an integrative framework on key sustainability research and problem solving competencies, namely '*systems-thinking competence, anticipatory competence, normative competence, strategic competence, and interpersonal competence*' (p. 205). Other research in the area has also developed competence frameworks for specific subject areas: engineering (Segalàs, 2009), teacher education (Cebrián & Junyent, in press; Sleurs, 2008), and educators at all levels of education (UNECE, 2012). Research has also looked at the inclusion of sustainability competencies in the programme descriptors of undergraduate

degrees (Cortés et al., 2010; Lambrechts et al., 2013; Segalàs, 2009). Thus the relevance of developing key competencies on sustainability has been acknowledged by international agencies such as UNESCO (2005) and UNECE (2009). For this reason the UNECE commissioned a group of EfS experts to develop a framework on EfS competencies for educators (UNECE, 2012). However, as this is a relatively new and emerging area of research, little evidence exists on the development, outcomes and impact that courses introducing students to these competencies have (Weik et al., 2011). Further empirical research is needed on the development and implementation of assessment tools for sustainability competencies (Cebrián & Junyent, in press; Sleurs, 2008). A tendency exists to focus on developing competencies' frameworks without paying sufficient attention to the individual and cultural context, and the organisational change processes required to achieve embedding EfS (Mochizuki & Fadeeva, 2010). Developing innovative courses that consider sustainability competencies could foster transformative learning amongst students but also engage stakeholders and the community, and in turn contribute to generate organisational change in the context of HE by opening up innovative programme designs (Mochizuki & Fadeeva, 2010).

In the UK, recent research on undergraduate students' attitudes towards sustainability, commissioned by the HEA, has evidenced, in a three-year consecutive survey study, that around 70% of students expect sustainability skills to be embedded in, and covered across the curriculum, rather than in specific modules (Bone & Agombar, 2011; Drayson, Bone, & Agombar, 2012; Drayson et al., 2013). This provides evidence on students' increasing interests, expectations and demands on learning about sustainability (Sterling, 2012). Considering that in the last few years students' expectations are becoming an integral part of UK HE policy and practice, the results of these surveys on student expectations to learn about sustainability could become clear catalysts for holistic curriculum change and academic staff engagement.

3.4 Curriculum development strategies

3.4.1 Sustainability embedded at an strategic level

There is no single curriculum model defining embedding sustainability in HE. Each institution is culturally and socially different, therefore each institution develops its own curriculum development programmes, plans and actions to embed sustainability (Dawe et al., 2005; Sterling, 2004). A report commissioned by the HEA on holistic curriculum change has been

published (Ryan, 2011). This research reviewed the international practices of twenty universities that had conducted some kind of holistic curriculum change initiatives, and performed an in-depth study of three leading UK HEIs that have been acknowledged worldwide for being examples of good practice in bringing about institutional curriculum change and practice for sustainability: the University of Gloucestershire; the University of Bradford; and the University of Plymouth. In the UK, the HEA Green Academy programme has provided evidence of significant institutional change across the HEIs that participated in its 2011 edition (McCoshan & Martin, 2012) (see section 3.4.6). The most committed universities have embedded sustainability in their strategic plans and teaching and learning strategies (Gudz, 2004). Ryan (2011) found from the review of the twenty HEIs that 75% had included the Efs agenda into its strategic documentation and plans, and 65% in curriculum change in the teaching and learning strategies. However, the fact of having sustainability embedded at a policy and strategic level does not necessarily translate into real practice, implementation across different faculties and departments, and engagement of the wider university community (Bekessy et al., 2007; Gudz, 2004).

3.4.2 Different approaches to embedding sustainability within the curriculum

A number of publications have reported case studies on embedding sustainability within different disciplines such as: marketing and business; geography and environmental sciences; nursing; engineering; architecture; teacher education; social work; and humanities (Holmberg et al., 2008; Jones, Selby, & Sterling, 2010c; Roberts & Roberts, 2007). Likewise specific modules or stand-alone courses on sustainability related topics are being developed by a number of universities (Hegarty et al., 2011). The design and delivery of modules on sustainability can be seen as a starting point for embedding Efs. For example in the UK, the University of Keele, the University of Nottingham and the University of Southampton amongst others have set up interdisciplinary modules focussed on current global challenges, including sustainability (McCoshan & Martin, 2012) (see sections 2.4.2 and 3.4.6). The University of Nottingham has published a series of Open Educational Resources on learning for sustainability and sustainability in different subject areas, such as business, geography, engineering, and arts and humanities¹⁴.

¹⁴ For more information please visit: <http://www.smashwords.com/profile/view/UniversityNottingham>

Other universities are offering Minors on Sustainability, such as the University of Michigan, the Penn State University, the University of Florida, and from 2013 the University of Southampton (see section 2.4.2). Different levels and approaches to embedding sustainability within the curriculum have been identified as (Rusinko, 2010; Segalàs, 2009; Thomas, 2004):

- Including some content and material on sustainability issues in existing courses of a programme.
- Offering separate courses within a programme that deal with sustainability issues, offering minors, discipline specific or interdisciplinary compulsory or optional courses available to any students.
- Creating new discipline-specific or cross-disciplinary programmes on sustainability related topics.
- Integrating sustainability issues into all courses, having embedded the sustainability discussions throughout the programme and developing an understanding from the subject area context and the study programme.

The latest has been developed in areas that are leading to sustainability such as environmental sciences and geography, or by offering specialised undergraduate or postgraduate degrees on sustainability (Thomas, 2004). Many authors agree that an integrative approach is the best way to embed sustainability (Cortese, 2003; Sterling, 2004) but this still tends to be limited to discipline specific courses typically in environmental sciences, geography and business and not necessarily linking research, campus and education (McMillin & Dyball, 2009). The field of research on the strategies, applications, results and best practices of incorporating sustainability into the HE curriculum is in its early stages (Sammalisto & Lindhqvist, 2008). No university exists that has embedded sustainability within its whole curriculum and in all the subject areas (Ryan, 2011). Some research has tried to conceptualise the elements that a curriculum orientated towards sustainability might have. A framework for greening the HE curriculum was developed through a participatory action research project involving eleven HEIs from Europe and Latin America (Junyent & Geli, 2008). Several characteristics for a curriculum towards sustainability were defined, such as flexibility, contextualisation, complexity, methodological adaptation and space for reflection and democratic participation. I believe that, with some imagination and originality, sustainability can be embedded in any subject area, but academic staff members need support and to be willing to engage in and try out innovative teaching and learning methodologies. I agree with Ryan and Cotton (2013, p. 153) in that:

“To introduce EfS more widely and achieve real impact on student learning experiences, change is needed at subject level. EfS must enhance existing programmes, recognising the different starting points of academic disciplines, both conceptually and pedagogy. Some disciplines have stronger connections with the language of sustainability than others”.

In my judgement work at a subject area level is particularly important to truly embed EfS within the undergraduate curriculum. However this must happen in conjunction with innovative experiences that link the formal curriculum to research, estates and operations, local community and external stakeholders (Hopkinson, Hughes, & Layer, 2008). Initiatives as such provide students with opportunities to learn and work on real sustainability issues within the university or the community, and have the potential to push the boundaries of subject area knowledge and comfort zone, building interdisciplinary and transdisciplinary collaborations and empowering students to become change agents.

3.4.3 Universities as living laboratories

The idea of campuses as living laboratories¹⁵ for the community, staff and students is gaining momentum as a suitable strategy towards embedding sustainability in the curriculum and culture of universities and linking the operations, education and research (McMillin & Dyball, 2009). According to McMillin and Dyball (2009, p. 58):

“The campus is the most readily available laboratory for hands-on projects, and acts as a shadow curriculum for the students to apply to the campus what they learn in the classroom.. by engaging students in the operational aspects of the university, a powerful learning experience emerges”.

Some papers have reported the experiences of universities in implementing courses and the idea of the living laboratory within their campuses (Beringer & Adomßent, 2008; Hopkinson et al., 2008; Shriberg & Harris, 2012). A case study of the impact of the course ‘Campus and Sustainability’ at the University of Michigan concluded that little research has systematically looked at the outcomes so far (Shriberg & Harris, 2012). However the development of living

¹⁵ Some of the universities with living laboratories for sustainability initiatives websites are Yale University (<http://sustainability.yale.edu/campus-living-lab>); University of British Columbia (<http://www.sustain.ubc.ca/our-commitment/campus-living-lab>); UCLA (<http://www.environment.ucla.edu/reportcard/article.asp?parentid=10852>); Newcastle University (<http://www.ncl.ac.uk/sustainability/initiatives/LivingLab.htm>); University of Cambridge (<http://www.admin.cam.ac.uk/carbon/research/livinglab/index.html>)

laboratories is in its infancy, hence they still have the potential for improving the environmental performance of the university, enhancing students' experiences on real interdisciplinary sustainability issues, establishing links with the community, and contributing to the application and generation of knowledge and research.

3.4.4 Sharing of good practice to promote curriculum development on EfS

The development of teaching resources and platforms to share good practice and promote curriculum development on EfS has focussed the efforts of universities and other organisations. A comprehensive guide on EfS in HE curriculum with resources, case studies and ideas to embed EfS in the different subject areas has been published recently by the HEA (Sterling, 2012). A toolkit for university educators that aim to learn about problem-based learning, blended learning and EfS has been published recently (Bessant et al., 2013). Furthermore champion universities in the area of sustainability have also developed leaflets to support curriculum development in the area of sustainability. For example, the University of Plymouth has developed the *7 Steps to: Embedding sustainability in your teaching*¹⁶, while the International Research Institute for Sustainability (IRIS) at University of Gloucestershire, has developed a leaflet on *Education for Sustainability: A Guide for Educators on Teaching and Learning Approaches*¹⁷. These leaflets intend to build the case for embedding EfS, providing information on its broad pedagogical principles and useful websites, and opportunities for developing sustainability literacy amongst students. A number of organisations such as the HEA, EAUC, HEFCE and UNESCO have specific websites that provide information, resources and case-studies for teaching sustainability (see Appendix 5). A number of HEA subject centres' websites contain information on subject-specific case studies. Recently, the Sustainability Exchange¹⁸, a platform to share good practice amongst HEIs, has been created in the UK. These kinds of websites provide teaching resources and case studies for academic staff members interested in embedding EfS within their teaching practice.

¹⁶ Please visit:

<http://www.plymouth.ac.uk/files/extranet/docs/CAR/7%20steps%20Seven%20steps%20to%20embedding%20sustainability.pdf>

¹⁷ Please visit:

<http://insight.glos.ac.uk/sustainability/education/documents/efs%20educators%20guide%20final%207july11.pdf>

¹⁸ For more information please visit: <http://www.sustainabilityexchange.co.uk>

3.4.5 Quality enhancement and benchmarking

External funding, benchmarking and quality assurance frameworks can directly affect the organisational structures leading to curriculum change. A study funded by HEFCE named *'Leading Curriculum Change for Sustainability: Strategic Approaches to Quality Enhancement'* has looked at quality enhancement and benchmarking in curriculum change for sustainability as an outcome. This research has been led by the University of Gloucestershire with four partner HEIs. The main outcomes of this project have been the creation of a guide to quality and EfS in HE¹⁹, new executive commitments to embed EfS in the curriculum, and more effective ways to embed EfS into existing quality initiatives. The project engaged key HE agencies and recommended the Quality Assurance Agency for HE (QAA) to locate EfS in quality frameworks and develop national EfS guidance. Thus, the UK QAA has added sustainability as part of its benchmarking of HEIs. The new UK Quality Code for HE scheme includes EfS, citizenship and ethical behaviour as cross-cutting themes that need to be embedded within the curriculum (QAA, 2012). It is the first time that EfS is incorporated into the QAA code of practice for teaching and learning. This will lead to external benchmarking and will potentially represent a motivation for curriculum and organisational change (McClaran, 2012). The HEA and the QAA conducted a consultation event in November 2013 for the development of a QAA and HEA ESD Guidance Document to be published in 2014. This will be a practical guide with the aim to inform and support academics with the incorporation of EfS in their teaching across the curriculum. Making sustainability a requirement by official bodies, funding councils and government is a catalyst for embedding sustainability in quality enhancement and benchmarking, and therefore in the university structures (Sterling, 2012).

3.4.6 The UK Green Academy Programme

The Green Academy was a UK institutional change programme launched in 2011 by the HEA, in partnership with EAUC and NUS. A second Green Academy programme was launched during 2013, however in this section I focus on the main outcomes achieved by the eight HEIs participating in the 2011 edition. This programme adopted a bottom-up approach by engaging university groups of senior managers, academic staff and student representatives in training activities to support their action and to foster change agents towards sustainability in their organisations (McCoshan & Martin, 2012). These institutions were: Canterbury Christ Church

¹⁹ For more information please visit: <http://efsandquality.glos.ac.uk/>

University, Keele University, the University of Nottingham, Swansea University, the University of Wales Trinity Saint David, the University of Worcester, University of Bristol, and the University of Southampton.

The main aim of the programme was to embed sustainability within the student experience. The Green Academy acted as a catalyst for achieving institutional change, developing strategic vision, institutional developments, senior management commitment and raising the sustainability profile and practice of these organisations (Kemp et al., 2012; McCoshan & Martin, 2012). For example, the University of Wales Trinity Saint David created INSPIRE (the Institute for Sustainable Practice, Innovation and Resource Effectiveness). Keele University incorporated sustainability as part of the 'Distinctive Keele Curriculum' with the aim to embed it into the curriculum and provide informal learning opportunities on sustainability to students. The University of Nottingham developed the 'Grand Challenge' process, which establishes a challenge to every school inviting them to participate in the change process. The four Grand Challenges in process are: internationalisation of the curriculum; assessment in the digital age; tutoring; and ESD. Canterbury Christ Church University focussed on the development of critical thinking skills through the idea of 'wicked problems'²⁰ to develop the 'Futures Curriculum' to embed sustainability in the student experience.

At the University of Southampton, institutional developments and strategic vision to become a global leader in sustainability were developed, along with embedding sustainability in the CORE (curriculum, operations, research and experience) and the university tag line 'The University of Southampton: A Globally Responsible University' (see section 2.4.2). These institutions identified the role of critical friends, senior management commitment and engagement, foster partnerships and focus on opportunities rather than on barriers as critical to progress in the programme's implementation in the university (Kemp et al., 2012). This programme facilitated the creation of a universities' network that led to collaboration, positive competition and support between them (Kemp et al., 2012).

3.4.7 Social learning and the hidden curriculum

Emerging initiatives in the field have focussed on promoting sustainability learning through informal and social learning. This corresponds to what is known as the hidden curriculum, which is about the activities and practices of the organisation that transfer sustainability values

²⁰ Used to describe problems that are difficult to solve because of their multifaceted and complex nature.

(Winter & Cotton, 2012). Most of the universities committed to sustainability offer informal learning opportunities to students and staff to engage in sustainability. Many of these initiatives are volunteering activities, providing opportunities to engage in campus-based or community-based projects, in some cases leading sustainability modelling of the institution or community (Ryan, 2011). For example, Mulà Pons de Vall (2011) studied social learning processes towards sustainability in HE in her doctoral thesis and highlighted the importance of providing staff with social learning opportunities to build sustainability awareness and action. Initiatives part of the informal curriculum are plausible across the globe (Global University Network for Innovation, 2012).

A growing number of partnerships and outreach activities with the local community have contributed to capacity-building and the improvement of regional development (Fadeeva & Mochizuki, 2010; Ryan et al., 2010). The rethink of university and community interaction is a current trend due to its importance in building sustainability practices, where the university and community become partners towards building local sustainability, and students become active change agents that can actually learn and practice sustainability in action (Lotz-Sisitka, 2012a; Winter & Cotton, 2012). Furthermore engaging the local community and different stakeholders in university business is critical to embed sustainability. However a gap seems to exist in linking curriculum development with social learning in HE (Müller-Christa et al., in press). The impact of informal and social learning towards building sustainable universities has been overlooked (Mulà Pons de Vall, 2011). Another example of building informal and social learning for sustainability within the university is the United Nations University Regional Centres of Expertise (UNU RCEs); this focuses on university-community partnerships. A further example can be found at Kingston University London; this has created a Sustainability Hub to enhance sustainability outreach activities, with the objective of making a difference to the local community through officialising projects with community organisations.

Student-led projects and work is another important area to foster social learning towards sustainability. A number of initiatives can be found in campus climate change and environmental student-led projects (Helferty & Clarke, 2009). In the UK, HEFCE has recently provided the NUS with five million pounds for the Students' Green Funds in order to help student unions across the UK to conduct student-led sustainability projects that are transformative and have a real impact on the wider university. NUS has awarded 25 students' unions²¹ across England, including the Students' Union at the University of Southampton to

²¹ For further information about the awarded Students' Unions and projects, please visit: <http://www.studentsgreenfund.org.uk/the-projects>

conduct Southampton Business Environment and Ethics Students (BEES) project to create a student-led sustainability auditing process, which focuses on ethical and environmental practices, to embed sustainability at the Students' Union and also impact on the university and local businesses.

3.5 Academic staff

3.5.1 Research on academic staff perceptions and attitudes towards EfS

Educational research in the area of university staff has focussed on identifying their understandings, beliefs, values, attitudes and visions towards EfS (Cotton et al., 2009; Cotton et al., 2007; Jones, Trier, & Richards, 2008; Reid & Petocz, 2006; Shephard & Furnari, 2012). From the literature on staff perceptions and attitudes some common strands and concerns can be outlined: diversity of views and understanding of sustainability; uncertainty on how to embed it in teaching and the curriculum; and time as a limitation. Thus different levels of engagement with the idea of EfS exist, related to the suitability to their subject area, and the ability to embed it in these. A summary of the research conducted in this area and its main findings can be found in Table 3.1.

Little research exists that has studied in-depth staff understandings, attitudes and challenges faced when thinking about embedding the principles of EfS within their professional practice (Cotton et al., 2009). In the interview-based research focusing on academic staffs' views on EfS, Jones et al. (2008) identified limiting factors such as staff interest, lack of awareness, time and capability. Other inhibitors in curriculum development and innovation towards sustainability are: academics tend to see sustainability as an imposed matter and not connected to their discipline; academics think that they do not have enough knowledge and competencies to integrate sustainability issues in their subjects; the ethos of HEIs are seen as an obstacle to embedding sustainability holistically in the curriculum; disciplinary silos; lack of incentives or individual priority; limited institutional commitment and support; crowded curriculum; and limited commitment from external bodies and stakeholders (Dawe et al., 2005; Jones et al., 2010a; Policy Studies Institute et al., 2008). Factors conditioning attitudes towards sustainability can be linked to misconceptions about the term, knowledge, background, previous experiences and personal values and beliefs (Filho, 2011). A recently

published paper (Christie et al., 2013) has reported the findings from a research on Australian academics' views and practices of EfS pedagogy. It is suggested that EfS is not practiced and academics do not see the link between EfS and pedagogical innovation. However the importance of using certain type of pedagogies for EfS has been articulated (see section 3.3.1 of this chapter), those responsible for using them do not necessarily see the link. I agree with Sterling (2012) in that student interests, links with community, views of employers, sustainability agenda of the university, quality and seeing the connections and relevance of sustainability to the subject area are engagement points for academics.

Table 3.1 Research on staff perceptions and attitudes towards education for sustainability

Authors	Research aim	Research method	Key findings
(Shephard & Furnari, 2012)	Explore the views of university lecturers on EfS and their role	Q methodology - forty-three lecturers responded to a Q-set test on 50 EfS statements	<p>Four different groups of staff' views on EfS were identified:</p> <ul style="list-style-type: none"> - Advocates for sustainability and for integrating sustainability into HE. - University teachers committed to the liberal ideals of HE in disciplinary contexts. - Sustainably minded university teachers inclined towards interdisciplinarity but not EfS. - Anthropocentric university teachers mindful of their academic freedom and responsibility to be critic and conscience of society.
(Cotton et al., 2009)	Explore what are the inhibitors to use transformative and holistic learning approaches and the strategies that lecturers use to embed EfS into teaching.	<p>In-depth interviews with fourteen academic staff members from different disciplines at the University of Plymouth (UK)</p> <p>Across disciplines</p>	<p>Constraints to include sustainability into teaching: limited relevance of sustainability to some disciplines; tensions between top-down and bottom-up approaches; conflict with 'conventional' pedagogies.</p> <p>The coping tactics used by lecturers comprise: informal or surreptitious inclusion of SD in curriculum content; small changes to curriculum where and when possible; modelling good practice in terms of environmental behaviour.</p>

<p>(Jones et al., 2008)</p>	<p>Explore the perceptions of lecturers and students on embedding EfS into undergraduate' courses: current teaching; opportunities and barriers to embed EfS</p>	<p>Case-study of the School of Earth, Ocean and Environmental Science at the University of Plymouth (UK): document analysis; semi-structured interviews (staff); focus-group (students)</p> <p>Specific subject area</p>	<p>Staff supported the idea of embedding sustainability but emphasised a lack of knowledge on sustainability and how to embed it in their teaching. Concerns emerged related to an already packed curriculum, citing time as a limitation.</p> <p>University could overcome internal obstacles such as individual's mind-set and personal motivation through engagement and motivation of academic staff.</p> <p>External factors such as the institution's structure and hierarchical culture can disempower staff activity/engagement in change processes and block transdisciplinary teaching.</p> <p>Academics interviewed when thinking about EfS understood it as content and did not considered teaching and learning approaches and philosophies.</p>
<p>(Cotton et al., 2007)</p>	<p>Explore lecturers' understanding, attitudes and beliefs about sustainability in HE curriculum</p>	<p>On-line questionnaire to 328 academic staff members from different disciplines at the University of Plymouth (UK)</p> <p>Across disciplines</p>	<p>Different understandings of sustainability amongst the participants in the questionnaire.</p> <p>Respondents generally supported the idea of sustainability however some controversies and resistances reside on the exact meaning of sustainability and its politic nature.</p> <p>Half of the respondents believed that sustainability is critical to teaching and research. However there was uncertainty about the link between teaching and sustainability, and the suitable approaches.</p>
<p>(Reid & Petocz, 2006)</p>	<p>Explore academics' understanding of sustainability in their subject area.</p>	<p>Phenomenography study. In-depth interviews with fourteen lecturers at Macquarie University (Australia)</p>	<p>Academics understand sustainability in teaching in different ways. Time is envisioned as a requirement to make changes in the curriculum.</p> <p>Conceptions of teaching sustainability: disparate; overlapping; integrated.</p> <p>Conceptions of sustainability in teaching: distance; resources; justice.</p>

3.5.2 Staff professional development

Little research exists concerning staff professional development aimed at transforming engagement with EfS. Tilbury et al. (2004) carried out a participatory action research project in order to engage lecturers in exploring ways to change the curriculum towards sustainability. This was undertaken using an innovative and interdisciplinary approach to encourage professional development, curriculum and organisational change in Australian universities. Roberts and Roberts (2008) hosted a staff development event to provide a space for exchanging and sharing innovative practice in EfS in the university context. Barth and Rieckmann (2012) illustrate the case of an academic staff development programme implemented in an Ecuadorian university and its resulting impact on individual competence development, innovation in teaching practices and organisational development due to new ideas and competencies acquired by staff through their participation in the programme. These are the few studies that have been found in the literature that are concerned with professional development of academic staff members in the area of EfS. Holdsworth et al. (2007) identify a lack of continuous professional development (CPD) programmes on EfS and the need to develop CPD programmes that enable the examination of personal understandings and beliefs in order to embed sustainability in the curriculum. Action research has been acknowledged as a suitable methodology to contribute to the transformation of professional practice of academic staff, generate new knowledge and promote the progress of the current state of EfS in HE (Cebrián et al., 2012; Warburton, 2003). In my doctoral thesis I have used an EAR approach (see Chapter 5) to construct new understandings and practices amongst research participants.

Some universities offer professional development programmes for academics and administrative staff (Holdsworth et al., 2007; Lozano-García et al., 2009; Tilbury et al., 2004). A web-study conducted by Holdsworth et al. (2007) reviewed Australian universities' websites and found that only one had a specific professional development programme on sustainability; interestingly most of them were signatories of international declarations on sustainability in HE. In a recent report, commissioned by the HEA, Ryan (2011) found out that 15 out of 20 of the exemplar HEIs reviewed as part of the research had professional development sessions for academics. However this does not necessarily translate into well-developed professional development programmes. The lack of training programmes, resources and organisational support for staff are impediments to achieve EfS in HE (Thomas, 2004). The advocated holistic and transformative change that sustainability requires can only be reached through

professional development that can contribute to curriculum innovations (Holdsworth et al., 2007).

3.6 Academic and organisational culture

Academic culture, academic freedom, disciplinary working environments or a lack of interdisciplinarity have been referred to as existing barriers to sustainability by several authors (Ferrer-Balas et al., 2004; Holmberg & Samuelsson, 2006; Martin et al., 2008; Moore, 2005a). The link of interdisciplinary practice in research and education as the means to deal with the sustainability challenge is logical because of the complex and multifaceted nature of the term (Hegarty, 2009; Tilbury, 2012). According to Hegarty (2009, p. 84), change projects at universities that seek to embed cross-cutting agendas such as sustainability have been '*anything but straightforward*'. Resistance and only partial success has been seen because these tend to be perceived as imposed agendas, and because research is often considered more important than teaching (Hegarty, 2008). This is due to the different existing 'territories' and subject-specific knowledge, understanding and values (Becher & Trowler, 2001). This makes interdisciplinary work and collaboration difficult, because each subject area grouping has its own way of operating, with divergent expectations and requirements.

Existing disciplinary silos and boundaries deter the capacity of EfS advocates to influence or convince other academics about the need to rethink current teaching and learning in HE in order to embed EfS (Hegarty, 2009). This is due to a strong sense of identity formation, assumptions and beliefs amongst academia, being socially constructed, and in which a status quo and a set of values claimed by certain academics are being reproduced (Hegarty, 2008). A set of academic values and beliefs shape knowledge generation and transfer through education and research (Carr & Kemmis, 2009). As I will discuss in Chapter 5 I placed the research within the critical theory and emancipatory paradigm as I was interested in creating critical reflection processes, which allowed the exploration of current values, beliefs and possible assumptions of academics in relation to education and sustainability, issues of power relationships, and the generation of transformative processes that could produce new ways of understating and practicing sustainability in HE.

However it should be noted that little research has been conducted on the approaches to challenge existing academic boundaries and culture, and the role of academic culture and

identity in blocking EfS in HE (Hegarty, 2008). For this reason when Hegarty (2008, p. 687) reviews the literature on EfS in HE wonders if *'in the light of the role of academic identity and its determinant impact on scholarly culture and practice, we might need to consider a different approach?'* Transformative approaches to education have the potential to lead to scholarly development on EfS (Ryan, 2011). Few are the papers in the literature that discuss or focus on issues to do with academic culture and sustainability (Hegarty, 2008, 2009). No evidence has been found on how academic culture impacts interdisciplinary sustainability projects development. The role of academic culture and its implications in achieving EfS has in essence been overlooked, when the link between academia and culture is critical to ensure success of HE sustainability projects (Ryan, 2011).

My doctoral research attempts to tackle some of the existing gaps identified in the literature on sustainability in HE. It was my aim to explore and develop an understanding of organisational learning processes towards embedding EfS within the undergraduate curriculum at the University of Southampton through engaging the research participants in open discussions, critical reflection and action-orientated processes. My understanding of organisational learning towards sustainability in HE is presented in Chapter 4.

3.7 Implications for my study

This chapter has outlined the current state of the art in the area of sustainability in HE to clarify the context of my study and to provide an overview of the main achievements and progress made, and emerging research areas in the field. I have reviewed key elements of modelling sustainable universities, educational processes towards embedding sustainability, curriculum development strategies, academic staff and academic and organisational culture.

The following points summarise the key arguments and insights developed through the review of literature and key initiatives and milestones in EfS in HE that have been presented and discussed:

- Significant improvements have been made in environmental management of the estates and operations, however curriculum development and the integration of sustainability across the curriculum is still in its infancy and little research exists on its implementation and outcomes (Jones et al., 2010a; Policy Studies Institute et al., 2008; Thomas, 2004). It has been difficult to move from theory to action (Moore, 2005a).

- A whole organisational system approach linking and coordinating the operations, education, research and outreach is necessary to foster a sustainable university (Adomßent et al., 2007; Ferrer-Balas et al., 2004). Systemic transformation is required (Sterling, 2004). Modelling, assessment and monitoring tools are being developed but there is still little application. There is a lack of real progress and structural change where current educational structures and practices need to be challenged (Holmberg et al., 2008).
- Universities need to work on the implementation side and develop effective mechanisms to mainstream good practice and transfer lessons learnt that clearly present theoretical and methodological frameworks (Corcoran et al., 2004; Martin et al., 2008). There is no systematic implementation and evaluation so far, and it is often reduced to enthusiasts conducting small-scale research or projects (Sharp, 2002).
- Leadership and staff professional development are key for organisational learning and change and have been overlooked (Thomas, 2004). A new type of leadership that is transformative and integrative is essential (Scott et al., 2012). These are both emerging research areas in the field.
- There is evidence that environmental and sustainability projects drive organisational learning (Albrecht et al., 2007; Gudz, 2004). Universities need to become learning organisations to embed sustainability within their structures and culture (Sharp, 2002). Most of the papers are stories of transformation, but little research has looked at the process of change (Velazquez et al., 2005).
- Living laboratories build the case for linking campus operations, research, students' experience and the community (McMillin & Dyball, 2009).
- Considerable literature on EfS pedagogy exists, however little are the studies focusing on staff perceptions or the challenges and opportunities faced by academics when incorporating EfS principles in their teaching practice (Cotton et al., 2009; Fien, 2002; Wright, 2010).

Figure 3.1 summarises keywords and factors that have been pointed out throughout the literature review and are envisioned as key elements and processes in fostering a student learning experience and holistic curriculum in HE towards sustainability.

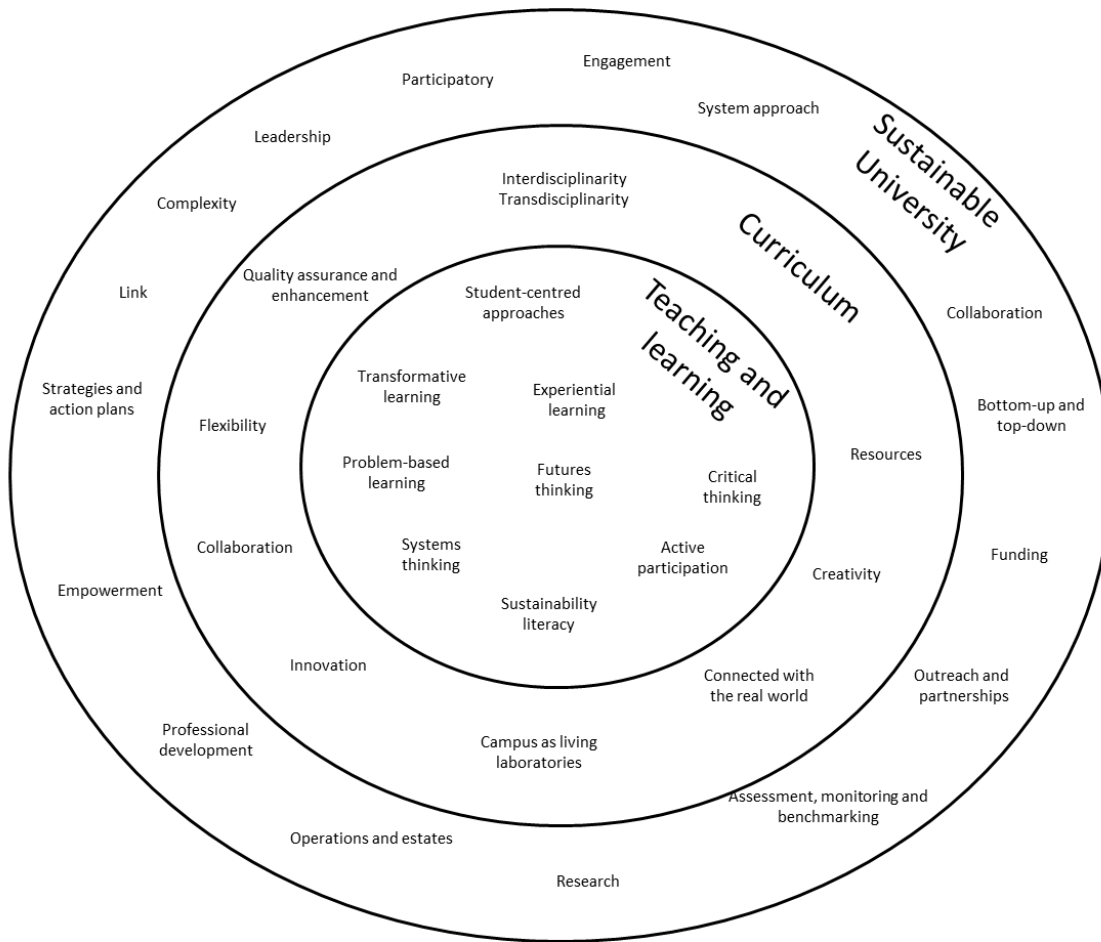


Figure 3.1 Key factors influencing student learning experience towards sustainability

The following points serve to contextualise my study within the broader existing body of knowledge on sustainability in HE and build the case for the choice of theory and method:

- Collaboration and interdisciplinary work and practice is a necessary approach to better understand and research sustainability issues (Jones et al., 2010c; Tilbury, 2011). For this reason I sought to engage participants in a collaborative, interdisciplinary and participatory process throughout the research.
- As I have outlined in section 3.5 of this chapter academic staff have different perceptions and attitudes towards sustainability and there is a need to build awareness amongst academics and empower them. For stage II of the research I adopted facilitator role with the aim of providing staff with support and with space to reflect about their own practice and develop their teaching practice towards embedding EfS.

- As I have pointed out little research has looked at the process of learning and change of organisations when embedding sustainability and little has been reported on what were the difficulties (Velazquez et al., 2005). My research aim in engaging with the Sustainability Programme group as a critical friend was to contribute to this through researching and learning from a real time intervention, and at the same time helping the group reflect and improve the intervention through the research process.
- Universities are critical contributors to the sustainability challenges society is facing. Several authors have stressed the need for universities to become learning organisations to enable transformation of their structures and practices to embed sustainability (Sharp, 2002; Sterling, 2004). This motivated my choice of organisational learning theories to guide the research (see Chapter 4) and my understanding of the curriculum as an holistic concept that includes formal curriculum, pedagogy, structure, ethos and organisation.
- Existing prevailing structures and practices inhibit the required transformation of HEIs towards embedding sustainability (Tilbury, 2012). As I have outlined in section 3.3 of this chapter transformative learning experiences are required to deconstruct existing ways of knowing and understanding, to critically reflect on the values, beliefs and worldviews that underpin them and to co-construct alternative paths and shared meanings that can contribute to foster sustainability (Sterling, 2001; Wals, 2010). Critical thinking and reflection is necessary to challenge existing worldviews and current unsustainable practices (Huckle & Sterling, 1996). Placing the research within the critical theory and emancipatory paradigm (see Chapter 5) allows critical reflection and the exploration and reframing of existing worldviews.
- The active involvement of the university community, including staff, students and senior managers is necessary to foster sustainability practices. The Sustainability Programme was an opportunity to engage with a community of practice formed by academics and students with different roles and responsibilities across the university.

Chapter 4: Organisational learning towards sustainability in higher education

4.1 Introduction

Organisational learning emerged in the 1980s and has been commonly used in management, leadership and business studies as a framework to understand how organisations can learn and adapt to external and environmental factors (Wang & Ahmed, 2003). The premise of this is that organisations need to be able to continually adapt to changes in their environment. Thus for an organisation, its learning and its members' ability to learn and adapt is essential to build the capacity required to deal with their external environment and be able to survive and sustain their activities over time (Senge, 2006). Two works were significant in the early debate about learning within organisational settings and spreading the concept: Argyris and Schön (1978) '*double-loop learning*' and Senge (1990) '*The Fifth Discipline*' (Wang & Ahmed, 2003). The key ideas underpinning these works are developed in this chapter. However a differentiation needs to be made between the use of these theories within businesses contexts and within HE contexts. Organisational learning has been widely used in businesses and management as a tool to improve the performance and effectiveness of organisations, although further empirical research needs to be conducted in order to understand the relationship between both (Yeo, 2002). In recent years universities have tended to take on business models due to the necessity to adapt to current restructuring and funding changes, but university purposes differ from private companies', such as social responsibility and the contribution they can make to foster sustainable communities through knowledge generation through research and education (Cortese, 2003). Holmberg et al. (2012) argue that the power structures of universities can present more complexity than businesses, as they are distributed amongst individuals, departments, faculties and senior management teams.

In this chapter I explore the combination of different theoretical frameworks to better understand and improve the effectiveness of organisational learning and change processes in the context of embedding sustainability in HE, specifically organisational learning (Argyris & Schön, 1978) (see section 4.3.1); the metaphor of the learning organisation (Senge, 2006) (*first edition 1990*) (see section 4.3.2); and expansive learning theory (Engeström, 1987) (see section 4.3.3). These are the theoretical lenses that informed my research. Further developed in this chapter is the idea that in organisational learning (as framed by Senge, Argyris and Schön)

cultural and social aspects of learning are not fully explored, therefore socio-cultural ideas and specifically expansive learning theory (Engeström, 1987, 2001) are seen as complementing these frameworks and providing a more comprehensive theoretical approach. Transformative learning theory (Mezirow, Taylor, & Associates, 2009) is also discussed in section 4.3.4 as a necessary step to better understand learning and change processes in individuals able to learn, and able to transform their organisations (Henderson, 2002).

These theoretical lenses on organisational learning have been chosen as I understand embedding EfS within the undergraduate curriculum as involving the whole organisation (social system): the ability of its members to critically reflect and challenge existing worldviews, values and beliefs to learn and develop new insights and ways of understanding and doing (Sterling, 2004). Thus, in my research embedding EfS is understood as involving: the social, cultural, economic and environmental dimensions of sustainability; and all the activities of a university including research, teaching and learning, engagement, and campus estates and operations. Therefore embedding sustainability is envisaged as a transformative organisational learning process involving the community and leading to a structural transformation towards sustainability (Tilbury, 2012). This involves a continuous process of learning to rethink existing practices and worldviews, from individuals within the organisation, that leads to community learning, that in turn leads to organisational learning.

This chapter is structured in four sections. First, I discuss effective leadership on sustainability in HE. Second, I explore the different theoretical frameworks on organisational learning that have guided my study. Third, I outline organisational learning studies in the field of sustainability and HE. Finally, I develop an integrative theoretical approach on organisational learning towards sustainability in HE and draw out six key implications for action in this area.

4.2 Effective leadership on sustainability in higher education

Leadership in the area of sustainability is an emergent area of research and practice for its importance in bringing about organisational learning and change. Therefore the understanding and leadership of senior managers and university leaders is key (Wright, 2010). The role of leadership and academic culture and its implications in achieving EfS has in essence been overlooked, when the link between academia and culture is crucial to ensure success of EfS in

HE sustainability projects (Ryan, 2011). Leaders and champions are vital in achieving the challenge of embedding sustainability within HE (Christensen et al., 2009; Ferrer-Balas et al., 2008; Holmberg & Samuelsson, 2006). As Williams (2008) suggests in her doctoral thesis the lack of leadership support from the organisation translates into lack of wider organisational impact. She recommends the use of transformational and distributed leadership frameworks, which would improve collaboration and learning across disciplines and would enhance the capacity to establish and engage learning communities in the sustainability change.

Commitment, leadership and support of those higher-up is critical to progress and embed sustainability (Lozano-García et al., 2009) because it means that new structures, incentives and funding are put in place (Holmberg et al., 2012). Decision-making processes need to become more participatory (Temple, 2012) and reward individuals and champions (Moore, 2005a). Bottom-up and top-down approaches are needed to make the agenda of sustainability successful, including students, and academic and administrative staff (Heck, 2005). Embedding sustainability requires strategic engagement and coordination. For this reason it needs to be introduced in governance systems, which would make those responsible for university governance become advocates of cultural change and transformation (Shiel, 2013). The importance of offering guidance and training to senior managers in order to convey the capabilities necessary to bring about change towards sustainability in their organisations has been also argued for in the literature (Tilbury, 2012). Considerable progress on leadership in the university context has been made on developing training programmes and initiatives that seek to provide leadership competencies on sustainability for managers in private and public sector. For example the University of Cambridge has set up executive programmes on sustainability leadership on: business, climate, the built environment, health care, and practitioners. A set of universities are also offering postgraduate courses on leadership for sustainability: MSc in Sustainability and Responsibility (Ashridge Business School; MA in Leadership for Sustainability (Lancaster University Management School; MSc in Responsibility and Business Practice (University of Bath); Master of Studies in Sustainability Leadership (University of Cambridge).

This evinces that universities have realised about the importance of providing sustainability leadership skills to the future leaders of businesses and organisations, however this has not been necessarily translated into the leadership practices of leaders and senior managers of HEIs (Shiel, 2013). Marshall et al. (2011) edited a book on the experiences from students engaged in the MSc in *Sustainability and Responsibility*. The use of an action research approach as an organising principle through cycles of action and reflection and with the students

undertaking their own leadership projects in their own organisations fostered individual and organisational learning and change through an experiential, collaborative and reflective process. An action research approach similar to the one used by Marshall et al. (2011) could inform leadership initiatives in the context of sustainability in HE. To date, a gap exists in the literature concerning how leaders can effectively drive innovation rather than integration of EfS in the organisational structures and practices of HE. Emergent leadership initiatives have tried to address this gap. In the UK, the HEFCE Leadership Governance and Management Fund (LGMF) engaged senior leaders of four universities in an action learning process to explore their roles and leadership towards embedding sustainability (Shiel, 2013). Likewise the Salzburg Global Seminar was established in 1947 as an independent, non-governmental organisation, with the key mission of building awareness amongst leaders in order to overcome global challenges. In 2009 a new programme with a focus on global sustainability, named Sustainable Futures Academy, was launched. Later in 2010 the Sustainable Futures Leadership Academy was established as a collaborative programme; this seeks to engage senior managers of HE in strengthening their leadership capabilities on sustainability (Salzburg Global Seminar, 2012). This constitutes an organisational change programme to gather different collaborations at an international level to catalyse leadership action towards sustainability in HE. Furthermore a recent research report has been commissioned by the Australian Teaching and Learning Council to define leadership capabilities for sustainability of effective HE leaders and change agents (Scott et al., 2012). This project is based on a survey methodology to actual leaders and change agents on EfS across the globe to better understand how leaders effectively lead EfS in HE. EfS leadership in HE requires the transformation of the structures and processes in that:

- HE needs to transform itself if it is to assist societal transformation for a more sustainable future.
- Good ideas with no ideas on how to implement them are wasted ideas.
- Change doesn't just happen but must be led – and deftly.
- The key to progressing sustainability in HE is to identify and systematically build viable leadership capabilities, competencies, support systems and pathways (Scott et al., 2012, p. 3).

Leadership on sustainability is complex. As such there is a need to explore and reframe current leadership frameworks (Fullan, 2003). EfS leadership seeks for transformation rather than adaptation, is future orientated and interdisciplinary, and requires efficient and collaborative management and governance systems (Scott et al., 2012). This suggests that a new kind of

leadership that is transformative and integrative is essential for a new challenge such as sustainability. In this sense, little empirical research has been conducted on the approach to leadership that sustainability requires, and the skills and capabilities that these leaders will need (Shiel, 2013). The University of Gloucestershire has developed the leaflet *Education for Sustainability: A Guide for University Managers on Needs and Opportunities*²². Furthermore few studies have reported on the perceptions, knowledge and engagement with sustainability of senior managers and major stakeholders (Wright, 2010).

The HEA Green Academy, amongst other purposes, offered training to groups of individuals from HEIs, so they could become leaders and change agents towards holistic institutional change in sustainability in their institutions (McCoshan & Martin, 2012) (see section 3.4.6). In this sense, the Green Academy attempted to provide leadership capabilities to groups working in bottom-up processes. Thus far, most sustainability champions in HE worked in leading change using a bottom-up approach (Jones et al., 2010a; Shiel, 2013). Thus, leadership happens at various levels within organisations, a leader is a person who engages in transformative change and works with others to create a more sustainable organisation (Marshall et al., 2011). Yet without the senior management support and leadership, these groups will fail to have the power to challenge and transform existing organisational silos and structures (Shiel, 2013).

It has also been emphasised the leadership role that HE can play in developing regional programmes (Coffman, 2009) through its expertise and engagement in regional environmental policy making. For the HE sector in general some models have developed the set of skills that leaders need: personal capabilities such as self-regulation, decisiveness, and commitment; interpersonal capabilities such as influencing and emphasising; and cognitive capabilities such as diagnoses, strategy, and flexibility and responsiveness (Fullan & Scott, 2009). These skills can provide the necessary leadership on reflection on values and ethics necessary to deal with sustainability. Leadership capabilities on sustainability can foster the organisational learning and change necessary for the transformation of universities towards sustainability. HE transformation towards sustainability requires effective leadership, leaders who are capable of: translating vision into a comprehensive transformative change process; negotiating the change process with the different university agents and at the different institutional levels; assisting and including staff from different disciplines; and being decisive and transparent

²² Please visit:
<http://insight.glos.ac.uk/sustainability/Education/Documents/EfS%20Managers%20Guide%20NEW%20Sept2011.pdf>

(Peoples' Sustainability Treaties, 2012; Scott et al., 2012). Few leaders of universities have been shown to have the capabilities required to develop an integrative approach to leadership for sustainability (Shiel, 2013). Thus systems thinking, emotional intelligence and the ability to learn are critical in helping smart people change their existing practices (Argyris, 1991). Organisational learning theories, further discussed in the next sections of this chapter, help explore how change towards sustainability can be led, because of their focus on transformative learning, collaboration, and critical reflection on current practices and actions of individuals within organisations.

4.3 Theoretical perspectives on organisational learning

Organisational learning is a contested area within organisation theory, due to the broadness of the term and the lack of a complete definition and theory, where several existing definitions and theoretical understandings are regarded as complementary (Boreham & Morgan, 2004; Crossan, Lane, & White, 1999; Wang & Ahmed, 2003). This has shed light on the deficiencies of multiple theoretical perspectives and several papers can be found in the literature that seek to develop theoretical insights and integrative approaches for an area of knowledge that could be seen as still in development (Crossan et al., 1999; Edmondson & Moingeon, 1998; Edwards, 2005; Thomas & Allen, 2006; Wang & Ahmed, 2003; Yeo, 2002). Organisational learning offers the theoretical integration and connection between individual processes to group and organisational learning and change processes. Existing schools of thought such as behavioural, cognitive, pragmatism and situated learning within the area of organisational learning have been discussed by different academics (Sauquet, 2004; Yeo, 2002). This section introduces the key ideas underpinning organisational learning theory (Argyris & Schön, 1978), and how expansive learning theory (Engeström, 1987) and transformative learning theory (Mezirow, 2009) can inform organisational learning to better understand individual transformation and the influences of culture and social structures in building learning organisations for sustainability (Senge, 2006). However little empirical evidence exists on the pedagogy of organisational learning, the the methods and learning processes associated to organisational learning (Boreham & Morgan, 2004). The integration of different theoretical perspectives becomes necessary to better understand how learning and change is attained in organisational contexts. Organisations need to be able to continually adapt to changes in their environment,

which might lead to universities being proactive rather than reactive to change (Fullan & Scott, 2009).

4.3.1 Organisational learning theory

Organisational learning theory (Argyris & Schön, 1978) can be classified as leading to both transformative learning amongst individuals and transformational change within organisations (Henderson, 2002). This approach integrates both individual and organisational learning. The capacity of organisations to learn relies on the capacity of its individuals to learn, thus organisational learning happens when individuals research into and learn from a problematic situation on behalf of the organisation (Argyris & Schön; 1978). The following points represent an attempt to outline the main contributions made by Argyris and Schön's (Argyris, 2006; Argyris & Schön, 1978) to organisational learning theory.

- **Action science: Espoused theories and theories-in-use**

Action science (Argyris & Schön, 1978) suggests that individuals think and act according to two theories they hold: (i) *theories-in-use*, which correspond to actual people's behaviours, routines, and theories that act in practice in a certain situation; and (ii) *espoused theories*, which correspond to the theories we think, or we would like others to think we sustain; these latter theories are framed by existing values and beliefs (Argyris, 2006). Theories-in-use guide people's actions, however they are frequently not conscious of them, or the set of assumptions that they hold in terms of the individual, group dynamics, social interactions and organisational culture. Reflection plays a key role in illuminating both 'theories' to enable individuals and organisations to move and learn. Concordance between both theories is needed to foster organisational learning. For this reason these authors have developed strategies and tools to help organisations and individuals reflect on both theories that can make individuals aware of the gaps between theory and action and promote organisational learning. Argyris (2006) highlights that there is a variety in espoused theories, however this variety does not exist with regard to theories-in-use.

Theories-in-use inhibit transformative and organisational learning; we learn theories-in-use in interaction within groups and organisations; we learn, for example, that sharing doubts and feelings with our colleagues can show an absence of professionalism. These are governing

variables that are implicit in social organisations. According to Argyris (2006, p. 392) the challenge is *'to help individuals transform their espoused theories into theories-in-use by learning a 'new' set of skills and a 'new' set of governing values'*. Challenging the current theories-in-use, situation and status quo is necessary for authentic learning to take place and new insights to be developed. The aim is to uncover organisational routines that inhibit the capacity to learn. It is the focus of this research to identify possible organisational and individual routines that inhibit learning and change towards embedding EfS. This is linked to historical, social and cultural issues related to being an academic staff member in HE, in this research at the University of Southampton, the existing routines and ways of operating at this institution, and the possible gaps between theory and practice to EfS therein. Action science attempts to bridge the gap between knowledge and doing (Argyris & Schön, 1978).

- ***Single-loop and double-loop learning***

The conceptualisation of single-loop and double-loop learning (Argyris & Schön, 1978) emerged as the forms of learning that can take place in organisations. Single-loop learning is adaptive learning, manifested as a change of behaviour in actions to meet certain desired outcomes. Double-loop learning is a process of reflecting on the principles, assumptions and governing individual and organisational rules, and it comes about only if individuals, teams and organisations are capable of adapting and transforming these assumptions and rules. Argyris (2006) stresses that in practice organisational learning and transformational change in organisations has proved to be difficult to realise, since they *'take a long time to bear fruition; they require behaviour and practices that often threaten the status quo; and they are about complicated problems that have many variables'* (p. 389). Argyris and Schön's work (1978) focussed on problem-solving to bridge the gap between theory and practice (Sauquet, 2004), however they have often been criticised for this reason, for being too pragmatic, and for not being rigorous enough in its theoretical underpinnings (Boreham & Morgan, 2004). The integration of organisational learning (Argyris and Schön, 1978) with expansive learning theory (Engeström, 1987) and transformative learning (Mezirow, 2009) provides an integrative theoretical framework to create learning organisations towards sustainability in HE. The significance of learning, and in particular the creation of learning spaces that can foster double-loop learning and challenge existing mental models that lead to unsustainable practices, has been articulated by several authors working on change towards sustainability in organisational settings (Dunphy, Griffiths, & Benn, 2007; Marsh, 2011).

4.3.2 Expansive learning theory

Various authors (Boreham & Morgan, 2004; Cook & Yanow, 1993) have argued for the integration of socio-cultural perspectives with pragmatic approaches to better understand organisational learning. Social and situated learning theories within workplace and organisational learning have been developed (see for example community of practice; Wenger, 1998). In my research I have drawn on Engeström's construct of expansive learning (1987) which corresponds to the third generation of activity theory. He developed an innovative framework within workplace and organisational learning during the 1980s with the conceptualisation of expansive learning within cultural-historical activity theory (CHAT) (Engeström, 1987, 2001). For Engeström learning is understood as an activity that entails using a set of tools to accomplish different tasks and actions, with cultural and historical factors shaping the activity in itself. According to Engeström (2001, p. 139):

“The object of expansive learning activity is the entire activity system in which the learners are engaged. Expansive learning activity produces culturally new patterns of activity. Expansive learning at work produces new forms of work activity”.

Expansive learning takes place through reflection on existing cultural and historical contradictions of the activity system. An activity system includes teams and organisations rather than single individuals and considers the entire work or activity and the environment, culture, motivations, history and complexity of real situations and activities. An activity system could be a school, hospital, university, business or any social system where individuals are engaged in an activity. Expansive learning opens new practices and expands common understandings of the object and the processes for achieving it (Boreham & Morgan, 2004). The focus is on existing contradictions within the activity system in itself, which enables the development of insight, learning and new action through reflection on cultural and historical conditionings. Activity systems are the focus of analysis and seek to *'develop conceptual tools to understand dialogue, multiple perspectives and networks of interacting activity systems'* (Engeström, 2001, p. 135). I was interested in understanding the influences that social and cultural contexts exert and the existing contradictions that influence organisational learning towards embedding EfS within the undergraduates' curriculum. From a socio-cultural perspective *'the knowledge generated by organisational learning can be represented as a collective resource, the dynamic product of interactions between people, artifacts and information'* (Boreham & Morgan, 2004, p.309). Acquiring a socio-cultural perspective can help understand the learning processes linked to practice in context, and according to Sauquet

(2004, p. 382) '*a better understanding of the relationship between learning and identity building and the role communities play in it*'.

The activity system can be conceived as embedding sustainability within one or more of the university's operations and activities. In this research the activity system is conceived as embedding EfS within the curriculum of the University of Southampton. Aspects of academic culture need to be understood in order to provide a rich account of how organisational learning for sustainability can take place in HEIs (Hegarty, 2008). In my research, through conducting individual interviews and group sessions I have sought to explore cultural and historical conditionings influencing academic practice in EfS. In this sense, it is also relevant to look at the ideal of the learning organisation and the disciplines required for creating an organisation that is able to learn and transform towards embedding EfS (Sharp, 2002).

4.3.3 Senge's fifth discipline and the learning organisation

Differences of conceptualisation between organisational learning and the learning organisation have been discussed in the literature and argued to be complementary (Edmondson & Moingeon, 1998). A learning organisation is defined as one where (Senge, 2006, p. 3):

"Its members continually expand their capacity to create the results they truly desire, where new and expansive patterns of thinking are nurtured, where collective aspiration is set free, and where people are continually learning how to learn together."

Senge (1990), in his seminal book *The Fifth Discipline*, characterises five learning disciplines: personal mastery, mental models, shared vision, team learning, and systems thinking. By the term discipline Senge (1990) symbolises theoretical and methodological foundations that nurture three learning abilities: fostering aspiration, developing reflective conversation and understanding complexity. Personal mastery is '*the discipline of continually clarifying and deepening our personal vision*' (Senge, 2006, p.7). Personal mastery is related to lifelong learning of individuals, thus the learning ability of organisations depends on its members' capacity to learn. Through sharing and discussing the ideas underpinning EfS with my participants (Stage II), sharing my insights and feedback documents with Stage II and Stage III participants, sharing existing resources such as publications and books, I have sought to develop personal mastery on EfS amongst the research participants.

Mental models are *'deeply ingrained assumptions, generalizations, or even pictures or images that influence how we understand the world and how we take action'* (Senge, 2006, p. 8). There is often a lack of self-awareness of prevailing mental models and the resulting way of understanding, interacting and acting. This discipline is closely linked to the ideas of becoming a reflective practitioner and fostering double-loop learning (Argyris & Schön, 1978; Schön, 1987) and the purposes of transformative learning theory (Mezirow et al., 2009) (see section 4.3.4). In my research I created learning spaces based on critical reflection, collaboration and dialogue with Stage II and Stage III participants. I used action learning conversations (ALCs) and reflective sessions (RSs) as the methods to guide the group interactions (see Chapter 7 sections 7.4.2 and 7.4.3). I used these methods because they contributed to critical reflection and reframing of current mental models and assumptions of participants in EfS. They therefore could foster transformative learning amongst participants (see section 4.3.4).

Shared vision is the *'capacity to hold a shared picture of the future we seek to create'* (Senge, 2006, p. 9). This discipline aims at bridging the existing gap between individual visions and shared vision among the social organisation, which encompasses taking into consideration future pictures or desired outcomes which are fundamental to nurture empowerment and commitment rather than indifference and passivity amongst the organisation community. Through my research I have looked at individual and shared visions within the participants. In my role as a facilitator I have aimed to develop a shared vision amongst Stage II participants and in my role as critical friend I have aimed to mirror the existence or inexistence of shared vision.

Team learning *'is where the rubber meets the road; unless teams can learn, the organization cannot learn'* (Senge, 2006, p.10). Teams are the basic learning units in organisations and enhance individual learning capacities through dialogue and collaboration. As I have outlined, the creation of collaborative and interdisciplinary learning spaces is critical to EfS in HE (see Chapter 3). For this reason I chose to work with an interdisciplinary group of academics (Stage II) and the Sustainability Programme (Stage III) at Southampton, making use of participatory and collaborative research methods that could enhance team learning (see Chapter 7).

Systems thinking is the discipline that embraces the other disciplines. The spirit of systems thinking resides in *'seeing interrelationships rather than linear cause-effect chains and seeing processes of change [patterns] rather than snapshots [isolated events]'* (Senge, 2006, p. 11). Only by abandoning the idea of fragmentation it is possible to construct learning organisations. My research has focussed on understanding the complexity and the interrelationships in order to embed EfS within the undergraduate curriculum. Systems thinking supported me in

understanding the complexity of relationships, meaning and organisational dynamics at the University of Southampton. A special emphasis is made on learning as transformation of current worldviews and understandings (Senge, 2006). The importance assigned to critically reflect on current values and assumptions to foster the learning organisation is similarly highlighted in the field of EfS, where transformative learning is envisioned as vital to the construction of new knowledge and innovation (Sterling, 2001). In this sense, theories of transformational change in organisations, organisational learning (Argyris & Schön, 1978) and transformative learning in adult education (Mezirow et al., 2009), which is further developed in the next section, play a key role in the development of learning capabilities and in fostering change in individuals and organisations.

4.3.4 Transformative learning theory

The use of transformative learning theory in conjunction with organisational learning theory to better understand and achieve organisational change has been highlighted in the literature (Henderson, 2002). Transformative learning theory has been successfully used in the field of adult education (Mezirow et al., 2009). Taylor (2009) defines it as a learning process that lets participants challenge existing worldviews, beliefs, feelings, values and assumptions based on past experiences. By a process of critical reflection decisions are taken collectively about new ways of understanding. Four main elements in transformative learning are identified: the individual experience, critical reflection, dialogue and a holistic orientation referred to as the affective and emotional part. The exploration of emotional issues is considered as fundamental to engage people emotionally in the re-construction and transformative process (Mezirow, 2009). The engagement of academic staff and the university community in communicative and critical reflective processes can lead to the deep and transformative learning required to change the existing paradigms associated with sustainability (Bawden, 2004). Mezirow (2009, p. 167) argues that transformation is *'the process of becoming critically aware of how and why our assumptions have come to constrain the way we perceive, understand, and feel about our world'*.

Transformative learning in the field of EfS is characterised as a theoretical approach that can contribute to engaging students in deep learning, engaging them in a cognitive, psychomotor and effective sphere (Sipos et al., 2008). Transformative learning is envisioned as a key for the development of sustainability competence amongst students, fostering a new way of

understanding and being by reflecting critically on self-assumptions and beliefs (Wals, 2010). In the field of EfS, transformative learning has been discussed mainly as a teaching and learning method and as a result of the student learning experience in EfS. Transformative learning is an evolving theory and little agreement exists on what really constitutes it and how it happens in reality. Therefore it is difficult as a researcher or practitioner to observe and comprehend it, and to collect evidence of it in practice.

I refer to transformative learning as a theoretical framework that can guide this research to better understand organisational learning and promote curriculum development and organisational learning and change on EfS, as it provides insights into how individuals can transform current worldviews and understandings. According to Engeström (2001, p. 150) *'theories of organizational learning are typically weak in spelling out the specific processes or actions that make the learning process'*. Argyris and Schön's framework (1978) has been criticised for being too pragmatic and not rigorous enough in its theoretical foundations; if combined with transformative learning theory (Mezirow, 2009) and socio-cultural theory it can provide a more integrative and rigorous approach (Boreham & Morgan, 2004; Cook & Yanow, 1993).

Several papers and publications can be found on organisational learning conceptualisation whereas there is a lack of empirical evidence on the pedagogy and the processes that lead to it (Boreham & Morgan, 2004). This research aims to address these deficits identified in the literature through integrating organisational learning theory as conceived by Argyris and Schön (1978), Engeström's (2001) idea of expansive learning at work, Senge's (2006) five disciplines as an ideal of a learning organisation and transformative learning theory (Mezirow, 2009), which provide the theoretical foundations of this study for understanding how individuals can transform their mental models in order to improve and change current practice leading to organisational learning and an organisation capable of learning.

4.4 Organisational learning studies in the field of sustainability and higher education

One of the main theoretical contributions to organisational learning in the field of sustainability in HE is the idea of whole system - systemic change (Sterling, 2004). In this work, Sterling (2004) notes the significance of Argyris and Schön's (1978) and Senge's (1990) work.

He draws on the importance of transformative learning, the redesign and transformation of existing educational systems, the move from fragmentation to system consistency, and from being a teaching organisation to a learning organisation. I found several papers in the literature that used Senge's and Argyris' and Schön's ideas to draw on the cases and stories of transformation of universities concerning the implementation and impact of sustainability policies and environmental projects (Albrecht et al., 2007; Gudz, 2004; Sharp, 2002). However little empirical research exists that has used organisational learning theories to inform research design or to inform the embodiment of sustainability within HE (Velazquez et al., 2005). My research has attempted to make a contribution to this area through using an integrative organisational learning theoretical framework towards sustainability in HE.

Several publications with a focus on organisational learning and change towards sustainability in private and public organisations can be found in the literature (Doppelt, 2010; Dunphy et al., 2007). The importance of participatory and transformative learning processes and critical reflection on governing organisational paradigms and practices that inhibit organisational learning are also acknowledged as critical (Doppelt, 2010). Reflection on mental models and double-loop learning is central in learning for sustainability in organisational contexts (Dunphy et al., 2007). However according to Doppelt (2010) organisations have focussed on developing technological solutions and policy rather than on challenging existing practices and organisational culture to develop more sustainable ways of thinking and practice. Doppelt (2010) has also used notions of organisational learning to create an approach to change processes and more participatory management towards sustainability in organisations. Other doctoral researchers have conducted empirical studies using organisational learning theories to study how organisational learning takes place in organisational contexts such as Marsh (2011) in the UK's National Health Service and Barasa Atiti (2008) in Kenyan Museums. Other empirical studies with businesses have provided evidence on learning processes apparent in Senge's and Doppelt's approach (Molnar & Mulvihill, 2003; Siebenhüner & Arnold, 2007). Hunting and Tilbury (2006) conducted research with ten corporations and government bodies and provided six insights for successful organisational change: shared vision; team building; critical thinking and reflection; work with stakeholder; systems approach; and no linear path to change. The link between these six insights and the organisational learning ideas of Mezirow, Senge's and Argyris and Schön's is evident. Furthermore, Ballard (2005) has suggested three conditions for developing learning processes to promote change for sustainability in companies: awareness; agency and association. Awareness refers to recognition of the complexity, scale, relevance and urgency of sustainability. Agency is about acquiring the

necessary skills to make a positive contribution to the company. Association is about working with others and it leads to empowerment because of the fact of working together. Thus the theoretical ideas discussed in section 4.3 and the integrative model I suggest in the next section seek to build awareness, develop double-loop learning, which is transformative and links theory and practice, and to empower people through working in teams and through developing their ability to critically reflect and challenge existing mental models to learn and develop new practices towards sustainability within organisations.

4.5 Organisational learning towards sustainability: an integrative theoretical approach

Several papers and publications can be found on organisational learning conceptualisations whereas there is a lack of empirical evidence on the pedagogy and the processes that lead to it (Boreham & Morgan, 2004). In this chapter I have aimed to address these deficits identified in the literature through proposing an integrative theoretical approach which considers the combination of organisational learning theory as conceived by Argyris and Schön (1978), Engeström's (1987) idea of expansive learning at work, Senge's (1990) five disciplines as an ideal of a learning organisation, and transformative learning theory (Mezirow, 2009). The integration of these frameworks jointly with effective leadership for sustainability and the key ideas underpinning EfS in HE (discussed in Chapter 3) provide the theoretical foundations for this study (see Figure 4.1). I envisaged this model as a tool for better understanding how individuals can transform their mental models in order to improve and change current practices of their organisations, and lead to a shared vision, organisational learning and HE organisations capable of embedding sustainability holistically. Figure 4.1 represents the key theoretical ideas that have been argued will lead to a better understanding of, and foster organisational learning towards sustainability in HE.

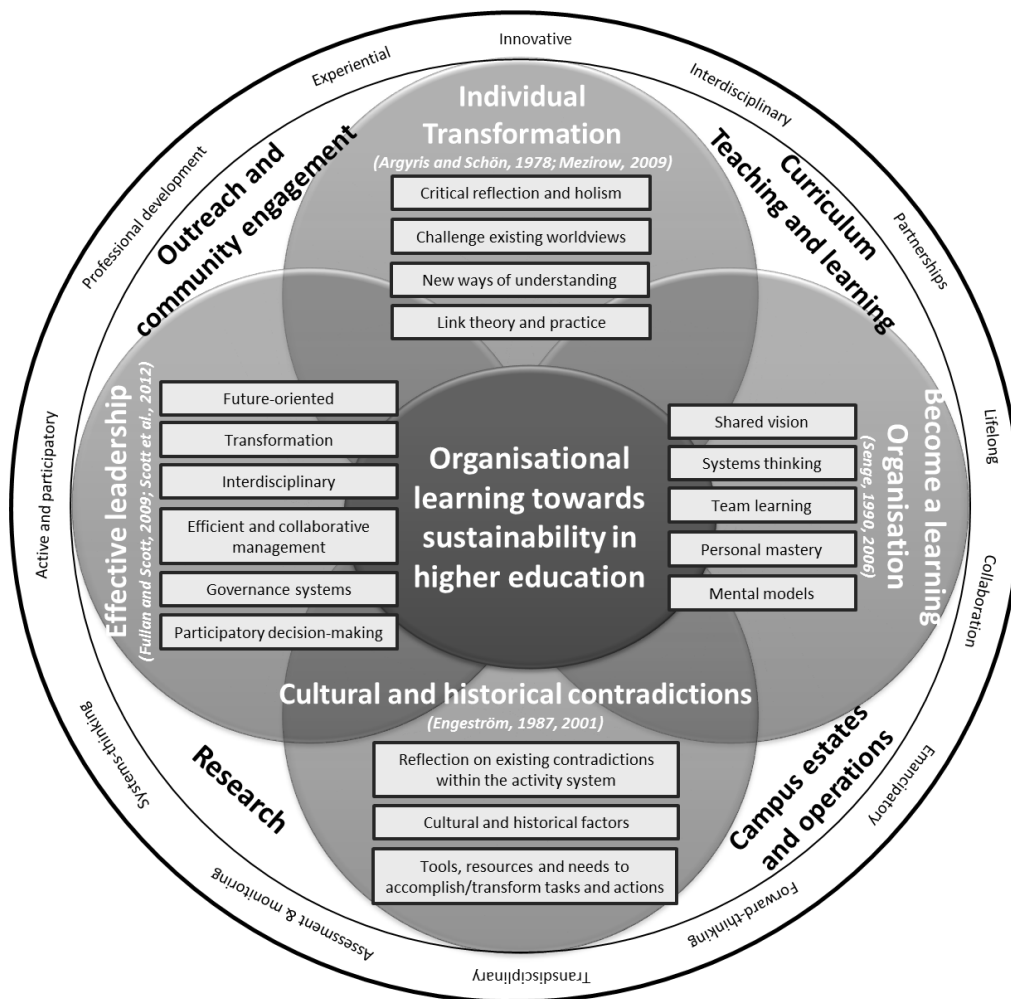


Figure 4.1 Organisational learning towards sustainability (from Cebrián et al., 2013, p. 299))

I envisioned it as an integrative theoretical framework that can help people to understand the ‘how to’, thus the learning processes associated with embedding EfS within the undergraduate curriculum at the University of Southampton. Research on EfS has failed to bring about holistic and structural transformation of HEIs (Tilbury, 2012). Although progress has been made in different areas, it still remains a great challenge to transform universities to embed sustainability in a holistic sense (Jones et al., 2010a). Sustainability can be a catalyst for systemic organisational change (Wals & Corcoran, 2006). The use of organisational learning theory provides a useful theoretical basis with which to better understand the process of transformation towards sustainability of HEIs (Sharp, 2002; Thomas, 2004). The challenge is that both organisational learning and sustainability are complex by definition, and are difficult to achieve because they are new fields, or fields under development. Thus universities face two main challenges in becoming learning organisations towards sustainability: the fact that

sustainability is an evolving and moving target, and the need to *'become skilful at the process of change itself'* (Sharp, 2002, p. 129). Organisational learning theory provides a series of lenses through which to understand the processes of HEIs as they embrace embedding EfS in all the university activities (Thomas, 2004). Senge's and Argyris' and Schön's ideas have been used in several papers to draw on the lessons learned (Gudz, 2004; Sharp, 2002; Thomas, 2004). This evinces that environmental and sustainability projects can drive organisational learning (Albrecht et al., 2007; Gudz, 2004).

The use of the proposed framework to inform and conduct my research has contributed to better understanding of the process of change per se, the factors enabling or blocking organisational change, existing individual and organisational routines that inhibit learning and change towards embedding sustainability, and bridging the gaps identified between theory and practice on the field of EfS in HE (Moore, 2005a). This leads to more effective organisational learning and change processes, and provides evidence-based research that can inform further research and practice to foster learning organisations' ability to rethink their structures and cultures to embed sustainability in HE (Argyris, 2006; Henderson, 2002).

4.5.1 Implications for action

In this study for the University of Southampton, six key implications for action for universities have been identified as necessary to embed EfS within HE and develop effective leadership to foster organisational learning are to:

- Adopt a research-led approach to the change process using organisational learning theory. Further research is needed that uses organisational learning to inform the design and development of research reporting on the achievements, opportunities, challenges and difficulties emerged during the whole change process towards embedding sustainability.
- View universities through the lens of systems thinking and become learning organisations skilled at the change process, which develop personal mastery amongst individuals, foster team learning and shared vision, and are able to rethink existing worldviews, mental models and practices to create innovative action.
- Conduct organisational research that links theory and practice in relation to EfS. Use participatory and emancipatory approaches such as action research that can foster transformation and learning in this area. These approaches catalyse critical reflection and learning-by-doing from real practice.

- Develop effective leadership and professional development frameworks and programmes that can engage the different university actors in leading organisational learning for sustainability and develop leadership capabilities in staff. This is in line with Fullan and Scott (2009) and Scott et al.'s (2012) work, which has identified developing leaders' capabilities as crucial to build effective change-capable universities towards embedding sustainability.
- Promote participatory decision-making processes using bottom-up and top-down approaches. Actively engage the university community and stakeholders in forward-thinking and in modelling the sustainable university.
- Provide staff and students with opportunities to collaborate, reflect, discuss and develop interdisciplinary projects and actions to adopt good practice on EfS within the university context.

Therefore the organisational learning framework I suggested (see Figure 4.1) could be practically implemented by: using innovative, participatory, collaborative and interdisciplinary research approaches; conducting action research projects; conducting research on effective leadership, professional and curriculum development; using participatory and emancipatory approaches that enable organisational learning; research with people rather than on people; and allocating an active role and empowering the research participants (Cebrián et al., 2012; Tilbury, 2012). The use of this framework can also support EfS practitioners and researchers to better understand organisational processes, identify opportunities, and deal with barriers related to structure and culture that inhibit universities from becoming learning organisations capable of embedding sustainability in their everyday practices and activities.

In my research I worked with an interdisciplinary group of academics and became a facilitator of curriculum development (Stage II). I assisted a community of practice working on embedding sustainability within the organisation acting as a critical friend (Stage III). In both processes I used action-orientated, participatory and collaborative methods such as action research, ALCs and RSs to enhance critical reflection, collaboration and sustainability action (see chapter 6 and 7). I placed my research within the critical theory and emancipatory paradigm in order to empower the research participants, create communicative action and space for exploring and reframing mental models (see chapter 5). I chose a set of methodological orientations and research design and processes that I believed could allow me to explore organisational learning processes towards embedding sustainability at the University of Southampton.

Chapter 5: Critical theory and the emancipatory paradigm

5.1 Introduction

This research is placed in the critical theory paradigm since one of the aims is to promote the critical reflection of the researcher and the research participants. Critical theory encourages the challenging of existing worldviews and mental models that can provide opportunities to foster new understandings and learning, transforming the individual and the organisation towards new discourses and practices on sustainability (Carr & Kemmis, 2009). This chapter focuses on the critical theory paradigm. I start with the introduction of some of the core assumptions of critical theory and emancipatory action research (EAR) and reflect on some criticisms associated with critical theory and EAR before moving to build the arguments for selecting EAR as the research methodology to undertake this research. The importance of questioning assumptions and existing worldviews to move towards action in EfS has been widely acknowledged in the field (Tilbury, 2012; Wals & Corcoran, 2006). The use and selection of critical theory and EAR responds to the need to question the taken-for-granted assumptions which researchers and research participants bring to this field of inquiry.

5.2 Theoretical assumptions of critical theory

Any research should be conducted within a clear exposition of the underpinning assumptions in:

- Ontological issues: how we see ourselves, *'theory of being'*
- Epistemological issues: how knowledge is understood and acquired
- Methodological issues: how the research process is undertaken

According to Neuman (1994) assumptions are statements related to the nature of reality that are not visible or clear and represent a starting point for any inquiry. Conceptualising and theorising the nature of humankind, social reality and a particular situation or problem are based on a set of assumptions. Consequently the understanding of the assumptions underpinning the research is critical. The idea of paradigm was introduced by Kuhn (1996), and

is related to acquiring a basic path to understand theory and research. Each research paradigm, positivist, interpretive, critic and postmodern, has a different way of looking at the world, and each is based on different assumptions (Neuman, 1994). In critical theory the main goal of research is to transform reality (Guba & Lincoln, 2005). Critical social research aims to discover traditions, expose silent truths and facilitate the social space required to change the world, where the intention is to give people the opportunity to transform their current status or situation (Neuman, 1994; Robson, 2011).

Cohen et al. (2000) described the critical paradigm that was encouraged by the Frankfurt School and its philosophers such as Habermas, Marcus and Horkheimer. The terms emancipation and justice became central in their discourse. They made a call for the full participation of citizens in the society, with equal rights and possibilities to contribute to decision-making (Habermas, 1987; Kemmis & McTaggart, 2005). The ideas of equality and democracy were major hall-marks of their work. Furthermore, the purpose of the critical paradigm is not just to understand and explain a situation or problem, as it is in the positivist and interpretive paradigms, rather its main goal is to question and transform reality (Robson, 2011). The significance of critical theory resides in its aim to question given agendas for research (Cohen et al., 2000).

In the field of EfS, Corcoran et al. (2004) analysed fifty-four case studies on sustainability in HE and identified the lack of theorising research methodology as an obstacle to a better understanding and improvement of sustainability issues in HE. A critical case-study approach within a critical theory paradigm can lead to a better understanding and improvement of situations. The theoretical basis of research methodology has been frequently misplaced in research concerning sustainability in HE, where the focus has been on presenting examples of good practice or case-studies (Corcoran et al., 2004). There is a need to develop research designs within a critical paradigm that link sustainability with organisational learning and social theory (Fien, 2002). The following points summarise the main assumptions relating to critical theory (Guba & Lincoln, 2005; Neuman; 1994):

- Society and reality are always evolving, so it is only possible to study any given situation at any given moment.
- People are creative and adaptive and can change the conditions and transform reality.
- People are limited by cultural and historical conditions, but they can transform current beliefs and behaviours enabling them to develop new understandings that can change

present oppressive structures and relations. It brings about empowerment of individuals and allows collective groups to participate actively in society.

- Critical theory is action-orientated in the sense that it critically analyses the present situation and allows individuals and groups to imagine and construct a different future through action plans.
- Research is value-laden. Social research is political and moral. The role of the researcher is based on values that involve the judgment of viewpoints and alternatives, of both their participants and themselves.
- Focus on change, contradictions or conflicts within social systems, support the understanding of reality (critical socio-historical analysis to identify the values and beliefs that underpin the ways of doing and thinking) and to help to transform it. The aim is to expose underlying assumptions and structures.
- Social sciences research is with others and not on others. Participants in the research are seen as co-researchers and co-learners.
- Reality is socially constructed but it is governed for structures that are not visible. Theory is a critique in the sense that it exposes conditions and contributes to the empowerment of people, enabling them to visualise an alternative path to a better society and world.

The conduct of research in Efs within a critical paradigm can foster the epistemological change advocated by Efs experts which is necessary to transform thinking and practice to embed the principles of Efs within HEIs (Fien, 2002; Tilbury, 2012).

5.3 Criticisms of critical theory and EAR

There are academics who are critical of critical theory and EAR. In the 1990's Morrison (1995) argued that there may be no connection between ideology critique and the emancipation of societies or even practitioners; for him there is no scientific evidence in the relationship between critical theory and emancipation (Cohen et al., 2000). Concerns exist around action research that makes it a highly problematic approach. Gibson (1985) stated that the agenda of EAR is extremely particular, prescriptive and problematic. A summary of the most sounded criticisms of EAR are:

- it is not realistic;
- it tends to control and prescribe;
- it assumes a view of emancipation and action research;
- it favours critical collective reflection instead of individual self-reflection;
- it assumes that power can be distributed simply by empowering people;
- it assigns more importance to groups rather than individuals (Gibson, 1985).

Kemmis and McTaggart (2005) mirror some errors made in previous research due to an overoptimistic and enthusiastic view of EAR, where the ability of action research to transform individuals and contribute to social and educational change is overemphasised. The empowerment of research participants is complicated and the change tends to be technical rather than emancipatory (Bradbury Huang, 2010). Another of the myths identified is in respect to the role of the facilitator who usually adopts the role of consultant or expert. This is seen as in contradiction to the role of equal participation of participants as co-researchers. However, understanding the facilitator role as unbiased or purely technical discards its duty in assisting the social change implied in EAR (Kemmis & McTaggart, 2005; Robson, 2011). Moreover it is suggested that action research requires both more theory and action with the need of a more proactive participation of research participants in research and action (Reason & Bradbury, 2008).

There are a number of challenges associated with the use of EAR. Reflexivity and critical reflection are essential elements to this research methodology if it is to expose the successes and failures, and the whole learning process resulting from EAR (Guba & Lincoln, 2005; Kemmis, 2010) (see section 7.6.3). In my research I made the case to locate EAR within a wider framework of educational change, namely organisational learning theory. The theoretical framework on organisational learning, discussed in Chapter 4, emphasises critical reflection, collaboration and dialogue, and holism. This approach to learning in organisations can guide the development of EAR projects with academic staff members to promote emancipatory rather than technical change to embed EfS in the HE curriculum and create a learning organisation.

5.4 EAR placed in the critical theory paradigm

EAR is a powerful method for cooperative self-inquiry used by individuals in the society to improve wisdom and honesty in their social and/or educational practices. EAR aims to

understand the practices, situations and conditions in which they occur. It is related to the whole structure, concerning the social and political constraints that influence the social and educational situation (Carr & Kemmis, 1986, 2009; Kemmis, 2010; Kemmis & McTaggart, 2005). As argued by Carr and Kemmis (2009, p. 79) EAR:

“Seeks to create and nurture the kind of democratic culture which fosters the processes of deliberative reasoning necessary for practitioners to collectively and self-consciously participate in the process of contestation through which their society – including its system of education – is reproduced and transformed”.

EAR contributes to social change and the personal transformation of the participants in the research through learning and reflection on action and through potentially liberating researchers and participants from restrictions of the technical-rationality paradigm (Usher, Bryant, & Johnston, 1997). In *Becoming critical* Carr and Kemmis (1986) suggest that action research is political, not in the sense that it gives a vision of what a good society is, but in that it recognises the existence of different worldviews. Its value and importance are on generating reflective processes with regards to different perspectives, with the premise of equal respect to diverse ideas, opinions and understandings (Noffke, 2009; Reason & Bradbury, 2008).

It has been argued that education is a political matter in the sense that it is a social reproduction that shapes the type of knowledge taught within the curriculum and the set of values and behaviours promoted because of existing power structures (Freire, 2000; Gaventa & Cornwall, 2008). These can vary according to the society, with knowledge and values changed and conditioned by cultural settings. To become educated is to be able to speak and understand a language and to learn a set of social routines, habits, tendencies and the ways of interacting in a particular society (Carr & Kemmis, 2009; Guba & Lincoln, 2005). If one of the goals of education is to shape individuals in the society, this means to reproduce a certain kind of society, but it also has the role of transforming individuals to create a better and more sustainable world (Clugston & Calder, 1999). As Kemmis (2010) suggests, the question is what exactly constitutes a good society or a worthwhile living world, and to answer this question it is necessary to think about the assumptions that underpin what a good society is in relation to education, because the current educational models assume what a good society is. This is a critical idea for progressing EfS at all levels of education. According to Sterling (2001) a paradigm shift is necessary to provide a real education for change, where the main role of education is to offer a deep and transformative learning experience and provide opportunities to develop learning communities for sustainability. EAR is a suitable research approach to

assist the creation of learning organisations. One of the first debates that we need to address is the purpose of HE and the extent to which the current educational models are reproducing a non-sustainable society (Bawden, 2004). Sterling (2001) proposes a paradigm shift and the need to reframe education by changing the current assumptions that underpin what a good society is as defined within the current educational structure.

The importance is in the process of critical reflection about what a good society is, and it aims at giving opportunities to contested processes of reflection, debate and dialogue and the values that underpin different models and patterns. According to Carr and Kemmis (2009, p.78) these processes might be 'rational' and 'democratic', and they argue that they are *'rational in the sense that such debates are conducted in accordance with principles of rational discourse, and democratic in the sense that everyone concerned is able to participate on equal terms'*.

EAR is a methodology that aims at offering an open space for communication and participation of individuals in decision-making in a collective and reflective manner, acting in their own practical settings, sharing, and acquiring a better understanding and awareness of the self and the collective situation and the significant circumstances that influence their acts. EAR can provide opportunities to challenge existing worldviews, beliefs and values, and empower practitioners, thus improving their practice, and the educational and social situation, towards sustainability in their daily life and professional practice. This approach within this research contributes to a holistic view of the factors influencing academic staff members' participation in sustainability issues and the journey required to embed sustainability within the undergraduates' curriculum.

5.5 Key concepts in EAR

Ideas that are predominant in EAR are concepts such as deliberative democracy, communicative action, communicative space, ideology critique and reflexivity (see section 7.6.3). They are fundamental ideas when seeking to conduct an EAR. In this section I shall briefly introduce them.

- ***Deliberative democracy***

Gutmann and Thompson (2004) state that 'deliberative democracy', an idea refreshed and stimulated by Habermas (1987), is about communal deliberation and agreement of people. It is inclusive in the sense that it gives the opportunity to participate democratically to a wide range of people (Carr & Kemmis, 2009). It is the vision that everybody has something to contribute and something to learn in interaction with others.

- ***Communicative space and communicative action***

Communicative action is a process of questioning self-understandings to collectively analyse a situation or problem that will lead to a common understanding and a set of agreed responses and/or solutions. In the late eighties Habermas (1987) stated that it is created when people are part of a particular conscious and intentional communication process with the purpose of '*reaching intersubjective agreement as a basis for mutual understanding so as to reach an unforced consensus about what to do in the particular practical situation in which they find themselves*' (Kemmis & McTaggart, 2005, p. 576).

Communicative action is based in some assumptions concerning behaviour of individuals in group participation as everybody engages equally to speak about a concern; contributions are realistic and honest and there are no boundaries or intimidation between different contributions (Carr & Kemmis, 2009; Kemmis, 2009, 2010). Communicative action can ensure the fairness, legality and rationality of the decisions and actions taken by the participants. It happens when people feel free and are confident to interact as part of a group. It gives space for different explanations, arguments and relevant information to be listened to and evaluated.

In the late 1980's Habermas (1987) identified a feature that he called communicative space; this is the space opened by communication between individuals/practitioners. This is the space created for communicative action where participants aim to reach common understandings and decisions that are based on a consensus about the best actions and solutions to improve a situation in a given time and place (Kemmis & McTaggart, 2005).

In this shared space people can support each other in a group because they share the same problem, aims and in some cases feelings and emotions. Furthermore the understandings and decisions are collectively agreed upon, and it is one of the factors that contribute to valid and valuable data, as they should be fair and reasonable. As with other doctoral researchers in the

field of sustainability education I have sought to create communicative space and communicative action through my research (Barasa Atiti, 2008; Mulà Pons de Vall, 2011).

- ***Ideology critique***

Ideology critique is another concept promoted by the Frankfurt School and Habermas (1987) and his colleagues. It is a process that allows dominant beliefs, values, myths and explanations that are part of our everyday practices and situations to be challenged. They are established and inherent in social habits and cultural contexts, and tend to legitimise political and educational structures and practices (Gaventa & Cornwall, 2008). They are usually seen as the normal behaviour or the normal situation. Ideology critique aims at challenging these existing patterns and beliefs to expose the profound conditions that are part of our everyday behaviour (Carr & Kemmis, 1986).

5.6 Summary

My research interests are to investigate the individual and professional development of academic staff members, as well as the factors and the circumstances such as political, educational, social and cultural that influence the educational and social practice of research participants. EAR seeks to create the communicative space and communicative action in which practitioners are able to make decisions, take action and research in collaboration into existing worldviews, practices and the conditions under which practice is carried (Carr & Kemmis, 2009). EAR can potentially produce new discourses and practices, through voicing and empowering participants to learn and transform their reality (Usher et al., 1997; Robson, 2011). Carr and Kemmis (1986) argue that one can only understand education as part of the reproduction of the social structure.

Two main functions of education can be defined: reproductive of the current social and cultural model and transformative for a better and worthwhile living society. EAR is transformative and political, not in the sense that gives a vision of what a good society is, but in the sense that it recognises the existence of different worldviews and the value of generating reflective processes with regards to different perspectives, with the premise of equal respect to diverse ideas, opinions and understandings (Gaventa & Cornwall, 2008; Kemmis & McTaggart, 2005). This is particularly relevant in organisational contexts as issues of

power and politics in organisations can limit participative openness (freedom to express one's opinions) and reflective openness (rethinking and challenging current views) (Coghlan & Brannick, 2005; Senge, 2006). In contrast Flood (1998) considers that a positive link might exist between both, and that people are willing to learn with other people and construct shared vision and action. Senge (2006) makes reference to knowledge-power concern and the need for social transformation, linked to critical theorists, making reference to power structures and valid knowledge as determined by these 'powerful structures', in that education and knowledge are conditioned by power structures (Carr & Kemmis, 2009). These may influence people's behaviour and capacities to rethink current thinking and practice and determine possible outcomes of group discussions and reflections, weakening the ideal of the learning organisation (Pettigrew, 2003). Other doctoral theses have used critical theory to help challenge mental models and current practices, and to illuminate power structures and relationships conditioning organisational learning and social learning towards sustainability (Barasa Atiti, 2008; Mulà Pons de Vall, 2011).

EAR is about local knowledge, daily life, cultural context and local situations (Somekh, 2006). My research emphasises the local stories of the research participants and the learning processes derived from the research. In this sense university members have a significant and active role to play in moving forward the agenda of sustainability in HE. Tilbury et al. (2004) carried out a participatory action research project in order to engage lecturers in exploring ways to change the curriculum towards sustainability. This was undertaken using an innovative and interdisciplinary approach to encourage professional development, curriculum and organisational change in Australian universities. Action research is a methodology that can contribute to the transformation of professional practice, generate new knowledge and promote the progress of the current state of EfS in HE (Warburton, 2003). According to Kemmis (2010) action research can inspire framing a better world through inquiry within the real world, providing new ideas for practice, new ways of thinking, new ways of doing and new relations (to others and to the world).

An action research approach can offer opportunities to engage academic staff members in a learning-by-doing process, where critically reflecting on existing worldviews, clarifying values and acting towards sustainability in a practical, but also in a theoretical way are the core elements. One of the preventive factors identified in embedding EfS as a whole is the fact that staff need support such as CPD programmes to build up the capacity within the academic community to change current teaching and professional practice towards EfS. It has been argued that the use of EAR as a methodology can foster transformation and learning in this

area and can be a research approach that catalyses critical reflection, learning from action within HE to bring about curriculum development and to a broad organisational learning in EfS in HE. The participation of the community of practice becomes indispensable when building the community capacity required to deal with sustainability and engaging in an innovative way of knowing, thinking and doing. EAR is a suitable methodology to conduct research on:

- Staff beliefs, values and experiences
- Professional development on EfS
- Developing shared visions, understandings and action towards EfS
- Finding out ways to improve university practice towards embedding EfS in the curriculum
- Structural and institutional barriers to implementing curriculum change
- Bottom-up innovation strategies
- Curriculum development from different disciplines
- Generating personal, professional and organisational learning

Research has been found that uses participatory action research (Moore, 2005a; Tilbury et al., 2004) but little research has been found that uses EAR within the field of EfS as a methodology to promote curriculum development or organisational learning (Barasa Atiti, 2008). Action inquiry methodologies have been emphasised as suitable methodologies to advance the agenda of EfS in HE contexts (Tilbury, 2012). EAR was located within organisational learning theory to help bridge the existing gap identified between staff development and curriculum development in EfS in HE. This choice of methodology also emerged from the necessity to conduct further research in the field that could inform the possibilities and outcomes in using this approach and in achieving organisational learning in EfS amongst academic staff members. This combination was considered promising in developing new understandings and ways of teaching and proceeding towards creating more sustainable curriculums and universities.

Chapter 6: Action research

6.1 Introduction

Action research has many forms, such as participatory action research (PAR), critical or emancipatory action research (EAR), collaborative inquiry and action learning. These are used in a variety of disciplines such as social and health sciences, education, organisation and administration studies, environmental sciences and management. Action research can be undertaken by a teacher, a group of teachers from a school or a group of teachers from different schools as well as managers, researchers, experts and students (Cohen et al., 2000). Action research differs from ethnography because it focuses on changing organisational practices rather than on observing a social organisation without influencing it (Coghlan & Brannick, 2005). PAR is based on social or community action, equal participation and shared ownership with the aim to transform current practices or structures. PAR focuses on issues of power, participation and decision-making (Carr & McTaggart, 2005). Action learning or active learning (Revans, 2011) focuses on management and managers' development. Action learning is task orientated, therefore its starting point is the engagement in collaborative action with others to deal and solve real problems of practice. Action learning and action research differ in that action research involves learning and research, while action learning does not necessarily involve research (Kember & Associates, 2000). Cooperative or collaborative inquiry involves research in collaboration with others rather than on others, therefore participants are engaged in all the research decisions and hence become co-researchers (Coghlan & Brannick, 2005). EAR is self-reflective centred and focuses on the emancipation and transformation of individuals in order to improve social practice and reality. As I discussed in Chapter 5, I placed my research within the emancipatory paradigm, because it considers and attempts to challenge existing power and organisational structures. The similarities between different action research approaches are manifest in that they all work towards improving real problems or situations and try to improve or solve these through participation, collaboration, action and empowerment.

In this chapter, I first outline the different dimensions that action research can take. Second, I discuss the facilitator and critical friend role in assisting action research projects, which are the roles I adopted for Stage II and Stage III of my research. Third, I outline power relations in action research. Finally, I draw on existing action research in the field of EfS, HE and organisations. The research design and processes of the action research project I conducted,

including how action research relates to my research options and decisions, and the action research cycles I embarked on are described in the next chapter (see Chapter 7).

6.2 Framing the different dimensions of action research

Although I was not an academic practitioner, in that I was not responsible for lecturing at the university, undertaking my own action research project permitted me to work with practitioners in order to reflect and promote changes in the curriculum and organisation towards sustainability. The methodological principles for action research are: integration of research and action; conducted through collaborative partnerships; high level of reflexivity; stimulates transformative learning amongst participants; embraces broader political and historical contexts; and starts from aspiration and a vision of social transformation and social justice (Somekh, 2006). These principles provide an open sight of action research and represent an umbrella for the different types and approaches. Some of the essential features of action research are: the vision that all the participants in the research have something to contribute and in turn have something to learn; participants are seen as co-researchers and co-learners, including the researcher; knowledge and theory are inseparable from practice; the main purpose is the improvement of a real situation or problem; reflection and action are two core elements; and the whole learning-by-doing process is what counts (McNiff & Whitehead, 2002; Noffke, 2009).

Five main characteristics of action research (see Figure 6.1) are identified as: human flourishing; participation; knowledge-in-action; practical issues; and emergent (Reason & Bradbury, 2008). In my research, academic staff members of the organisation have been involved in developing their own solutions with my support and action as a facilitator for curriculum development towards EfS (Stage II) and as a critical friend for a community of practice focussed on embedding sustainability within the organisation (Stage III) (participation). My participants and I have worked on a practical issue that mattered to people (practical issues). The research purpose and topic were meaningful to individuals and aimed at improving social well-being and sustainability (human flourishing). The knowledge gained from the research emerged from real practice and interactions with the research participants (knowledge-in-action). I envisioned action research as the means for developing new practices towards embedding EfS within the curriculum (Stage II) and for fostering the reflection that contributed to the improvement of a community of practice's work (Stage III) (emergent).

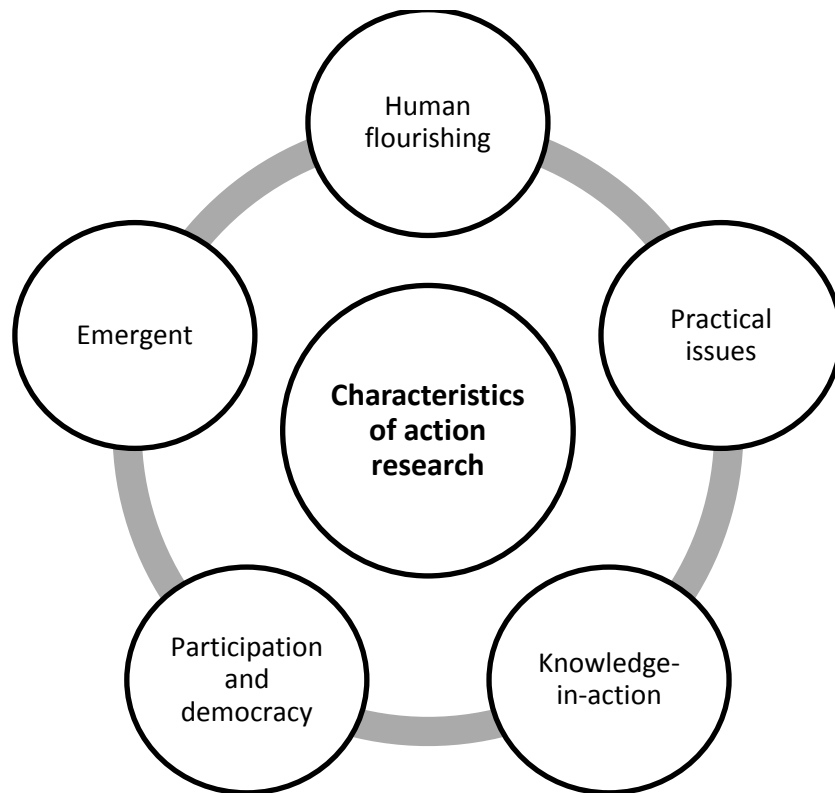


Figure 6.1 Characteristics of action research (from Reason and Bradbury (2008, p. 5))

For Noffke (2009), there are three dimensions of the action research approach: the personal, the professional and the political. These dimensions can be differentiated according to the purpose of the action research work in educational settings, where different assumptions and practices can be recognised. The personal dimension makes reference to the practitioner as researcher and the process of self-reflection, planning and introducing changes to improve self-practice (McNiff & Whitehead, 2002). It is related to the main purpose of action research described by Elliot (1991, p. 49) as *‘to improve practice rather than to produce knowledge’*. The professional dimension corresponds to professional development purposes; usually in education (concerning teachers); with the aim of enhancing the teaching profession and developing teacher practice (Noffke, 2009). The political dimension is usually embedded in the previous dimensions, but the purpose is mainly to generate democratic processes to empower groups often without voice, such as lower socio-economic groups and underprivileged communities (Carr & Kemmis, 2009). It is linked to power and political issues, structures, participation and the decision-making of the community, and ideally leads to educational and social change (Kemmis, 2010). For Noffke (2009) these three dimensions (personal, professional and political) are interconnected, however researchers tend to focus on a single

aspect. By contrast Carr and Kemmis (2009) argue that it is not possible to give different emphasis to an action research project since it will inevitably involve:

- The self-transformation of participants as it develops personal understandings.
- The professional development of the community of practitioners.
- The empowerment of participants due to a democratic process that potentially can change the social system, the institution and the world.

The integration of these dimensions is what makes action research extremely relevant and transformational for the exploration of sustainability, because of the different interpretations and complexity of the term (Marshall et al., 2011). The emancipatory or critical approach consciously explores the relationship between these three faces (Carr & Kemmis, 1986). However action research aims to make practical, technical and emancipatory contributions, the emancipatory is more difficult to perceive and to achieve than the rest (Bradbury Huang, 2010). Furthermore, Usher and Bryant (1989, p. 188) introduced the concept of a 'denormalising' practice, which they characterised as a process of scrutinising how practice is framed and restricted. In this sense, acquiring a dialogue and a self-critical position with real problems of practice can lead to new insights and ways for embedding sustainability holistically in the curriculum, which can potentially lead to educational and social change (Sterling, 2004). For this reason, EAR, placed in the critical paradigm, brings about personal, professional and organisational learning towards curriculum development in EfS.

Moreover, a useful differentiation is made between first, second and third person (or order) action research (Coghlan & Brannick, 2005; Marshall et al., 2011; Reason & Bradbury, 2008). An action research project that engages in these three modes of practice is more compelling and sustainable in the long-term. I have contemplated the influence and impact of my roles as a facilitator and a critical friend, my assumptions, motivations and values, and the learning gained through the research process at a personal and professional level (first person action research) (see Chapter 9). According to Reason and Bradbury (2008, p. 6), '*second person inquiry starts with interpersonal dialogue and includes the development of communities of inquiry and learning organizations*'. I carried out my research with an interdisciplinary group of academics (Stage II) and an existing community of practice (Stage III). I engaged them in collaborative, supportive and reflective discussions that aimed to develop new understandings and professional practice in EfS, fostering organisational learning towards sustainability (second person action research) (see Chapter 9). The third-person action research makes reference to extending the project to the wider community consequently having a wider impact that can contribute to wider human and social development. This is the contribution I

sought to make through the development of an evidence-based model on how to embed EfS within the undergraduate curriculum at the University of Southampton (see Chapter 10). This model can impact the wider university community and lead the University to become a learning organisation towards sustainability.

6.3 The facilitator and critical friend role

A critical friend, as the name indicates, is a person who assists reflective processes in a supportive and helpful way. Costa and Kallick (1993, p. 50) defined a critical friend as:

“A trusted person who asks provocative questions, provides data to be examined through another lens, and offers critique of a person’s work as a friend. A critical friend takes the time to fully understand the context or the work presented and the outcomes that the person or group is working towards”.

Critical friends are facilitators of learning. They are able to listen, step back from the process, and assist through providing another perspective (Kember et al., 1997). Critical friends allow for time to reflect on processes and actions. Elliot (1991) further elaborated the role of critical friends in education by employing the phrase 'second order action research'. As pointed out in the previous section, different orders and roles were considered. The insider in the self-reflective and action research process leads to improving one’s own teaching practice. Also, the outsider assumes a proactive role to promote both the creation of a reflective and collaborative learning community to aid the teachers’ ability to learn and reflect on their practice. The outsider is defined as a ‘*second order action researcher*’ and adopts a supportive role for the insider. In this sense, action research is about the process of learning in both, the insider-teacher and the outsider-supportive role. The outsider-supportive role, named critical friend or facilitator, can adopt different forms and roles, being more proactive or passive, depending on the project and the needs of the group (Kember et al., 1997).

Critical friends have been widely used in the school context to promote individual and professional learning and reflection in practice (Bambino, 2002; Baskerville & Goldblatt, 2009; Butler et al., 2011). Critical friends can be outsiders to the organisation such as HE academics or external advisers acting as educational experts (Nind, 2003), or it can be a critical friend group with peers from the same organisation or peers from other schools (Bambino, 2002). Some examples of second-order action research projects also exist in the HE context (Donche

& Petegem, 2004; Nascimento Botelho et al., 2010). Critical friends, being external advisers (Kember et al., 1997) or peers (Fulcher & Paull, 2010), have been used in HE to facilitate action research projects to improve professional practice of academic staff members. Critical friends are key agents in organisations that envision themselves as learning organisations (Senge, 2006) for their ability to foster reflection and improvement of educational situations. However according to Fulcher and Paull (2010), little research exists on the real practices and processes related to the critical friend role (Fulcher & Paull, 2010; Pettigrew, 2003). One of my research aims was to address this lack in the critical friends' literature (see Chapter 9).

The role of the critical friend or facilitator in an action research project is complex and controversial. For example, Donche and Petegem (2004) reflect on the different roles adopted as facilitators in an action research project to introduce student-centred education. These roles include: discussing with actors; organising and leading workshops for participants; consulting with specific action research groups; carrying out research; being a mediator in the process; being a critical friend; and being a co-learner of innovation. Besides, Kember et al. (1997) identify a diversity of roles such as: financier; project design consultant; rapport builder; coffee maker; mirror; teaching consultant; evaluation adviser; research adviser; resource provider; writing consultant; matchmaker; and deadline enforcer. Furthermore, critical friends face a number of challenges, such as effective communication, ownership of the project, power relations and time constraints (Baskerville & Goldblatt, 2009; Kember et al., 1997; Pettigrew, 2003). In this sense, the challenges as facilitators of an interdisciplinary working group using action research, according to Tilbury et al. (2004), include: the type of support required by lecturers; the complex interactions between people from different disciplinary backgrounds; the lack of lecturers' time available; and the maintenance of motivation within the participants for the duration of the study. Thus, flexibility in the approach and in the different roles adopted is an intrinsic quality of facilitators of action research projects (Kember et al., 1997). The critical elements, strengths and challenges for critical friends are to (Bambino, 2002; Costa & Kallick, 1993):

- build rapport and trust amongst the group;
- be flexible to adopt different roles when engaging with groups in different projects or work;
- reflect on the process and learning from the personal action, the role as a critical friend;
- provide support and effective feedback to the group without preaching.

A good example of the facilitation of an EAR process can be found in Barasa Atiti's thesis (2008) where he uses a second-order action research approach to promote organisational change towards sustainability in Kenyan museums. He identifies three cycles of action research: the first related to the engagement of participants to identify contextual issues, the second to plan and act collectively towards enabling change and the third to explore ways and actions for institutional and social change. It is a good example of the important aspects within the whole process of facilitation, and the actions derived from practitioners' reflection and engagement.

Moreover, critical friends and facilitators of action research need to be able to interact with people with different interests and who hold different worldviews and values (Pettigrew, 2003). In this research, I needed to establish a personal and professional relationship with the participants and agree on my role as an action researcher at the University of Southampton (see Chapter 9). The concept of the political entrepreneur (Buchanan & Badham, 2008), making reference to the different strategies and diplomacies needed to work with participants, and to acquiring a critical reflective position in relation to these, are developed and brought into the research. This needs to be made explicit as part of the research process (see Chapter 9). Buchanan and Badham (2008) suggest managing this political role involves performing and back staging. Performing and pursuing the change process and agenda involves being pro-active and facilitating participation for change, whereas back staging requires skills that enable negotiation, justification and influence to mediate and interact within the existing culture and politics of the organisation. However, the difference between acting as a political entrepreneur and being unethical is fragile (Meyerson, 2003). For this reason, I engaged in a critical reflection process throughout the research by keeping an accurate record of the ethical dilemmas I faced, and the decisions made, in my research journal, and by sharing these with my supervisors and other action researchers and academics at the University of Southampton that acted as critical friends for my own action research project (see Chapter 9). I saw the roles I adopted in Stage II and Stage III of my research as a learning process for both the research participants and me as the researcher. In my research, I differentiated between the facilitator role (Stage II) and the critical friend role (Stage III). I use the term facilitator for curriculum development in EfS to make reference to the role I adopted for the interdisciplinary team of academic staff members at the University of Southampton (Stage II) (section 7.7.2). This is because I adopted a leadership role, being more pro-active and supportive to the group and project development. In Stage III, I adopted the role of critical friend for the Sustainability Programme team (section 7.7.3). I prefer to use the term critical friend for this stage because I

became more of an outsider to an on-going initiative seeking to embed sustainability holistically within the student experience. I listened to and observed the group, stepped back and provided my feedback and support to help the group reflect and learn in specific RSs I led (see sections 7.4.3 and 7.7.3).

6.4. Power relations in action research

Critical theory and the emancipatory paradigm intentionally explore the role of power relationships in individuals' and groups' worldviews and action, and the role of social control and domination (Carr & Kemmis, 1986; Darder, Baltodano, & Torres, 2003) (see Chapter 5). Action research in organisational settings also explores the role of politics and power structures within the organisation and examines cultural and organisational conditions and dynamics that influence change (Coghlan & Brannick, 2005). I was interested in exploring the power relationships and structures at the University of Southampton that could pay an influence on organisational learning and change towards sustainability (see Chapter 4). I was also interested in exploring power relationships inherent in research and specifically in action research, through creating a collaborative space with research participants (Reason & Bradbury, 2008).

From the outset, I envisioned the action research process, and the use of ALCs and RSs, to have the capacity to empower academics and the Sustainability Programme group to take further action towards embedding EfS (see sections 7.4 and 7.7). Critical reflection and reflexivity contributed to identify the different assumptions, interests and power relationships inherent in individuals, groups and the organisation (Guba & Lincoln, 2005) (see section 7.6.3). Power can be defined as a relationship consisting of two people where one has power over the other and has control over its action (Lukes, 2005). This is a common understanding of power, which encounters the winners (powerful) and the losers (powerless) in politics, decision-making and governance of social organisations (Gaventa & Cornwall, 2008). In a university for example, it would take place if the voices of different agents are not equally heard or represented, and decision-making and action is therefore in favour of the powerful. Issues to do with control over agendas and politics play a key influence in exercising power (Lukes, 2005). In this sense, politics and power shape how people perceive their views and interests (Lukes, 2005).

Divergent views on power exist, for example, Foucault (2000) recognises power as being relational and productive in organisational settings such as HEIs. This infers power can take place through democratic participation, discourse, organisations and practices (Gaventa & Cornwall, 2008). This is relevant since certain institutional structures and conditions have the ability to lead organisational learning processes towards sustainability. Other doctoral researchers working in organisational settings undertaking action research projects have explored power relationships and the organisational rules conditioning the change of practice (Barasa Atiti, 2008; Marsh, 2011). As an action researcher, the aim is to create democratic participation and to empower the research participants (Somekh, 2006). Yet, the information collected is often highly political and there are different power relationships involved, such as with the sponsor, participants and managers (Pettigrew, 2003).

Thus conducting research, and particularly action research, within an organisational context is highly political (Punch, 1994). Gaining access, using the data collected, and the dissemination and publication of findings is closely linked to politics. This could influence participants' answers and interactions with the researcher in a positive or negative sense, depending on their views of the organisation, and how they see themselves as members of it. Action research emphasises listening, questioning and examining everything to stimulate action (Coghlan & Brannick, 2005). Thus, the suitability of conducting action research projects within an organisational setting resides in mirroring the assumptions, practices and beliefs of the organisation and the researcher and in providing insights into how to change the organisational practices and structures that inhibit the capacity of the organisation to learn and change (Coghlan & Brannick, 2005). In this research, I used a number of strategies to explore and address power relationships, politics and organisational conditions and dynamics conditioning the action research process and the practice of participants, through providing space for critical reflection and empowering and voicing participants (see Chapters 7 and 9).

6.5. Action research in education for sustainability, higher education and organisations

Action research methodology is in line with EfS processes such as learning-by-doing, empowerment, dialogue and collaboration, innovation, and active and participatory learning. Research for sustainability in HE has, over the last decade, become more focussed: on interdisciplinary; in transforming rather than informing; on having social impact; on social and

structural change; on the researcher as a partner; and on research with people rather than on people (Tilbury, 2012). McMillin and Dyball (2009) used an action research approach to look at what education and operations' benefits are gained from campus sustainability projects, with the purpose of enhancing participation through forums, discussions and surveys, and envision sustainability creating organisational change. Moore (2004; 2005a) used a participatory action research approach to examine EfS programmes' implementation at the University of British Columbia. This approach allowed her to be an active participant in different sustainability projects and activities taking place at the university, engaging key individuals in a participatory process, and challenging existing organisational practices. Roorda (2001) in his doctoral thesis, developed an assessment tool for the implementation of EfS in the HE curriculum named AISHE (see section 3.2.4). An action research approach was used to evaluate eight EfS projects. Action research is emerging as an increasingly used methodology in leadership and in training programmes for leaders to create sustainability processes in the context of their organisations or companies (Marshall et al., 2011).

Participatory and action-orientated approaches have been reported as critical to foster organisational learning and change towards sustainability in private and public organisations (Doppelt, 2010; Dunphy et al., 2007). In the area of EfS, participatory action research and participatory research approaches have been used to work on professional development and curriculum development on EfS with school and university teachers (Gayford, 2003; Tilbury et al., 2004). Action and reflection are critical to build the awareness, agency and association needed to deal with sustainability (Ballard, 2005). Several publications have reported on case studies and the successful contribution of action research to foster organisational learning and change towards sustainability (Molnar & Mulvihill, 2003; Siebenhüner & Arnold, 2007). Similarly, Marsh (2011) and Barasa Atiti (2008) used action research for this purpose in their doctoral studies. This evidences an increasing academic research practice and awareness in the use of innovative, participatory, collaborative and action-orientated research approaches to explore and create organisational learning and change towards sustainability through the research process itself (Cebrián et al., 2012).

Chapter 7: Research design and processes

7.1 Introduction

Quantitative and qualitative techniques, such as questionnaires, interviews, case studies, focus-groups, workshops, diaries, biographies, document analysis, photography and participant observations, can be used in action research to gather data. The methods and techniques chosen depend on the research problem and the aims of the study. The methodological significance of qualitative research is that it resides in building theory, without commitment to prior specific knowledge or existing theories (Minichiello et al., 1990). Qualitative research is a method of inquiry that focuses on gaining a deep understanding of social phenomena (Creswell, 2007). The data collected is naturally occurring and is grounded in participants' experiences and meanings (Silverman, 2006). Qualitative research is a situated inquiry that consists of interpreting and providing detailed information on the context and lives of those involved in the research (Denzin & Lincoln, 2011). I chose a qualitative research approach because my research aims were to acquire a deep understanding of the University of Southampton context, and its academic staffs' experiences, understandings and views on EfS (Flick, von Kardorff, & Steinke, 2004). To recapitulate, the aims of this research were to:

- Identify key factors, strategies and conditions necessary to embed EfS within the undergraduate curriculum at the University of Southampton, taking a holistic and organisational perspective;
- Identify existing contradictions, resistances, and challenges and opportunities faced when trying to work with academic staff in changing thinking and practice;
- Promote critical self and group reflection which facilitates acquiring new perspectives and discourses;
- Generate personal, professional and organisational learning towards sustainability amongst the research participants.

The following research questions guided my research:

1. What are the factors influencing academic staff engagement in education for sustainability?
2. What are the views and visions of academic staff in relation to education for sustainability?
3. How can a model be developed for the University of Southampton to embed education for sustainability within the undergraduate curriculum?

I have investigated these questions using qualitative methods guided by participatory and emancipatory approaches (see Chapter 5). I have used an EAR approach to work with academics at the University of Southampton to develop an organisational learning model to embed EfS within the university curriculum.

Action research, with its strong focus on reflection and action (Reason & Bradbury, 2008), contributed to the understanding of the opportunities and challenges faced by the participants when thinking, reflecting and acting towards embedding sustainability in HE. The research design is what connects the research questions to the empirical evidence, and the research aims to the research findings. In this chapter I outline the overall research design and processes on how I conducted this action research project at the University of Southampton, placed within the critical and emancipatory paradigm as discussed in Chapter 5. First, I outline the overall research design. Second, I summarise aspects of sampling and access to participants. Third, I describe the research techniques used for data collection. Fourth, I introduce the process of analysis. Fifth, I outline ethical, quality and validity issues. Finally, I provide an overview of the action research project and the research design, as well as the processes of the three research stages.

7.2 Overview of research design

The research design I adopted comprised three stages of data collection:

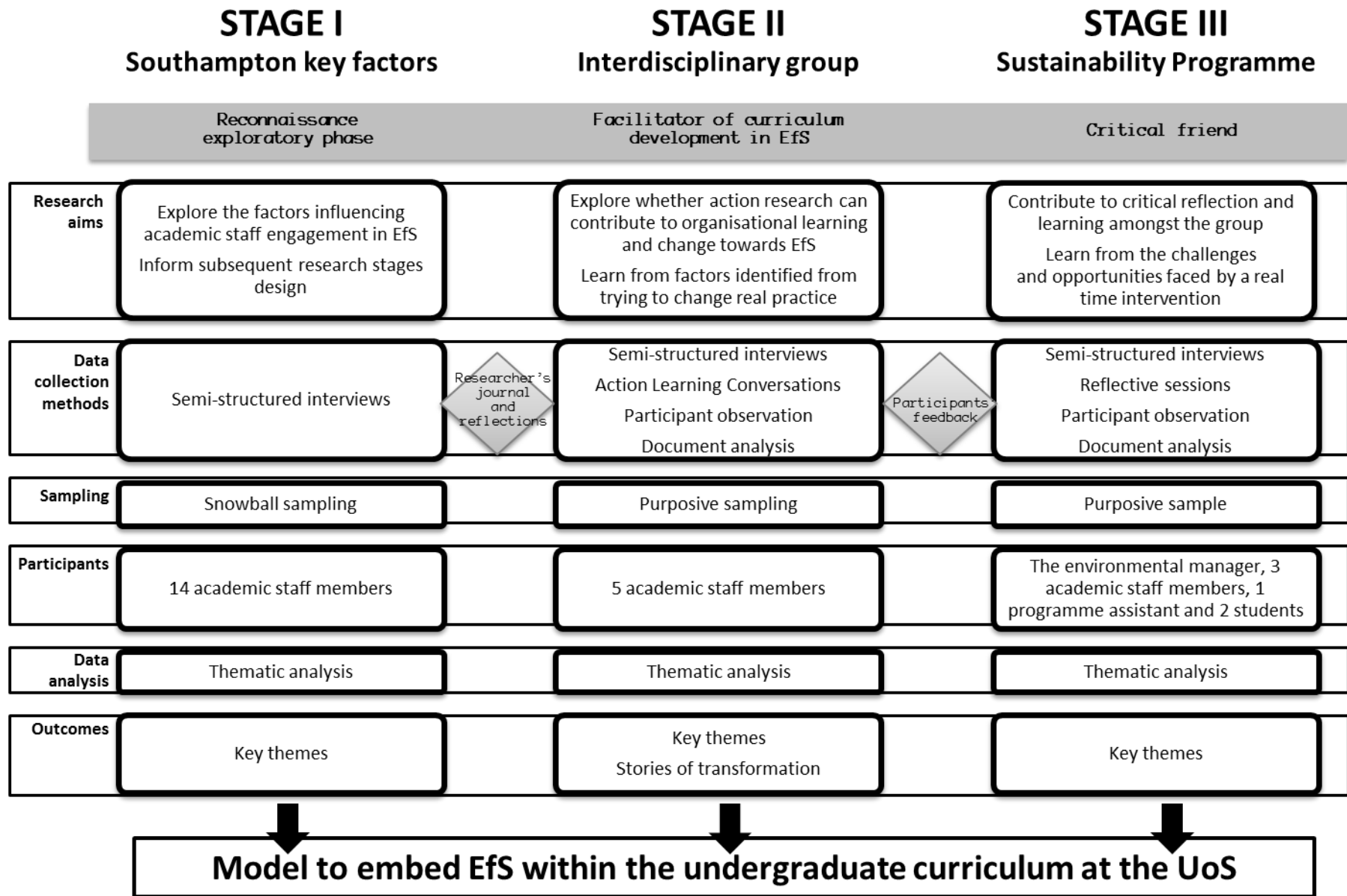
- **Stage I:** Identify the factors influencing academic staff members' engagement in EfS and gain a deeper understanding of the University of Southampton context and organisation. Fourteen academic staff members from different disciplines were interviewed as part of an exploratory study and reconnaissance phase of a typical action research cycle (see section 7.7.1).
- **Stage II:** Work with an interdisciplinary group of five academic staff members to critically reflect and act towards embedding EfS in their teaching practice through the creation of an action learning set (see section 7.4.2). My role as researcher was to be a facilitator for curriculum development in EfS through providing staff with support and space for interdisciplinary and critical reflection (see sections 6.3 and 7.7.2).

- **Stage III:** Fulfil the role of a critical friend for the Sustainability Programme team. My role as a researcher in this stage was to provide feedback to the group, assisting the process of reflection and articulating experiences by asking critical and sometimes provocative questions (see sections 6.3 and 7.7.3).

After Stage I development, my central interest in researching two differentiated contexts within the university was mainly to acquire an understanding from two perspectives: a group of practitioners reflecting on and trying to embed EfS within their teaching (Stage II); and a community of practice seeking to implement a new programme and advance towards embedding sustainability within the organisation (Stage III). Stage II and III happened at the same time, and though I faced some challenges (see Chapter 9), engaging with the Sustainability Programme group (Stage III) was very valuable to my inquiry as it was an opportunity to learn from a real time programme implementation going on during the research development. Therefore it meant collaborating and researching with university members working in the same area, which was fundamental to *'walk the talk'* of sustainability (see Chapter 1). In Figure 7.1, I summarise the overall research design; please refer to section 7.7 for an overview of the research stages design and processes, and of the action research cycles.

Critical theory paradigm
Emancipatory Action Research

Figure 7.1 Overview research design and research stages



7.3 Access to participants

Different sample techniques exist, such as convenience, quote, purposive and theoretical sampling (Dawson, 2005). Convenience sampling is used mainly in case study research; participants are selected on the basis of accessibility and availability. Quota sampling involves large number of participants because it is based on the search for a representative sample of the population studied. In purposive sampling researchers decide which is the richest case (or cases) to study according to their relevance and qualities. In theoretical sampling the size of the sample depends on the theoretical saturation of themes that have emerged from participants. These sampling strategies are often used in qualitative research, case studies, action research and ethnographic studies (Cohen et al., 2000). Different sampling approaches have been used for the different stages of this research. In Table 7.1, I outline the approaches and sampling processes for each research stage.

Table 7.1 Sampling strategies for research stages

Stage	Sampling strategy	Selection criteria	Sample technique process
Stage I	Snowball sampling	Academic staff members from different disciplines who were already embedding ideas on EfS or were interested in it, considering a broad understanding of EfS.	Directors of Programmes ²³ in each academic unit across the university were contacted via email to help identify key individuals in the different departments. This approach was chosen due to the difficulty to access and to know who was doing what. The final sample was fourteen participants.
Stage II	Purposive sampling	Academics willing to: Develop practice and improve their undergraduate teaching towards embedding EfS. Share personal and professional experiences. Be open to questioning about their practice.	Key individuals with an interest in EfS were identified in Stage I. The creation of an interdisciplinary group of academic staff members from different disciplines that could lead to reflective and learning processes was the main purpose to select the sample. Several academics from different disciplines were contacted and the project was presented to them in an informal meeting. Later in this meeting individual participants gave informed consent. The final sample was five academics from different disciplines, ages, gender, academic career stages and years of work in the university.

²³ Directors of Programmes are individuals in the University academic units responsible for managing, coordinating and overseeing taught programmes and courses.

Stage III	Purposive sampling	All the members of the Sustainability Programme at the University of Southampton.	The purpose was to work as a critical friend with the Sustainability Programme team. Several informal meetings with the leader were held to discuss possible collaborations and approaches to link this research to the initiative. After a previous informal interest showed by the leader, the research design, processes involved, and the role of the researcher as critical friend were presented to the whole group before giving individual consent. In a first interview the research was presented to each member and participants gave their informed consent individually.
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7.4 Research techniques

The methods and techniques used in this research are explained in this section with a particular emphasis on action learning as a research technique; this is the method I used to promote learning amongst Stage II participants. In Figure 7.2, I outline the multiple-method by multiple-voice design used in my research. The information collected in each research stage was triangulated separately, using different research techniques such as interviews, focus-groups (action learning conversations and reflective sessions), researcher’s reflective journal and participant observation (see Figure 7.2). Documents produced by participants and the University offered background and contextual information, but were not used as part of the triangulation process (see section 7.4.6). The triangulation process, using different research techniques and voices (Figure 7,2) has enhanced the research quality and validity (Creswell, 2007; Denzin & Lincoln, 2011) and the level of reflexivity throughout the process (Barasa Atiti, 2008). As I will further discuss in Chapter 10 section 10.1 another level of triangulation between the findings of the different research stages existed. I treated each research stage as a separate unit of research and analysis to identify the congruence, concurrence and divergence of themes to build the discussion and conclusions of the research, and to enhance the validity and quality of the research (Creswell, 2007).

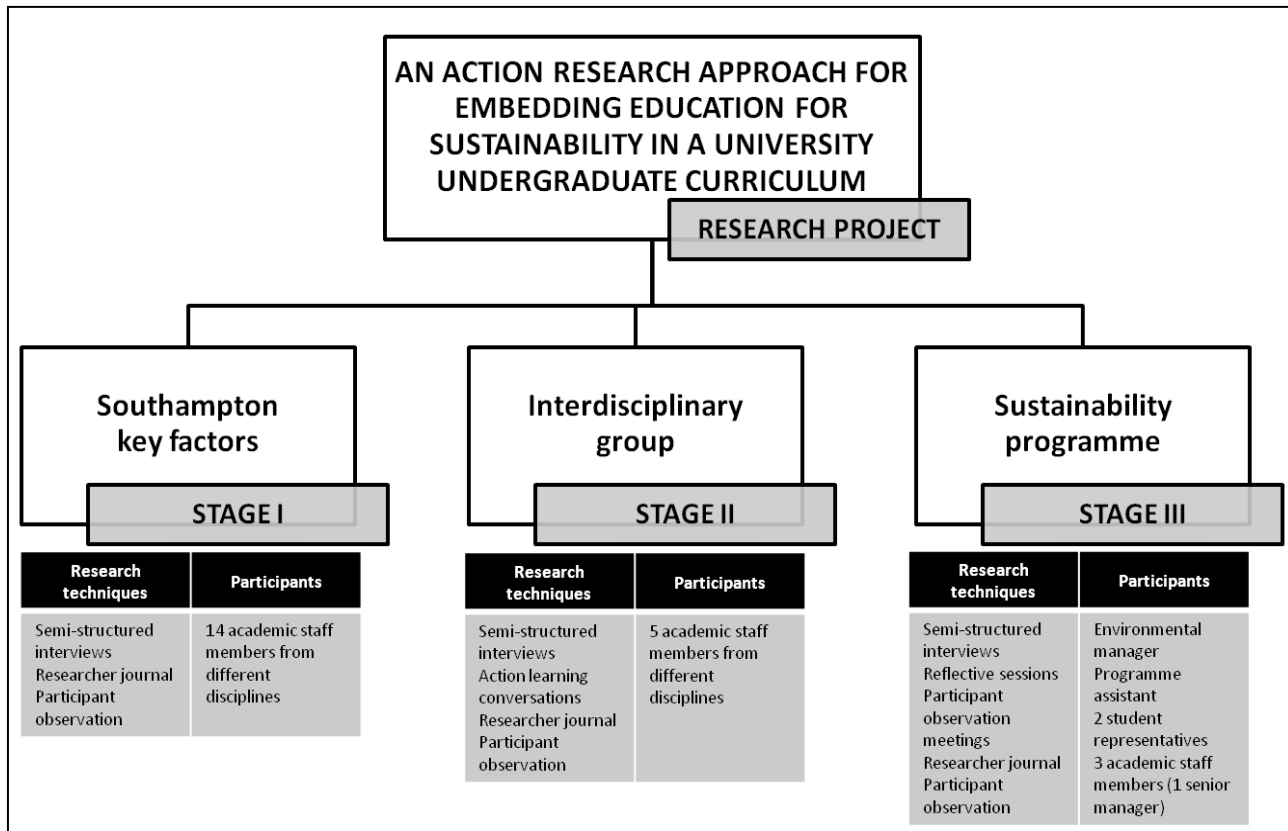


Figure 7.2 Multiple-method by multiple-voice design

7.4.1 Semi-structured interviews

Qualitative research interviews seek to: understand and interpret the life worlds of participants; reveal and explore specific situations and actions, rather than generalities; adopt openness to new data and phenomena; focus on specific ideas and themes whilst avoiding being too pre-structured; and accept and mirror ambiguity and contradictions (Kvale & Brinkmann, 2009). Different types of qualitative interviewing techniques exist, such as the structured interview, the semi-structured interview, the open-ended or unstructured interview, and the focus group (Bryman, 2012; Cohen et al., 2000; Silverman, 2006). The choice of one approach in favour of another depends on the research topic and questions (Silverman, 2006). A semi-structured approach was chosen to conduct all the research interviews since it allowed more flexibility and the possibility to generate a more comfortable environment, where rapport and trust could be developed between the researcher and the participants, and where participants' viewpoints and invisible factors related to the research topics, and understanding the world from the participants' perspectives could emerge (Minichiello et al., 1990). Moreover interviews in action research tend to focus on what the participants need to say in the moment and situation, and are seen as more than a data collection technique,

becoming information gathering interventions (Coghlan & Brannick, 2005). Interviews are conversations with purpose, where generation and co-creation of knowledge happens between the researcher and the participants (Doucet & Mauthner, 2002).

Interviews represent a context to foster meanings and identity amongst participants. The interview itself acts as a context for the creation of people's narratives and their identities. Other research in the area of EfS has also used semi-structured interviewing as a research method to explore academic staff experiences and views, as well as their understanding of sustainability (Cotton et al., 2009; Jones et al., 2008; Reid & Petocz, 2006). Other doctoral research in the field of sustainability in HE has also used qualitative interviewing as the main data collection technique, or as a tool for data triangulation (Mulà Pons de Vall, 2011; Williams, 2008).

7.4.2 Action learning conversations

Action learning has been widely used in the fields of organisational development and management as an innovative strategy to promote leadership and learning amongst leaders and managers (Pedler, 2011a; Revans, 2011). Moreover, it has also been used as a method to promote professional development, and as a teaching and learning method (McGill & Brockbank, 2004). According to Pedler (2011a, p. xxi) *'action learning is an idea, a philosophy, a discipline and also a method, and never just one of those things'*. Action learning is an incessant process of reflection and learning that takes place with the support of a 'set' of peers with the aim to take action to improve practice (McGill & Brockbank, 2004). In this research action learning is both a teaching and a learning approach to EfS that guides the research and a research technique. The values in action learning are: voluntary nature of action learning; confidentiality and trust; recognition of all the domains of learning; autonomy and mutuality; learning as a social and collaborative process; the learner as a model of 'abundance' rather than 'deficiency'; making a difference; personal responsibility for learning; support and challenge; empathy; quality of attention; development takes time; and a spirit of enquiry (McGill & Brockbank, 2004, p. 18).

The creation of an action learning set was chosen as a research method for Stage II, to promote critical reflection, learning, and the development of new insights and practices in EfS amongst academic staff members. The following motives influenced my choice of this research method:

- In action learning, learning is grounded in reflection from experience and in working on real problems. It is about trying to provide new insights and innovative solutions for action. My assumptions on learning for sustainability (see Chapter 3 section 3.3), the need to learn from real practice, and the challenges and opportunities identified by participants influenced this choice of method.
- Staff interviewed during Stage I of this research showed interest in developing practice and teaching towards embedding sustainability and stated the importance of having support and opportunities to develop understandings and practices.
- Embedding sustainability in the HE curriculum was understood as a ‘wicked problem’ and the creation for an action learning set could contribute to individual, professional and organisational learning at the University of Southampton.
- Explore whether action learning as a research method could inform and promote insights into personal, professional, and organisational learning. Consider the extent to which the creation of an action learning set and the use of action learning as a research method could contribute to organisational learning towards embedding EfS in the University curriculum.

Reflection and action are at the heart of the action learning process, given that it promotes reflection on past experiences, rethinking current action, and developing new insights in the members of the action learning sets (McGill & Brockbank, 2004). Action learning has been used in this research as the method to run the group sessions for Stage II. In the context of sustainability in HE in the UK, the HEFCE Leadership Governance and Management Fund (LGMF) used action learning to engage senior managers and leaders at four universities in order to explore their roles and leadership practices towards sustainability (Shiel, 2013). Action learning is emphasised as a suitable teaching and learning method to engage students, academics and community stakeholders in learning sustainability (Jiusto, Stephens, & McCauley, 2013; Tilbury, 2007).

- ***The creation of an action learning set***

The creation of the action learning set varies according to the type of project and its purposes. Recommendations are made in the literature of the convenience of a set between four and six participants. Action learning can acquire many different forms and can be initiated by different

people. McGill and Brockbank (2004) identify the following types of action learning: facilitated sets sponsored by organisations; independent action learning sets; pair sets; and self-facilitated sets. The set I created could be defined as an independent action learning set, as the organisation was not involved in its creation; the research participants and I (as the researcher) created it. No resources, rewards or parameters were determined by the organisation. Each set member decided what to bring to the group, without any organisational conditions, apart from focusing on a broad aspect in each set (see section 7.7.2).

Action learning programs are typically based on the following tenets (Smith & O'Neil, 2003, pp. 63-64):

- participants tackle real problems (no “right” answer) in real time;
- participants meet in small stable learning groups (called “sets”);
- each set holds intermittent meetings over a fixed program cycle;
- problems are relevant to a participant’s own workplace realities;
- a supportive collaborative learning process is followed in a set;
- process is based on reflection, questioning, conjecture and refutation; and
- participants take action between set meetings to resolve their problem.

In the first individual interview with Stage II participants I introduced them to the general action learning process. Before each set I asked them to think about a challenge that they faced when thinking about embedding EfS in their teaching (see section 7.7.2). The participants were also reminded of this in an email sent four days before each action learning set; this email contained a graphical representation of the structure of the action learning session (Appendix 6).

I suggested a set of starting ground rules that were agreed upon by the participants before starting the first set. Participants were asked to introduce or change any rule in the following list:

- All information that emerges during the session is confidential
- One person speaks at time
- Really listening to each other is the key
- Switch off mobile phones

- ***Structure of the action learning sets***

Each action learning set followed the structure of action learning conversations (ALCs) (Appendix 6). ALCs are based on action learning, and they are a process of the following repeated cycles (Marsick & Maltbia, 2009, p. 162):

- Framing of the challenge as a question
- Unpacking meaning through sharing information about the context and prior action
- Peer questioning (to which the problem holder does not immediately respond) to unlock mental models that make one blind to other points of view
- Identifying assumptions that underlie current ways of framing the challenge
- Reframing one's understanding of the situation
- Making more informed decisions and taking informed action to address the challenge

ALCs differ from other action learning approaches because they put emphasis on the critical reflection on possible assumptions made by the set members when framing the challenge, or when thinking about new insights and future action. This approach was chosen due to my interest in promoting critical reflection and the questioning of current assumptions, values and beliefs in EfS amongst the research participants (see Chapter 5).

Stage II participants adopted two different roles in the action learning sets:

- Presenter: frame a challenge as a question that they faced when thinking about a broad topic in embedding EfS suggested by the researcher (see section 7.7.2).
- Support role: role of the other members is to listen, ask questions or offer suggestions, acting as consultants, rather than providing advice or judging.

The person receiving the consulting help does not respond to questions or observations in the moment, but does write down what he or she hears. Each phase offers an opportunity for short, selective responses by the person receiving the consulting help, but remarks are held until that point in the protocol. My role as facilitator of the action learning set was to: introduce the process; guide the participants through it; prepare some questions in case I needed to promote questioning; and gather data.

7.4.3 Reflective sessions

The group sessions I conducted with Stage III participants, to provide them with my feedback and insights consisted on reflective sessions (RSs). I used different techniques such as the Diamond 9²⁴, a tool for prioritising on different themes that were relevant to the group progress, to help the group reflect and to foster strategic thinking and planning. In these sessions I provided oral and written feedback on a number of themes I identified through my individual interactions and participant observations with the group (see section 7.7.3). I also used ideas from my theoretical framework, such as the learning organisation ideal (Senge, 1990), as tools for reflection, and provided participants with my insights into useful existing practices and projects that could inform group development and progress (see section 7.7.3). I used the following techniques to give effective feedback: to be helpful; to focus on behaviour and not on individual action; to use 'I' and not 'you'; to restrict feedback to elements about which I am certain; to focus on descriptions rather than judgements; to choose the appropriate time and place; to be precise and succinct; to make sure members understood the feedback; and to appeal for future action (Costa & Kallick, 1993). I questioned participants' thinking, I questioned elements that were unclear, and I offered possible alternatives through bringing operational ideas. I designed these sessions to provide the group with time for critical group reflection and for the sharing of insights and ways forward (Bambino, 2002).

7.4.4 Participant observation

Participant observation, ethnography and fieldwork are used interchangeably, where the researcher observes participants in their everyday life and experiences (Silverman, 2006). It has been argued that participant observation is intrinsic to all social research, because one cannot study society without being part of it (Denzin & Lincoln, 2011). In participant observation the researcher establishes a direct relationship with the social actors by staying in their natural environment. The purpose is to observe and describe their social actions by interacting with them, participating in their everyday ceremonies and rituals, and learning their code (or at least parts of it) in order to understand the meaning of their actions (Gobo, 2011, p. 17). Participant observation has been used throughout the whole research process where I engaged in informal sustainability events held at the University of Southampton and where I interacted with the research participants in different research situations and informal

²⁴ Please see Appendix 27.

meetings and events. For Stage III, I engaged in participant observations of the Sustainability Programme's meetings and other events they organised, such as research seminars, the Blackout event (see section 2.4.2), and presentations. This helped me to understand how the Sustainability Programme group operated.

7.4.5 Researcher journal

I used a researcher journal to collect and record my reflections as a researcher. This was key in reporting my observations and interactions with the research participants, my own interests and values, and the interests and values of the participants (Lincoln & Guba, 1985). During the whole research process, and after each data collection moment, I collected the researcher notes in a journal where I reflected on, and recorded observational, theoretical, methodological and personal notes related to the research (Richardson & St. Pierre, 2005). Reflective journals contain information such as: initial reflections on the topic of concern; the plans that were made; a record of action taken; observation of the effects of the actions; reflections upon, and personal opinions about, the actions taken, and reactions to them; results obtained from other observation techniques; and references for, and notes on, any relevant literature or supporting documents discovered (Kember & Associates, 2000, p. 43). Keeping a research journal was particularly helpful to reflect on and question biases, assumptions, and contextual and cultural influences (Guba & Lincoln, 2005). This enhanced my self-reflexivity through the research process and enabled me to reflect on, and rethink my roles as facilitator and critical friend (see section 7.6.3 and Chapter 9).

7.4.6 Review of documents

For sociologists, 'documents' can be written texts but can also be audio and visual evidence (Punch, 2009). Silverman (2006, p. 153) uses texts *'to identify data consisting of words and/or images which have become recorded without the intervention of a researcher'*. Texts can be diaries, essays, letters, newspapers, reports, official documents, policy documents, internet documents, images, announcements, or advertisements that are produced without the mediation of the researcher. Documents are mainly used as resources or as topics. Documents are used as a resource to gather a general picture of how social institutions operate to find out meanings and contradictions within situations or cases (Silverman, 2006). Documents are treated as topics when they act as tools in social interactions (Alasuutari, Bickman, & Brannen,

2008). According to Punch (2009) and Fitzgerald (2007) they need to be studied within the social situation and context in which they were produced in order to allow for their interpretation and sense-making. Documents exist in the social world in two main ways: as containers of meanings and content, and as actors in social networks (Prior, 2008). Most qualitative research documents are used as topics (Silverman, 2006), but as shown in this section, there are different understandings and conceptualisations related to the use of documents for research purposes. The research interests are crucial when deciding what is understood by document, and which type of analysis is the most adequate. The documents collected in this research were produced by the participants and by the University during the research process, such as the University strategy, reports, working documents, minutes of meetings, leaflets and posters. Documents offered background and contextual information to the research, however documents were not included as part of the data analysis and triangulation process.

7.5 Process of analysis

Rapley (2011) outlines the procedures of four different regularly used approaches to qualitative analysis: framework analysis, thematic analysis, interpretative phenomenological analysis and constructivist grounded theory. Common steps and aims in qualitative analysis can be identified which are based on the search of patterns or themes within the data analysed (Braun & Clarke, 2006; Rapley, 2011). A thematic analysis approach (Braun & Clarke, 2006) was selected for analysing and making sense of the data collected during the research process. This approach was chosen because it allowed me to identify key themes that participants considered relevant to academic staff engagement in EfS, and for developing a model on how the University of Southampton could embed EfS within the curriculum. The analysis process consisted of coding of the data, comparing the codes, and identifying themes (Braun & Clarke, 2006). Nvivo 9 was used to collect, organise and analyse the data and in developing the thematic framework. The use of thematic analysis allowed a rich, flexible, complex and detailed analysis and description of the data and the report of themes (Braun & Clarke, 2006). Figure 7.3 shows the main steps of data analysis process:

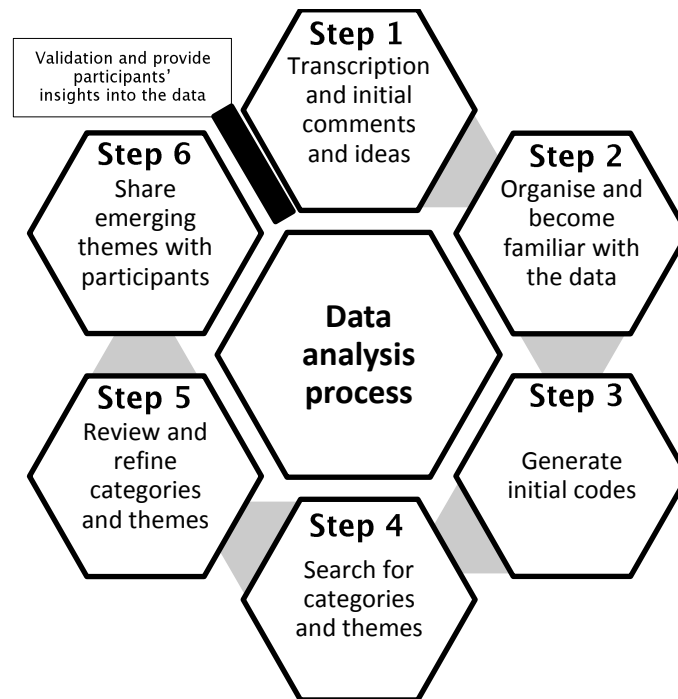


Figure 7.3 Data analysis steps

▪ ***Step 1: transcription and initial comments and ideas***

Interviews, ALCs and RSs were audio-recorded (with informed consent from the participants; see section 7.6). According to Fick (2002) different levels of transcribing are required according to the purposes of the research conducted. In this research, the audio-recordings were fully transcribed after each data collection moment.

Field notes are an integral part of qualitative research (Silverman, 2006). In qualitative research writing down field notes, and the reflections of the researcher after each interview, group session or research situation, is fundamental. It is necessary to write them down as soon as possible after the research situation (Fick, 2002). Each field note or memo²⁵ generated in this study contained information about the key ideas given by the participants, information from observations, and information concerning methodological, theoretical and personal issues (Richardson & St. Pierre, 2005). These notes reflected on the research event, informed further methodological issues, helped explore possible hunches and hypotheses, and helped

²⁵ Field notes and memos are used interchangeably

build possible theoretical connections. These notes were useful in informing further data collection and research stages.

Transcripts and feedback summary documents from the interviews and group sessions were sent to the participants and discussed at the beginning of the following interview interaction (for Stage II and Stage III). This was part of the ethical framework of the research and was used as a way to give participants the right to withdraw, add, or correct any of the information given. The feedback summary documents were also used as tools to foster critical reflection and learning. It should be noted that few participants reviewed and sent the transcripts back to me with corrections.

- ***Step 2: organise and become familiar with the data***

All the transcripts were transcribed by myself and organised in an Nvivo 9 Project. According to Rapley (2011), a necessary initial stage is reading carefully, and in detail, the data collected in order to look for interesting ideas or issues raised by participants. Memos were also taken during this process.

- ***Step 3: generate initial codes***

Different approaches to thematic analysis can be identified. Boyatzis (1998) differentiates between theory driven, previous research driven, and data driven analyses. For my research I used a data driven approach to generate codes and patterns through an inductive-deductive process from the interviews and group sessions (ALC and RS) as I was interested in generating the themes from the data. I used the conceptual framework on organisational learning towards sustainability in higher education (see Chapter 4) to guide the process of analysis. The analysis was a combination of inductive and deductive approaches to generate codes and patterns emerging from the data, linked to the conceptual and theoretical ideas identified as to lead to organisational learning towards sustainability (see Chapter 4).

According to Boyatzis (1998, p. 30) codes *'appear with the words and syntax of the raw information. It is the task of the researcher to interpret the meaning after obtaining the findings and to construct a theory after the discovery of results'*. This mode of coding can ensure a higher reliability and validity of the coding and theme-building process, as it is contextualised on the data, and the bias of the researcher is reduced. Box 7.1 shows an example of coding from three interviews.

BOX 7.1: Example of text for coding**Initial codes**

Paul: well it's the absence of benchmarking isn't it.. there is nobody who goes around from the funding council, saying have you done sustainability.. it's the absence of any external benchmarking it means the message that comes across is that it doesn't matter.. I mean money matters right? Doing research matters, publishing matters.. it should be one of those benchmarks that funding bodies should use to fund universities.

Absence of external benchmarking
It should be one of those benchmarking that funding bodies use to fund universities
Money, research and publishing

George: Staff engagement? The morale of staff is so low, it's because of all of what is happening around, I don't think most of staff are particularly interested in this, they are interested in keeping their jobs, in doing what they have traditionally done

Current change situation doesn't help
Staff interested in keeping their jobs
Staff interests

Mark: let's say the music department, you need to put into your curriculum aspects of sustainable development so that your students know about this, or should we say well no, that's not really part of the music curriculum, that needs to be put, if those students are going to have that it needs to be built into their education somewhere else.

Differences in academic subjects
Need to find a way for each subject area

- **Step 4: search for categories and themes**

From the initial coding a set of categories and themes were constructed. Codes were grouped into categories through a process of reviewing, refining and comparing the initial codes (Rapley, 2011). The construction of themes is at the heart of thematic analysis (Boyatzis, 1998). According to Braun and Clarke (2006, p. 82) *'a theme captures something important about the data in relation to the research question, and represents some level of patterned response or meaning within the data set'*. Themes were built according to their relevance and occurrence across the data and represent a rich account of the data set, encompassing all the factors that emerged during the discussions. There was no focus on a particular aspect. The purpose was to provide a rich overview of the issues identified by participants. The thematic framework construction was an iterative process of reviewing and refining the initial codes and categories to finally build a coherent set of themes. Each stage was treated as a separate unit of research and analysis because I was interested in identifying the congruence, concurrence or divergence of themes that emerged in the different research stages (see section 7.4).

7.6 Ethics, quality and validity

7.6.1 Ethical framework of the research

I considered the ethical implications of the study carefully, such as informed consent and participant information and the implications involved in conducting action research in my own organisation, including the possible challenges faced in terms of anonymity and confidentiality, and the potential effects on the participants (Coghlan & Brannick, 2005; McNiff & Whitehead, 2010). I submitted two research proposals to the Research Committee at the University of Southampton, Stage I in July 2011, and Stages II and III in December 2011. For Stage I no issues were raised and I received immediate ethical clearance. For II and III the Faculty Ethics Committee asked me to revise some sections and emphasise aspects to do with the anonymity and confidentiality of participants for both research stages to ensure that participants were aware of these issues before giving their informed consent. The next extract shows this concern:

“Generally a good clear submission. The limitations on ability to ensure anonymity and confidentiality are expressed clearly at 5.5 (i) and 5.5 (ii) of the Ethics Form and on the Stage 3 Info Sheet, but I believe similar limitations also apply (albeit for slightly different reasons) at the earlier stages, so I think it would be appropriate to include similar wording on the Stage 2 Info Sheet and on the Consent Form. Other than this, fine”.

After making the changes required to the participant information sheets and informed consent forms I gained ethical clearance from the Faculty Ethics Committee in January 2012 (Ref. 1102). The participant information sheets included: (i) the purpose, duration, and procedures of the research; (ii) notice of the right to withdraw; (iii) risks or adverse effects of the research; (iv) prospective benefits to participants, to the university and society; (v) extent and limits of anonymity and confidentiality; and (vi) contact details for further questions regarding ethics (see Appendix 7). The written consent form included ethical, confidentiality and anonymity issues as well as data protection (see Appendix 8). In the informed consent participants were asked to agree and sign the following:

“I understand that this research will use pseudonyms to keep participants confidentiality and anonymity but it is limited in the extent to which all the data can be kept anonymous, as people who are close to me may be able to identify or imagine who is who and where is where. I will be able to participate in a respondent validation and member checking as ways to ensure the maintenance of anonymity and confidentiality”.

According to Coghlan and Brannick (2005), in action research (and in any research in organisational settings where there is difficulty in guaranteeing anonymity and confidentiality) certain issues need to be clarified prior to participants' engagement, for example the possible political consequences, negotiation, the ownership of findings, and the degree of uncertainty in the research journey. For this reason I discussed these issues and presented the research and the implications of being a participant in informal meetings before requesting consent for Stage II and Stage III from participants (see Appendixes 12 and 24). For Stage I I sent the participant information sheet and the informed consent form beforehand by email. It was then discussed and signed at the beginning of the interviews. I used a number of strategies to ensure the anonymity and confidentiality of participants in compliance with the Data Protection Act and the University Ethics Policy, such as the use of pseudonyms, respondent validation and member checking strategies, to acknowledge their involvement in the research and to avoid errors or omissions, and to give them the opportunity to provide their feedback and insights into the data gathered and the findings. I envisioned member checking as a way to empower participants throughout the research process, enabling them to contribute as a validation process of the main findings, and as a way to approve the maintenance of confidentiality and privacy. The maintenance of confidentiality was safeguarded during and after the study. During the study, only my supervisors and I had access to the data. All project information, including field notes, transcripts, documents, and audio tapes, were stored securely, kept in a locked filing cabinet, during both the data collection and analysis periods, and a compromise was made to erase it once the study was completed.

7.6.2 Quality and validation strategies

Ethical practices and considerations are intrinsic to any type of research, particularly in qualitative research, to ensure the protection and respect of research participants, and the quality and validity of the research (Fisher & Anushko, 2008). As has been acknowledged by several authors (Creswell, 2007; Denzin & Lincoln, 2011; Reason & Bradbury, 2008), qualitative research and action research need to address validity and quality differently than within the positivist paradigm and quantitative research traditions. Quality and validity are contested in qualitative research and different perspectives on validation criteria exist amongst qualitative researchers (Creswell, 2007). Qualitative research terminology differs from quantitative terminology (Denzin & Lincoln, 2011). So for example, the term 'trustworthiness' has been suggested to assess the quality and validity of qualitative research, and includes: (i) credibility

(plausibility); (ii) transferability (context embeddedness); (iii) dependability (stability); and (iv) confirmability (value explication and reliance of data) (Lincoln & Guba, 1985). Others have suggested a combination of different perspectives, the use of metaphorical conceptualisations of validity, or even the denial of the applicability of validity and reliability to qualitative studies (Lincoln & Guba, 1985; Punch, 1994; Richardson & St. Pierre, 2005).

Reflexivity through critical reflection on the values and assumptions of the researcher and the participants, keeping a research journal, and recording the researcher reflections on the whole research process jointly with member checking processes have been acknowledged as to enhance the validity and quality of qualitative research and action research (Coghlan & Brannick, 2005; Guba & Lincoln, 2005). Therefore member checking and the feedback from participants are critical and enable the identification of the researcher's own assumptions (see Chapter 9). Different authors have considered rigour and quality criteria for action research (Bradbury Huang, 2010; Coghlan & Brannick, 2005; Reason & Bradbury, 2008). So for example Bradbury Huang (2010) makes reference to the seven 'choice points' for quality that reviewers search for in the papers submitted to the journal *Action Research*: clear articulation of objectives; work in partnership and enact participation; contribution to action research theory and practice; articulation of methods and processes; actionability of the research; reflexivity and the self; and significance of the research. According to Coghlan and Brannick (2005, p. 29) good action research has three elements: *'a good story; rigorous reflection on that story; and extrapolation of usable knowledge or theory from the reflection on the story'*. In this section I introduce the quality and validity strategies I used for my research, and the ethical framework for the research. I highlight reflexivity due to its importance for this research type.

I selected four main quality and validity strategies and techniques to ensure that the validity criteria were met in the different research stages of my research: prolonged and intensive engagement with my participants; member checking; multiple-method by multiple-voice design (see section 7.4); and rich and thick descriptions. Prolonged and intensive engagement with my participants helped build trustworthiness. I built relationships of trust with the research participants that contributed to understand the organisational culture and the context I studied (Creswell, 2007; McNiff & Whitehead, 2002). The research method and techniques used (see Chapter 6 and section 7.4) contributed to mirroring the assumptions of the participants and myself as an action researcher, which enhanced the quality and credibility of the study. Member checking (Lincoln & Guba, 1985) was a central strategy I used throughout the research project, where participants provided feedback on summary documents of the findings I produced after each data collection moment throughout the

research (see sections 7.7.2 and 7.7.3). This contributes to the reflection on assumptions and the creation of more democratic and participatory relationships with participants, therefore to their empowerment. A multiple-method by multiple-voice design (see section 7.4) by using semi-structured interviews, ALCs and RSs contributed to contrasting the evidence collected and to strengthening the findings of the research (Creswell, 2007). I provide rich and thick descriptions of the action research project (see section 7.7) to enable the application of similar theoretical and methodological frameworks to other organisational contexts, and make evident the action research cycles through providing an accurate account of the research processes for Stage I, II and III of my research (Coghlan & Brannick, 2005).

7.6.3 The self in the research: the importance of reflexivity

Reflexivity as a strategy to enhance research quality and trustworthiness has been widely used in qualitative and critical theory research, and in sustainability and organisational studies (Barasa Atiti, 2008; Coghlan & Brannick, 2005; Mulà Pons de Vall, 2011). The understanding of the self in the research process depends on the social science paradigm in which the research is placed. From a critical paradigm position, the self in the research is understood as a research instrument, the researcher investigates with people and makes explicit its assumptions and the relationships and interactions established with the participants as a way to acknowledge their involvement, and ensure the validity and quality of the research (Guba & Lincoln, 2005). Usher and Bryant (1989) identified a contradiction in the use of a positivist paradigm, as in the choice of paradigm there is a value-laden position where the researcher positions and constructs an understanding of research practice. If research seeks to be valuable and useful to participants and co-researchers it needs to be shared with them, seeking their involvement, participation and engagement in the research process. According to Usher and Bryant (1989, p.150) *'researching into the practices of others must also involve a consideration of research itself as a practice'*.

Reflexivity is an essential aspect of EAR because it takes as its grounds the generation of knowledge in which: *'data are authentic and reflect the experiences of all participants and democratic relations exist between all participants in the research'* (Cohen et al., 2000, p. 239). Reflexivity becomes a self-conscious act of the participants involved in the research. Their values, perceptions, opinions, actions, beliefs and feelings nourish the situation being researched. All the co-researchers or participants in the research need to apply critical self-examination and questioning of their assumptions, both as inquirers and as respondents. It is

the process of reflecting critically on the self as a researcher, the human being as a research instrument (Guba & Lincoln, 2005). It is the process of questioning both our identity and how it shapes the whole research process, but also within our interactions with others. Reflexivity is an important aspect of ensuring the validity of the whole research process (Somekh, 2006). I have used reflexivity to enhance the research validity and quality of this study. The concept of the self has four main characteristics (Usher & Bryant, 1989, p. 150):

- The self is both subject and object: it is reflexive, that is to say it has the quality of being an object unto itself.
- It is relational: it is implicated in the constructions of others in relation to whom he acts in any given social situation.
- The self is communicative: it is engaged in symbolic exchanges in which the content of communication is addressed not merely to others but also to the self.
- The self is rule-governed and has a structural quality, which Mead illustrates through the notions of role-taking and game-playing and in relation to his concept of the 'generalized other' as a performative reference.

Usher and Bryant (1989) also identified aspects of the self as researcher, especially relevant to adult educators as action researchers, such as the skills, experience, personality and values of the researcher. They also emphasised the importance of a set of other issues that influence the self and the research: how subjects in the research are defined and understood; auspices and sponsors; audiences for the researcher's performance; practicalities and resources' limits to the research; ethics of the research; and the purposes of the research. All these aspects need to be acknowledged. In this research the self is understood as a problem-solving practitioner that has to deal with a number of issues when researching within a real situation. Participants become co-researchers and the researcher becomes a participant as well, and the critical self-examination and analysis of the self becomes a meaning making tool. In these lenses the self is engaged as a reflective practitioner and research is understood as '*the practice of writing and rewriting selves and the world*' (Usher et al., 1997, p. 212).

Mirroring the researcher's assumptions (cultural, biographical, social, and political) that influenced the research, and the social, ethical, political and cultural settings where the research occurred and which influenced the whole research process, is fundamental. The critical reflective practice of the researcher can take these issues into consideration in action inquiry approaches where the researcher is seen as an integral part of the research. In these projects it is critical to keep a reflective journal from the beginning that can show: initial

reflections on the topic; plans made; record of actions taken; observation of the effects of actions and reactions; results obtained from other observation techniques; references and notes on any relevant supporting document discovered (Kember & Associates, 2000).

According to Somekh (2006, p. 14) *'the importance of self-enquiry in action research is a matter of research quality. The self can be said to be a 'research instrument''*. Through writing my reflections and field notes throughout the research process, and through the interactions and discussions with the research participants, I have critically reflected on my own assumptions on EfS and the research process itself. This has ensured the reflexivity necessary to become a reflective practitioner of my research practice, has enhanced my learning during the process, and has enhanced the validity and quality of the research (see section 7.4.5 and Chapter 9).

7.7 The action research project

In this section I present a comprehensive overview of the research design and processes for Stage I, II and III, and the action research cycles of the research summarised in Figure 7.4. I conceived Stage I as an exploratory phase aimed at identifying the factors influencing academic staff members' engagement in EfS, and to inform the subsequent research stages (see section 7.7.1). One of the objectives of this exploratory phase was to identify possible participants for the subsequent research stages. The findings from this stage (see Chapter 8 section 8.2) informed the research design of the subsequent stages and the role of the researcher as a facilitator for curriculum development on EfS (Stage II).

For Stage II and Stage III (see sections 7.7.2 and 7.7.3) each data collection activity informed the development of the subsequent data collection moments. This was a systematic process; I prepared and shared summary documents after each data collection moment. I used these documents as tools for reflection and to enhance the quality and validity of the research (see section 7.6.2). The research process in Stage II and III consisted of iterative cycles of reflection and action (see Figure 7.4).

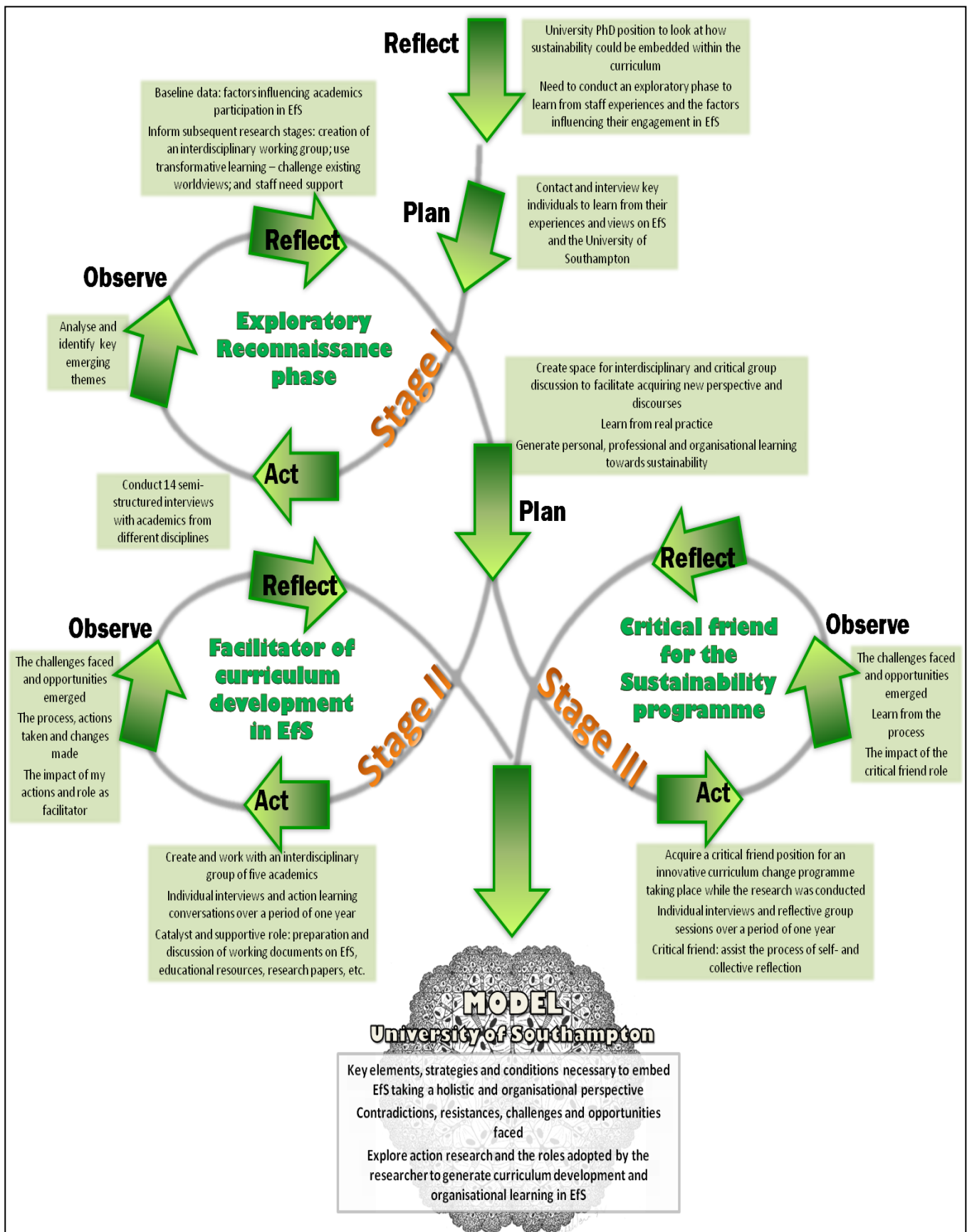


Figure 7.4 Action research cycles of the research

7.7.1 Research process Stage I

Stage I of this research corresponded to an exploratory – reconnaissance phase of a typical action research cycle (see Figure 7.4). The research goals of this stage were to: collect baseline data and gain a deeper understanding of the University of Southampton; identify the factors influencing academic staff engagement in EfS; inform the research design; and identify possible participants for subsequent research stages. The first stage of this study lasted approximately eleven weeks, from October 2011 to December 2011 (see Appendix 9). Fourteen academic staff members from different departments at the University of Southampton participated in this stage (see Table 7.2). The roles of the participants within the university included: director of programme, professor, teaching fellow, lecturer, senior manager and reader amongst others.

Table 7.2 Profile of Stage I participants

Pseudonym	Gender	Faculty	Subject area
Albert	Male	Faculty of Social and Human Sciences	Education
William	Male	Faculty of Social and Human Sciences	Education
Paul	Male	Faculty of Social and Human Sciences	Education
Lee	Male	Faculty of Social and Human Sciences	Education
Arthur	Male	Faculty of Business and Law	Arts and design
Bruce	Male	Faculty of Physical Sciences and Engineering	Electronics and computer sciences
Ellie	Female	Faculty of Social and Human Sciences	Politics
Eric	Male	Faculty of Physical Sciences and Engineering	Electronics and computer sciences
Stephen	Male	Faculty of Health Sciences	Health sciences
Martha	Female	Faculty of Social and Human Sciences	Geography
George	Male	Faculty of Humanities	History
Sarah	Female	Faculty of Humanities	Film studies
Mark	Male	Faculty of Humanities	Philosophy
Adam	Male	Faculty of Physical Sciences and Engineering	Physics

These individuals were selected using a snowball sampling technique (see section 7.3). I emailed the Directors of Programmes to find out key individuals in the different university departments that had an interest in sustainability and innovative teaching and learning methods. Some provided me with key people to contact, some did not reply, and three preferred to meet me to know more about my research and discuss personally with me the suitability of interviewing key people in their departments. The Directors of Programmes acted as a filter in the selection process, modifying the snowball sampling. The selection criteria were: (a) enthusiastic people who may be happy to participate in my research and collaborate in the second stage of the study; (b) staff who were already doing something related to any aspect of sustainability or interdisciplinary or innovative teaching and learning methods; and (c) staff identified by contacting the Directors of Programmes.

From the key people contacted in each department, some showed willingness to participate and to be interviewed, some replied saying that they had no time and some did not reply, making a final sample of fourteen academic staff members. Participants came from a range of Faculties comprising: social and human sciences; business and law; physical and applied sciences; and health sciences and humanities (see Table 7.2). It was very difficult to engage academic staff members from applied sciences in Stage I. However, three academic staff members from a science background were interviewed. It should be noted that the email sent, which included a definition of sustainability (see section 2.1), mainly on social sustainability, may have influenced the sampling process, and may have biased the sample obtained. Participants had a range of teaching and research responsibilities in the university. The sample consisted of three female and eleven male staff members in different career stages and different lengths of time as part of the organisation (see Table 7.2).

A semi-structured interview approach was chosen as the data collection technique for this stage (see section 7.4.1). According to Kvale and Brinkmann (2009, p. 1) the qualitative interview endeavours to *'understand the world from the subjects' points of view, to unfold the meaning of their experiences, to uncover their lived world prior to scientific explanations'*. The interview was structured in terms of the main topics for discussion, using open-ended questions and prompts that allowed the participants to talk in-depth about other EfS-related issues that were important and relevant to them. The interview questions explored participants' experiences, views and understanding of sustainability and EfS (see Appendix 10). Interviews started with general information on current teaching responsibilities and professional roles in the organisation, and continued with questions about their understanding of sustainability in a broad sense, to move on to actual views and future insights into

educational and curriculum aspects such as the role of HE in educating for sustainability and the conditions necessary, and factors influencing, staff and students' engagement in teaching and learning about sustainability. A final question about current teaching on sustainability was posed.

I envisioned Stage I as the reconnaissance – exploratory phase of an action research cycle (see Figure 7.4). Therefore Stage I research findings (see section 8.2 Chapter 8) informed the design and development of subsequent research stages in: the creation of an interdisciplinary working group because of the difficulty of interdisciplinary and collaborative working between academics (Stage II); the use of the organisational learning framework towards sustainability in HE to guide the research that could foster critical reflection and challenge existing mental models in EfS (see Chapter 4); and the method choice of EAR and the roles of facilitator for Stage II and critical friend for Stage III to create new understandings and practices in EfS (see Chapters 5 and 6).

7.7.2 Research process Stage II

In Stage II, I adopted a facilitator role within a group of five academics at the University of Southampton in order to foster critical reflection and action, and to gain learning from real practices and from their journeys on embedding EfS within their teaching practice. Action research allowed me to adopt an active role as a researcher through researching people's lives and entering their world and by letting them enter my views and world (see Chapter 6). My aims as a facilitator of this group were to: generate personal, professional and organisational learning towards sustainability; explore the value and limitations of the method used to generate curriculum and professional development; and transform thinking and action towards embedding EfS within their teaching practice. I created a space for the co-generation of knowledge and action through conducting three individual interviews and three ALCs with Stage II participants over a period of one and a half years, from January 2012 to May 2013 (see Appendix 12). Five academic staff members from different roles and departments, and a range of teaching and research responsibilities in the university took part in this stage (see Table 7.3). Participants' roles within the university included director of programme, lecturer, professor, senior manager and teaching fellow.

Table 7.3 Profile of Stage II participants

Pseudonym	Gender	Faculty	Subject area
William	Male	Faculty of Social and Human Sciences	Education
Eric	Male	Faculty of Physical Sciences and Engineering	Electronics and Computer Sciences
Julian	Male	Faculty of Humanities	Archaeology
Ruth	Female	Faculty of Natural and Environmental Sciences	Biology
Joanna	Female	Faculty of Health Sciences	Health Sciences

As I outlined in section 7.3 of this chapter, the sampling method used was purposive as I was interested in academic staff that were open to questioning about their practice, willing to share personal and professional experiences, develop their teaching practice, and develop their undergraduate teaching towards embedding EfS. Through Stage I of the research I identified possible research participants, and I asked them to arrange an informal meeting, where I introduced them to the research aims and commitment required from them in order to gain informed consent (Appendix 6 and 7). William and Eric were involved in Stage I of the research, while Julian, Ruth and Joanna showed interest but could not be interviewed as part of Stage I of the research. They all came from different subject areas, departments and faculties, had different ages, roles, responsibilities and years in the organisation (see table 7.3), however they had the same role and responsibilities within the research, which was contained in the participant information sheet (Appendix 7). After obtaining their agreement to take part we started the research, focusing on teaching modules where they could embed EfS. In Figure 7.5, I have mapped the research process followed in Stage II of this research, which is further detailed in Table 7.4. Both contain the actions I undertook as part of my facilitator role.

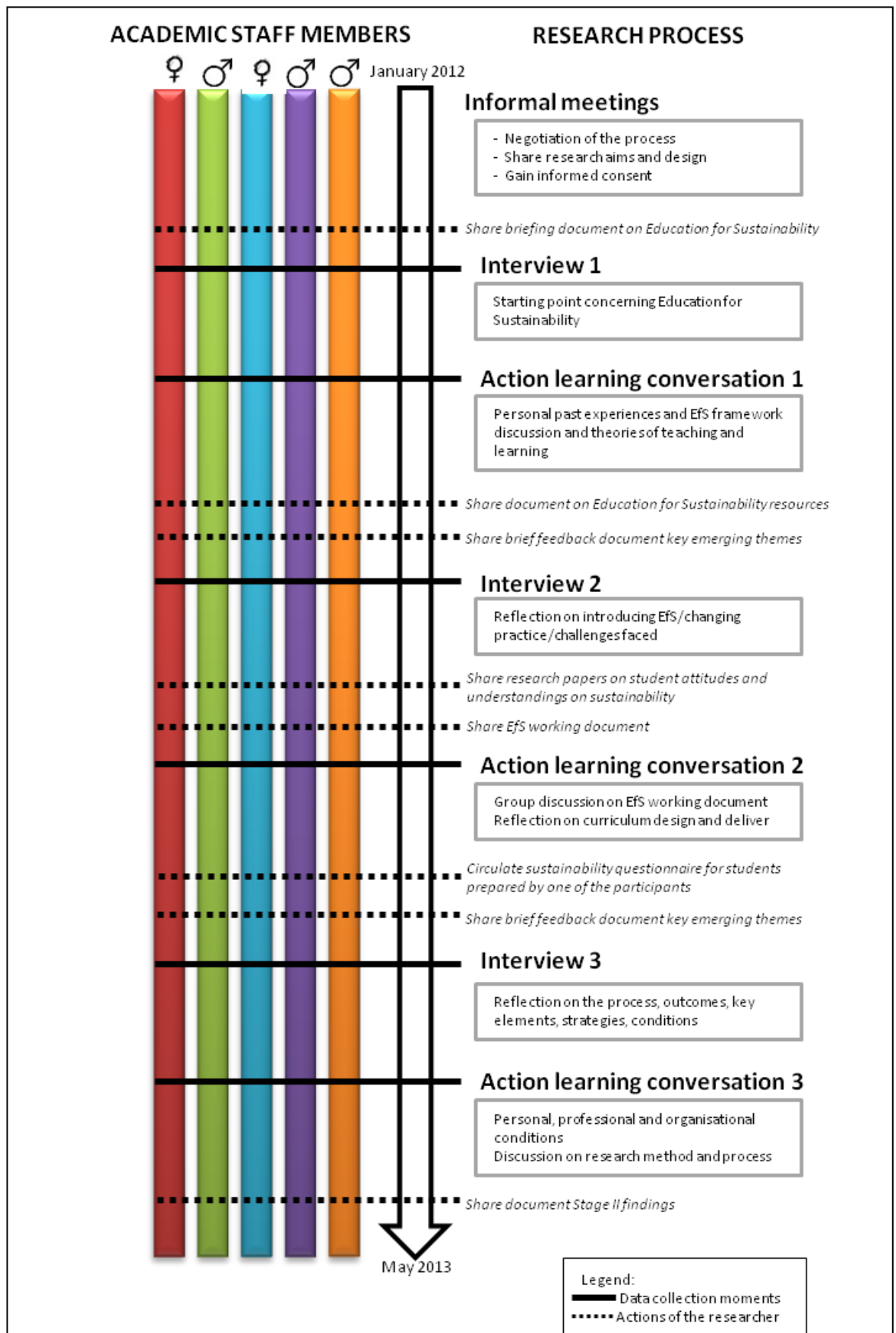


Figure 7.5 Research process Stage II

Table 7.4 Description of research process Stage II

Research step	Research purposes	Brief explanation
Informal meeting	Introduce tentative participants to the research project. Gain informed consent.	The project was introduced to the participant. The informed consent was agreed. Participants provided ideas of possible modules where they could introduce EfS.
Share briefing document on EfS (Appendix 13)	Share initial theoretical ideas and teaching and learning methods associated with EfS.	Prior to Interview 1, the ' <i>Briefing document EfS</i> ' was shared with the participants, for discussion in Interview 1 with each of them individually.
Interview 1 (Appendix 14)	Find out what are some of the initial issues related to the understanding of EfS, and teaching and learning practice associated with it.	In Interview 1 EfS ideas and understandings were explored and discussed, what they were already doing and what could be done, what might be possible opportunities, challenges, tools and needs faced. Reflect with participants on the possible modules where sustainability could be embedded, identify opportunities and initial challenges.
ALC1 (Appendix 6 and 15)	Engage participants in a group discussion and critical reflection.	Each participant brought one challenge they face when thinking about EfS. The ALC method used was introduced to them beforehand by email and they were reminded of it at the beginning of the session. The group went through and reflected on the five challenges presented.
Share document on EfS educational resources (Appendix 16)	Provide resources on EfS to support the thinking and redesign of teaching to embed sustainability.	The document ' <i>EfS educational resources</i> ' was prepared and shared with the participants in order to inform their practice after Interview 1 and ALC1. This document contains general information on resources for HE and specific to the subject area when found (research papers, websites, HEA subject centres information, etc.).
Share brief feedback document key emerging themes (Appendix 17)	Share key emerging themes emerged in Interview 1 and the ALC1 to help reflect back.	Three days before Interview 2 a working document on key themes that emerged in Interview 1 and a working document on the key themes that emerged in the ALC1 was shared with the participants. Participants were asked for feedback at the beginning of Interview 2.
Interview 2 (Appendix 14)	Find out the progress or the lack of progress made by each participant.	Discussion of how participants had progressed on their initial ideas, what had happened since the last time we met and where they were at that moment, factors influencing, challenges and opportunities.
Share research papers on student attitudes and understandings on sustainability (Appendix 18)	Provide resources on existing research on students' attitudes and understandings on sustainability to support their practice.	One participant had interest in designing a questionnaire for students, this emerged in ALC1 and Interview 2. An email was sent with research papers and publications on students' understanding, perceptions and attitudes on sustainability.

Research step	Research purposes	Brief explanation
Share EfS working document (Appendix 19)	Remind and refresh participants on the research, and some key issues that needed to be clarified.	After conducting Interview 2 it seemed appropriate to prepare a short paper on my definition of sustainability, rationale, PhD aims, role of the researcher, key themes, and ways to embed sustainability. I also included some reflections and possible questions to think about as a starting point for the discussion in ALC2.
ALC2 (Appendix 6 and 20)	Reflect on and discuss the ideas contained in the EfS working document. Engage participants in a group discussion and critical reflection on curriculum design on sustainability.	Part 1: Discussion around the EfS working document. During the session we discussed how participants understand these terms, and different views and interpretations. Part 2: Follow the ALC structure. Group discussion on where participants have got to with the module redesign. Participants bring challenges they are facing related to the design of sustainability teaching.
Circulation of a sustainability questionnaire for students prepared by one of the participants (Appendix 21)	Share useful information with the members and support their practice.	One of the participants designed a sustainability questionnaire for the students with the help of my help. One of the outcomes of ALC2 was the interest of other participants to use it as a pre- or post-test evaluation of their interventions. An email was sent with this information to all participants.
Share brief feedback document key emerging themes (Appendix 22)	Share key emerging themes from Interview 2 and the ALC 2 to help reflect back.	Three days before Interview 3 a working document on key issues that emerged in Interview 2 and a working document on the key issues that emerged in the ALC2 were shared with the participants. Participants were asked for feedback at the beginning of Interview 3.
Interview 3 (Appendix 14)	Reflect on the process of change, the possible outcomes and key elements, strategies and conditions.	Discussion on the whole process and the redesign of modules. Identify key factors that have enabled or constrained the redesign of the modules. Evaluate the whole process and provide insights and future perspectives.
ALC3 (Appendix 6 and 23)	Reflect on the research process, impact and common outcomes. Personal, professional and organisational conditions.	Part 1: group discussion and reflection on the whole process. Participants reflected on their individual designs and delivery, and learning and outcomes, such as approach to EfS, new content, teaching and learning methods, and new activities or elements that they introduced. Participants were asked to bring a challenge they faced at any level, such as personal, professional and organisational. Part 2: group discussion and reflection on the research method, the action research, and action learning.
Share document Stage II findings	Share the main findings of the research with the participants.	Share summary of main findings of the research. Member checking where participants have been able to give feedback on the research findings.

7.7.3 Research process Stage III

In Stage III, I adopted a critical friend position for the Sustainability Programme at the University of Southampton. Action research allowed me to adopt an active role as a researcher to examine a real change programme towards sustainability at the University (see Chapter 6). My aims as critical friend were to: contribute to the self-reflection and collective reflection of the group; promote a critical group reflection which could facilitate acquiring new perspectives and discourses; and explore the impact of my role as critical friend and the method used in generating new action and practices. I adopted an outsider role, stepping back and listening, and tried to understand the group dynamics and action through engaging as an observer in their meetings, and through conducting three individual interviews and two RSs, for over a period of one year and a half, from January 2012 to May 2013 (see Appendix 24).

The sampling for this research stage was purposive, hence Stage III participants were selected due to their involvement in, and membership of the Sustainability Programme (see section 7.3 of this chapter). I agreed the main features and conditions of the role, and my engagement with the Sustainability Programme leader, in preceding informal interactions and meetings. I then shared this with the group in order to gain the informed consent from the different members willing to participate (see Appendix 6 and 7). When I initiated the research the group was formed of six people of differing placements, responsibilities and groupings within the university, however the majority shared an environment-related background, coming from environmental sciences, geography or biology (see table 7.5).

Participants' role within the university included staff member, lecturer, teaching fellow, undergraduate student and senior manager. Participants hold specific roles and responsibilities within the group such as programme assistant, leader, environmental manager, sceptical and student representative. Participants provided their different expertise to the group in EfS, knowledge on the HE context, the organisational conditions and dynamics and the student body.

Table 7.5 Profile of Stage III participants

Pseudonym	Gender	Faculty or location within university	Subject area / Background
Bob	Male	Faculty of Engineering and the Environment	Environmental sciences
Lucy	Female	Faculty of Engineering and the Environment	Environmental sciences
Andrew	Male	Faculty of Natural and Environmental Sciences	Biology
Richard	Male	Estates and facilities	Environmental sciences
Martin	Male	Faculty of Engineering and the Environment	Environmental sciences
Jack	Male	Faculty of Humanities	Languages, linguistics and area studies Geography
Mary	Female	Faculty of Engineering and the Environment	Environmental sciences

This group was particularly valuable to my research because of the involvement of academics, students, a senior manager and the environmental manager on a real time change programme. This meant that I could gain insights from people coming from different groupings across the university, enriching my understanding of embedding sustainability across the University from different stakeholder groups.

After gaining informed consent, and their agreement to take part in the research, we started by focusing on me being an outsider to the initiative, and on conducting individual interviews and observations that could inform RSs conducted with the group. In Figure 7.6, I have mapped the research process followed in Stage III of this research, which is further detailed in Table 7.6. Both contain the actions I undertook as part of my critical friend role.

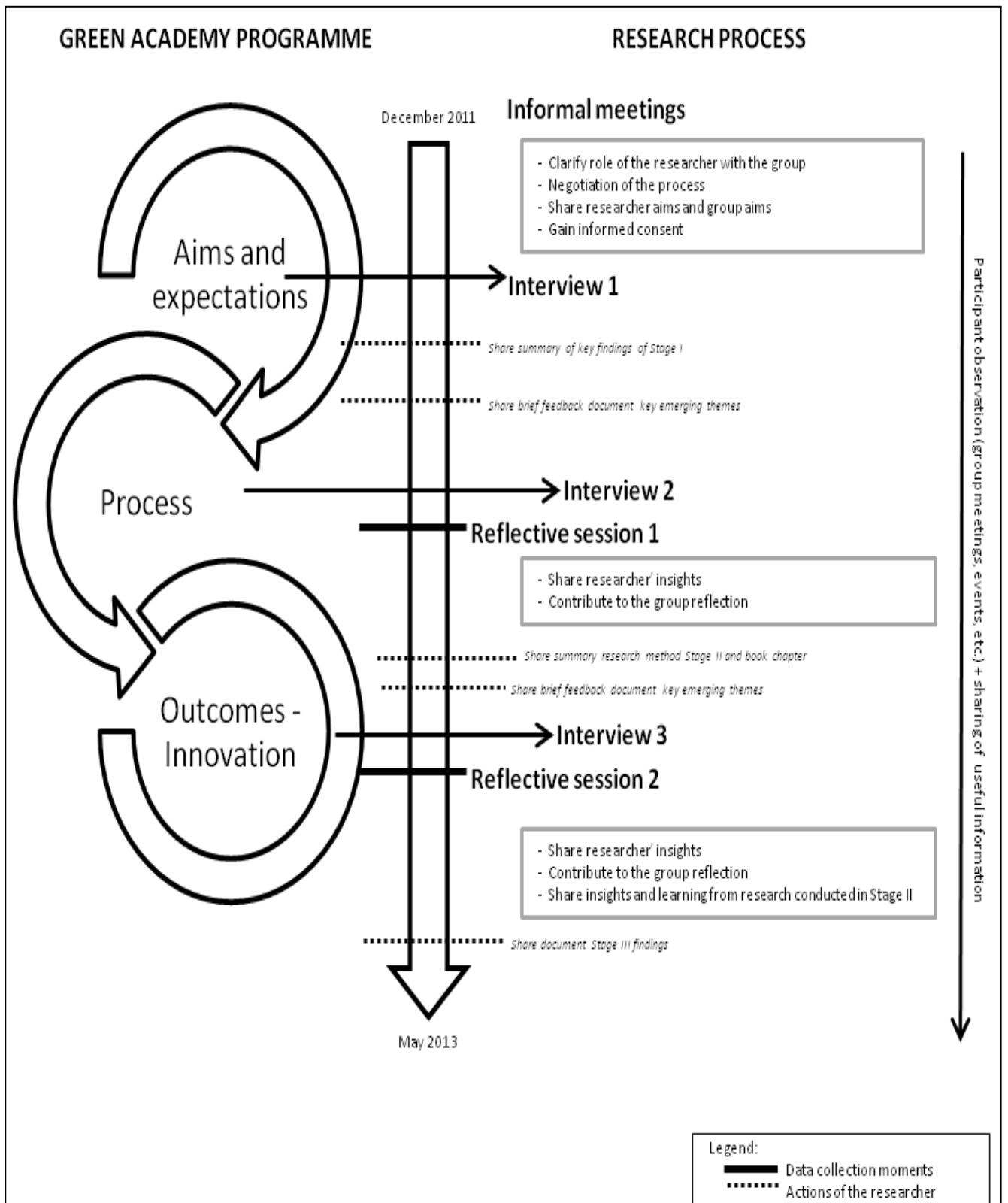


Figure 7.6 **Research process Stage III**

Table 7.6 Description of research process Stage III

Research step	Research purposes	Brief explanation
Informal meetings with leader of the group	Discuss my role, and usefulness to the group, with the leader. Gain his consent.	Different ideas and roles I could acquire were discussed with the leader. Agreement on the usefulness of acquiring an outsider role providing feedback in specific moments.
Informal meeting	Introduce tentative participants to the research project. Gain informed consent.	Sustainability Programme members were introduced to the research at the beginning of their meeting in January 2012.
Interview 1 (Appendix 25)	Gain a deep understanding of the context and conditions under which the Sustainability Programme is operating. Find out initial successes, challenges and opportunities faced, and the desired outcomes, aims, and expectations.	In Interview 1, the members of the Sustainability Programme had the opportunity to reflect upon the initial aims and expectations of the group.
Share summary of key findings Stage I (Appendix 11)	Share the summary of key findings from Stage I to inform the group's action.	An email was sent with the summary of key findings from Stage I. This was considered useful information to share with the group as it could inform their action and development.
Share brief feedback document key emerging themes Interview 1 (Appendix 26)	Share key themes that emerged in Interview 1.	Three days before Interview 2 a working document on key themes that emerged in Interview 1 was shared with the participants. Participants were asked for their views and feedback at the beginning of Interview 2.
Interview 2 (Appendix 25)	Find out what has happened since Interview 1. Reflect on the process and how the group was getting on with the initiative.	In Interview 2 the members of the Sustainability Programme had the opportunity to reflect upon the process so far. What had happened since the last time we met, and what were the current challenges, successes and opportunities.
RS1 (Appendix 27)	Mirror data and help the group reflect on issues related to EfS and curriculum and organisational development.	An adaptation of the Diamond 9 was used to start group reflection on the current priorities of the Sustainability Programme. I gave some feedback on key issues and asked reflective questions to participants. The group reflected on these key issues and provided insights and future action possibilities. A closing activity based on the learning organisation ideal as a tool for reflection was used.

Research step	Research purposes	Brief explanation
Share whole PhD method	Support the group in developing a method for curriculum development and academic staff engagement.	An email was sent with two documents: a chapter I wrote (Cebrián et al., 2012); and a summary of the research method I used for Stage II (see section 7.7.2).
Share brief feedback document key emerging themes Interview 2 (Appendix 28)	Share key themes that emerged from Interview 2.	Three days before Interview 3 a working document on key themes that emerged in Interview 2 was shared with the participants. Participants were asked for their views and feedback at the beginning of Interview 3.
Share brief feedback document outcomes RS1 (Appendix 29)	Share key outcomes from RS1.	Three days before Interview 3 a working document on key outcomes of the RS1 was shared with the participants. Participants were asked for their views and feedback at the beginning of Interview 3.
Interview 3 (Appendix 25)	Reflect on the implementation of the programme so far, what were the key achievements, and what were the key challenges and the opportunities.	Interview 3 focused on the process and evaluation of the programme so far, the key achievements and challenges, and the identification of opportunities and future insights.
RS2 (Appendix 30)	Mirror data and help the group reflect on issues related to Efs and curriculum, and organisational development.	I shared my insights and feedback on the nine themes I identified through my interactions and the data analysis. Part 1: my insights and feedback, and group discussion and reflection. Part 2: prepared and shared a document on the Stage II method that could inform their curriculum development strategy.
Share document Stage III findings	Share the main findings of the research with the participants.	Share summary of main findings of the research. Member checking where participants have been able to give feedback on the research findings.

Chapter 8: Research findings

8.1 Introduction

Chapter 8 outlines the findings arising from the different research stages. First I introduce a summary of the findings from Stage I, which corresponded to the reconnaissance - exploratory phase of a typical action research process (see Chapter 7 section 7.7.1). Second I discuss the findings for Stage II, where I engaged with an interdisciplinary group of five academic staff members willing to embed EfS within their teaching practice with my support as facilitator (see Chapter 7 section 7.7.2). I also provide evidence on how the research method contributed to generate organisational learning for sustainability (see Chapter 4). Finally I explore the factors that emerged through my engagement as a critical friend with the Sustainability Programme group as to influence their progress (see Chapter 7 section 7.7.3). I provide evidence on how the research process has contributed to generate organisational learning for sustainability (Chapter 4).

The findings contained in this chapter inform the discussion about the development of a model for the University of Southampton on how to embed EfS within the undergraduate curriculum, which I outline in Chapter 10. Chapter 8 is my account of what happened and what I found during the research process, in a particular time, within a specific organisational context and situation at the University of Southampton. I acknowledge my influence and provide my reflections on the research process in Chapter 9. As part of my ethical framework (see Chapter 7 section 7.6) I gave voice to participants throughout the process, allowing them to feedback summary documents of tentative findings throughout the research. At the end of the process I also shared with them a draft version of the findings, asking them to provide their views and insights, with the aim of having their feedback, enhancing their participation, and empowering them as active agents involved in my research.

8.2 Stage I findings

This section outlines the findings from Stage I of my research. As detailed in Chapter 7 section 7.7.1, Stage I of my research was conceived as a reconnaissance - exploratory phase of an action research. This was an initial step necessary to gain a deeper understanding of the institution's organisation and the challenges and opportunities faced by its academics when

engaging in EfS. This section summarises the findings of the fourteen interviews carried out with academic staff members from different disciplines. The five themes that emerged during the interviews with Stage I participants were the understanding and importance of sustainability, the role of the organisation and the HE sector, curriculum, ways of delivery, academic culture, and personal influences. Figure 8.1. shows the final five themes and the twelve thematic categories identified.

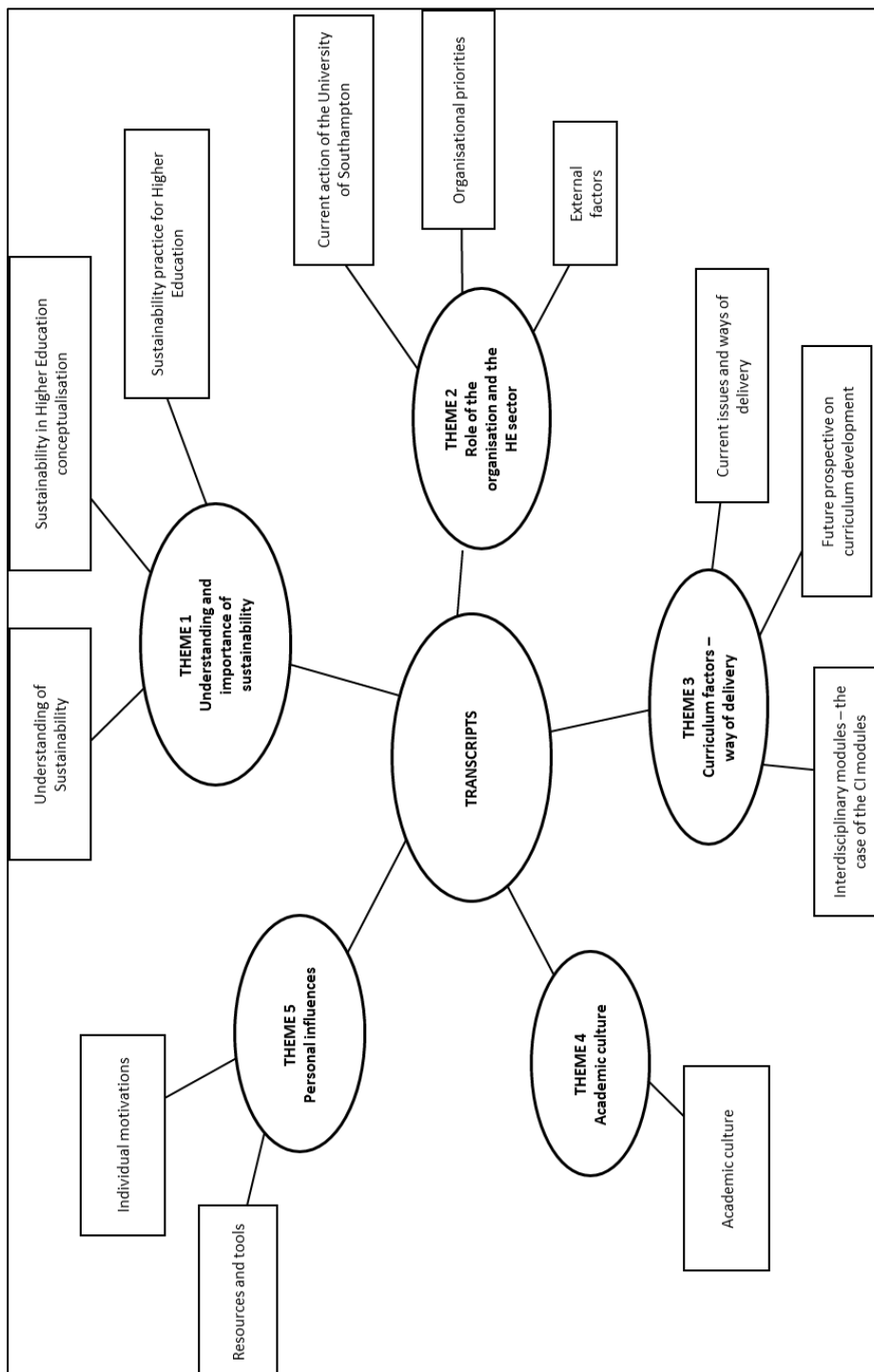


Figure 8.1 Themes and categories identified for Stage I

8.2.1 Understanding and importance of sustainability

Different definitions of sustainability were provided by participants: environmental sustainability; economic sustainability; long-term maintenance; and a holistic conceptualisation. Participants who defined sustainability as a holistic concept included economic, environmental and social dimensions, and were academics whose teaching and area of expertise was in sustainability. For example Martha and Sarah understood it as:

“It's basically a holistic concept that reflects and refers to the way we live our lives today, it's entire way, it's not just about the environment” (Martha)

“When I think of sustainability, the dominant idea which comes to mind is the idea of resources” (Sarah)

Sustainability was also linked to the own subject area. EfS in the HE context was envisioned as building awareness, and promoting debate and critical thinking amongst students. These roles were linked to the role of HE in fostering active change agents, that is to say responsible citizens and professionals who are capable of influencing change and making a positive contribution towards sustainability in all aspects of their lives. Some concerns existed relating to the difficulty in assessing sustainability skills such as collaboration in HE, the importance of providing space for critical thinking without preaching a right way of thinking about the world, and the need to deliver informed discussions. For example Arthur and Adam viewed the role of HE as:

“Introducing students to issues and raising awareness but not preaching to them or trying to impose a view” (Arthur)

“The role of higher education I think, any education role, is to make sure that the discourse becomes a bit more informed and ideally more quantitative... sort of scientific value” (Adam)

Although the interview questions focussed on educational and curricular aspects, participants emphasised the importance of the organisation's sustainable practices, including research, operations and estates, and staff and students behaviours. Ellie stressed the importance of practicing sustainability as an institution:

“Something I think about making this place sustainable in itself... [students] might think that we are making a bit of a mockery of sustainable development ourselves as an institution” (Ellie)

Therefore the importance of universities as role models was stressed as a key driver to embed sustainability across the institution and to encourage academic staff members to take action in their professional practice. Similar to other research conducted on staff perceptions, one of the main challenges faced by academics is the understanding of sustainability (Filho, 2011; Holmberg & Samuelsson, 2006). Academics see sustainability education as one of the social purposes of HE, however the sustainability practice of the university in all its activities is critical in order to engage them in EfS.

8.2.2 Role of the organisation and the higher education sector

A range of organisational factors that influenced academic staff members' action emerged during the discussions. In terms of current action within the University of Southampton and the sector in general, different views were reported. An improvement in the greening of the campus was recognised, however in terms of education some participants felt there was not enough being done. A lack of coordination and internal communication on sustainability matters and the importance of communicating the sustainability initiatives and achievements of the organisation were stressed as a way to build awareness amongst the academic community. Martha considered:

“It seems to be a lot going on but it's just not coordinated” (Martha)

Moreover, a number of organisational levers needed to occur simultaneously: sustainability as part of the priorities of the organisation, having an institutional framework or action plan, providing staff support, and rewarding examples of sustainability. The need for institutional processes was another driver that emerged during the discussions. Different participants commented on this:

“Part of it is that the university or the faculty or the department they're in needs to provide [staff] with the space, the time, the opportunity to do it if they want to do it” (Albert)

“To make it work it'd need that schools or academic units would have to do an action plan... it'd have to be a planned approach and a prescriptive planned approach” (Paul)

“If the university set the self the target.. instead of being the top 10 research in the country we want to be the greenest university in the country” (Lee)

However, different perceptions existed on the kind of approach necessary to engage the university community in sustainability; both top-down and bottom-up approaches were envisioned by participants. The role of the HE sector was seen as encouraging, providing support, and rewarding the universities that encourage embedding sustainability. The importance of benchmarking, external bodies, national priorities and policies were mentioned by participants as enablers or blockers for realising change towards sustainability in universities. Stephen and William stressed that:

“[Senior managers] have to make a decision about how much money, how many resources they are going to put into it” (Stephen)

“Well is the absence of benchmarking, isn't it? what would encourage the university to do it is if it was measured and rewarded for doing stuff” (William)

Recent internal changes at the University of Southampton were seen as a hinder to innovation. As the next interview extract from Ellie indicates these internal changes had led to increased workloads of academics, which did not allow them the time to engage in EfS.

“I know these should all be done but I guess one of the reasons it is not happening is because everybody is so busy doing what they are already doing and doing things in a way they are forced doing them, again we only get on with these changes that the university is recently gone through the transition because of the need to cut costs.. I think we've got the constraints of time and money, that are really making it difficult to make this wonderful idea just got jump into fruition that was all” (Ellie)

These findings reinforce the importance of organisational factors that have been previously discussed in the literature, such as the need for organisational support, coordinated action across the university, translate vision into clear action plans, visible priorities, and the development of top-down and bottom-up approaches that engage and empower all the university agents (Lozano, 2006a; Velazquez et al., 2006). These findings reflect that leadership and support from the university management team and external agencies in charge of benchmarking and quality assurance processes is essential.

8.2.3 Curriculum factors – way of delivery

Participants commented on a number of ways they were already introducing sustainability within their current teaching modules, such as: debates and group discussions; optional

modules related to sustainable practices in specific subject areas; and modules that deal with ethics. Participants provided insights into desired approaches to teaching and learning for sustainability: using sustainable teaching methods such as distance learning; using transformative learning strategies that can challenge students' worldviews and foster change agents; real practice and case studies; student-centred approaches; and co-teaching. Ellie and Sarah emphasised:

“We could build the curriculum into a way to try to make the university improve its own environmental sustainability... we could be getting students involved in understanding how you can bring about these changes, making these changes happen.. to make it a bit more real” (Ellie)

“It's our role to build them into independent learners and enable them to take charge and to lead, manage the resources they have available, to exploit them” (Sarah)

However, it was also acknowledged that the use of innovative teaching and learning strategies could represent a challenge with the structure of big lectures with large numbers of students. The suitability of embedding sustainability holistically within the whole curriculum, introducing it in every course was a controversial issue. A recurrent concern was the need to find the appropriate opportunity in each subject area. Participants also expressed concerns and difficulties about how to deliver it in courses where sustainability was not a core part of the subject. Eric and Mark commented:

“I suspect the right answer is to try and find ways where it integrates naturally into some part of the curriculum and I can easily think how that would work in [subject area]... but I'm not quite so clear how it would fit easily into something like [subject area]” (Eric)

“We ought to be thinking as an institution about where we are going to put that part of their education, whether we think it should be in the everyday curriculum or whether we think it should be done in some other ways, just as we give careers destinations advice outside the curriculum” (Mark)

Subjects such as geography, environmental sciences, and some of the engineering modules lead to a natural inclusion of sustainability, whereas in other subjects such as music, languages or history, other places rather than the formal curriculum might be more appropriate. The dilemma of making sustainability modules compulsory or optional was mentioned. The Curriculum Innovation (CI) and its interdisciplinary modules were envisioned as an existing opportunity and advocated by some participants as the right place to embed sustainability. Re-

arrangement of the curriculum, and sustainability being part of assessment and the syllabus were seen as necessary steps forward. Bruce and Martha stated that:

“[the lecturer] can have a discussion about sustainability but if it doesn't appear in the exam, and it's not something that is in the syllabus, and it's not testable students can ignore it if they wish to” (Bruce)

“Making sure that the money follows the student and doesn't go directly to departments, making sure that you have module harmonisation to allow students to take these different modules from whatever programme they are in, and timetabling, making sure that it actually works” (Martha)

Different perceptions on embedding sustainability within the curriculum were reported. The findings from this research suggest that though staff saw the value of EfS pedagogies to teach sustainability, a number of constraints arising from the current structure and way of delivery existed, restricting the ability to implement EfS in practice. Finding the appropriate way to embed it in each subject, re-arranging the curriculum, using existing curriculum structures such as the CI modules, deciding on an institutional and departmental approach, and including it in the official syllabus and assessment were seen as necessary steps that participants envisioned in order to embed EfS within the curriculum. These findings are in line with other authors (Ryan & Cotton, 2013; Sterling, 2012) in that sustainability needs to be contextualised according to each subject area in order to find the suitable ways and structures to embed EfS.

8.2.4 Academic culture

Academic culture is characterised by the factors raised by participants that are inherent to the culture of being an academic. Culture is understood as the set of ideas, beliefs and actions distinctive to the scholarly community. One's position in the department, the department's view on teaching and research, and individual and departmental priorities and interests were issues that emerged during the discussions as influencing academics. Lee and Bruce stressed that:

“I don't think it fits with the research interests of the school” (Lee)

“You've got staff doing research in the area, specifically in those areas, I do work in [area of expertise] because that's my area, I'm interested in it. Most other staff in the

department aren't interested in it, it's not an area they are interested in, so you have the academic research areas" (Bruce)

The development of new teaching topics in accordance with new research area developments could be an opportunity to introduce the latest knowledge and contemporary issues such as sustainability in current teaching. For example Eric outlined that:

"Programme coordinators are busy people who have got their research to get on with, they don't change unless there's some pressure for change, either pressure from their own subject disciplines saying things have moved on and your degrees have got to update or there is some external pressure coming in from outside saying we've got to put this into our degrees" (Eric)

Senior staff were considered key in leading new agendas and changes in the curriculum. Sustainability as part of the routines and daily life of the academic community emerged as a concern. According to Martha:

"For academics to be successful we have to publish and disseminate our research internationally, that means getting planes and travelling and going to other places... there's a huge carbon footprint" (Martha)

Sustainability required being embedded in the academic discussions, whereas there was a sense that at the moment it was not part of these discussions and the culture of academics. Interdisciplinary work and collaboration between disciplines and departments were seen as the main challenges. Differences in understanding, teaching practices and administrative approaches amongst the different disciplines inhibited interdisciplinary collaboration on sustainability teaching. Ellie considered that:

"There is the challenge of working interdisciplinary, working across disciplinary boundaries... we don't necessarily understand one another's academic jargon, we don't necessarily understand the different systems that we've got, the different ways of doing things, the different ways of teaching and learning, things are done differently across the uni" (Ellie)

Academic freedom to research and teach, and the existing academic culture could both facilitate or inhibit turning the EfS ideal into reality. Some strongly held views existed on the unsustainability of academic life, in that academics are not encouraged to carry out sustainability practices while doing research, travelling or disseminating their research. The findings from this research show the need to embed sustainability in the university structures

such as promotion criteria, grants and funding, research assessment, and job descriptions, in order to engage staff and create more sustainable universities. Other authors (Hegarty, 2008; Moore, 2005a) have also reported on academic culture and disciplinary silos as inhibitors of collaboration, while collaboration and interdisciplinary and transdisciplinary work is required to embed EfS within the curriculum.

8.2.5 Personal influences

Participants acknowledged a number of challenges and opportunities that could encourage or discourage academic staff members in taking action towards sustainability. The lack of knowledge about sustainability, the perceived lack of relevance to the topic of expertise or subject area, and the lack of understanding of the benefits of changing, were seen as the main personal barriers of academic staff members. In this sense, Albert and Paul stressed:

“Some people think it’s not relevant, some people don't think is necessary, some people just don't want to do it because it means changing what they do and they don't really like to change things very much, some people might think they’re not allowed to do it because it's outside their normal remit of teaching about their subject” (Albert)

“I've never seen it as a topic that related to my teaching area... I have to be convinced that it is relevant to my topic” (Paul)

On the other hand, a number of catalysts were identified that could endorse their individual action such as having examples of good practice, staff professional development, and champions or role models in the departments, or in the university, to assist new teaching developments in this direction. For example Stephen viewed it as:

“Good examples of possibly for example champions, who have championed sustainability within the university, and unfortunately is not here, I can't name anybody, so I have no role model, I have no positive influence on me about sustainability” (Stephen)

Staff perceived a range of reasons and motivations for colleagues’ engagement or disengagement with embedding sustainability within their teaching. Staff personal interests and motivations were regarded as levers to embed sustainability. Ellie reflected:

“I think what's different about us is that we all do things in our personal lifestyles that are environmentally friendly... we kind of live in breath environmental sustainability”
(Ellie)

However, it was also stressed that there could likewise be staff members interested in sustainability personally who were not necessarily translating it into their teaching and professional practices. This was associated with the perceived responsibilities as educators. Mark stressed:

“I'm a lecturer, why should I more than a dentist be talking to people about environmental sustainability? so one argument I might say no it's irrelevant, it's not part of my professional job... but look as an educator you are different from a dentist and because you're an educator you need to be thinking about how you build sustainability awareness into your teaching but there's an argument to be had about that” (Mark)

The findings from this research stage indicate the importance of personal values and beliefs, which has a direct link on the personal motivation of academics to engage with sustainability. Having champions, teaching resources on EfS, and professional development were seen as opportunities to engage in EfS by participants. Thus one of the suitable strategies to foster EfS is the creation of professional development programmes on EfS that can help develop new insights and practices amongst academics (Barth & Rieckmann, 2012; Holdsworth et al., 2007).

8.3 Stage II findings

This section summarises the findings from Stage II of my research. As I explained in Chapter 7 section 7.7.2, this research stage was concerned with identifying the factors influencing embedding EfS within the undergraduate curriculum, through working collaboratively with five academic staff members to foster critical reflection, action and learning from real practice and from their journeys on embedding EfS within their teaching practice. In this section I outline the findings from the fifteen individual interviews and the three ALCs I conducted (see section 7.7.2). At the end of this section I introduce the main outcomes of delivery achieved through the research process, making reference to the evidence for organisational learning towards sustainability (see Chapter 4). Four themes were identified during my interactions with Stage II participants, which are; knowledge and understanding of sustainability and EfS, personal influences, curriculum factors – way of delivery, and organisational conditions and dynamics. Figure 8.2 illustrates the final four themes and the eleven thematic categories identified.

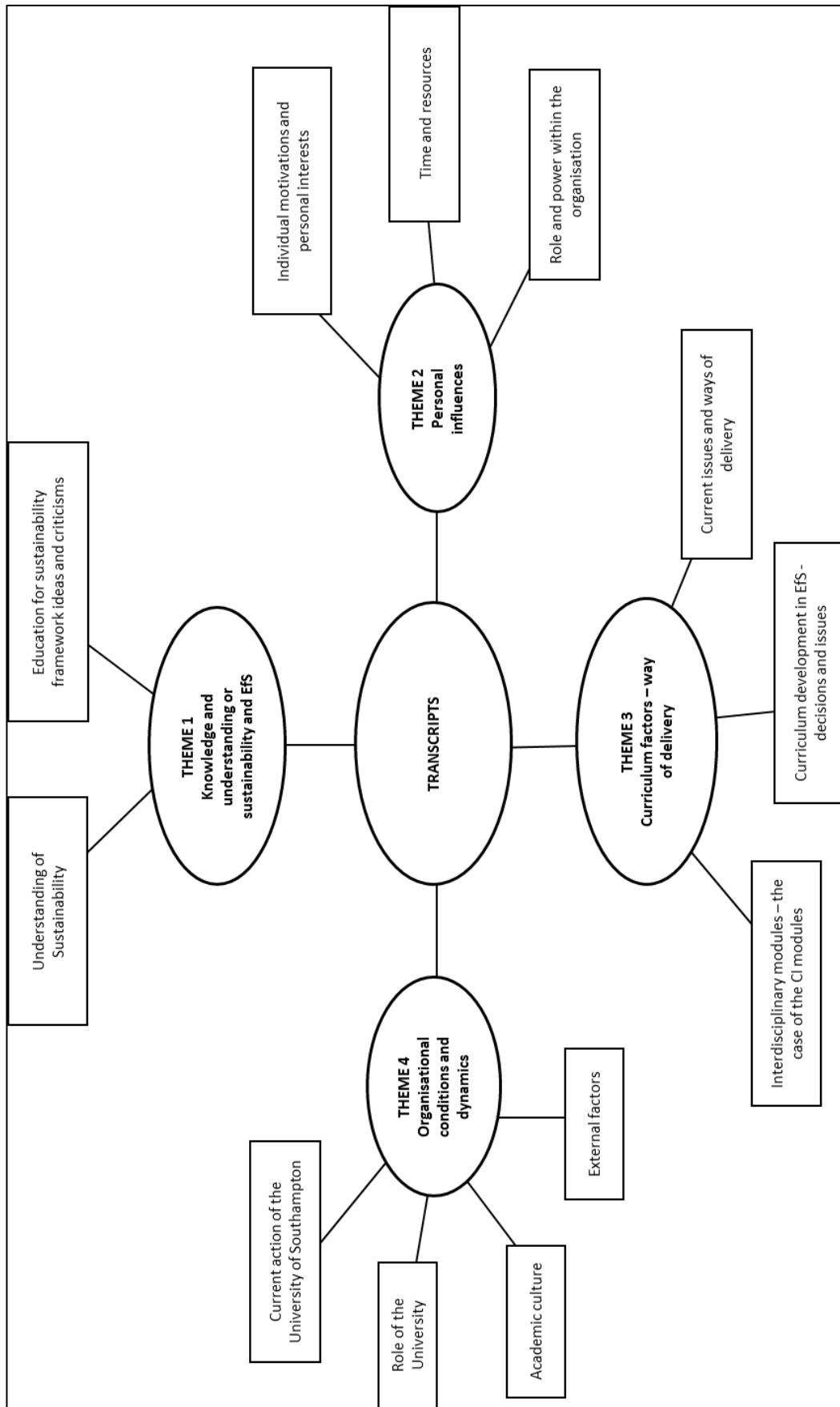


Figure 8.2 Themes and categories identified for Stage II

8.3.1 Knowledge and understanding of sustainability and education for sustainability

The understanding and knowledge of sustainability was one of the main challenges that emerged throughout the research process. Participants acknowledged the holistic nature of sustainability, and the existence of multiple perspectives and focuses of sustainability as challenges to embed EfS within their teaching. As the next interview extract from William shows the challenge was the holistic nature and complexity of the term and the need to have interdisciplinary knowledge from different subjects in order to be able to embed it in teaching.

“The challenge is the holistic nature of it, because it’s in part environment and geography, isn't it? and geology, it’s partly economics, it's part of politics, it's part of the culture, it interacts with so many different areas.. it forces you to go to places you haven't been” (William – Interview 1)

However the different perspectives on sustainability were also seen as a stimulating aspect. So for example Ruth in interview 2 made reference to the summary document I prepared on ALC1 (see Appendix 17) and stressed that *‘I think the interesting thing was when I read back from everybody.. the sheets you sent and it's quite interesting how you can see sustainability from so many different perspectives’* (Ruth - Interview 2). An increasing awareness of sustainability amongst the academic community was acknowledged, however Stage II participants felt that some colleagues did not see the relevance or benefits of it. As Eric stated *‘staff don't see the link and don't think it's relevant to their professional practice’* (Eric – Interview 2). As the next interview excerpt from Joanna demonstrates, professional development and training programmes were necessary to increase academics’ understanding, knowledge and awareness of sustainability.

“Education, we need to know about it.. because to me sustainability originally was all about recycling.. it's about having that definition. If we're not informed how can we inform? If we don't understand or see developments of it.. why would we then?” (Joanna – Interview 3)

Before interview 1 with Stage II participants I sent an email with an *EfS briefing document* (see Appendix 13 and section 7.7.2). This was then discussed with them individually at the beginning of interview 1 (Appendix 14). I envisioned this document as a tool for reflection to help participants think about existing mental models, views and understanding of EfS. ALC1 focussed on discussing the EfS ideas with the group and sharing their initial plans, views and challenges on embedding EfS within their teaching (see section 7.7.2). Participants showed

some resistance as they were unsure about the definition of sustainability, emphasising the need to have a ground definition as a starting point. The challenge of a lack of a clear definition and understanding of sustainability was a recurrent theme that emerged in interview 1, ALC1 and interview 2. This brought me to prepare a second document, *EfS working document* (see Appendix 19), and devote the first part of ALC2 to discussing it (see 7.7.2). In this document I reinforced my definition of sustainability, the rationale of the project, the doctoral research aims, my role in the research process, and my assumptions, key themes, and ways I envisioned embedding sustainability within the university curriculum happening. Participants showed further resistance in relation to EfS not being part of the rational empirical paradigm as it was seen to focus on the emotional and affective domains of learning. A disagreement with the assumption made by EfS between sustainability and the use of student-centred approaches being in line was reported. So for example Eric stressed that:

“I could teach about sustainability using teacher-centred methods, I could be a very student-centred wonderful teacher but be completely unsustainable, I don't understand why you've aligned the two, you've aligned approaches to sustainability with certain sorts of teaching” (Eric - Interview 1)

Another resistance that emerged was related to the moral component of EfS, which was seen to be in direct contradiction with the purposes of HE, such as to foster critical thinkers and independent learners. The EfS framework was seen as not clear enough in terms of its educational purposes, for example if it was value-laden, or about cultivating critical thinkers. It was necessary to search for clarity in these terms. The next quote from Julian exemplifies this resistance:

“I think you've got to be quite explicit if you're trying to create an education which is driving towards a particular vision of a sustainable future, which is X or Y, you've got to be quite clear on what that is and why that's desirable, or if it's more about getting people to think more about these situations and perhaps develop their own awareness of what they think it should be happening socially, environmentally, then that's slightly different” (Julian – ALC2)

The data collected provides evidence on the importance of the conceptualisation and understanding of sustainability and the EfS rationale in order to embed it in the undergraduate curriculum. EfS was generally seen as a semi-philosophical field and the difficulty for academics was to envision the how to turn these ideas into practice. The nature of sustainability, the

existing literature and the lack of evidence on the process and final desired outcomes were seen as challenges to embed it in the curriculum. So for example Julian stressed that:

“I think that’s what I see as being particularly challenging in here, because sustainability as a concept is always very vague, and that’s not problematic if you’re just having a discussion about sustainability but if you’re trying to embed it as a concept then you’ve got to know what you’re trying to sustain.. that's where the literature has struggled for a long time” (Julian – ALC2)

The findings from this research reflect the difficulty academics have in understanding and buying into the holistic nature of the term, and to envisioning sustainability as a learning process rather than a checklist (Tilbury, 2012). This indicates that a previous step for academics is having knowledge and understanding of sustainability and the EfS rationale. These findings reinforce what previous studies have reported (Christie et al., 2013; Cotton et al., 2009) in that academics do not necessarily see the link between sustainability and the use certain type of pedagogies. It is necessary to create strategies and learning processes to challenge existing assumptions and mental models in EfS, and that can generate double-loop learning – transformative learning (Senge, 1990; Sterling, 2004). Providing academics with professional development and training opportunities that can allow gaining new understandings and insights are necessary strategies to inform academics and to embed EfS within the curriculum (Holdsworth et al., 2007).

8.3.2 Personal influences

Personal influences makes reference to the individual motivations and personal interests that participants recognised as to play a key role in their engagement in my research and with embedding EfS within their teaching practice. It also makes reference to other factors that had a direct influence on their individual practice, such as time and resources, and their role and power within the university. Their personal motivation and interest in sustainability was a clear enabler to engage in my research. In the following extract Eric emphasised his and his colleagues’ motivations as the main factor to incorporate sustainability content in the module.

“Most of the motivation was internal, I wanted to include something on sustainability in the course and was determined that we should, and my co-teachers as well were very keen that we should” (Eric -Interview 3)

Participants perceived an increasing interest to learn about sustainability amongst the students, which motivated them to redesign existing teaching to embed EfS. This could provide students with greater opportunities to engage in contemporary issues such as sustainability, which was a topical research area and could provide students with larger employability skills. As Ruth commented:

“It's a really topical area of research so it's good for them to see that this is such a growing area and it should also be quite exciting for them to be investigating something that's so new that it's changing all the time.. that the literature is built in literally day-by-day” (Ruth - Interview 1)

Participants showed commitment to student learning and to the improvement of their teaching practice. Several departments and faculties were going under curriculum reviews during the research development. At the same time, the UK HE sector was seeing several changes such as the change in fees and the internal restructuring of universities. This was seen as a suitable time to engage in a type of research that was looking at the role of HE in society. Participating in this research was seen as an opportunity to allow them the time to reflect on these broader educational issues. As Julian stressed:

“I think it's about as it's always been throughout your project, I think it's quite timely, it's thinking about the processes in terms of what education is for? and what we're hoping people to get out from our degrees?” (Julian - Interview 3)

However a lack of time and a lack of financial resources were stressed as challenges to curriculum development and innovation. The five academic staff members showed an evident personal motivation and interest in sustainability, though current workloads, and having different roles and responsibilities apart from teaching, inhibit the redesign of existing modules. As Joanna stated:

“it's time that's the thing, you know everyone is under pressure - they've got lots of things that they have to achieve and they've got to do, and most of the people have two or three different roles and responsibilities, they're not just here teaching” (Joanna – interview 2)

A perceived lack of teaching resources was another challenge that participants stressed. In interview 1 I asked them about their specific needs in order to embed EfS. Case studies and teaching resources were stressed by the five academic staff members. Therefore having an awareness of existing teaching resources and materials in EfS was an enabler to develop new teaching materials. As Eric commented:

“Some useful case studies would be great.. definitely, because if there were already existing case studies so we didn’t have to make up and would make my life a lot easier, yes” (Eric – Interview 1)

As part of my role as a facilitator, I prepared the document *EfS resources* (see Appendix 16) with information on existing teaching resources with the aim of supporting the redesign of their teaching to incorporate EfS. Divergent views on the usefulness of the materials shared were reported by participants. Some showed concerns about the variety in the quality of existing materials, considering a lack of evidence or examples of how to do it, what worked and the outcomes of the delivery. Others articulated that the teaching resources and information contained in the *EfS resources* was very useful to the redesign of existing teaching. So for example Ruth stressed that these resources supported the redesign of her module:

“I think realising that actually there's a lot of information out there, particularly from the Higher Education Academy, lots of ideas for how to embed things into the curriculum or into lectures, so you're not starting from nothing and that made it seem a lot more achievable.. that there was an idea there that could just be tweaked” (Ruth – Interview 3)

These findings suggest that having an awareness and knowledge of existing teaching resources can increase the personal motivation of academic staff members and can facilitate the redesign of the curriculum towards EfS. They also suggest a lack of staff awareness amongst academics on existing teaching resources and materials in EfS (see section 3.4.4). This mirrors a possible assumption made by academics in terms of a lack of existing resources and a perceived low quality of these.

Participants identified their role, position and power within the organisation as clear enablers to introduce new teaching topics. The fact of being a professor, teaching fellow or module leader provided them with the academic freedom, autonomy and power necessary to introduce sustainability into their teaching. So for example William stressed that *‘I could have done five lectures on it, nobody stopped me, I mean because of the autonomy and the power at university, the power in university in case you're a professor, I do anything I want to do’* (William - Interview 3).

Sustainability being a topical research area, student interests, and their position and role within the university, were enablers to embed EfS within their existing teaching. A lack of time, financial resources and teaching resources were stressed as challenges to engage in EfS. An

awareness and knowledge of existing teaching resources could increase academics' motivation to embed EfS within their teaching practice.

8.3.3 Curriculum factors

Curriculum factors focuses on current ways of delivery and curriculum development issues that participants raised during the discussions. Diversity in the teaching and learning approaches used by participants existed. So for example, Joanna and Eric were very keen and passionate about the use of innovative teaching and learning methods such as student centred approaches, blended learning and experiential learning, while William used standard teaching methods such as lectures and group discussions. Julian's approach was in using different approaches such as fieldwork, computational based approaches, experiential learning and discussions in conjunction with standard teaching methods. This was due to the multidisciplinary nature of his subject area. Joanna was in a vocational subject area; they were therefore already working in collaboration with external bodies and professionals, using lifelong learning, problem-based learning and experiential learning approaches. This illustrates how teaching and learning approaches used by academics are in fact determined by the nature of their subject area.

In reference to the teaching and learning approaches in EfS I shared with them (see Appendix 13), Eric commented that *'you talk about a whole lot of kind of learning stuff that is very closed to my heart.. you know to move from transmissive learning to learning through discovery, teacher centred to learner centred'* (Eric – Interview 1). Eric was an advocate of student-centred approaches and had devoted most of his energies and time at university to persuading staff to use these types of approaches. In contrast, as the next interview extract from William shows, he positioned himself as a positivist and transmissive teacher.

“I mean you obviously believe in like the importance of the affective domain in learning, that's not my kind of history mind.. it's very much that I'm a positivist, there're truths, that the function of learning is to develop people cognitively.. in a sense their emotions will follow their brain, the heart follows the head” (William - Interview 1)

The information gathered indicates that personal values and beliefs on teaching and learning, in conjunction with the nature of their subject area, influenced academics' choice and approach to teaching and learning. Participants were very positive about the teaching and learning methods I suggested in the *EfS Briefing Document* (see Appendix 13). They specially

valued role-plays, group discussions and debates, case studies, critical reading and writing as powerful tools to engage students in learning about sustainability. However a number of challenges were raised in relation to the use of these approaches. A perceived lack of student engagement and interest in student-centred approaches was emphasised in several occasions. Differing expectations in learning between staff and students were reported. Participants agreed on the tendency of students to be assessment focussed, because of the structure of the current curriculum, with clear module descriptors and learning outcomes. For this reason, making sustainability an assessable outcome was seen as a necessary strategy to engage students and staff. Furthermore, the format of lectures with large numbers of students hindered the use of innovative and student-centred teaching and learning methods. Joanna and Julian arose these as challenges in ALC1:

“The challenge I recognise within I think actually is the educational framework and student expectations.. we have modules with clear goals, we have learning outcomes directly matched to assessment and students are given the paperwork to show the link, which is all very good, they understand and they want to do that, and they want to see the A, B, C progression which doesn't promote wider academic learning or understanding the importance of context.. I think we presume that if we don't assess it students don't value it” (Julian – ALC1)

“The challenge is around students' expectations and perceptions versus the curriculum and what we're trying to do to help them with their education and their practice” (Joanna – ALC1)

Scepticism about, and resistance to the suitability of embedding sustainability in every discipline, course or module emerged during the discussions. Perceived differences in subject areas and faculties, and an already crowded curriculum with different competing demands made the idea of embedding EfS across all subject areas difficult to achieve in reality. The CI modules (see section 2.4.2) were seen as an existing curriculum structure of the University that provided students with opportunities to learn contemporary issues. Elective modules were seen as suitable because they created the time and space necessary to discuss the complexity of sustainability and gain the critical thinking skills necessary to deal with sustainability issues. Julian stressed that:

“I think how is embedded and where is embedded is really interesting because in some areas is not going to be an appropriate topic of conversation, is not going to come up in [module] because it doesn't have a direct bearing.. so if you're going to encourage

[students] to think about these issues or involving in their curricula is providing the right mechanism to deliver it.. that's why [curriculum innovation module] because there is a direct focus of what we're doing, and it fits well because the topics and the complexity can be discussed" (Julian - Interview 1)

In reference to embedding sustainability within their teaching modules, participants encountered a number of issues. The way to go about introducing it, i.e. whether to decide on building it as an add-on or to mainstream it throughout the modules was the main decision to be made. The role of course committees and validation processes of a new curriculum and module's syllabus was critical. Hence collaboration and discussion with teaching fellows and at the programme level would increase staff awareness on this matter and facilitate embedding EfS. So for example, Eric's experience exemplifies this issue:

"I had some trouble to get it accepted into the syllabus officially, I kind of put it in, it disappear again at some stage in the checking, I put it back in again and it didn't disappear the second time" (Eric – ALC3)

Deciding on suitable modules in which to embed sustainability, contextualising and finding the relevance to the subject area, and having a specific focus were stressed as opportunities to embed EfS. As the next interview extract shows, Ruth found that having a specific focus to start with increased her pro-activeness.

"It's nice to have something really specific to focus on, because I think if it was something very general I might.. it might slip away and get forgotten about, so for now I'm just going to focus on that.. on the specific things and then see what happens in subsequent years" (Ruth – Interview 2)

Another opportunity identified was the capacity to rethink and redesign existing courses, or the design of new courses and modules. This allowed the time and capacity to think about new teaching developments without representing additional workloads. So Eric stressed that:

"The ability to redesign the syllabus was the enabler, to redesign the course, so that we could think again about how we were teaching it.. people are not going to do much.. unless they are anyway starting again or starting a new course, they're not going to sit there and say 'I've got this course that's been working well for 5 years, I wonder if I could put some [sustainability content] into it now', because they just haven't got time" (Eric - Interview 3)

Different views existed on sustainability teaching and the need to embed it within the curriculum. The EfS teaching and learning approaches were valued by participants, however a number of challenges faced in practice emerged, such as student expectations, assessment-based curriculum and the existence of an already crowded curriculum with different competing demands. The findings of Stage II show that contextualising sustainability according to the subject area and finding a specific focus are opportunities to embed EfS. A suitable place to embed it needs to be found for each subject area (Ryan & Cotton, 2013). The findings from this research show that the use of EfS pedagogy by academics is conditioned by their existing values and beliefs on teaching and learning, and by the nature of their subject area (Cotton et al., 2007).

8.3.4 Organisational conditions and dynamics

Organisational conditions include the factors that participants identified as being intrinsic to the culture, structures and remits of the university. Stage II participants emphasised the relevance of introducing students to sustainability through HE. Raising consciousness, making students aware of sustainability in their subject areas, fostering critical thinkers and independent learners, and helping students to become change agents were seen as key roles of HE. However, as the next extract from ALC2 shows, academics could see the role of HE in contradiction to EfS, as universities were required to advance subject specific knowledge through research and teaching but did not necessarily have the responsibility to teach sustainability to students.

“It’s the nature of education, is that universities we’re not necessarily here to teach in that respect, we’re here to provide ideas” (Julian – ALC2)

Participants made reference to an increased commitment of the university over the last years in terms of the environmental sustainability of the estates and operations. This could potentially increase academic staff awareness and engagement in EfS. However the management of the university, a finance-focussed institution, a lack of change politically and a lack of perceived organisational support in teaching sustainability emerged as barriers to embedding EfS within the curriculum. As Eric stressed:

“Although the university itself has quite positive aspects of sustainability, I don't think the organisational conditions for teaching about it have been at all positive really. I'd say they're slightly negative.. I don't think that's changed much” (Eric – Interview 3)

Different perceptions existed on the commitment of the university in terms of curriculum innovation, which could be due to the different nature and functioning of faculties and subject areas. Participants indicated senior management leadership and support, and participatory processes as opportunities for academic staff engagement in EfS. So for example the next quote from Ruth shows how these factors could have increased her pro-activeness to embed EfS in her teaching.

“I think if there'd been more of a push from the university to say 'right this is what you need to do' and not in a really dictatorial way but in a very dynamic.. this is exciting new stuff, you need to get this out, you need to change the next generation” (Ruth – Interview 3)

Participants considered that the university had to provide staff with support and guidance in order to embed sustainability within their teaching practices, creating the space and structures that could allow it to happen. However, as the next interview extract from Julian demonstrates, while the university role was to provide support to staff, academic freedom to teach and research needed to be respected.

“Not every member of staff is going to see this as a positive idea, or are going to agree with the ethical standpoint onto or are going to want to integrate it, and it's important we preserve that because that's what academia is about” (Julian - Interview 3)

Participants made reference to the current change landscape of HE in the UK and recent changes at the University as providing a number of opportunities. While workloads and academic pressures were increased, student expectations were acquiring a more central role. This could provide opportunities to enable students to take ownership of the organisation and participate more proactively in the decision-making processes and the sustainability actions of the University. This was an opportunity as it could help attract students and provide uniqueness to the University of Southampton. Ruth stressed that:

“That's how we're going to attract students in the future I think, if they feel like they have some ownership and the university is taking it rather than just turning up for a few lectures.. to actually get the most out of it, completely engaged with everything,.. that's what sells Southampton as well.. we need to sell Southampton as a location and as an institution and things like letting students have a say over things” (Ruth - Interview 3)

The involvement of the University of Southampton in delivering Massive Open Online Courses (MOOCs) created new opportunities for curriculum delivery.

A lack of internal communication on current sustainability initiatives of the university emerged as an organisational challenge. For example Ruth made reference to the Sustainability Programme work as an opportunity for curriculum development in EfS. However she did not receive or notice any information about it through formal university communication channels. Ruth emphasised that:

“I get email updates from [HEA], and it was just one of the things in it -the call was open-, and I thought ‘what's that?’ and then I clicked on through, and found that we're.. that this university's done an evaluation report.. hahaha.. and I thought ‘why I didn't already know about that?’” (Ruth – Interview 2)

The Sustainability Programme appeared in some communication channels, however its communication to the wider university community was limited (see section 8.4.6). This mirrors the importance of providing clear communication channels and strategies that can enable collaboration and linkages between different groupings and individuals interested in EfS.

Academic pressures such as Research Excellence Framework (REF), publishing and gaining research grants blocked academics' engagement in EfS. Thus curriculum tended to become the bottom priority for academics. Teaching and research pressures differed according to whether an individual held a research or a teaching position. Academics holding teaching fellow positions had fewer research pressures, which translated into more time available to devote to curriculum development. As the next extract from ALC2 shows concerns with sustainability as a field not fitting with existing academic silos and structures were reported.

“It doesn't fit into the kind of silos that we have our lives in, and so it's really difficult as a field for it to rule in higher education” (William – ALC2)

The fact that the University is part of the Russell Group, with a strong research focus, conditioned the aforementioned. However this was also seen as an existing organisational enabler, as the existing research expertise could be used to engage students in sustainability. The role of external bodies and policy-making processes in leading the sustainability agenda in HE were stressed as conditions to embed EfS. Making sustainability a requirement by official bodies, and it being a part of the quality assurance processes, were both seen as necessary strategies to embed EfS within the curriculum. As Eric stressed:

“my model is about the quality assurance processes, using the quality assurance processes to ensure that there is a requirement that you do this and that people will go about having a look at it” (Eric - Interview 3)

Benchmarking and quality assurance processes were seen as critical to embed EfS within the curriculum. Communication, organisational support and senior management leadership were stressed as opportunities to academics' engagement in EfS. The changing landscape of HE offered academics the opportunity to create new ways of delivery. Academic culture and research pressures were stressed as challenges to embed EfS.

8.3.5 Outcomes of the research process and evidence for organisational learning towards sustainability

In this section I outline the main outcomes of delivery achieved during the research process by Stage II participants, and the evidence for organisational learning towards sustainability. Due to word limitations a full exploration and analysis of the individual factors and outcomes of delivery for the five academics is reported in Appendix 31.

Some tangible outcomes of the delivery of sustainability teaching were achieved through the research. Eric acknowledged that being part of the research encouraged him to introduce sustainability more officially in the syllabus. Eric and his colleagues chose to introduce sustainability as a topic due to the different requirements and competing demands. In a new redesigned module two activities related to sustainability were introduced, write a technical report and do a presentation. As Eric explained in ALC3:

“the course now has a number of places where the students are actually studying some aspects of sustainability.. so we gave them a choice of six report titles, they had to choose one of them, and four of them were related to sustainability.. and similarly when it came to doing presentations.. I think there were maybe two out of the twelve topics”
(Eric – ALC3)

I could not collect clear evidence on the impact that the research had in Eric's making these choices of delivery, as he was planning to do this regardless of his involvement in the research. However he recognised that the project had reinforced his initial ideas. Eric considered that:

“your project has been interesting but we would have done this.. this was going to happen and to some extent it was already happening, so maybe what the project did was make us reinforce it, put more of it in” (Eric – ALC3)

William planned to put in sustainability as one of the case studies to work on with the students, allocating a lecture and associated seminar to it. However he got ill the weekend

before and had to cancel his teaching. At the moment of finishing the research he was planning to teach it in the following academic year 2013/2014.

The idea of doing a pre- and post- test with the students emerged in ALC1 (see Appendix 17). Ruth liked this idea and decided to take it forward, which led to the design and distribution of a sustainability questionnaire amongst students (see Appendix 21). As a facilitator I assisted her with my feedback and insights in developing, distributing and analysing the questionnaire. Ruth used the questionnaire results to inform the redesign of an existing lecture in sustainability related topics. The questionnaire findings strengthened her motivation and facilitated the introduction of sustainability into her teaching. Ruth emphasised that:

“One of the challenges was thinking about how to introduce something new and exactly how to do it and thinking about what would be introduced so as you know Gisela and I developed this questionnaire together to find out what the students already know, and got some quite interesting results from it and I was actually able to show the students some of those results as a follow-up, so what I decided to do is a follow-up lecture based on the questionnaire and then we re-surveyed them” (Ruth – ALC3)

The new lecture included aspects such as: sharing the questionnaire findings with students; discussion on the definition of sustainability; links to university, local, national and global data and current action in sustainability; everyday life sustainability practices; innovative practices on sustainability subject related elements; and peer-discussion on the sustainability of a cup of tea. The questionnaire was distributed amongst the students at the end of this lecture in order to collect evidence on its impact on students’ learning.

Julian was already teaching sustainability related topics. For Julian, the project contributed to reflection on curriculum content and delivery from the perspective of EfS, having an impact on his ideas about the delivery of EfS. Julian acknowledged that he moved from a more descriptive and analytic approach to a more pro-active approach to teaching sustainability. As Julian commented:

“Convey the what and the why, and considering what's included and what's not included did change because of thinking about this concept of education for sustainability.. I put slightly a different purpose on it, from one from describing and reporting and analysing, to one which has gone much more pro-active agenda about it really.. it’s good to think about it and good to push” (Julian - Interview 3)

Joanna decided to focus on a set of sessions with students that she named ‘research-in-practice’. These sessions contributed to students gaining research skills, linking it to the every-

day practice of practitioners. These sessions corresponded to three sessions for first years that focussed on reading and criticising research papers useful to student practice. For second year students she designed three day-sessions looking at qualitative, quantitative and mix-method research that would help students with their final dissertations. As Joanna explained:

“For the new curriculum was research in practice days and journal clubs, for the first and second years, so that they could have the skills that would help them to continue and be sustainable in their roles” (Joanna – ALC3)

If we look at the main phases of a typical action research cycle: plan, act–implement, observe, and reflect–evaluate (McNiff & Whitehead, 2002; Stringer, 2007)(see Chapter 6), differences amongst participants can be identified. In Figure 8.3, I summarised the main outcomes of delivery for the five academics. William planned a case-study week on sustainability however he did not deliver it. Eric, Joanna and Ruth acted and implemented some new teaching in sustainability, introducing sustainability as a topic in specific lectures and activities. Eric and Ruth had added some questions into the assessment, however it was not really part of the formal assessment. I could not collect evidence to evaluate whether they arrived to the reflection-evaluation phase because in ALC3 they had just delivered these and no time could be devoted to reflect on or evaluate their interventions. Ruth did the post-test but this was not analysed at the time of finishing the data collection. For this reason I have placed them in between the act-implement and observe phases. I have placed Julian in the reflect-evaluate phase because he was already embedding EfS within his teaching and the research contributed to his reflection and to acquiring a more pro-active approach to sustainability through EfS.

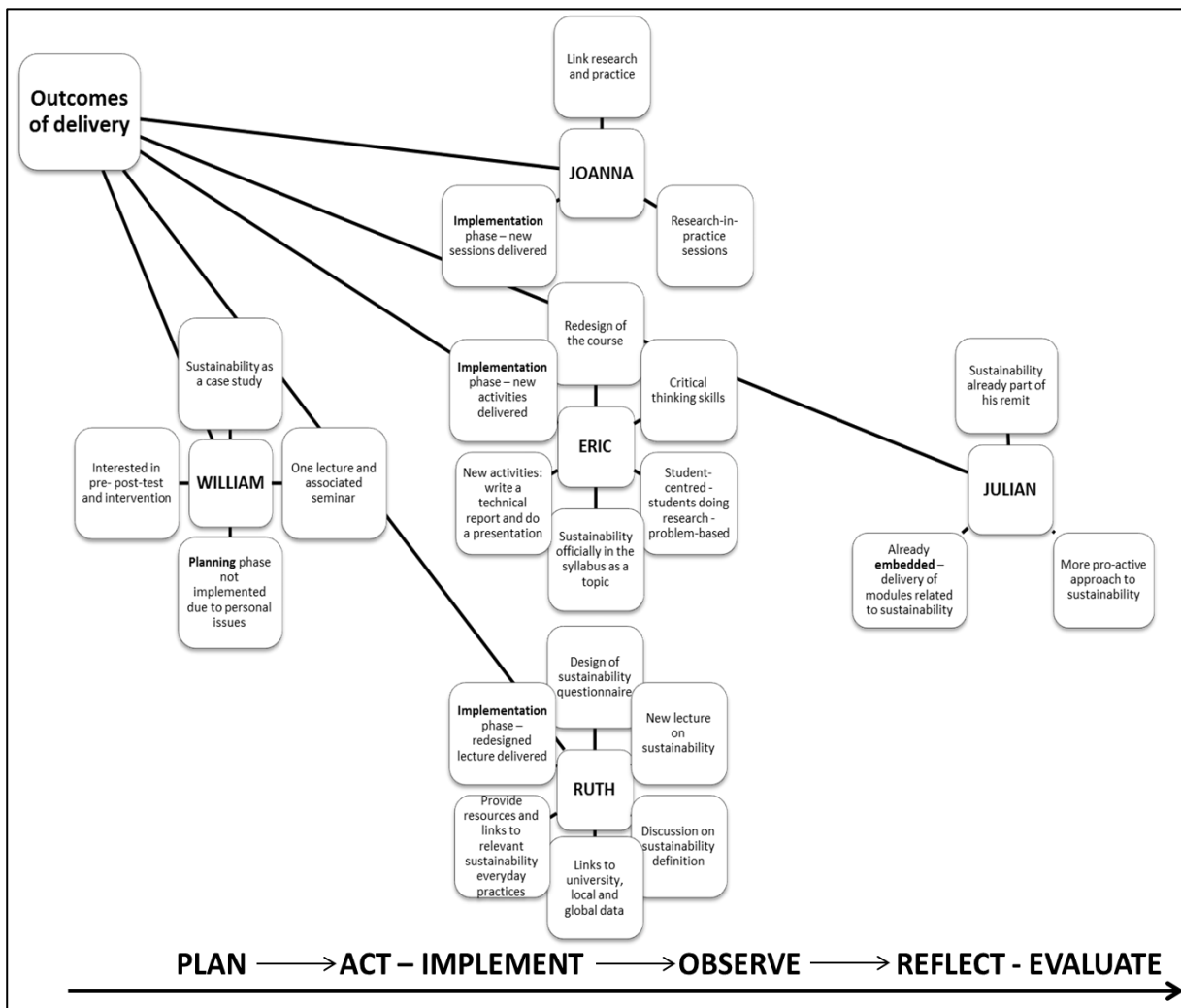


Figure 8.3 Summary of the outcomes of delivery for Stage II participants

As I outlined in Chapter 1, one of my research aims was to generate personal, professional and organisational learning towards sustainability. In the last interview with Stage II participants (see Appendix 14) I asked them to complete a graph, placing themselves before and after the research in terms of their motivation to embed EfS within their teaching and the organisational conditions being supportive (see Figure 8.4).

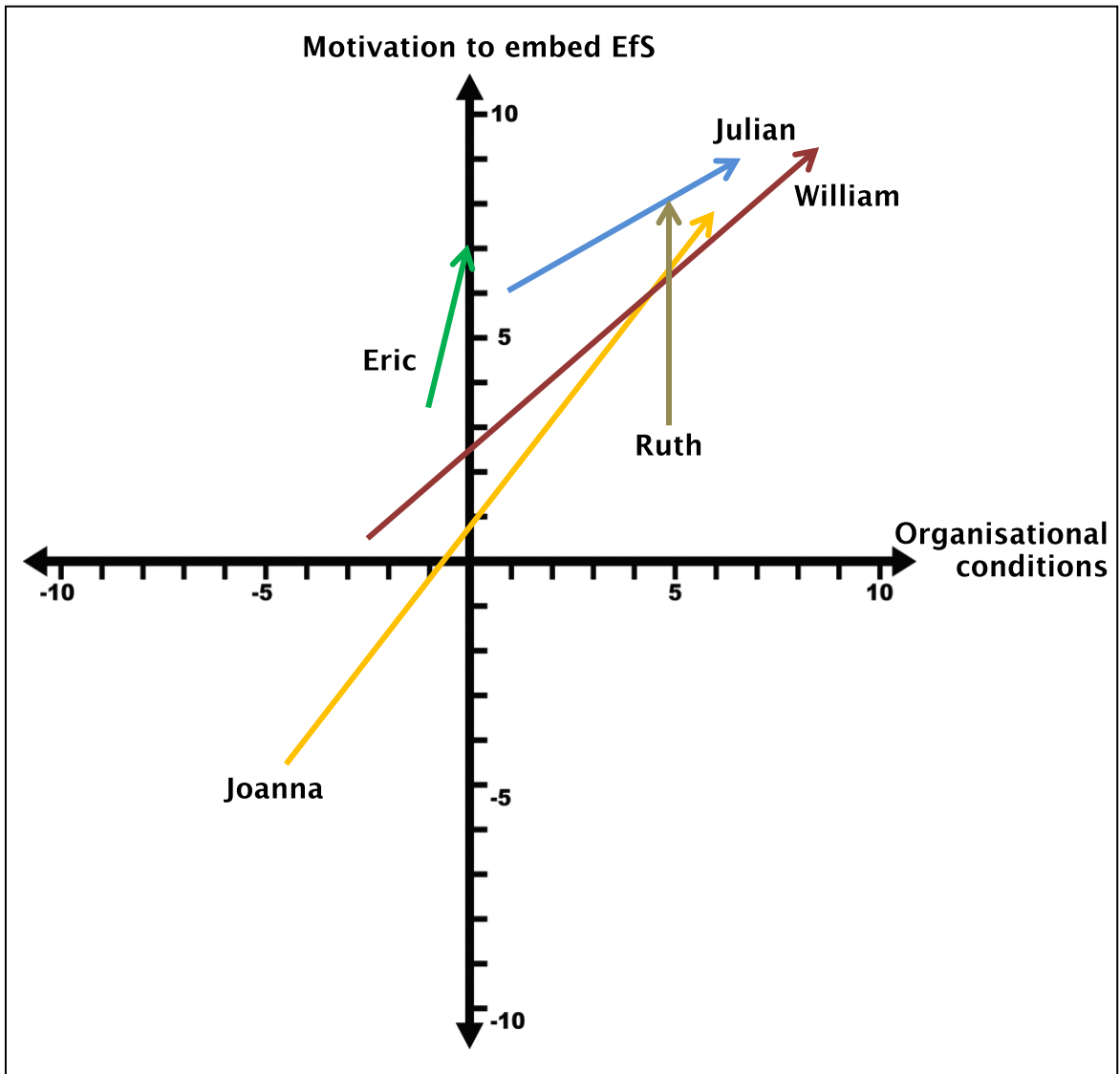


Figure 8.4 Motivation to embed EfS and organisational conditions

As the graph shows all Stage II participants considered that their motivation to embed EfS had increased as a result of the project. Participants stated several reasons such as the individual interactions with me, with the readings and materials sent, and with the group discussions. These provided opportunities to discuss sustainability with academics from other faculties. Ruth stressed that:

“Having the group discussions, and these meetings with you and the extra-reading you sent me, and when we actually got a questionnaire written I think then my motivation greatly increased” (Ruth - Interview 3)

Participants stressed that the research process contributed to generating new understandings of sustainability because of the group support and my facilitator role, which in turn increased their motivation and pro-activeness. As Joanna emphasised:

“The thing that's made me more pro-active is having an understanding because I didn't.. if I think back to when we started I didn't really, I don't think I've ever heard of sustainability or not taking any notice of it, or not thought it was appropriate to me, so the pro-activeness was really the self-learning with your support and the group support” (Joanna - Interview 3)

The group sessions and the documents shared facilitated learning and acquiring new perspectives on sustainability, therefore contributing to challenge and reframe their previous understandings and views on EfS and generating organisational learning towards sustainability (see Chapter 4). An increased awareness of sustainability being related to politics and broader societal issues was emphasised by participants. As Eric commented:

“My interactions with you have taught me to think of sustainability as a bigger issue than just green [subject area] if you like.. there's a much bigger issue underlying this and there's a lot more politics, there's a lot more political view of what's going on here than I was necessarily thinking of in just my green [subject area] view of the world” (Eric - Interview 2)

This shows that the research enabled the creation of a collaborative, supportive and reflective space that has enabled the creation of communicative action (Kemmis & McTaggart, 2005) and has challenged existing mental models on sustainability (Senge, 1990). The next quote from Ruth emphasises how the action learning group sessions have enhanced reflection and encouraged planning and action.

“Personally I find the reflection normally really difficult because it's not what you're told to do as a scientist, but I think having the reflection in this group discussions setting makes it.. it's quite easy, it's very supportive and I'm not constantly thinking ‘oh am I actually reflecting?’ I think it's been a really good way for making sure that you get that reflection and then it encourages us to plan and act” (Ruth - ALC3)

Participants also stressed an increased awareness of organisational conditions, however as the graph shows (see Figure 8.4) different perceptions existed of the organisational conditions being supportive. This was influenced by differences in participants' subject areas and faculties, as well as their roles and responsibilities within the organisation. The research increased their awareness of the organisational conditions and support. Joanna commented that:

“I don't think the organisational conditions have changed, the reason I've put it down here is because I didn't know about it.. I didn't know what I didn't know” (Joanna – Interview 3)

Taking part in the group sessions and discussing the different existing definitions and ways of understanding sustainability was seen as a positive element. This generated interdisciplinary learning and a shared vision amongst participants. My role as facilitator, the documents shared, and the individual and group interactions increased their personal mastery (Senge, 1990), due to the deeper understanding of sustainability and EfS they fostered. The findings of this research therefore indicate that the method used has enhanced personal mastery and challenged previous mental models on sustainability through team learning, therefore creating organisational learning towards sustainability (Argyris & Schön, 1978; Senge, 1990). Although they acquired a new understanding of sustainability, where previous worldviews and mental models in EfS were challenged, this did not necessarily translate into their teaching practice. Their motivation to embed EfS and their awareness of the organisational conditions increased because of their participation in the project. However the research has evidenced that change in current ways of delivery to embed EfS according to these new insights and understanding depends on other factors, such as curriculum factors and organisational conditions (see sections 8.3.3 and 8.3.4). A challenge resides in bridging the gap between EfS theory and pedagogy, and the teaching practice, and therefore a disjunction between participants' espoused theories and theories-in-use (Argyris, 2006; Argyris & Schön, 1978).

8.4 Stage III findings

This section outlines the findings from Stage III of my research. As I indicated in Chapter 7 section 7.7.3, this research stage was concerned with exploring the change process and the factors influencing the Sustainability Programme's progress, such as the achievements, vision of the programme, challenges and difficulties, opportunities, disappointments, and organisational conditions and dynamics. Engaging with the Sustainability Programme was an opportunity to conduct research on a real change programme and to contribute to the existing gap I identified in the literature, in terms of studying the change process of sustainability initiatives (Ryan, 2011; Velazquez et al., 2005). This section summarises the findings from the twenty individual interviews and two RSs I conducted with them (see section 7.7.3). At the end of this section I introduce the main outcomes of the research process, making reference to evidence for organisational learning towards sustainability. I identified eight themes as

8.4.1. Long-term place of the initiative within the organisation and strategic thinking and planning

This theme makes reference to the vision evolution of the group, its long-term place within the organisation, and aspects related to strategic thinking and planning that emerged during the discussions. The group had a clear shared vision and overarching goal, which corresponded to what they characterised as the CORE model - embedding sustainability within the curriculum, operations, research and experience of the university. As the next interview extract shows the Sustainability Programme's members saw linking these areas and reinforcing existing work across the university as one of their main roles.

“We’ve got a huge amount of work going on, I just think we need to just put it together, which is what the [Sustainability Programme] has always been about, is always been about putting everything together. It’s not about reinventing the wheel at all” (Bob – Interview 1)

The background of the members (see section 7.7.3), the fact that some of them were already working together in sustainability initiatives at the university, and their participation in the HEA Green Academy programme meant that the group had a very clear shared vision. This was one of the main strengths of the group. However this vision was not shared by the organisation, and finding its place within the organisation was a clear challenge of the programme. The flexibility, resilience and responsiveness of the programme to readapt to external changes, such as in policy and practice of the organisation, were key capabilities in order to move forward. As Andrew stressed:

“As a result of all the changes and movements within the university on related issues, the role of the [Sustainability Programme] is as it should be fairly flexible to take advantage of implementing the overall aims of the [Sustainability Programme] within the university” (Andrew – Interview 1)

Internal changes in the university, such as in the university politics and the emergence of other sustainability groupings altered the group's journey (see section 8.4.4) to finally focus their action in curriculum and experience of the CORE model. Lucy commented that:

“In all of our discussions recently about where the work of [Sustainability Programme] fits within the university it kind of always comes back to education and experience, that the kind of operations side is kind of covered by Richard and the Estates and Facilities, and from research, there are research groups like sustainability science, who are kind of taking the lead of that” (Lucy – Interview 2)

The focus and priority was established through a process of identifying gaps within the current organisational practice, strengths of the group and the uniqueness of the University of Southampton across the EfS sector, in terms of leading action in partnership between staff and students (see section 2.4.2). This provides evidence of the importance of identifying the expertise, strengths to find focus, and the contribution that the group could make to the organisation. However an on-going challenge was the long-term place of the programme and how to measure success. Jack emphasised that:

“But you know where are we going? where do we want to be? and sometimes.. I've never been entirely sure, even though I enjoy the process.. I think it's just sort of focusing on mission, where do we want to go? what do we want to achieve? what are our indications of success?” (Jack – Interview 3)

The group initially produced an action plan with broad actions to achieve in the short, mid and long-term. To establish an action priority list that could guide the programme more was one of my insights as critical friend (see Appendix 29 and 30). In RS2 members agreed on the need to develop a more transparent and reporting action plan. One of the outcomes of RS2 was to establish an action plan for each of the goals contained in the initial action plan. Lucy suggested that:

“Establishing an action plan for each of those goals because they're quite broad and when I write comments against them is very big and very general” (Lucy – RS2)

I considered it critical to put in place monitoring, benchmarking and assessment tools for the programme, as no formal monitoring system or assessment tools existed. I therefore provided the group with a list of existing tools in RS2 (see Appendix 30). Participants stressed the importance of monitoring, however concerns emerged around the difficulty to assess or monitor certain actions such as engagement and behavioural change. Richard stressed that:

“How do you assess the engagement that's taking place? how we're going to measure any impact [engagement with faculties] has? that goes back to the benchmarking.. we need to have some space to be able to have the thinking through” (Richard - RS1)

The group had a shared vision, which was one of their main strengths, however finding its place within the organisation was one of their main challenges. Flexibility and identifying the strengths and the potential contribution that the group could make in the organisation were critical. Having a clear action plan and monitoring and benchmarking systems were necessary to the Sustainability Programme's progress and development. Over the research process the

group found a clearer place within the organisation and moved to a consolidation and recognition stage.

8.4.2 Identity and branding

One of the key themes influencing progress was the identity and branding of the programme. The group was initially branded as the Green Academy, however this was circumstantial and the group agreed on the need to rebrand the programme, coming up with a name that had more entity and was unique to Southampton. Clear identity and branding were critical to build a profile and recognition of the initiative across the University. In RS1 the name-change emerged as the main priority of the group. In January 2013 the group organised an away-day; this was one of the outcomes of RS1. The away-day was mainly devoted to discuss the name-change and identity, and a new name for the programme was agreed upon. As the next interview indicates, this new name had a low acceptance and engagement by the sustainability champion and the communication champion of the organisation. Rich commented that:

“When we went and talk to people after the workshop in January, and we started talking about the name, the response was.. nobody said 'oh that's fantastic', you know everybody just said 'oh that's not going to work' pretty much, right from [sustainability champion] at the top” (Richard – Interview 3)

It took a lot of time and effort to agree on a new name, and the fact of not having an identity and branding stopped the group in terms of communication, dissemination and engagement with the wider university community. The next interview extract from Mary shows how it hindered student and staff engagement.

“Such a key barrier is the branding.. it's stopping me from doing some stuff.. so it must be a hinder into other things.. also because we can't start promoting ourselves” (Mary - Interview 3)

As the next quote illustrates this also stopped the programme assistant engaging with academics and hindered the visibility of the programme. Most of the staff and students at the university were unaware of the aims and activities of the programme.

“I think that's just delayed a lot of the stuff, so we hoped to be a bit further than we are, the fact that engaging with the faculty of social and human sciences has been delayed by a few months, so I think that's been a bit of a struggle really” (Lucy – Interview 3)

The sustainability champion came up with a new name for the group ‘Sustainability Programme’, which meant greater support and recognition, and seemed to fit better with the purposes of programme. As the next quote demonstrates the new name fitted with existing university groupings and structures such as the Environmental and Sustainability Advisory Group or the Sustainability Science research group. This enabled the creation of a more unified and coherent message within the university.

“Allows us to reflect where we would sit in relation to other groups like Sustainability Science research group, and the Environment and Sustainability Advisory Group, so it's the fact that we couldn't really lose the word sustainability, otherwise we'd slept off that planes of speak” (Lucy – Interview 3)

The name-change had a number of ramifications that the group had to take into account. The need to find a graphical representation, and to change the name in existing communication materials and in the Environment and Sustainability Strategy were critical to avoid confusing the university members (see section 8.4.6).

Identity and branding stopped the group in terms of engagement with staff and students, publicity and communication of the initiative, which therefore meant it was a rather invisible group to most of the university community. One of the main achievements of the group was a new identity and brand in line with the current sustainability strategy and structure of the university. This would increase the recognition of the programme, and enhance their collaboration and engagement with the wider university community and other sustainability groupings. Identity and branding was important to achieve coordination and a shared unified coherent organisational vision and approach.

8.4.3. Engagement, establishing linkages and collaboration

Engagement, and the establishment of linkages and collaboration, was one of the major goals of the programme. The creation of the group through their participation in the HEA Green Academy programme was seen as an early-win in terms of establishing linkages and collaboration as it connected people from different groupings across the university (see section 7.7.3). So Jack stressed that:

“We've met, you know I met Bob.. some people may not see that as a particular achievement, just demonstrates how things go on at different sides of the university,

people can be working in quite similar things and yet.. just never meet” (Jack – Interview 1)

The presence of a cross-sector group facilitated the consolidation of several activities in partnership with the students, some of them already going on, such as Waste Wars (Halls Waste Audits), and some of them developed on the basis of the programme, such as Blackout or the Clothes swap (see section 2.4.2). These were one of the main achievements of programme. As Bob commented:

“Blackout I would see it as being one of our biggest achievements so far, and it's been a good example of how you can add student engagement to linking operations and research outputs, I think that's been a great example, and the publicity that we've got from that it's been priceless really” (Bob – Interview 2)

Events such as Blackout were key in terms of awareness-building across the University, of developing student and staff engagement, of publicity, of linking informal learning to campus management, and of building on the idea of the University as a living laboratory (McMillin & Dyball, 2009; Shriberg & Harris, 2012) (see section 3.4.3). The group, jointly with the University of Southampton Students' Union (SUSU) applied and was successful in gaining the Student Green Funds, which is aimed at developing Business Environment and Ethics Students (BEES) (see section 2.4.2). BEES funding implied the creation of a sabbatical post for sustainability and provided funding for a programme assistant post. As Richard commented this funding opportunity brought potential for engagement and cultural change amongst students that could therefore impact on the university culture.

“Yeah there's new funding potentially to help fund a sabbatical post and hopefully Lucy's post, and Blackout going UK wide, I mean the real opportunities there, if we can mind that way.. if we can get the money to support the sabbatical post and everything else then I think it will really open up the student engagement side of things” (Richard – Interview 3)

The initial aims of the group were staff and student engagement in sustainability. Staff engagement was mainly in curriculum development terms (see section 8.4.7). Increased student engagement was one of the main achievements of the group, while staff engagement was seen as more difficult. This was because of the engagement of two student representatives in the group who were committed to leading action with students. The Sustainability Programme had a student intern over summer 2012, who was then the student

representative in the group the following academic year. As Mary stressed this enabled her to plan student engagement:

“I think for me the period over the summer when I was working for [Sustainability Programme] was more about researching and getting information from other areas to find out what I could do.. now that I’m back in university and working with the Environment and Ethics committee is when things can actually be implemented and things can actually change” (Mary – Interview 2)

The main outcomes achieved through the student intern in 2012 were the development of a sustainability strategy for SUSU, along with awareness-building activities such as workshops with students and sabbatical officers at SUSU.

Few opportunities for staff engagement in activities, specific actions, or projects led by the group existed. I provided feedback to the group in RS2 in terms of a sense of protectiveness of the programme, making staff or student involvement difficult (see Appendix 30). A contradiction existed between the aim of enhancing EfS processes such as collaboration and participation across the organisation, and having control, leadership and ownership of the EfS agenda at the University. As Bob commented:

“We’re not trying to [be protective] but we’re kind of are by accident.. I think we’re more open with students than with staff, I think we engage more with students than with staff.. because I am a control freak.. I like to know that everything is having an appropriate level of quality and I like to just keep on checking on that.. perhaps I’m just worried a bit too much with the empowering element, I like the idea of empowering the students, I’m not so comfortable with empowering all the staff groups without us being involved” (Bob – RS2)

Progress on the engagement side was hindered by the fact that there was no clear mandate, and by identity and branding issues and university structures and politics (see sections 8.4.1, 8.4.2 and 8.4.4). A number of events that increased student awareness were organised on the student engagement side. Individual students’ involvement within the group played a key facilitating role in this respect. Recent funding obtained to conduct BEES had the potential to increase the profile of the group in terms of the partnership approach, bolstered the impact in the wider local community and lead to cultural change within SUSU that could then generate organisational change.

8.4.4. University structures and politics

This theme makes reference to the existing university structures and politics that influenced the programme's progress and implementation. In this sense one of the early wins of the group was the inclusion of the programme as one of the five strands of the Environment and Sustainability strategy²⁶ of the university (see section 2.4.2), because it meant higher-level support. However, as the next interview quote indicates, members were unsure of the real engagement of the senior managers.

“First we've got to get the political leadership and I'm not entirely certain we've got it.. I'm not quite sure that the deans really understood what we're talking about” (Richard - Interview 3)

A clear challenge to the group was the lack of a coherent university strategy for embedding sustainability in the organisation, including curriculum. As Bob commented sustainability needed to be built into the teaching and learning strategy and the university strategy:

“Sustainability needs to be within university strategy, and we've got the strategy of 2010 to 2015 and sustainability isn't in that strategy.. it needs to be in the highest level documents, it needs to be in the learning and teaching strategy” (Bob – Interview 1)

The Environment and Sustainability Advisory Group was established in 2011 and was led by a faculty dean, the sustainability champion of the University. This group was responsible for supervising progress on the strategy and for providing advice to the senior management team. An increased commitment of the university in terms of environmental sustainability was evident. Several factors such as financial savings, students' recruitment, international reputation, and a more attractive place were identified as reasons for an increased university commitment. Senior management support and leadership was seen as an opportunity, however, as the next interview extract indicates, the challenge was to turn this commitment on paper into real sustainability practice. Avoiding green-washing events by the university was seen as critical.

“We've got the senior champion and it's in the strategy and it's going through University Executive Group, so we'll have all the sign-ups, it's now turning that into reality, because you can have it in pieces of paper but that's only partly very clearly.. it's only a very small part of the story” (Richard – Interview 1)

²⁶ For more information on the Environment and Sustainability Strategy, please visit: http://www.southampton.ac.uk/susdev/documents/environment_sustainability_strategy_feb2012.pdf

In this sense SUSU was developing a Sustainability Strategy, which was seen as a potential catalyst for cultural change across the organisation and to impact on all the areas of the university activity such as curriculum and student experience, research, and estates and operations. Martin commented that:

“We’re building a sustainability strategy for the student union, so we're trying to make the.. change the culture in the Student Union to think more under sustainability terms.. and that can start impacting on other areas such as the curriculum.. also on the research to make sure that the university is trying to go down these sort of like sustainability groups.. and then also the operations if students want to have more green, more environmentally friendly campus, a more equitable campus” (Martin – Interview 2)

The group faced a number of challenges to do with politics, representation higher up, and organisation and delivery of sustainability across the university. The support and commitment of senior managers was critical to the group progress and to embed sustainability. The Pro Vice-Chancellor for Education who was initially supportive of the programme left to another organisation, therefore they needed to gain support from the new Pro-Vice Chancellor in order to engage with staff in curriculum development for sustainability (see section 8.4.7). The Sustainability Champion was a dean of faculty and was critical in the process; however having the Vice-Chancellor’s and Pro-Vice Chancellor’s support was critical as they were the main forces driving cultural change at the University. As Bob stressed:

“I think if we get a higher level of buy-in from [Vice-Chancellor], he says ‘he's committed to it’.. I think if we can get more visibility to shift from [Vice-Chancellor] and [Sustainability Champion].. that will be good, because [Sustainability Champion] does a brilliant job in keeping this going but she's got just Dean of the Faculty.. she's going to be resisted by someone in another faculty, because she's a dean from a different faculty” (Bob – Interview 2)

The university’s role was seen as to provide recognition and reward academics for getting involved in sustainability. There was a sense that the university, because of being a research-led institution part of the Russell Group, was more interested in the research side than in the educational side. As the next interview extract from Jack indicates, if sustainability were an organisational priority, it would need to be reinforced through rewarding systems for academics.

“I think we've got a very low view of teaching in this university, and it's getting lower and you know you hope that maybe a change at the top will actually help in this way..

it's partly about rewarding.. it's rewarding good teaching, rewarding innovative.. taking academic development seriously because at the moment it's just all over the place” (Jack – Interview 2)

To create sustainability positions, such as a sustainability manager or director, a cross-faculty role or champion, and to add sustainability as part of the job descriptions and in the promotion criteria were seen as necessary strategies to embed sustainability within the current university structure. Bob commented that:

“Sustainability in the structures, sustainability in the promotion criteria, sustainability positions in faculties, sustainability in job descriptions, that’s the biggest challenge one.. that's how we have significant change towards sustainability in the university.. I think that the benefit really of trying to make sure that we've got opportunities for people to get recognition in the university, for getting involved in sustainability is the only way you're really going to change that culture” (Bob – Interview 2)

The new faculty structure of the university (see section 2.4.1), the different ways of operating, and the independence of faculties across the university were seen as challenges to work in a transdisciplinary way and to embed sustainability. An interesting comparison was made by one of the student representatives, about the university being as complex and diverse as London city, with many different structures, stakeholders, sub-cultures and pressure points making a big challenge embedding EfS and achieving successful organisational change.

“It's like London as a city, it's so diverse.. it's the fact that there's just so many different cultures, different types of people, different systems in place, in the structures, different governance systems” (Martin – Interview 3)

Current university structures, politics and bureaucracy hindered embedding sustainability within the university. Increased senior management commitment on environmental sustainability was evident, however no clear organisational strategy and action existed in curricular terms. Issues to do with funding, representation and the organisation of the university, leadership and senior manager’s engagement were critical to the group’s development and to engagement of the wider university community. Embedding sustainability in the university structure through creating sustainability positions, rewards and adding sustainability as part of the promotion criteria were seen as necessary strategies to embed EfS and to transform the university culture towards sustainability.

8.4.5. Group dynamics – teamwork

This theme makes reference to the group dynamics and teamwork of the group. The creation of the group in itself was an early-win (see section 8.4.3). Each member had a different role within the group, and provided different expertise, knowledge and links with university stakeholder groups (see section 7.7.3). The Sustainability Programme was successful in gaining funding from the University to create a post and appoint a programme assistant. As the next interview quote shows, all the members agreed on the fact that increased group capacity was gained by having a full-time person working on it.

“We've got some money now and a post created and supported, and we've got a person in that post to drive the programme because clearly we didn't have the resource, we had got a lot of good will from the team that was set up, we've got interest from various areas of the university but we had anybody to actually go and do the work” (Richard – Interview 1)

Members had passion and interest but their individual workloads translated into limited time and resources as a group and individually to devote to the programme. The leader was the main driving force of the initiative; therefore the team was dependent on his time and capacity. Bob was working half time at the university, and this emerged as a clear constraint as it had direct repercussions in terms of the programme's development. Bob emphasised this as one of the main barriers for the development of the programme:

“This is one of the biggest barriers of the [Sustainability Programme] is the lack of resources and the lack of time, I haven't got the time that Lucy needs for me and her to push this” (Bob – Interview 2)

The different engagement of the members was seen as constricting the group's capacity. Bob, Lucy, Richard and the student representatives tended to meet outside the group. For Lucy and Richard the programme was part of their daily job, while other members were not actively involved in any of the actions. Therefore it was seen as necessary to actively engage all the members in promoting and leading specific actions of the programme to have more capacity. As Richard commented:

“If we're going to get the best out of the group then all the members have to contribute, has to be something for them tangible to get on and do.. so that people could go away and your action is to do this and you report back at the next meeting into how you're getting on” (Richard - Interview 3)

This brought me to suggest the idea of having a more distributed and shared leadership amongst the programme in RS2 (see Appendix 30) that could lead to an increased capacity of the group. I suggested that the members could adopt different responsibilities and roles to lead specific actions. As the next extract from RS2 indicates this was seen as a positive aspect and the group agreed on the need to assign more formal roles and responsibilities to its members.

“You're right.. there's no doubt with that.. we do need to give other people more responsibilities, different roles” (Bob – RS2)

Reviewing the membership in order to bring in new members from different faculties and departments emerged in the discussions, and I also suggested the need for this in the RSs (see Appendixes 27 and 30). However, the group had a holistic approach to embedding sustainability; their background was mainly from environmental sciences (see section 7.7.3). Engaging new members from social sciences, education, communication team or professional development could bring new expertise, ideas, influence, workforce members, and increase the work capacity of the group. As Andrew stated this could also bring fresh challenges and have a cascade effect.

“It might be an idea to start changing, or bring new people onto the group.. with fresh ideas and fresh challenges, and also bring in a few other people that increases the awareness in other polls in the university, because they then go back and they talk about it” (Andrew – Interview 3)

Another of my insights in RS1 and RS2 (see Appendixes 27 and 30) was about there being insufficient time to reflection and discussion, which could be useful for the creation of new ideas and insights within the group. As I have outlined (see section 8.3.1) the organisation of an away-day to provide the group with space for reflection and strategic thinking and planning was the main outcome of RS1 (see Appendix 29).

A lack of internal communication between some of the members was evident. Therefore in RS2 (see Appendix 30) I suggested regular updates as a solution to ensure internal on-going communication and engagement. The lack of the effectiveness of meetings and the need to have more space for on-going discussion and reflection was critical and valued by RS2 attendees, who decided to streamline their meetings.

“I wonder if we can streamline our meetings a bit, so if you like we submit reports just like a one page beforehand so we don't have to spend time reporting back in the meetings” (Lucy – RS2)

The different positions and roles of the members were seen as supportive to achieve embedding sustainability as they linked different groupings and cultures of the university. A full-time post enabled programme development, however a lack of time and individual workloads hindered the capacity as a group. Different members had different levels of engagement, therefore a critical way forward was to have more distributed leadership within the members. Bringing in new members was necessary to have new insights and more work capacity. The lack of internal communication, reflective time and discussion, and ineffectiveness of meetings emerged as challenges to effective teamwork.

8.4.6. Communication

Communication emerged as a key theme throughout the process because of its importance in building awareness amongst the university community and ensuring recognition of the programme. Increased communication in sustainability existed through the sustainability strategy of the University, the Sustainability Science Research group and Blackout (see section 2.4.2). Blackout facilitated communication, publicity and awareness-building within the university, however, as the next interview extract indicates, members disagreed on increased communication of the Sustainability Programme per se and felt that more communication needed to be available for staff and students.

“I might have expected a bit more sort of public output, I've seen lots of papers you know that have been produced internally to the group, but maybe more needs to be done.. you know having information available to the wider university about the group and stuff” (Jack - Interview 3)

The Sustainability Programme appeared in an edition of the university's eVoice²⁷, and some information was available in the Staff Club, however no on-going communication existed because of lack of funding to create dissemination materials. This resulted in a lack of awareness of the programme amongst the university community. As Bob stressed the communication and profile of Sustainability Programme at Southampton had increased more externally than internally.

“I actually think more people know about the [Sustainability Programme] team and programme in Southampton externally than internally” (Bob - RS1)

²⁷ Magazine for academic staff at the University of Southampton.

A factor influencing communication was a lack of identity and branding (see section 8.4.2), which was necessary to develop communication strategies to build awareness. The need to create a communication strategy and plan emerged as a priority in RS1 and RS2 (see Appendix 29 and 30).

“I think if you're looking ahead as to what's the importance of things we need to do, we need to agree what that is, identify the branding and then work out the communication strategy that goes with that” (Richard - RS1)

I experienced myself not receiving the information about the Sustainability Programme seminar through any formal communication university channels, or information on how to get involved in Blackout or other activities such as TEDx conference (see section 2.4.2). I shared this insight with the members in RS2 and suggested the creation of a mailing-list or periodic email to all university members (staff and students) with existing activities and opportunities to get involved in actions (see Appendix 30). An overlap between existing mailing-lists was reported. Bob considered that:

“The problem is you run the risk of flooding with duplication, because you've got the sustainability officers mail list which is the estates focus, you've got the sustainability science mailing list, which is people sign-up for research reasons.. everything comes back to the fact that there's lots of pockets and this is the worst thing about it really” (Bob - RS2)

The quote above provides evidence on the existing fragmentation in the sustainability activity across the university, and the lack of coordination in terms of communication and the delivery of sustainability. Restructuring current university structures and creating a sustainability director position would ensure more coordination and a unified message across the university (see section 8.4.4). When I finished the data collection the group was planning to produce a sustainability booklet and website amongst other activities. The student representative pointed out the need to make these communication materials attractive to students in order to facilitate their engagement. Mary stressed that:

“If students want to find out more information or if the students are interested and I want to say 'look here for more information', there's no way for them to go because the [Sustainability Programme] website it's just not.. it's not for students” (Mary – Interview 2)

The communication of the programme to the wider university community was key for building awareness and engagement, and ensuring recognition. A lack of funding, an un-finalised

identity and branding, a lack of on-going communication, and a lack of a coherent and coordinated approach across the university were the main challenges that the programme faced in terms of communication. A lack of communication on the programme led to a lack of knowledge and awareness amongst the University community, which hindered wider involvement of staff and students.

8.4.7. Curriculum approach

Curriculum development towards sustainability was one of the aims of the programme. The group planned two initial stages to start with. The first one was a curriculum mapping of existing courses and modules that were already embedding sustainability. The second was to provide support and engage with academics to enhance sustainability in their teaching. The curriculum mapping consisted of an assessment of sustainability content and learning outcomes contained in module syllabi using the Five Capitals Model to look at human capital, natural capital, social capital, manufactured capital, and financial capital (Forum for the Future, 2003). This was seen as one of the key achievements of the group. As Jack stressed:

“I think the mapping exercise is a big achievement, just getting a sense of what's going on already” (Jack – Interview 2)

As part of my feedback in RS2 (see appendix 30) I suggested the need to disseminate the curriculum mapping to the wider community. It could also be published in the e-Voice or on the SUSSED website (student and staff University portal). Bob commented on arranging a special e-Voice *‘talk to [communication staff] and her boss to see whether or not we can have sustainability focussed special edition of eVoice’* (Bob - RS2).

Their approach was to identify where sustainability already sat, and to make it more explicit and visible. Therefore it was about providing staff with support and guidance, engaging them in a positive way through acknowledging what they were already doing. As the next interview extract shows it was about encouraging people rather than imposing embedding sustainability.

“I think it’s important not to destroy the morale of people who’re doing things in this area, not to go in and say ‘oh you’re doing it wrong, you should do it differently’, or ‘you need to rewrite the module descriptor’, you know these sorts of things. So I suppose it’s getting people aware and interested, I suppose is talking to people about what they already do” (Jack – Interview 1)

The second stage started with a pilot in the Faculty of Human and Social Sciences to identify points of engagement and opportunities for staff to then develop a clearer mandate and action plan to engage with the remaining faculties. The group decided to start these discussions with directors of programmes because they had more power and could offer a holistic view of the programmes. As Lucy commented:

“Because they’ll have the overview of the programme as a whole.. programme directors will have a better view of what’s within the modules, and also with the progression from year 1 to year 2 to year 3” (Lucy – Interview 3)

They planned to start engaging with the faculty in January or February 2013, however issues to do with time constraints, identity and branding, and university structures and politics (see sections 8.4.2 and 8.4.4) stopped them from engaging with staff. When I finished the research the programme assistant had just started her engagement with academics. As the next interview extract indicates, getting PVC support to start faculty engagement (see section 8.4.4) and academic year waves (section 8.4.8) delayed this work.

“We’re slightly behind of where we wanted to be with engaging with the faculty.. but the meeting with the PVC was important to have before doing that, and the name change” (Lucy – Interview 3)

In my engagement as critical friend I perceived that their approach to curriculum development was not very clear (see Appendix 30). The programme assistant asked me in one of our informal interactions about my research approach with Stage II participants. Therefore I decided to share the Stage II research method with the group via email, jointly with a book chapter (Cebrián et al., 2012) I wrote on methodological issues (see 7.7.3). Additionally, I saved the last part of RS2 to share my insights, lessons learned and main outcomes of Stage II of the research (see Appendix 30).

The group had a number of ideas to create structures such as forums to establish a network and formal linkages and engagement within academics and faculties. This was one of the topics discussed in RS2, where I provided a number of ideas (see Appendix 30). One of the main outcomes of this session was the creation of a forum with faculty representatives to facilitate curriculum work. Lucy and Bob stressed that:

“I think we act as gatekeepers quite a lot of the time.. kind of setting up forums to engage with people, so it’s not necessarily hardly saying task group needs to get bigger, it’s that we need to establish different forums to engage with people” (Lucy – RS2)

“Yeah.. the responsibility for what's happening in their faculty and acting as the congregate for within the faculty, I think is definitely necessary” (Bob – RS2)

The group was leading one of the Curriculum Innovation (CI) modules, which was seen as an early-win in terms of embedding sustainability in the university curriculum, because it engaged staff and students in interdisciplinary work and learning. CI modules were seen as an existing opportunity with a structure that needed to be enhanced. As Bob commented:

“Looking at interdisciplinary work because sustainability is as interdisciplinary as you can possibly have.. it’s about getting the academics together and sort of giving the students opportunities to take the modules in the different areas across the university” (Bob – Interview 1)

In RS2 an update to further curriculum development work was provided by the programme leader. The university planned to offer majors and minors to undergraduate students, making use of the CI modules in sustainability. This saw fruition, and a minor in sustainability was offered in some faculties during the academic year 2013/2014 (see section 2.4.2). The student representatives of the group made also reference to ways of delivery, emphasising the need for more student-centred and experiential learning approaches that provided linkages with external stakeholders. Martin stressed that:

“I found from my experience that practical things where you’re actually going out there and doing it makes you think about more and more, is a more effective way of teaching and more effective way of learning” (Martin – Interview 1)

The curriculum mapping on sustainability, jointly with the CI module, were the major achievements of the group in terms of curriculum development. Their curriculum approach was to provide support and build awareness amongst staff to make sustainability more explicit where relevant. When I finished the research the group was in its early stages of engagement with academics and was piloting its approach in one of the University faculties.

8.4.8. Organisational conditions and dynamics

This theme makes reference to organisational conditions and dynamics that are intrinsic to any HEI. This theme covers issues to do with academic culture and freedom, and external factors such as external bodies and student bodies influencing the sustainability performance of HE institutions. The current changing situation of the UK HE sector and consequent internal

changes in the University were stressed as one of the main challenges to implement the programme. This generated increased workloads and change-fatigue, which decreased staff motivation and restricted the time available for engaging in sustainability. As Bob commented:

“We are in an era of increased work-loads, cuts in the number of people working in universities, less money coming into universities, whilst being told to deliver more, as I understand it, that’s not a business model that can work” (Bob – Interview 1)

Universities tended to embark on change processes, but did not necessarily engage the university community in these processes (Sharp, 2002). It was therefore necessary to engage people and to report back on the results and the benefits of the change. As Andrew stressed:

“That’s the fault of a lot of organisations, they tend to be too much focussed on the change itself, implement the change and then get on with the day job and then not report back to everyone and be proud of the change” (Andrew – Interview 1)

A number of opportunities could also emerge from the current change situation of the HE sector. Student expectations acquiring a more central role and recent NUS surveys showing increased student interest to learn sustainability (Drayson et al., 2012; Drayson et al., 2013) were seen as an opportunity to engage universities in embedding sustainability. External bodies such as HEFCE and the HEA, and quality assurance processes, were seen as drivers to facilitate organisational change towards sustainability. Bob emphasised that:

“There’s also in terms of external factors there’s the fact that the government has put pressure on HEFCE to deliver on sustainable development, as a result HEFCE put pressure on the HEA.. so it becomes part of the quality assurance process” (Bob – Interview 3)

Competition with other research-led universities, specifically within the UK Russell Group, was an organisational condition and dynamic that could enable organisational change towards sustainability. These organisations tended to focus on international recognition and a competition-based culture. As Jack stressed:

“The university is very very competition sensitive to certain competitors, only certain ones... so only to you know other Russell Group universities” (Jack – Interview 2)

Incorporating sustainability in the research criteria and processes was seen as a necessary strategy to embed sustainability within research-led universities. As the next interview extract from Andrew shows, building sustainability into research processes such as the Research Excellence Framework (REF) would be a clear enabler in this type of institutions.

“If it came about that part of the REF was that, not only that you have to do good research but you have to have evidence that it was done in a sustainable way, then suddenly sustainability is at the top of the agenda, and everyone will be knocking at your door saying 'what does sustainability mean? how do I do this? and how do I tick the box? And where do I do this?’” (Andrew – Interview 3)

Academic life and culture also emerged as influencing the programme’s progress. Research and teaching pressures and waves of activity within the academic year were seen to block academic staff engagement. So the fact that the REF was coming to an end by the end of 2013 was seen as an opportunity in terms of engagement. Academic culture was seen to favour individualism rather than collaboration. Therefore existing academic silos, gold-rush mentality, egos, reputation, publishing and gaining research grants were seen as challenges for embedding sustainability within the existing academic culture in universities. Academics claimed sustainability being their territory and were protective of their areas of interest and expertise. As Andrew emphasised:

“We have to be careful of the gold rush-mentality of people across the university wanting to get their goal nodes or their slice of the cake, and if we’re not careful we’ll end up with infighting political battles” (Andrew – Interview 1)

The current academic system discouraged sustainability practice, as sustainability projects tended to have more impact on students and the community rather than being accountable for academic promotion. Academy system and organisational conditions were seen as not leading to sustainability. As Bob stressed:

“That’s just the way you know of life in universities, they don't lend themselves to do sustainability at all, that's where the irony lies.. [university] structures still don't lend themselves to being sustainable” (Bob – Interview 1)

Universities did not engage students in decision-making or as partners of the institution. So for example Martin felt that the student voice was not heard and emphasised the need to create more participatory processes and engage students in the decision-making and governance systems as necessary strategies to engagement and the embedding of sustainability.

“Sometimes I can feel like our voice is not heard as well as is you know some people higher-up in the university.. sometimes I can feel that your voice can be.. you know it’s not a practice or process so much, I think it’s something that it needs to be changed.. that students should have a really much bigger weighting in what they say.. is just making sure that the students' voice is heard” (Martin – Interview 1)

The current change of the HE sector created increased pressures on academics. However the dynamics and conditions of the organisation were seen to be changing towards a more student-focussed approach. The role of external bodies, quality assurance processes, student expectations, and international recognition and competition were seen as external factors that could facilitate organisational change towards sustainability. The current academic system and culture, which favoured individualism rather than collaboration, was seen as a challenge to embed sustainability within universities. Sustainability needed to be accountable in the research processes. Engaging the university community in participatory and change processes was seen as a strategy to enable broader university community engagement in sustainability.

8.4.9. Outcomes of the research process and evidence for organisational learning towards sustainability

In the previous sections I pointed out some of the outcomes of the RSs I conducted with the Sustainability Programme group, such as the organisation of an away-day devoted to reflection and strategic thinking, the streamlining of meetings, and the establishment of more formal roles and responsibilities for members.

The feedback documents, interviews and RSs became clear tools for fostering critical reflection and helping the group find focus. Andrew considered the process of interviewing them individually as very valuable to get them reflecting on the programme.

“This is extremely useful for us to think a bit more strategically both about our individual roles and the role of the [Sustainability Programme] within the university” (Andrew – Interview 1)

The members saw the value of my role in terms of mirroring the existence of a shared vision amongst the group and contributing to reflection. As the next quote from Lucy indicates, the feedback documents contributed to this:

“I always come back to fact that we seem to have a shared vision and that's really good, and that we all seem to be kind of in a similar understanding of what the [Sustainability Programme] is about and where are we going in the university” (Lucy – Interview 3)

The individual interviews, feedback documents and RSs were seen as useful and helpful to help the members' reflections on the programme development. The RSs contributed to reflection, team learning and the creation of communicative action. As Richard emphasised:

“The RS1 was very helpful, I thought it was probably one of the better [Sustainability Programme] meetings in terms of the group working more as a group, having something to discuss and work around compared to the meetings we have had” (Richard – Interview 3)

I provided feedback on theoretical ideas on effective leadership for sustainability, EfS and organisational learning in RS1 and RS2 (see Appendixes 27 and 30). Due to time limitations I had to be selective and I decided to use the learning organisation ideal (Senge, 1990) as a tool for reflection in RS1. I asked them to reflect on how the Sustainability Programme could contribute to making the University become a learning organisation towards sustainability. Achieving a shared vision was seen as difficult and depended on the organisational vision and strategy. A perceived lack of power within the organisation was made evident when sharing the learning organisational ideal in RS1 (see Appendix 29). Although there were senior members in the group (see section 7.7.3), they felt disempowered to make change happen in the organisation. Bob stressed that:

“I think that's too big for anything that we're trying to do and anything we could do as a group, I think that's something which is more systemic across the whole organisation, only then I think it's possible to really” (Bob - RS1)

I could collect little evidence on the impact that my feedback and insights, and the documents shared, such as the Stage II research method and the outcomes documents on the interviews and RSs had on the group reframing or changing its practice (see Appendixes 29 and 30). I shared several documents and information with the programme assistant and the rest of the members by email but I could not collect evidence on the impact of these actions.

Chapter 9: Researcher's reflections

9.1 Introduction

In writing and reporting action research projects it is important to differentiate between describing what happened and interpreting what happened (McNiff & Whitehead, 2010). In Chapter 7 I described the research process and methods used. In this chapter I outline my interpretations and reflections on what I experienced and learned during this research. I draw on my reflections and learning at two levels; those which correspond to first order action research and those which correspond to second order action research (Coghlan & Brannick, 2005; Reason & Bradbury, 2008) (see Chapter 6 section 6.2). In the critical theory and emancipatory paradigm the self in the research is understood as a research instrument (see Chapter 7 section 7.6.3). Reflexivity is therefore necessary to ensure becoming a reflective practitioner and to enhance the validity and quality of the research (Usher & Bryant, 1997; Somekh, 2006). In this sense, the worldviews and assumptions of the researcher and the participants need to be made explicit and questioned in order to create democratic participation and transformative learning processes (Guba & Lincoln, 2005).

First, I focus on first order action research, exploring the different roles I adopted in the research, skills I developed, how the assumptions I brought to my research were challenged through the research process, my motivations and values, and how the research has contributed to my own development and learning as action researcher. Second, I outline second order action research reflections, which constitute a reflection on my learning with others, and the challenges and opportunities faced when working with staff and supporting them to make change happen.

9.2 Reflections on first order action research

I placed my research within the critical theory and emancipatory paradigm (see Chapter 5). I was willing to uncover and challenge people's previous assumptions and mental models in EfS to construct new understandings and practices (Guba & Lincoln, 2005). However, as other studies (Bradbury Huang, 2010) have pointed out, it was easier to enact and gather evidence of participation than of emancipation. I understood emancipation as liberating academics from previous knowledge and power issues within the organisation that could constrict EfS practice.

I therefore decided to use ALCs and RSs, as they allowed me to explore current assumptions and practices in EfS and to reframe them with participants (see sections 7.4.2 and 7.4.3). Both research techniques contributed to critical reflection amongst participants (see sections 8.3.5 and 8.4.9). However, this did not necessarily mean that deeply ingrained assumptions were challenged or that I emancipated or empowered them to change their practice towards EfS. As the findings indicate, existing organisational conditions and dynamics could hinder participants' emancipation or empowerment (see Chapter 8).

In reference to ALCs, I planned a structured way to conduct these sessions, however this proved difficult, as Stage II participants were rather reticent when asked to reflect on possible assumptions. For example, Ruth commented that *'to think about what those assumptions are, is really difficult'* (ALC3). I used CHAT ideas (Engeström, 1987; section 4.3.2) as part of my theoretical framework, and from the learning gained through this study it seems appropriate to suggest that CHAT needs to be used as a tool for reflection on assumptions because it focuses on identifying existing cultural and historical contradictions within activity systems such as embedding EfS in HE.

Moreover, I brought a number of assumptions in EfS to my research, and I kept a research journal (see section 7.4.5) that helped me critically reflect on my assumptions and views, and the research process itself. The research design (see Chapter 7), based on reflection and on-going interactions and discussions with the participants, also contributed to challenging my assumptions in EfS. The participants posed me challenging questions that helped me realise the importance of making my own assumptions explicit to them. For example, as I wrote in a research memo:

"I have shared with them my views and assumptions and have suspended them to group evaluation - critique. In this ALC2 I had to bring more of myself and bring more of some of the key ideas that underpin my work" [Researcher memo 30-01-2013]

Sharing my assumptions on the rationale for embedding EfS in HE in ALC2 with Stage II participants (see section 7.7.2 and Appendix 19), and allowing time to reflect on these within the group setting, made Stage II participants take ownership of the project.

Participants' expectations of my role differed. For Stage II, I adopted different roles according to each participant, as each of them had different needs, interests, motivations and levels of pro-activeness (see sections 8.3.2 and 8.3.5). However confusion existed amongst Stage II participants on my exact role. For instance, William kept asking me to teach his sustainability

sessions and to prepare a research bid for funding. This mirrors different issues; me not being clear enough about my role, and William being unclear on the project. To help me clarify my role as facilitator with William, I needed support and help from my supervisors. For example, at the end of RS1 Andrew highlighted that *'I expected you to be more critical'* in reference to my critical friend role for Stage III. Though some participants expected me to be more critical, I sometimes felt powerless (see section 6.4) due to the different egos of the academics involved, their strong held-views, and their expertise and experience in academia. I could feel a sense of protectiveness within the Sustainability Programme group that disempowered me to be more critical (see section 8.4.3). Likewise, Stage II participants showed concerns and critiqued my qualitative and action-orientated research approach. As Julian stressed *'It seems quite high risk as a PhD project'* (ALC2). I reflected upon this in the following memo:

“Being a facilitator and critical friend hasn't been always an easy task, it has been very challenging, first because there's a power relationship issue between myself, being a PhD student, and my participants, being professors and experienced in lecturing at universities, or for example Bob, who is the [Efs expert] and seems very protective of what he is doing with the Sustainability Programme” [Researcher memo 15-04-2013]

Being a PhD student with less power in the organisation and less academic experience hindered my action as facilitator and critical friend. As pointed out by other authors (Gaventa & Cornwall, 2008; Pettigrew, 2003) balancing power relationships is a critical skill for action researchers to create democratic participation.

Moreover, one of the Stage II participants came up with the idea of doing a pre- and post-intervention with the students to find out their expectations of, and knowledge about sustainability. I challenged them to use a mixed-methods approach, combining quantitative with qualitative methods. As I reflected in the following memo strong-held views of participants that came from a positivist background, and a lack of time were the main reasons that blocked the use of a mix-method approach.

“Most of my participants come from a positivist background, and wanted to see numbers and tangible outcomes, which for them could be having the results of a questionnaire” [Researcher memo 15-04-2013]

I decided to support them with the design of the Sustainability questionnaire (see Appendix 21) as this could be a motivating factor to their action. Thus, according to other action research facilitators (Buchanan & Badham, 2008; Pettigrew, 2003) flexibility and developing strategies

and diplomacies to work with people with different values and worldviews is needed. I agree with Pettigrew (2003) in that being a facilitator is about performing theories-in-use (behaviour to lead to action of participants) rather than espoused theories (my own values and worldviews) (see section 4.3.1).

Several authors have made reference to the different roles of facilitators necessary to fulfil participants' expectations and achieve the research goals (Kember et al., 1997; Tilbury et al., 2004). I agreed my roles with the participants beforehand signing informed consent forms in informal interactions with Stage II and III participants (see sections 7.7.2 and 7.7.3). Stage II informally committed to try to embed some aspects of EfS within one of their teaching modules. I adopted a number of roles in relation to Kember et al.'s (1997) roles, being those of the coffee maker, mirror, teaching consultant and resource provider. Coffee maker makes reference to the flexibility to meet in any environment and situation, because of the participants' lack of time. This has allowed building a personal and professional relationship with participants. For example, I went for lunch or coffee with the Sustainability Programme assistant on several occasions, I met Stage II participants informally, and took part in sustainability activities at the University. The mirror is the privileged position of the critical friend, who is external and can therefore provide 'objective' feedback and advice (Kember et al., 1997). As the next quote shows, participants also saw the value of my role in this sense:

“What I'd be very interested to see is when you report back about not only how we all felt, how you feel then because you're then in the privilege position of having taken each of us independently and then you can more flag together in a picture of how you think it's working or not working” (Andrew – Interview 1)

The teaching consultant and resource provider takes the role of supporting staff, giving some ideas or examples of good practice that can inform their projects. I shared with Stage II and III participants existing resources and literature in EfS that could inform their practice (see sections 7.7.2 and 7.7.3). As Figure 9.1 shows, my role and position within both groups were different and I had to learn the differences and similarities of being a facilitator and a critical friend in practice, becoming a reflective practitioner (Schön, 1987).

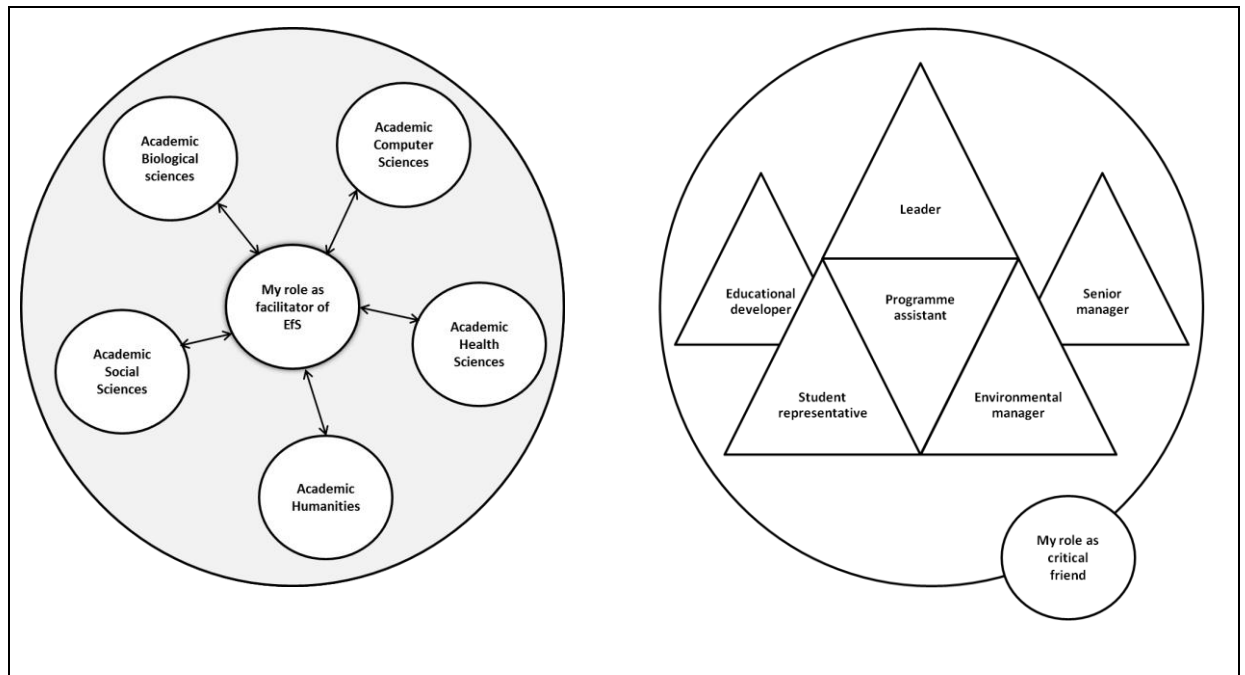


Figure 9.1. Different roles and position adopted in Stage II and III

Thus I experienced some fears, doubts and insecurities about how skilled I actually was to perform this task. It was fulfilling to experience how my roles evolved into what I was willing to become when I designed the research. As I reflected:

“I have a sense for both stages that my role is evolving and that I'm becoming more of what I expected, a catalyst and expert, and a critical friend” [Researcher memo 21-11-2012]

I experienced some frustration with my Sustainability Programme role, as we agreed with participants I was going to become an outsider, stepping back and providing feedback to the group in specific moments in time (see Figure 9.1 and 7.7.3). Therefore I could not get involved proactively in specific projects or actions. For Stage II, I faced what could be seen as the opposite challenge. I had a more pro-active role; I was the facilitator and led the group interactions (see Figure 9.1). As I commented in the following memo I was unsure about how to facilitate without preaching or imposing my ideas, avoiding the research becoming a mirror of my own ideas and framework.

“One of my challenges is how to inspire and facilitate without preaching or imposing ideas, so that the idea is owned by the participants” [Researcher memo 30-05-2012]

For this reason I provided an open definition of sustainability (see Chapter 2), which led to some confusion amongst Stage II participants, but enabled them to contextualise it to their subject area.

Moreover, my supervisors and two other academics in the organisation, experts in action research, acted as critical friends for my own project, helping me to critically reflect on my roles, challenges faced and decisions and actions taken (see section 6.3). According to the experience gained I agree with others (Kember & Associates, 2000; McNiff & Whitehead, 2002) in that critical friends are key in first order action research processes.

Some authors have pointed out time as a limiting factor to conduct action research projects as part of doctoral studies (Klocker, 2012; Moore, 2004). In her thesis, Moore (2004) considers that action research was very time-consuming, demanding and problematic because of the need to fight different battles, but especially in relation to hierarchical structures in the university, between intrinsic characteristics of academic culture, such as individualism and outcomes-orientation, and action research, such as collaboration and process-orientation. Issues to do with academic culture emerged throughout my research (see Chapter 8), but similar to Klocker's (2012) experience, I did not face cultural battles, as the support and trust of my supervisors helped me conduct an action research.

9.3 Reflections on second order action research

Second order action research makes reference to the facilitator and critical friend roles when working with others to facilitate action research (Reason & Bradbury, 2008). Similar to other critical friends or facilitators I faced a number of challenges, such as effective communication, ownership of the project, organisational politics, power relations, and time constraints (Baskerville & Goldblatt, 2009; Kember et al., 1997; Pettigrew, 2003). I ensured that the participants that were not able to attend the group session could have all the information on the main discussion points and outcomes of the sessions through sharing summary documents (see sections 7.7.2 and 7.7.3). In this sense finding effective communication strategies to ensure continued engagement of participants in the action research is necessary (Kember & Associates, 2000). Participants saw the tools I designed as positive. So for example Joanna stated that *'you've been very good at the communication side of things in the written format as well as verbal too..'* (Joanna – Interview 3).

As I commented in the following memo, on-going communication was particularly challenging when working with academics because of seasonal changes in academic work practices:

“This is part of the work circumstances, in other organisations this wouldn’t happen, summer is always a period when academics have their breaks, participants didn’t get back to some of my emails... so I have resent them again” [Researcher memo 25-09-2012]

Gaining access to research participants is one of the first challenges that qualitative and action researchers face (Coghlan & Brannick, 2005). In my case I experienced different issues when engaging with Stage I, II and III participants. Gaining access for Stage I and II was quite an easy task as I focused on people who were enthusiastic or had a personal interest in sustainability (see 7.3 and 7.7). However, as the next extract from my reflective journal shows, in Stage III gaining access and conducting research presented more challenges.

“There were some barriers to be able to research with them, at the very beginning I felt they didn't want anyone to engage with them, as they had the [Sustainability Programme] as their little treasure, with time, after talking with Bob about the research, after asking [my supervisors] to help me.. I think there are some political and power reasons that I don't quite understand” [Researcher memo – 28-08-2012]

It took from approximately February to November 2011 to gain access to the Sustainability Programme group. This could be due to several reasons such as lack of time, lack of interest or value placed in on my role, academic culture, and existing politics within the organisation (Coghlan & Brannick, 2005; Pettigrew, 2003). Working with this group was really important to me because it meant collaborating with people working in this area in my organisation. However, as pointed out by others (Coghlan & Brannick, 2005; Punch, 1994), gaining access is political, and particularly so when doing action research in your own organisation. This could be even more of a challenge in academic contexts because of protectiveness, competition, recognition and existing academic tribes and territories (Becher & Trowler, 2001; Hegarty, 2008).

My supervisors were critical in helping me gain access. I describe this process as the ‘the powerless with a powerful friend’. Myself being a PhD student with low power, but having my supervisors with more power, one of them being relatively senior in the organisation, helped me open some doors and enabled me to gain access to the Sustainability Programme. As pointed out by other authors (Foucault, 2000; Gaventa & Cornwall, 2008) power relationships

exist in social organisations. Power can create productive, relational and participatory decision-making processes (Foucault, 2000). Power tensions exist when facilitating any research; researchers (including action researchers) can be outsiders and can find themselves in a powerful relation with participants, due to knowledge and position (Bambino, 2002; Baskerville & Goldblatt, 2009). The help and position of my supervisors enabled the undertaking of an action research project at the University, which aimed to create democratic participation and the empowerment of participants (Gaventa & Cornwall, 2008). It should be noted that I had a lack of control and power over the participants' action. I tried to influence change in their teaching practice, however I did not have the power to make changes myself. My endeavour was a clear bottom-up approach on how to embed EfS, and this empowered Stage II participants to be more pro-active and motivated to embed EfS. As Ruth stated:

“It has made a big difference having you as the catalyst because if it was as Eric said just a top-down thing, someone saying well you've got to do this now, I don't think I would have spent the same amount of time, or maybe is a good way of thinking about doing it, probably would have been just a standard - oh I'll put something together, it will be ok” (Ruth – ALC3)

Becoming what Buchanan and Badham (2008) named as the 'political entrepreneur' is critical when doing action research with others. Political strategies, performing and backstaging, being active, and building collaboration, but also being able to interact with the existing cultural and political system, are critical (Buchanan & Badham, 2008). It is about being politically smart, whilst still ensuring an ethical practice (Coghlan & Brannick, 2005). For this reason, the relationship I sought to establish with participants was based on '*equality, harmony, acceptance, cooperation and sensitivity*' (Stringer, 2007, p. 28). Building trust and rapport was key to establishing this relationship and to performing my task as facilitator and critical friend. Others (Barasa Atiti, 2008; Kember & Associates, 2000) have also highlighted mutual trust and rapport as previous steps to facilitating action research.

The Stage II group was created because of this study. I was in the centre of the group as the facilitator, and I used ALC to conduct group interactions that contributed to a balanced interaction between participants (see Figure 9.1, 7.4.2 and 7.7.2). They presented similar challenges and concerns in relation to EfS (see section 8.3), but age, position and subject area conditionings made them acquire slightly different levels of pro-activeness and motivation, and therefore outcomes of delivery of EfS (see section 8.3.5). The Sustainability Programme was already a consolidated group when I started the research; each member had its role, and

group dynamics were already established (see Figure 9.1, 7.7.3 and 8.4.5). As the next email extract shows, it was more about getting the group to develop trust in me.

“Glad to have you on board - as long as you promise to be honest with us!” [21-11-2011 – Bob’s email]

Moreover, some dilemmas emerged during the research in terms of the extent to which I should link Stage II and III. One of the Stage II participants found out about the Sustainability Programme through an HEA email (see section 8.3.4). As the next memo shows I reflected on this and made the decision not to mix them due to research purposes.

“My initial plan was not to mix Stage 2 and 3 to be able to draw a comparison of findings of both stages and minimise the risks of contamination between them.. there are ethical and methodological issues.. I think the best approach is that I don’t encourage Ruth to contact Bob and the [Sustainability Programme], I let it open to her.. but I’ll ask her not to tell the other participants, if they find out it needs to be by themselves” [Researcher memo 07-11-2012]

I intentionally decided not to share the Sustainability Programme work or information with my Stage II participants. This could have confused them and I found that an interesting outcome was to see whether they found out by themselves, and to identify the organisational conditions and dynamics involved (see sections 8.3 and 8.4). I deliberately made Stage I and II inform Stage III because I sent to the Sustainability Programme’s members a summary of Stage I findings, a methodological book chapter I wrote (Cebrián et al., 2012), and a summary of the research methods for Stage II (see section 7.7.2). These documents were shared with the Sustainability Programme as part of my supportive role as critical friend. Facilitators and critical friends need to develop interpersonal capabilities such as influencing and emphasising (Fullan & Scott, 2009), building trust and rapport, and collaboration through interacting with the existing cultural and political system (Buchanan & Badham, 2008).

Chapter 10: Discussion and conclusions

10.1 Introduction

This concluding chapter is a theoretical discussion with respect to the research questions and the theoretical framework on organisational learning towards sustainability, which was developed in Chapter 4, with links to the literature reviewed on sustainability in HE in Chapter 3. This chapter is structured around the three research questions that guided my research:

1. What are the factors influencing academic staff engagement in education for sustainability?
2. What are the views and visions of academic staff in relation to education for sustainability?
3. How can a model be developed for the University of Southampton to embed education for sustainability within the undergraduate curriculum?

First, I discuss the factors influencing academic staff engagement in EfS. This section is organised according to challenges to implementation of EfS and opportunities for implementation of EfS. Second, I discuss the views and visions of academics in relation to EfS. Third, I provide an organisational model for the University of Southampton on how EfS could be enhanced and embedded within the undergraduate curriculum. In line with my understanding of EfS and student learning processes, I understand the university curriculum to include the formal curriculum, pedagogy, structure and ethos of the organisation (see Chapter 3). Fourth, I outline the limitations of this research. Finally, I provide a summary of contributions made by my doctoral research and the implications for further research.

The discussion of the findings and conclusions in this chapter have emerged from my engagement with Stage I, Stage II and Stage III of this research (see Chapter 7). Stage I corresponded to an exploratory, reconnaissance phase, where I conducted fourteen interviews with academics from different subject areas (see Chapter 7 section 7.7.1). The five themes that emerged from the interviews with Stage I participants were the understanding and importance of sustainability, the role of the organisation and the HE sector, curriculum, ways of delivery, academic culture, and personal influences (see Chapter 8 section 8.2).

In Stage II, I adopted a facilitator role for an interdisciplinary group of five academic staff members to learn from real practice, and identify the factors influencing academic staff

practice and action towards embedding EfS within their teaching practice (see Chapter 7 section 7.7.2). Four themes were identified during my interactions with Stage II participants, which are; knowledge and understanding of sustainability and EfS, personal influences, curriculum factors – way of delivery, and organisational conditions and dynamics (see Chapter 8 section 8.3).

In Stage III, I engaged as a critical friend with a community of practice seeking to foster organisational change towards sustainability at the University of Southampton, to learn from a real time programme and from the factors influencing its process and success (see Chapter 7 section 7.7.3). I identified eight themes as fundamental to the programme development in my engagement as critical friend. These were: long-term place of the initiative within the organisation and strategic thinking and planning; identity and branding; engagement, establishing linkages and collaboration; university structures and politics; group dynamics – teamwork; communication; curriculum approach; and organisational conditions and dynamics (see Chapter 8 section 8.4).

Each research stage was treated as a separate unit of research and analysis. Figure 10.1 summarises the findings from the three research stages. The findings from the research stages were later on triangulated to identify the congruence, concurrence and divergence between them. The aim of the triangulation between research stages was to enhance the quality and validity of the research findings (Creswell, 2007), and to build a more comprehensive discussion and research conclusions to develop an evidence-based model for the University of Southampton on how to embed EfS within the undergraduate curriculum.

The themes emerged from each research stage in conjunction with the theoretical framework developed on organisational learning towards sustainability in higher education (see Chapter 4) and the existing literature in the field of EfS (see Chapter 3) were used to build the model for the University of Southampton. The model I developed emerges from the views, visions and factors identified by the participants, the theoretical ideas and the existing literature, and focuses on existing opportunities, and processes and strategies the University could enhance in order to embed EfS within the curriculum.

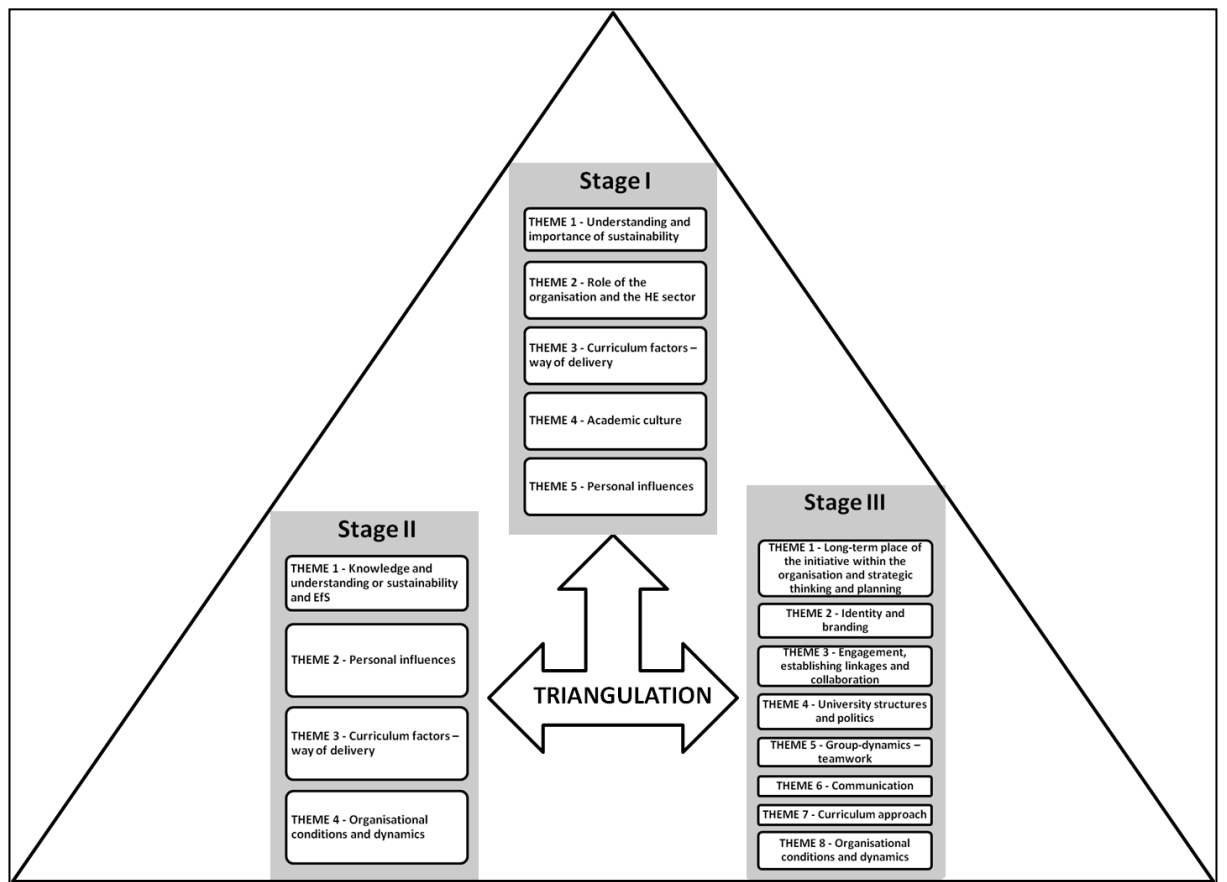


Figure 10.1 Summary of the findings from the research stages

10.2 What are the factors influencing academic staff engagement in education for sustainability?

10.2.1 Challenges to implementation of EfS

In this section I discuss the challenges to implementation of EfS that emerged throughout my research. This study confirms that the lack of understanding and knowledge of sustainability is one of the main challenges faced by academics in engaging with EfS. Several authors (e.g. Filho, 2011; Jones et al., 2010a; Policy Studies Institute et al., 2008) have indicated understanding and knowledge of sustainability as a challenge to embedding EfS within the HE curriculum. Stage I and Stage II findings (see sections 8.2.1 and 8.3.1) provide evidence on the different understandings of sustainability that participants had, the interdisciplinary nature of the term, and the lack of a concrete definition as blocking academics' engagement in EfS.

The lack of time and financial resources emerged as a factor inhibiting academic staff engagement in EfS (see sections 8.2.5, 8.3.2 and 8.4.5). This is in line with findings from other studies in the field (Ferrer-Balas et al., 2008; Filho, 2009; Holmberg & Samuelsson, 2006). The changing landscape of the UK HE sector, and internal changes at the University of Southampton over recent years, had increased the workloads and teaching and research pressures for academics (see sections 8.2.2, 8.3.4 and 8.4.8). Academic pressures such as the Research Excellence Framework (REF), publishing, and gaining research grants hindered staff engagement in EfS and in curriculum innovation (see sections 8.3.4 and 8.4.8).

The University of Southampton, being a research-led university, part of the UK Russell Group, presented a number of research pressures for academics, such as academic success and achievement, that could hinder their involvement in EfS (see sections 8.3.4 and 8.4.8). Thus research-led universities face different issues than teaching-led universities with respect to engaging their academics in EfS (Williams, 2010). This thesis suggests (see section 8.4.4) in line with Hegarty (2008), that in research-led universities research could matter more than teaching, consequently making difficult the engagement of academics in educational innovations.

It is in this sense that academic culture, academic freedom, disciplinary working environments and lack of interdisciplinarity have been referred to as existing barriers to sustainability in the literature (Ferrer-Balas et al., 2004; Holmberg & Samuelsson, 2006; Martin et al., 2008; Moore, 2005a). Stage I and Stage II findings have shown how the role and position in the university, individual research interests, and the academic freedom to teach and research can be enablers or barriers, depending on academics' personal motivation, perceived relevance of sustainability to the subject area and academic interests (see sections 8.2.4 and 8.3.2). As a result a main inhibiting factor for academics to engage in EfS is the need to respect their academic freedom to teach and research in sustainability-related topics.

Furthermore, this study provides evidence on the lack of collaboration and interdisciplinary practice amongst academics as constraining their engagement in EfS (see sections 8.2.4 and 8.4.8). Both collaboration and interdisciplinary dialogue and practice are critical to sustainability because of its complexity and interdisciplinary nature (Jones et al., 2010b; Moore, 2005a). My research indicates that these imperatives of sustainability are a real challenge because of the existing academic and organisational cultures (see sections 8.2.4 and 8.4.8). Change projects at universities aiming to embed crosscutting agendas have proved difficult because of the different existing cultures and academic silos (Hegarty, 2009; Tilbury,

2012). Stage I and Stage III findings indicate the difficulty in working collaboratively and across disciplines due to the differences amongst academic jargons, tribes and territories (Becher & Trowler, 2001). Stage I and Stage III findings (see sections 8.2.4 and 8.4.8) also provide evidence on some of these intrinsic characteristics of academia, which could be seen as to be in direct contradiction to EfS principles (see Chapter 3 section 3.3). For instance, academia favouring competition and individualism rather than collaboration, and existing gold-rush mentalities, egos, academic silos and entitlement are factors that hinder the successful application of EfS principles into practice (see sections 8.2.4 and 8.4.8). I also faced some initial challenges in gaining access to the Sustainability Programme group (see Chapter 9). Consequently, it could be argued that existing academic and organisational conditions inhibit practicing EfS principles in universities, because they do not lend themselves to sustainability (see section 8.4.8).

The lack of clear organisational support and leadership for embedding sustainability within the curriculum emerged as a strong theme in all three research stages (see sections 8.2.2, 8.3.4 and 8.4.4). Stage I findings indicate that there was no support received by the organisation and no visible role models or champions that could contribute by engaging in EfS (see section 8.2.8). Stage II findings also show a lack of organisational support to embed EfS in their teaching practice by some of the participants (see section 8.3.4). Regardless of the need to preserve academic freedom to teach and research, emphasised by Stage I, II and III participants, no positive organisational support to teach about sustainability existed. Stage III findings confirm how the Sustainability Programme's progress and success was conditioned by senior management commitment, politics and organisational support (see section 8.4.4). As a result of no clear senior management engagement, the leadership that could potentially be offered by the Sustainability Programme group or other sustainability groupings at the University was not encouraged. Therefore, organisational commitment and support is vital to engaging academic staff members in EfS. This issue has been widely documented in the literature (Peoples' Sustainability Treaties, 2012; Thomas, 2004; Wright, 2007), and reinforces the need to work on developing effective leadership for sustainability frameworks to foster leadership capabilities amongst senior managers of universities (Scott et al., 2012; Shiel, 2013).

Most of the participants agreed on an increased commitment to and practice of environmental sustainability in the estates and operations of the University of Southampton (sections 8.2.2, 8.3.4 and 8.4.4). However, the organisational priorities and direction in terms of teaching were unclear (see sections 8.3.4 and 8.4.4). This is a common challenge that HEIs face, which have so far tended to put their efforts into embedding sustainability in their estates and operations

rather than incorporating it holistically in their campuses, outreach, research and education (Sterling, 2013; Thomas, 2004; Wright, 2004). This thesis supports the view that having an institutional approach to the curriculum, making clear and visible the organisational priorities, and providing support and leadership for sustainability are necessary to motivate and engage academics in EfS (Holmberg & Samuelsson, 2006; Velazquez et al., 2006).

Moreover, existing competing demands, an overcrowded curriculum and current curriculum structures could block academic staff engagement in EfS (see sections 8.2.3 and 8.3.3). Current methods of teaching based on lectures with big number of students, and a narrow curriculum with narrow learning outcomes, being assessment focussed, were challenges to academic staff engagement in EfS. As a result, there was no space in the curriculum to introduce new content, because sustainability is not part of the official portfolio of courses (see sections 8.2.3 and 8.3.3).

10.2.2 Opportunities for implementation of EfS

In this section I outline the opportunities for implementation of EfS that emerged throughout my research. This study reinforces the idea that professional development and training programmes in EfS for academics are necessary strategies to enable them to have the time and opportunities needed to gain understanding and knowledge of sustainability, to rethink existing teaching practices, and to gain the necessary skills to teach sustainability (Thomas, 2004; Tilbury, 2012). The need for professional development in EfS has been recognised by other researchers, however little evidence exists on the impact that professional development programmes in EfS have in changing thinking and practice towards EfS (Holdsworth et al., 2007; Thomas, 2004). In 2013, the EU funded the Copernicus Alliance, a European Network on Higher Education for Sustainable Development, to conduct the project 'University Educators for Sustainable Development (UE4SD)'. This brings 55 HEIs together to enhance the development of EfS competencies of university educators so that they can drive innovation for sustainability in the curriculum. Such initiatives reinforce the idea that developing the EfS competencies of educators is a way forward to embed EfS within the curriculum (Cebrián & Junyent, in press; UNECE, 2012).

Personal influences and motivations emerged as an opportunity throughout my research (see sections 8.2.5 and 8.3.2). It was evident that academic staff have different reasons to engage in EfS, so for example, Stage II participants engaged in my research in EfS on a voluntary basis

because of different personal interests (see section 8.3.2). Stage II participants' motivating factors differed but all showed positive values and beliefs on the importance of sustainability and student learning. This indicates the significance of personal values and beliefs in order to engage in EfS, and the importance of creating processes of 'reflection-in-action' that can contribute to aligning theories-in-use (actual behaviour) and espoused-theories (values and beliefs) (Schön, 1987).

The importance of personal motivations also raises a question in terms of the strategy to engage academics and to embed EfS. Starting with engaging individuals who have a personal interest and belief in sustainability seems to be an appropriate strategy for embedding EfS within the curriculum. In this sense, I agree with other authors (Lozano, 2006a; Policy Studies Institute et al., 2008) on the need to start with enthusiasts to incorporate and institutionalise sustainability at universities. Thus, the diffusion of innovations theory (Rogers, 1995) can be a useful framework to inform and guide the change-processes towards embedding sustainability in the university curriculum.

Moreover, because of the existing academic culture and system (see sections 8.2.4, 8.3.4 and 8.4.8), in order to engage academic staff in EfS in research-led universities sustainability should be built into academic processes and research structures more effectively and systematically. For example, adding sustainability as a promotion criterion or as one of the criteria for the REF could be an opportunity for the implementation of EfS (see sections 8.2.4 and 8.4.8). Although HEFCE and HEA, the main HE funding agencies in England, have provided financial support to academics, students and universities to conduct sustainability research projects (see Chapter 2 section 2.3), sustainability has still not been officially built into research structures and processes. Thus, the sustainability agenda of funding agencies has mainly impacted enthusiasts and academics already working in sustainability without seeing a major transformation of university structures towards sustainability (Jones et al., 2010a; Tilbury, 2012).

Finding suitable strategies to engage academics in EfS in a positive way is needed to avoid EfS being perceived as an imposed agenda (Hegarty, 2008). The curriculum approach I adopted in my study, which was to engage with academics in critical reflection and discussions to generate new understandings and practices in EfS, encountered the need to respect their academic freedom and enable them to take ownership of EfS to contextualise it within their subject area (see Chapter 7). The Sustainability Programme's approach for engaging with academic staff in curriculum development in EfS (see section 8.4.7), was also about enacting dialogue and discussion and empowering people rather than forcing academics to embed EfS.

This research suggests that these are suitable approaches in this cultural context to engage with academics in EfS.

Transforming current academic and university systems and structures towards sustainability seems critical to engage academics in EfS (Tilbury, 2012). Furthermore, creating university strategies and new structures that can challenge existing academic tribes and territories are necessary (Becher & Trowler, 2001). University structures that incentivise and reward interdisciplinary and transdisciplinary work and collaboration need to be created (see sections 8.2.2 and 8.4.4). Types of projects such as the one I conducted in Stage II need to be financially supported, incentivised and rewarded, because they generate interdisciplinary and transformative learning amongst academics, and empower academics to embed EfS (see section 8.3.5). Furthermore, more empirical research needs to be conducted on the role of academic values, identities and relationships in the context of embedding EfS in HE. Socio-cultural learning theories such as expansive learning theory and actor-network theory (Engeström, 1987; Lotz-Sisitka, 2012b) can contribute to the exploration of socio-cultural and historical conditionings and contradictions that inhibit organisational learning and change towards embedding EfS in the university curriculum.

This study provides evidence on the need to make sustainability a requirement and part of the existing quality assurance processes and external benchmarking of HE institutions (see sections 8.2.2 and 8.3.4). External benchmarking and assessment emerged as critical to academic staff engagement in EfS. External agencies and bodies such as government, HEFCE and HEA were seen as drivers to organisational change and innovation towards sustainability in HEIs (see sections 8.2.2, 8.3.4 and 8.4.8). Consequently, a condition for engaging academics in EfS would be for external bodies or agencies to recognise the importance of EfS and require it to be incorporated in the curriculum. Furthermore, the role of external agencies in leading sustainability has been demonstrated by the HEFCE Carbon Reduction Strategy in the UK (HEFCE, 2010), which has led to the creation and implementation of carbon management plans in most UK universities because of its association with the direct funding of universities (see Chapter 3 section 3.2.3). Likewise, the QAA in the UK has added sustainability as part of the benchmarking of HEIs in the new UK Quality Code for HE (QAA, 2012). The QAA and HEA held a consultation event on the development of an ESD Guidance Document (see Chapter 3 section 3.4.5). External benchmarking processes are clear catalysts for academic staff engagement and for embedding EfS within universities, which can lead to the integration of EfS as part of internal and external quality assurance processes.

If EfS was made a requirement by external agencies and bodies, academics would engage in EfS because of the need to incorporate it into courses and curriculum delivery. Making sustainability an explicit, assessed outcome of the curriculum to be delivered would facilitate the integration of sustainability into the curriculum and would increase student engagement, according to the participating academics (see sections 8.2.3 and 8.3.3). Designing new courses, redesigning and reviewing of existing curricula were also indicated as opportunities for engaging academics in EfS because they provided academics with the time to review existing teaching without increasing current workloads (see section 8.3.3).

This study suggests a number of tensions affecting academic staff engagement with EfS. Academics might have a personal interest and motivation to engage in EfS (see sections 8.2.5 and 8.3.2), but factors such as the lack of time and financial resources, lack of deep understanding of sustainability, current curriculum structures and ways of delivery, academic pressures, external factors, lack of organisational support and existing organisational conditions do not facilitate their engagement in EfS. Therefore, organisational support and leadership, quality assurance processes, professional development and creating reward structures are necessary strategies towards academic staff engagement in EfS. External benchmarking and external bodies' policies would be clear drivers of organisational change and innovation towards sustainability in HEIs.

10.3 What are the views and visions of academic staff in relation to education for sustainability?

In this section, I outline the main views and visions of the participating academic staff in relation to EfS. This study demonstrates that a general agreement amongst the participating academics existed on the social purposes and role of HE in engaging students with contemporary issues such as sustainability as part of their university education (Calder & Clugston, 2003; Filho, 2011). Stage I and Stage II participants shared their views on the need to foster critical thinkers, independent learners and active change agents through HE (see sections 8.2.1 and 8.3.3). The Sustainability Programme's approach to curriculum was also based on the EfS principle of engaging students in sustainability action to become active change agents (see section 8.4.7).

The data collected in this study provides evidence of the participating academics' views on ways to approach EfS in the planning and delivering of their curriculum. A number of existing contradictions between the EfS ideas and rationale (see Chapter 3 section 3.3), and HE purposes were reported. Academics considered the differences between subject areas and the need to find a suitable approach for EfS for each subject area (see 8.2.3, 8.3.3 and 8.4.7). Participants were in general resistant to the idea of embedding EfS in every subject area, as there were some subject areas where sustainability was seen as irrelevant or not part of the discourse. Other authors (Dawe et al., 2005; Ryan & Cotton, 2013) have also identified the perceived irrelevance to the subject area as one of the main challenges to embed EfS. Different levels and approaches for embedding EfS within the curriculum exist (see Chapter 3 section 3.4.2). The participating academics seemed to perceive embedding EfS as including some content and material on sustainability in their teaching, which have been the main outcomes of delivery achieved through my work with Stage II participants (see section 8.3.5). However, Stage II participants in the early stages of the project weighed up adding sustainability as content or mainstreaming it throughout the curriculum; they decided to introduce sustainability in specific sessions or lectures, as a topic or case study. This indicates that the ideal of embedding EfS within all courses, having sustainability discussions embedded throughout programmes and developing an understanding from the subject area context and the study programme is far from becoming a reality. This suggests that there are misconceptions on sustainability (Filho, 2000) amongst academics, who probably consider sustainability to be mainly about the environment without seeing the holistic nature of the term.

The Sustainability Programme's approach to curriculum development was about reinforcing and making visible where sustainability already sat in the curriculum, providing support and guidance to staff (see section 8.4.7). It is therefore necessary to identify suitable modules and subjects where sustainability can fit naturally (see sections 8.3.5 and 8.4.7). Sustainability can be introduced in different subject areas but it needs to be contextualised (see section 8.2.3 and 8.3.3). Other authors (Ryan & Cotton, 2013; Sterling, 2012) have also emphasised the importance of contextualising sustainability to the subject area. As indicated by a Stage I participant, co-teaching could be a suitable strategy for embedding EfS in subject areas where sustainability does not fit naturally (see section 8.2.3). This approach is in line with what others have suggested (e.g. Holmberg et al., 2008) about combining teaching between sustainability experts and subject area experts as a strategy to embed EfS within the curriculum.

In relation to the pedagogy of EfS (see Chapter 3 section 3.3.1) different views were reported. Stage II participants indicated a number of resistances to EfS pedagogy, such as EfS not being part of the rational empirical paradigm and the value-laden nature of EfS in contrast to HE purposes (see section 8.3.1). Stage II participants saw the value of certain teaching and learning methods to teach about sustainability, such as role play, group discussions, debates and critical reading and writing (see section 8.3.3), but could not see the link with certain pedagogies such as student-centred approaches, experiential learning and transformative learning (see section 8.3.1). This study therefore suggests that the use of EfS pedagogy by academics is conditioned by their existing values and beliefs on teaching and learning, and the nature of their subject area (see sections 8.3.1 and 8.3.3).

A clear mismatch was also identified between teaching and learning approaches advocated by EfS experts (see Chapter 3 section 3.3.1) and the views and beliefs of academic staff members on how to teach sustainability. This thesis is in line with other studies in the field that have reported a disparity between EfS ideals and academics' views on teaching sustainability (Christie et al., 2013; Cotton et al., 2009). Accordingly, it is necessary to develop a clearer rationale for the adoption of EfS pedagogy in HE and conduct further empirical research on the views, practices and visions of those academics not involved in EfS (Cotton et al., 2009). Creating learning processes that can challenge existing worldviews in EfS and build awareness amongst academics on the need to use student-centred approaches, and link these to the teaching of sustainability, is necessary to embed EfS within the HE curriculum (Holdsworth et al., 2007; Sterling, 2004).

The action research method used (see Chapters 6 and 7) has allowed critical reflection on EfS ideas and has contributed to the development of new understandings, insights and practices in EfS (see section 8.3.5). Action research and action learning are suitable instruments to use to work with staff on professional and curriculum development (Kember & Associates, 2000; McKernan, 1996; McNiff & Whitehead, 2002). Action orientated approaches provide staff with the time to critically reflect on the practice of EfS and empower them to make changes in their teaching practice because of acquiring new understandings and views on EfS (Cebrián et al., 2012; Holdsworth et al., 2007; Tilbury, 2007).

Freedom of thought and critical thinking, key aspects of HE, were seen as contradicting EfS principles. Several participants made reference to EfS being value-laden, and consequently in danger of giving students a pro-sustainability view rather than an informed unbiased view and fostering critical thinking skills (see section 8.2.1 and 8.3.1). Other academics have also

expressed criticisms about embedding EfS in HE. EfS tends to be seen as based on social policy objectives rather than knowledge generation and academic freedom (Knight, 2005; Williams, 2010). This thesis indicates that a number of academics are likely to also perceive embedding EfS as value-laden, being in contradiction to the purposes of academia, and as a result seeing embedding EfS in the HE curriculum as irrelevant. There seem to be mixed assumptions amongst academics on the purposes of EfS, as this depends on how sustainability is defined, developed and introduced to students (see Chapter 3 sections 3.3 and 3.4).

Having examples of good practice, case studies and champions were seen as clear opportunities to embed EfS within academics' teaching practice (see sections 8.2.5 and 8.3.2). As Stage II findings indicated, having an awareness of existing teaching resources on EfS can motivate academics to make changes in their teaching (see sections 8.2.5 and 8.3.2). A perceived lack of quality of existing materials, a lack of evidence on what worked effectively, and the outcomes that EfS teaching had on students' learning (see sections 8.3.1 and 8.3.2) resulted in disengaging academics from embedding EfS in their teaching. This shows the need to make existing EfS resources available to academics, while providing them with the time and opportunity to review existing teaching. Further empirical studies that can demonstrate the development, outcomes and impact of EfS delivery on students' learning are necessary as this would engage academics in embedding EfS (Cebrián & Junyent, in press; Weik et al., 2011).

Engaging university staff and students in sustainability initiatives and decision-making processes of the University emerged as an intrinsic factor in embedding sustainability within the student learning experience (see sections 8.2.3, 8.3.4 and 8.4.8). This would provide students with real-world learning opportunities, and allow staff and students to take ownership of the organisation and be part of the change process towards sustainability (see sections 8.2.3 and 8.3.4). As the findings indicate, the vision of the Sustainability Programme was about embedding sustainability and establishing linkages between operations, research, curriculum and experience (see section 8.4.1). 'Blackout' and the recently awarded BEES (see section 8.4.3) are clear examples of bringing these elements together and using the university as a living laboratory (see Chapter 3 section 3.4.3). It could be argued that these types of extra-curricular or social learning opportunities are the way forward to embed EfS and thus, need to be promoted and established within the university community (Mulà Pons de Vall, 2011; Winter & Cotton, 2012). These strategies help connect the different university cultures and power struggles between administrators, students and staff, leading to the transformation of current university structures towards sustainability (Sharp, 2002).

The current 'widening of the curriculum' strategy of the University of Southampton was seen as a suitable existing strategy that needed to be reinforced (see sections 8.2.3, 8.3.3. and 8.4.7). Existing CI interdisciplinary elective modules (see section 2.4.2) were seen as the suitable approach and way to embed EfS within the student experience (see sections 8.2.3, 8.3.3. and 8.4.7). The CI modules created opportunities for staff to work between disciplines and for students to learn in interdisciplinary environments.

The current change situation of HE was seen as to provide opportunities for new ways of delivery, such as in the creation of Minors in sustainability and MOOCs, and an increased organisational awareness of student expectations and learning (see sections 8.3.4 and 8.4.7). Existing evidence on students' attitudes and interest on learning sustainability (Drayson et al., 2012; Drayson et al., 2013) could enable embedding EfS more effectively and proactively within the university (see section 8.4.8). The effects of these changes of the HE sector upon the social purposes of HE remain to be seen, where universities could become more managerial and recognise 'students as customers', or become more connected to their local and university community, and recognise 'students as partners' (Sterling, 2013). The 'students as partners' approach would be critical for involving students in creating a more sustainability-active university and community. This opens up a new set of research questions and research opportunities in terms of the impact that the vision of 'students as partners' and more student-led HEIs might have on creating organisational learning and change towards sustainability.

This study provides evidence on different views and visions of academics in relation to EfS. Academics viewed contextualising EfS in each subject area as necessary starting points to embed EfS. The CI modules were seen as an existing university structure that needed to be reinforced in order to embed EfS. Using the campus as a living laboratory and engaging students and staff in sustainability projects and decisions were seen as critical for building sustainability within the university. In addition, a number of contradictions existed between the EfS principles and the role of HE. Academics viewed embedding EfS as introducing content and material on sustainability in existing courses and offering elective courses that dealt with sustainability. The idea of integrating sustainability into all the courses is a clear challenge because of an existing mismatch between EfS pedagogy and the views of academics on teaching sustainability.

10.4 How can a model be developed for the University of Southampton to embed education for sustainability within the undergraduate curriculum?

This section addresses the last research question and outlines a model for the University of Southampton on how to embed EfS within the undergraduate curriculum. The suggested model seeks to contribute to a holistic and structural transformation of the University in order to embed EfS within the undergraduate curriculum (Sterling, 2004; Tilbury, 2012). This model is not a step-by-step guide for achieving sustainability; on the contrary, its main purpose is to inspire the University of Southampton, specifically its senior management team, to enhance organisational learning and move towards embedding sustainability (see Chapter 4). I see this model as suitable to inform and provide insights for other HEIs seeking to create an organisational learning process to embed EfS within the university curriculum.

The evidence-based model discussed in this section consists of four overarching components that can support the university in its aim to embed EfS within the curriculum. These correspond to the I3E Model: **I**nform, **E**ngage, **E**mpower and **E**mbed. This study provides evidence on the need to create a shared organisational vision and strategy, to make information available to staff and students, to build on existing sustainability initiatives at the University, and to enhance sustainability awareness, policy and action (see sections 8.2.2, 8.3.4 and 8.4.6). In addition, a number of strategies and actions are needed in order to motivate and engage staff and students in EfS, such as through providing clear organisational leadership and support, participatory decision-making, and partnership approaches (see sections 8.2.2, 8.3.4, 8.4.3, 8.4.4 and 8.4.8). This thesis indicates that the empowerment of the university community towards embedding EfS could be achieved through providing time and financial resources, creating reward systems, offering recognition and opportunities for staff and students to collaborate, providing opportunities for interdisciplinary work, and engaging in action-orientated and transformative learning processes (see sections 8.2.2, 8.2.5, 8.3.5 and 8.4.4). To finally embed sustainability some of the existing university structures need to be reinforced, while new structures should be created, such as quality assurance processes, research and promotion criteria, sustainability centres, and sustainability positions (see sections 8.2.2, 8.3.4 and 8.4.8). In Figure 10.2, I have created a graphical representation of the I3E Model.

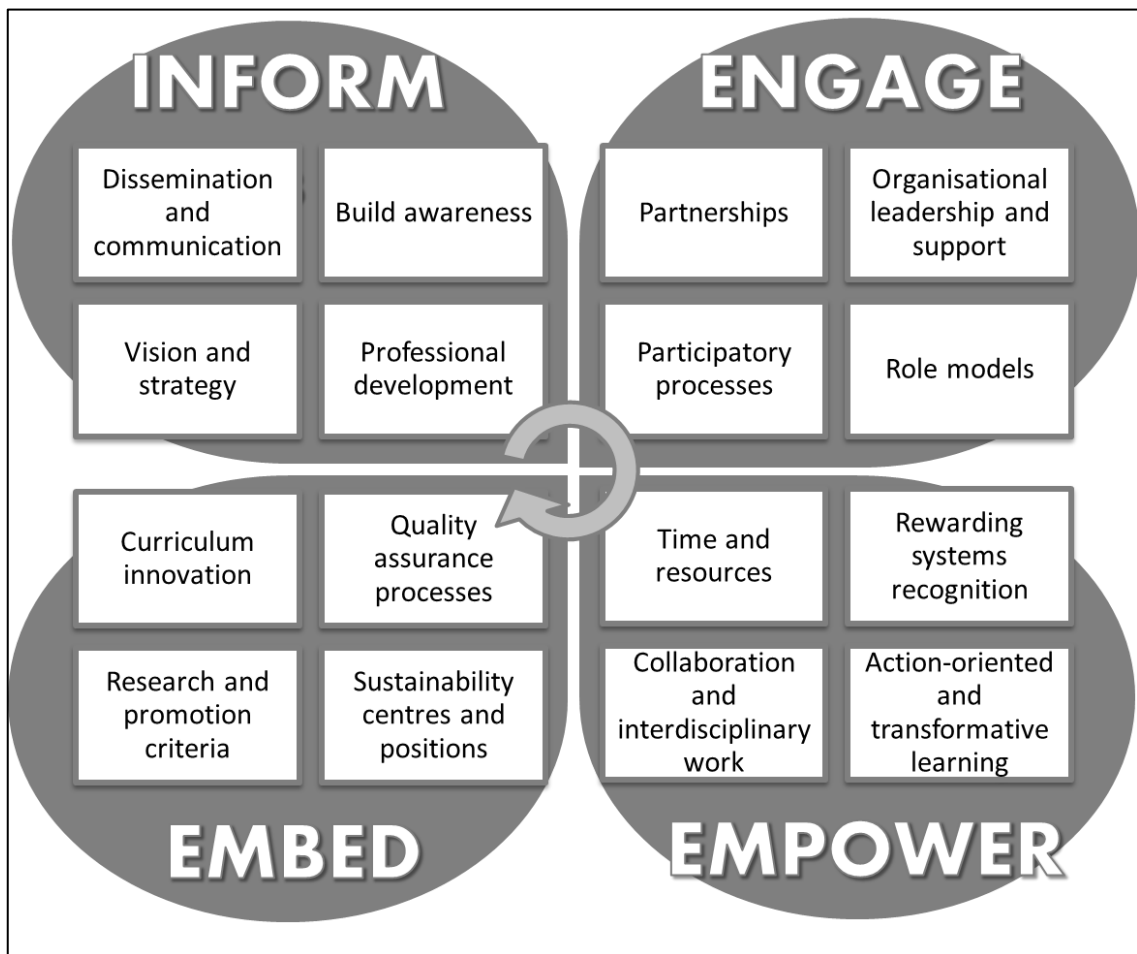


Figure 10.2 I3E Model to embed EfS within the University of Southampton

10.4.1 Inform

To date, the University of Southampton has developed a number of policy documents on sustainability. For example, the Environment and Sustainability Strategy and the Sustainability Policy have increased its profile in this area, and have acknowledged the Sustainability Programme work as part of the university’s sustainability strategy (see Chapter 2 section 2.4.2). Although this has been mainly in terms of the environmental performance of the estates and operations and the organisational priorities, the vision and strategy are not clear to its academics (see sections 8.2.2, 8.3.4, 8.4.8). As a result, no clear organisational vision of teaching, learning and embedding EfS existed. This is a challenge that most universities have faced (Jones et al., 2010a). Thus, achieving a shared vision is critical to creating organisational learning (Senge, 1990). The findings suggest that although the Sustainability Programme team had a shared vision this was not necessarily shared with the organisation, which made its

development and progress difficult (see section 8.4.2). Creating a shared vision in a large organisation with people from different academic disciplines and cultures could be a challenge. HE presents a high degree of complexity due to the different existing subcultures, tribes and territories, academic disciplines, and faculties (Becher & Trowler, 2001). This thesis also indicates differences and 'boundaries' between academic disciplines and university faculties (see sections 8.2.4, 8.3.4, 8.4.4 and 8.4.8). Academic disciplines and faculties seem to be disconnected because of the inexistence of a coherent organisational approach and message within the university, with different groupings working on sustainability in fragmentation rather than in coordination (see section 8.4.3). This suggests that the university vision and strategy needs to be contextualised to the different faculties and academic disciplines, whilst ensuring that a shared vision and strategy are developed and established. Systems thinking approaches, organisational learning, and socio-cultural theories can contribute to (a) the understanding of the complexity of HEIs and the existing academic culture, and (b) the identification of ways to create a shared vision amongst the organisation (see Chapter 4 and Chapter 8 sections 8.3.5 and 8.4.9).

The University of Southampton needs to become a role model for its staff and students and ensure that policy documents are translated into clear action in practice (see sections 8.2.2 and 8.4.4). This has been a clear challenge to universities worldwide that have struggled to truly embed sustainability in practice (Wright, 2004). This study shows that the participants were also concerned with the real commitment and practice of the University (see sections 8.2.2 and 8.4.4). Developing a clear strategy and vision, and clear action plans would, therefore, build awareness within the university community. This is about aligning the espoused theories to the theories-in-use of the organisation (Argyris & Schön, 1978; Gudz, 2004), the university's vision, its values, and its actions and practices.

Communication is a critical path towards institutionalising sustainability and building awareness on sustainability within the university community (Djordjevic & Cotton, 2011; Lozano, 2006a). This research has shown the importance of communicating sustainability initiatives and practices going on within the university to the wider university community (see section 8.2.2 and 8.4.6). More empirical research to look at effective communication of sustainability in HE is needed. So far, few studies have explored effective communication of sustainability in HE (Djordjevic & Cotton, 2011; Franz-Balsen & Heinrichs, 2007).

Although the Sustainability Programme was a potential EfS communication channel for the organisation (see section 8.4.6), there was limited on-going communication, and the existing

university structures and politics hindered its dissemination (see section 8.4). One of the Stage II participants found out inadvertently about the Sustainability Programme at Southampton through a HEA email (see section 8.3.4). This was a missed opportunity at an organisational level, because if it had been communicated through university channels, this academic would have followed it up and used the Sustainability Programme as a resource for teaching (see section 8.3.4). The University needs to provide clear communication channels and strategies that can inform the university community on sustainability initiatives, and enable collaboration and the establishment of linkages between different groupings and individuals interested in EfS. Making existing EfS resources and champions at the University more visible through university communication channels would contribute to embedding EfS within the curriculum (see sections 8.2.5 and 8.3.2).

As pointed out in the previous sections (see sections 10.1 and 10.2) there is a need to build awareness amongst academic staff members through offering professional development and training opportunities in EfS. The University needs to offer professional development programmes and training for academic staff members in EfS. These are necessary to help academics develop an understanding of sustainability and EfS pedagogy, and their personal mastery that would then enable them to embed EfS principles in their teaching practice (see section 8.3.5).

To summarise, developing a clear organisational vision and strategy on sustainability that is shared but contextualised within the different faculties and academic disciplines is a necessary first step to building awareness of EfS amongst the University community. Communication and dissemination of existing sustainability initiatives and projects is needed to build awareness and inform staff and students about the sustainability practices of the University. The creation of professional development and training opportunities can expand the work of individual academics and start changing the culture of the organisation. Implementing these suggestions would create personal mastery in EfS amongst academics, as well as a shared vision on sustainability within the organisation, which in turn would lead to the creation of a learning organisation towards sustainability (see Chapter 4).

10.4.2 Engage

This study reinforces the importance of senior university managers as critical leaders to foster organisational learning and change towards sustainability (see sections 8.2.2, 8.3.4 and 8.4.4)

(Scott et al., 2012; Shiel, 2013). Moreover, having examples of good practice, and role models or champions within the organisation, are critical for academics' engagement in EfS (see sections 8.2.5 and 8.3.2). The University needs to support academics and make existing role models visible. In this sense, key senior managers and leaders have a significant task to perform as role models of the University. This has been evidenced by the Sustainability Programme findings in that the team participation was totally dependent on key senior managers' commitment and support (see section 8.4.4). A lack of wider organisational impact was evident due to a lack of leadership support from the University. This is in line with what Williams (2008) found out in her thesis, and the need for more transformational and distributed leadership to enhance the capacity to establish and engage learning communities in the sustainability change.

The University of Southampton also needs to provide effective leadership towards sustainability that can translate into new structures, incentives and funding (Holmberg et al., 2012). Thus, the emerging literature on the capabilities of effective leaders on sustainability can be informative and inspirational for current leaders at the University (Scott et al., 2012; Shiel, 2013). For instance, action learning with university managers has been used as an approach to help them embed sustainability within their universities (Shiel, 2013). A possible way forward could be the adaptation of the research method used in this thesis, using action research and action learning to work with senior managers at the University of Southampton to incorporate sustainability holistically in the organisation (see Chapter 7).

Engaging the different university stakeholders such as administrative staff, academics, students and the local community in the change process towards sustainability (sections 8.3.4, 8.4.3 and 8.4.8) is critical to create a shared vision (Senge, 1990). The University community needs to be part of the change so that people can see the benefits and outcomes of changing (section 8.4.8). In terms of university governance, enhancing participatory decision-making processes has been stressed as key to engage staff and students in sustainability in HEIs (Temple, 2012). For this purpose, bottom-up and top-down approaches are needed to ensure the success of the sustainability agenda (Heck, 2005).

Using the university environment and estates as a living laboratory (see section 3.4.3) would enact staff and student engagement to create a more sustainable university, enabling them to experience sustainability (see sections 8.3.4, 8.4.3 and 8.4.4). Students and staff should consequently become an integral part of the process of transformation and the university strategy towards sustainability. Senge (1990) made reference to the need to consider future

frameworks and desired outcomes, and in this sense, transparency, and the engagement of different university agents and stakeholders in participatory processes and innovations on sustainability is fundamental to creating a desired shared vision of the sustainable university. In terms of formal curriculum, academics' engagement at a faculty and programme level is required in order to ensure successful curriculum development in EfS (see section 8.3.3). If EfS is to be embedded, academics and students need to be engaged in the decision-making processes related to curriculum development (see 8.4.8). The evidence collected suggests that providing academics and students with opportunities to participate and discuss with peers about where they see the relevance of sustainability within their subject area, and where it can be enhanced or covered within the formal curriculum, would facilitate taking ownership and seeing the relevance of embedding it (see section 8.3.3 and 8.4.7).

The Sustainability Programme's findings indicate that fostering partnerships between staff and students, and with the local community, are necessary because they contribute to academic staff and student engagement, as well as to building awareness and collaboration with the different university agents and with the community (see section 8.4.3). Active engagement with the community is critical to building more sustainable universities (Global University Network for Innovation, 2012; Sterling, 2013). Moreover, student-led projects have been regarded as leading to broader cultural and organisational change (Barth, 2013). For this reason the University needs to actively support and reinforce existing projects such as BEES (see section 8.4.3), and needs to create opportunities for the emergence of more student-led projects in sustainability. Collaboration between different university stakeholders and groupings, and student-led projects have been pointed out as crucial in implementing change towards sustainability in HE (Barth, 2013). The rethink of university and community interaction is necessary because of importance in building sustainability practices, where the university and community become partners towards building local sustainability, and students become active change agents that can actually learn and practice sustainability in action (Lotz-Sisitka, 2012a; Winter & Cotton, 2012).

Therefore, in summary, enabling staff and students to take ownership of the change process towards EfS, using bottom-up and top-down approaches, is necessary. Yet some of the participants felt that the organisation was very top-down (see sections 8.2.2 and 8.3.4). The findings of the research for Stage I, II and III (see sections 8.2.3, 8.3.3, 8.3.4 and 8.4.8) indicate that academics and students need to be consulted and engaged in debates and discussions about embedding EfS at a programme and faculty level (see sections 8.2.3 and 8.3.3). The methodology adopted in this thesis is based on a bottom-up approach; I have worked with an

interdisciplinary group of academic staff members and with the Sustainability Programme. The bottom-up approach of my project engaged academics more proactively (see Chapter 9), and its success demonstrates that the university might benefit from implementing this approach. Nevertheless, organisational support and leadership is still required to make the necessary changes to the current delivery of EfS (see sections 8.2.2, 8.3.4, 8.3.5 and 8.4.4).

10.4.3 Empower

The findings from this research provide evidence on the suitability and potential that using transformative and organisational learning frameworks has on challenging existing mental models and empowering individuals to develop new understandings of, and practices in EfS (see Chapter 4). This thesis demonstrates the importance of teams in supporting individual learning, reflective practice and new insights, which lead to a shared vision and empowerment of individuals to embed EfS (see section 8.3.5). Creating interdisciplinary conversations to enable interdisciplinary work and practice is critical to embed EfS (see sections 8.2.4, 8.3.5 and 8.4.7). However, this study confirms that existing academic tribes and territories (Becher & Trowler, 2001) inhibit interdisciplinary work and practice. Stage II findings indicate that the action research method used has generated interdisciplinary learning, shared vision amongst participants, and organisational learning towards EfS (see section 8.3.5). A supportive learning environment was created that provided participants with interdisciplinary support and knowledge about sustainability, thus empowering them to make changes in their current teaching practice to embed EfS because of gaining new insights and a broader perspective of sustainability (see section 8.3.5). In this sense, the University needs to ensure the creation and maintenance of these types of interdisciplinary groups as they empower academics and foster collaboration and team learning, which are fundamental to creating learning organisations towards sustainability (Senge, 1990). Supportive internal structures that provide staff with the space, freedom, flexibility, time and opportunity to participate in working groups and research projects in EfS are necessary to empower academics to embed EfS in their teaching. The research indicates the positive contribution that creating reflective processes have in empowering and deepening the visions of individuals and communities of practice seeking to embed EfS (see sections 8.3.5 and 8.4.9). The findings provide enough evidence on the critical role that group discussions, training exercises, and activities have on reframing current assumptions and fostering reflection on sustainability issues to achieve a shared vision of the future (see section 8.3.5).

Action oriented, experiential, collaborative and reflective processes can enable 'learning-by-doing' processes, and support learning from real practice in a supportive way, empowering individuals to develop new EfS practices (Holdsworth et al., 2007; Scott et al., 2012; Tilbury, 2012). However, competing demands, curriculum structures, current workloads, academic pressures, existing organisational conditions, and a lack of time have been found to act as barriers in implementing EfS ideals into practice (see sections 8.2.3, 8.2.4, 8.3.3, 8.3.4, 8.4.8). This indicates a possible gap between academics' theories-in-use and espoused theories (Argyris & Schön, 1978). Academics might believe in, and see the value of student-centred approaches and sustainability, but may not necessarily be translating it into practice due to existing organisational conditions and the factors aforementioned. Consequently, even though academics might have a personal interest in EfS to engage in conversations and projects that lead to their empowerment in terms of knowledge of EfS, this would not be enough. Thus, other strategies, such as reward systems, recognition and providing them with time and financial resources are needed to empower them to embed EfS (see sections 8.2.2, 8.3.4 and 8.4.4).

The need for reward systems and funding has been widely advocated in the literature as a clear enabler to embed EfS (Holmberg & Samuelsson, 2006; Moore, 2005b). The University of Southampton needs to create reward systems and funding opportunities that empower individual and collective action towards embedding EfS. Current curriculum structures also emerged as disempowering academics to try innovative teaching and learning methods (see sections 8.2.3 and 8.3.3). This indicates that, in order to embed EfS, academics need to be provided with the flexibility, capacity and space in terms of curriculum delivery to empower them to try innovative teaching and learning methods that often require small groups of students and more time and engagement in student learning by lecturers.

Because of the importance of research at the University of Southampton, evidenced throughout the thesis (see sections 8.2.2, 8.3.4 and 8.4.4), it seems reasonable to suggest that a clear strategy to empower academics within the University to embed EfS would be the creation of research grants and recognition. Research projects that seek to empower academics and students to embed EfS need to be supported. Undergraduate research projects, masters theses, and doctoral theses have a contribution to make in building organisational sustainability and empowering the wider university community. For example, the creation of awards, competitions or prizes for research projects on sustainability could also contribute to the empowerment of staff and students to create organisational change towards sustainability (Thomas, 2004; Tilbury, 2012).

In summary, the creation of collaborative and interdisciplinary groups that can share their expertise and skills on sustainability and learn from each other in supportive learning environments is necessary to empower academics, senior managers and students to embed EfS. Action-orientated projects that can generate transformative learning on sustainability, the creation of internal reward systems and recognition, organisational support through providing staff with the time and financial resources to embed EfS, and enhancing sustainability research could empower the university community to practice the ideals of EfS.

10.4.4 Embed

The creation of university structures is imperative to embedding EfS within the undergraduate curriculum. The findings from Stage III clearly show how existing university structures, or lack of university structures influenced their progress (see section 8.4.4). The University therefore needs to create specific sustainability structures that allow for embedding EfS. Sustainability 'champion' universities have sustainability directors and sustainable centres, which is a clear first step to embedding sustainability in the university structures and lead to holistic organisational change (Ryan, 2011). The Sustainability Programme findings have evidenced the need to create a sustainability director and specific sustainability positions in order to embed sustainability within the university structures (see section 8.4.4). This would build sustainability into the promotion criteria and would create visible people in charge of sustainability in the different university faculties or departments. However, the existence of champions, such as the Sustainability Programme's members, may not receive the organisational support needed to lead innovation without having a senior manager specifically devoted to sustainability (see section 8.4.4). For this reason, it seems appropriate to have a more specific and visible role in the senior management team, such as a Pro-Vice Chancellor in charge of sustainability. At the moment there is a sustainability champion but there is no specific member of the University Executive Group in charge of sustainability (see section 8.4.4).

Furthermore, the existing faculty structure at the University (see Chapter 2 section 2.4) was indicated by participants as representing a physical boundary to inter- and trans-disciplinary work. The University faculties had their own strategies and ways of operating, which hindered embedding sustainability across disciplines and faculties (see section 8.4.4). Consequently, creating a cross-faculty role in charge of leading the EfS agenda across the different university faculties seems a necessary way forward to establish transdisciplinary opportunities and action

on sustainability. The need to build sustainability criteria into internal quality assurance processes in order to embed EfS was also evidenced throughout this study (see sections 8.3.4 and 8.4.8). A project named *'Leading Curriculum Change for Sustainability: Strategic Approaches to Quality Enhancement'* was conducted recently on quality assurance processes on sustainability with five UK universities (see section 3.4.5). A guide to quality and EfS in HE has been produced, which could inform the University of Southampton in how to add sustainability into internal quality assurance processes.

This thesis reveals the importance of embedding sustainability within the existing research structures, for example in bids for research grants and criteria for success, taking into account the social and environmental impacts of research. One participant commented that as an ethical protocol existed, a sustainability protocol for research could be created for all the research conducted at the University (see section 8.2.4). This would contribute to embedding sustainability in the university structure and fit in with the existing academic culture at the University, which is research-focused (see sections 8.2.4 and 8.4.8). Taking advantage of existing university structures to facilitate embedding sustainability within the organisation is fundamental, for example in existing funding schemes for academic or teaching development, professional development programmes for academics, and interdisciplinary structures such as the recently developed undergraduate CI modules or the Flexible Learning project (see section 2.4.2). A clear agreement existed amongst the participating academics on the suitability of the CI modules as an existing structure where EfS was already embedded, and that should be reinforced (see sections 8.2.3, 8.3.3 and 8.4.7). Such initiatives encourage and enable interdisciplinary work by academics from different subject areas, and provide students with opportunities to learn about contemporary global issues.

Establishing the monitoring, assessment and reporting procedures of sustainability is necessary, though this is one of the main challenges that HEIs have faced so far in terms of their sustainability practice (Shriberg, 2002). As the findings indicate, this is a challenge because of the difficulty of monitoring or assessing some of the aims of sustainability, such as engagement, collaboration and empowerment (see section 8.4.1). Creating these monitoring, assessment and benchmarking systems collaboratively with other universities similar to Southampton, such as the University of Nottingham or the University of Bristol, part of the Russell Group and also part of the HEA Green Academy programme 2011 (see section 3.4.6), could contribute to embedding EfS within the university structures more.

In summary, the creation of a senior management position on sustainability, sustainability positions in the different faculties and academic units, a cross-faculty position to promote EfS, adding sustainability as part of the promotion criteria, job descriptions, and research protocols and processes would enable embedding sustainability within the university structures at the University of Southampton. Enhancing sustainability and taking advantage of existing university structures such as the professional development unit and the CI modules is essential to embedding EfS across the University.

10.5 Limitations of the study

This section outlines the limitations of this study. As I have pointed out, I envision sustainability as a transformative organisational learning process (see Chapter 4), which implies that we are continually developing, learning and gaining new insights at an individual level that will then influence the group and organisational level. This research was conducted in a particular time, in a particular context, with a particular collection of individuals and groups. The model I developed is therefore based on the factors I identified at the University throughout my research and is intended to inspire EfS policy and practice at the University of Southampton.

Time was one of the main limiting factors in this study. I was interested in exploring the contribution that action research could make to organisational learning for sustainability. In Stage II I faced several challenges, such as academics having different knowledge of sustainability, different levels of motivation, and different interests. As I have pointed out previously (see section 8.3.1), developing a shared understanding of sustainability took a considerable amount of time and effort within the research process. I did not have the time and capacity, and neither did my participants, to prolong the research and the data collection to work with them for a longer period in order to look at the impact of delivery on student learning in sustainability. In this sense, it would be necessary to conduct a longitudinal study, to work with academics for a longer period of time, such as for two consecutive academic years within the same action research process. This could bring more empirical evidence and insights into the change of practice and the outcomes of delivery. It seems that significant change and action towards EfS would have been achieved in subsequent years if continued collaboration and reflection existed.

Moreover, offering training in action research to participating academics would have facilitated more action. For example, Tilbury et al. (2004) trained lecturers on action research

to help them develop their own action research projects to embed sustainability. In my case I did not have the capacity, the time, or the financial resources to gain Stage II participants' agreement for this. Nor did I have the expertise on action research to teach them when we started the project. I could not therefore directly ask them to commit to conducting their own action research projects. This was rather embedded, and at the end of the study I asked them to reflect on the research method (see section 7.7.2). I believe that receiving some initial training in action research would have supported participants more proactively to rethink their teaching practice achieving more tangible outcomes of delivery.

The main challenge I faced as a researcher was to gather evidence on whether participants' assumptions had been challenged (see 8.3.5 and Chapter 9). It would be necessary to conduct a longitudinal study to enable work with academics over a longer period of time, to collect evidence of their assumptions, and their espoused-theories and theories-in-use (Argyris & Schön, 1978). The method I designed did not address how to qualitatively research if the assumptions had been challenged. This indicates that other research tools in conjunction with the ones I used would be needed, such as observations and reflective accounts provided by the participants over time that could provide evidence on the quality and extent to which the assumptions were challenged and reframed. I considered including participants' reflective journals as a research technique, however this was discarded due to the large engagement and commitment that the research already represented for the participants.

Establishing my role during the research process was one of the limitations I faced. I was not an experienced action researcher, facilitator or critical friend. I had to learn to become a facilitator and critical friend through the research process (see section 9.1). This is one of the main values in terms of my learning through the research. However, learning to take on these roles (e.g. gaining access and developing rapport and trust) probably took up valuable time I could have spent on conducting further action with my participants. This may have led to greater outcomes of the action research project.

Stage II participants did not continue to work together after the research was finished. Participants saw the outcomes of the research as a potential contribution to inform the practice and policy of the University, but did not see the relevance or did not have the time to continue working together once I finished the research. This mirrors issues to do with long-term sustainability of projects like mine, if they are not well supported and resourced by the organisation.

Two students took part in the research because they were part of the Sustainability Programme team, but I decided to focus on academic staff. This was mainly because of the assumption made in terms of staff having more knowledge about the organisational dynamics and conditions and them having more power to make change happen on the curriculum side and in the organisation. A limitation of the study is the fact that I did not engage with non-academic staff, students or senior managers as main informant groups, which has provided a bias towards the views of academic staff members.

10.6 Contributions and implications for further research

In this section I outline the main contributions and the implications of the study. These are the theoretical contribution made through the development of organisational learning towards sustainability in HE (see Chapter 4), the methodological contribution of using action research as a research method to foster organisational learning for sustainability (see Chapters 5, 6 and 7) and the development of a model for the University of Southampton on how to embed Efs within the undergraduate curriculum.

10.6.1 Theoretical contribution: exploration of organisational learning processes towards sustainability in higher education

In Chapter 4 I developed an integrative organisational learning framework towards sustainability in HE based on transformative learning theory (Mezirow, 2009), organisational learning theory (Argyris & Schön, 1978), effective leadership for sustainability (Fullan & Scott, 2009; Scott et al., 2012) and expansive learning theory (Engeström, 1987). The use of this theoretical framework to guide this study has contributed to gaining a deeper understanding of organisational learning processes towards sustainability at the University of Southampton.

I took individuals and teams as the basic units of learning for my research (Argyris & Schön, 1978; Senge, 1990). This study has provided evidence on the importance of working with individuals and teams to generate organisational learning towards sustainability (see sections 8.3.5, 8.4.5 and 8.4.9). Therefore, the creation of working groups is vital to advance the agenda of sustainability in HE. Moreover, transformative learning theory (Mezirow, 2009) and organisational learning theory (Argyris & Schön, 1978) were found to be relevant theoretical

approaches to explore existing worldviews of academics and challenge their existing mental models in EfS (see sections 8.3.5 and 8.4.9). This reinforces the need to create transformative learning and double-loop learning processes (see section 4.3) amongst academic staff in order to transform their existing mental models in EfS and bridge the gap identified between EfS theory and practice (Christie et al., 2013; Cotton et al., 2009). A space for critical reflection and communicative action (Habermas, 1987) was created through the research (sections 8.3.5 and 8.4.9). However, as I have pointed out previously (see Chapter 9) it proved difficult to measure the extent to which participants' assumptions were challenged and how this translated into change of teaching practice to embed EfS. Stage II findings provide evidence on the difficulty of aligning espoused-theories (beliefs and values) and theories in-use (behaviour) (Argyris, 2006; Argyris & Schön, 1978). Although academic staff members could see the relevance of EfS ideas and the value of using student-centred approaches, it was difficult to align this to their behaviour and practice. This research shows that there are other factors that made the alignment of theories-in-use and espoused-theories in EfS almost impossible. Further empirical research, conducting a longitudinal study, would be needed to work with the same academics for a longer period of time. This could provide evidence on the link between reframed worldviews and assumptions in EfS and their translation into teaching practice to identify the factors that inhibit aligning EfS theory and practice.

The theoretical framework used has reinforced the importance of the five disciplines of Senge (1990), being those of shared vision, team learning, personal mastery, mental models and systems thinking in creating learning organisations towards sustainability. The organisational learning ideal (Senge, 1990) shares a number of similarities with educational processes towards sustainability such as future-thinking, collaboration, systems-thinking, critical thinking and reflection, active participation and partnerships (Tilbury and Wortman, 2004; Tilbury, 2011). This thesis has shown that Senge's model and disciplines are relevant for fostering organisational learning towards sustainability in HE as other research has also suggested (Gudz, 2004; Sharp, 2002). Therefore more empirical research is needed that uses these theoretical lenses to explore change processes towards sustainability at universities to inform further policy and action.

The use of Senge's disciplines (1990) to guide this study has enabled me to identify the existence or inexistence of a shared vision and how this contributes to advancing or blocking sustainability practice (see sections 8.3.1, 8.3.5 and 8.4.1). However, the findings indicate that team learning and personal mastery could be achieved more easily through the creation of working groups, professional development programmes, the organisation of events with EfS

experts and sharing of resources (see sections 8.3 and 8.4). Developing mental models in EfS and shared visions of the future require greater efforts and it is difficult to know or measure the real impact that policies or training programmes can have on challenging academics' mental models or worldviews in EfS (Barth & Rieckmann, 2012; Holdsworth et al., 2007). Thus, further empirical research using other tools to explore the development of Senge's five disciplines is necessary. Moreover, this thesis suggests, in line with Sharp's (2002) recommendations, that using and developing these five learning disciplines (Senge, 1990) drives innovation and specific sustainability projects that can help understand the complex characteristics of universities, and rethink current mental models in EfS.

Expansive learning theory (Engeström, 1987) has contributed to the understanding of cultural and historical conditionings influencing academics. However, because of the relevance of academic culture to embed EfS identified in this study (see sections 8.2.4, 8.3.4 and 8.4.8), socio-cultural theories of learning should acquire a more central role in further empirical research on EfS in HE. The use of expansive learning theory has enabled me to gain a general understanding of the influences of academic culture, however I have not been able to explore cultural conditionings that inhibit turning EfS ideas into reality in-depth. I suggest that CHAT and the activity system (see section 4.3.2) could be used in further empirical research with academics as a tool for reflection on cultural and historical contradictions and conditionings that inhibit EfS practice. This could be informed by other research (Kerosuo, Kajamaa, & Engeström, 2006; Trowler & Knight, 2004) in organisational settings such as schools and hospitals that has used Engeström's framework (1987) to frame activity systems and to foster expansive learning at work. These studies could inform further empirical research in EfS in HE.

10.6.2 Methodological contribution: exploration of action research as a research method to foster organisational learning for sustainability

Action research and action learning methods have been widely used for professional development purposes and improvement of teaching and learning in schools and universities (Aspland et al., 1996; Donche & Petegem, 2004; Kember & Associates, 2000; Nind, 2003). In the area of EfS, PAR and participatory research approaches have been used to work on both professional and curriculum development on EfS with school and university teachers (Gayford, 2003; Tilbury et al., 2004). I placed my research within the emancipatory and critical theory paradigm (Carr & Kemmis, 1986, 2009), which focuses on the emancipation and

empowerment of individuals through challenging and transforming existing assumptions and mental models of sustainability (see Chapter 5). Evidence has been gathered on the transformative potential of EAR to foster organisational learning towards sustainability (see sections 8.3.5 and 8.4.9). As this study suggests, EAR and second-order action research (Elliot, 1991) contributed to transform participants' mental models on EfS (see sections 8.3.5 and 8.4.9). Stage II findings (see section 8.3.5) provide evidence on how existing mental models on EfS were challenged and new understandings, insights and teaching practices were gained through the research process. As others have argued (Barasa Atiti, 2008; Mulà Pons de Vall, 2011) critical theory enables people to identify current mental models in EfS and engages them in changing current practice towards sustainability. In line with these authors, this thesis suggests that more empirical research using EAR is needed to foster new understandings and professional development on EfS, and to inform future studies on suitable methods and strategies to work with academics on changing thinking and practice of EfS.

In addition, evidence has been gathered on how participatory and emancipatory approaches such as action research can foster transformation and learning in EfS (sections 8.3.5 and 8.4.9). These approaches catalyse critical reflection, collaboration and learning-by-doing from real practice. In my thesis I explored EAR and the research methods used (see Chapters 5, 6 and 7) as the means to develop a strategy for embedding EfS within the university. Therefore, this study contributes to the theory-building of how to develop EfS strategy in practice. The methodological framework developed combines what are often seen as two distinct activities, those of theory and method for EfS. The application of EAR has sought to develop new understandings and practices on EfS, thus contributing to the theory of EfS methodology, and further demonstrating how organisational learning towards sustainability can take place in HE.

The framework of EAR for EfS was suggested as the method to address academics' needs for developing strategy and action in their teaching practice. This method has enabled reflection and action, alongside the identification of specific needs of academics and the factors influencing their engagement and action in EfS. This research has demonstrated the potential of using these approaches to rethink current practice and to lead to new practices and actions of academics (see section 8.3.5). The use of an EAR approach contributes to empowering academics to take ownership of sustainability and to connect it to their discipline. More empirical studies using action research are needed because they empower academics and motivate action. EAR contributes to better decision-making in terms of sustainability because it questions practice, and current assumptions and worldviews. Moreover, ALC, used as a research technique in Stage II, has proved to be a useful tool for identifying possible

assumptions and balancing the group's time and roles (see section 7.4.2 and Chapter 9). Therefore, I suggest that more research using ALCs as tools for reflection and learning with academic staff members is needed.

The findings of this study have shown the role of action research in opening up communicative space and communicative action (Carr & Kemmis, 1986, 2009). However it is difficult to know the real impact of this project and the research method used. The research method used would need further exploration and it would be necessary to readjust it according to the learning gained through the research. Further empirical research needs to be conducted to test this research method with other individuals and teams in other organisational contexts. This would inform on the wider applicability and permit an evaluation of whether it can be replicated as a method to foster organisational learning towards sustainability in HE.

This thesis has significant implications for HE policy and practice. Through action research, academics develop new ways of understanding and new practices for embedding EfS within their teaching practice and within the organisation. Via this type of research the learning of individuals can lead to wider organisational learning and change. Due to the fact that they are contextualised, EfS interventions that are based on action-orientated processes, participation and collaboration are likely to be more culturally appropriate, and therefore more sustainable.

10.6.3 Model for the University of Southampton on how to embed EfS within the undergraduate curriculum

There have been several theoretical developments on the pedagogy of EfS, however little attention has been paid to the holistic implementation of EfS in the curriculum (Thomas, 2004; Tilbury, 2012). Similarly, there are only a few studies that have explored in-depth staff perceptions or the challenges and opportunities that staff actually face in practice when trying to embed EfS ideas in their teaching practice (Cotton et al., 2009; Fien, 2002; Wright, 2010). This study has contributed to filling this gap identified in the literature through the development of an evidence-based model that emerged from real practice and from the factors identified by the participants when trying to embed EfS ideas within their teaching practice (Stage II).

Moreover, most existing research on embedding EfS in HE has focussed on case studies and stories of transformation without presenting a coherent theoretical or methodological

approach to look at the change process of universities seeking to embed EfS (see Chapter 3). This study has contributed in addressing significant shortcomings in the literature in terms of systematically studying the change process towards embedding sustainability per se (Ryan, 2011; Velazquez et al., 2005). In Stage III, I engaged with a community of practice seeking to embed sustainability within the organisation and studied the factors influencing their progress. This thesis extends current knowledge on identifying the factors, opportunities, challenges, and resistances which emerged from a real time intervention at the University of Southampton (see section 8.4). Hence, I aimed to systematically study organisational learning and change processes towards building a more sustainable university, by developing its theoretical basis (see Chapter 4), and developing qualitative methods that can lead to organisational learning and change processes in EfS at the University of Southampton (see Chapters 6 and 7).

I have therefore generated an evidence-based model with four overarching components that can support the University of Southampton in its aim to embed EfS within the curriculum (see section 10.4 and Figure 10.2). The I3E Model corresponds to: **I**nform the university community about sustainability; **E**ngage the different university stakeholders in the change process towards sustainability; **E**mpower individuals and groups to make change happen within their sphere of influence and action; and to **E**mbod sustainability within existing university structures.

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Appendices

Appendix 1 Sustainability in the international scene

During the 1960s and 1970s an environmental movement was initiated due to the emergence of different social concerns: growing pollution and environmental degradation, poverty in non-developed countries, inequalities, etc. The publication of some books such as *the Silent Spring* (Carson, 1962) and *the Limits to Growth* (Meadows, Meadows, Randers, & Behrens III, 1972), to cite two of the most relevant and remarkable books in this area, and the lyrics and music of artists of the time such as Cat Stevens, John Lennon, John Denver and Bob Marley, advocated the need for environmental protection, social justice, human rights and equity. These represented landmarks in Western societies and made a public call for global environmental action and political commitment to address development and environmental issues. Due to the increasing social concerns about the environment, inequalities and development, the first United Nations Conference on the Human Environment was held in 1972 in Stockholm. It was the first time that the link between development and environment was internationally and politically recognised and therefore the need to ensure environmental protection and development of non-developed countries as the means to alleviate poverty. Forty years after, in the recently held United Nations Conference on Sustainable Development (UNCSD, Rio de Janeiro, June 2012) the Heads of State and Government affirmed to *'renew our commitment to sustainable development... at all levels, integrating economic, social and environmental aspects and recognizing their interlinkages, so as to achieve sustainable development in all its dimensions'* (United Nations, 2012, pp. 1-2). Although an increasing international and national commitment is plausible, due to the several declarations of good intentions (see Table 1), real progress on this agenda and its means of implementation across the globe has been weak and unequal. The lack of progress and implementation has also been acknowledged in *The Future We Want*, an outcome document of the UNCSD, where state members declared *'we recognize that the 20 years since the United Nations Conference on Environment and Development in 1992 have seen uneven progress, including in sustainable development and poverty eradication. We emphasize the need to make progress in implementing previous commitments'* (United Nations, 2012, p. 5). The following table outlines the timeline and evolution of sustainable development and Education for Sustainable Development in the international sphere.

Year (Place)	Key event	Key outcomes
1972 Stockholm (Sweden)	United Nations Conference on the Human Environment	First United Nations conference dedicated to the environment as a topic. It marks the beginning of international policy on environmental issues. It represented the first time that developed countries' leaders recognised the relationship between development and the environment.
1987	Publication of the Brundtland Report "Our Common Future" by the World Commission on Environment and Development	The World Commission on Environment and Development published <i>Our Common Future</i> , also known as the <i>Brundtland Report</i> . The interrelation between environmental, economic, cultural and social issues was stressed, as well the need for global solutions. Origin of the most mainstreamed definition of sustainable development.
1992 Rio de Janeiro (Brazil)	United Nations Conference on Environment and Development (UNCED) <i>(also known as Rio Summit or Earth Summit)</i>	Three outcome documents resulted from this conference. The <i>Rio Declaration on Environment and Development</i> fixed the rights and obligations of nations in pursuing sustainable development. The <i>Forest Principles</i> made recommendations for sustainable development and conservation of forests. The <i>Agenda 21</i> was established as a voluntary action plan for implementing sustainable development. In Chapter 32 of the <i>Agenda 21</i> it is recognised for the first time the importance of education to foster a sustainable society and future. Education at all levels, including Higher Education, is seen as a key agent for a positive transformation towards sustainability.
2002 Johannesburg (South Africa)	World Summit on Sustainable Development (WSSD) <i>(also known as Rio+10)</i>	The international political commitment to sustainable development was renewed. Special interest on assessing the progress and implementation. The need to reinforce Education for sustainable Development was stressed.
2005	Declaration of the United Nations Decade of Education for Sustainable Development (UNDESD, 2005-2014)	Following on the recommendations of the WSSD, the United Nations General Assembly in 2002 declared the United Nations Decade of Education for Sustainable Development, which initiated in 2005. This was intended to be a lever to embed the principles of sustainable development across all levels and sectors of education.
2005	The United Nations Economic Commission for Europe (UNECE) Strategy for Education for Sustainable Development	The UNECE Strategy was adopted by the European Union to promote the integration of ESD in Europe. The strategy is an applied tool to integrate key themes within European educational systems.
2009 Bonn (Germany)	World Conference on Education for Sustainable Development	This conference was held to evaluate the achievements made during the first half of the DEFS and future strategies to move into the second half of the DEFS. The <i>Bonn declaration</i> (UNESCO,2009) was the outcome document of the conference.
2012 Rio de Janeiro (Brazil)	United Nations Conference on Sustainable Development (UNCSD) <i>(also known as Rio+20 or Earth Summit 2012)</i>	In Rio+20 the international commitment on sustainable development was renewed. The conference focussed on two themes: a green economy in the context of sustainable development and poverty eradication, and institutional framework for sustainable development. The outcome document <i>The future We Want</i> renews political commitment, provides a set of recommendations and reaffirms the key role of education in moving towards a sustainable future.

Table 1. Chronology of the emergence of sustainable development and EfS internationally

Sustainable development was defined for the first time in 1983, when the United Nations created the World Commission on Environment and Development (WCED) to establish 'A global agenda for change'. In 1987 in its report *Our Common Future*, also known as the *Brundtland Report*, an explicit

link was made between the social, economic, cultural and environmental issues, and sustainable development was conceived as (WCED, 1987, p. 43):

“The development that meets the needs of the present without compromising the ability of future generations to meet their own needs”.

This definition is one of the most quoted definitions referring to sustainability or sustainable development (Bell & Morse, 1999). Sustainable development was and is seen as a meeting point for environmentalists and developers and as a call to all nations to work on environmental protection, economic growth and social equity. There have been many debates and controversies related to this definition and the Brundtland report (for further discussion see Bell & Morse, 1999; Dresner, 2002). Some authors consider it is mainly linked to economic growth without rethinking the way of living, the economical patterns and dynamics, and as a contradiction in terms, showing the intent to continue with current non-sustainable practices and interrelationships with natural systems (Dresner, 2002). By contrast Langelle (1999) states that maybe the link between economic growth and sustainable development has been over-emphasised and other aspects such as morals and behaviours have been overlooked. The Brundtland report also emphasises social justice, equity, solidarity, poverty and ecological limits as aspects of sustainable development (WCED, 1987). The definitions given by international and national agencies have been criticised for being vague, abstract, ambiguous, contradictory and non-operational because they do not clarify what methods and innovative processes are required to cultivate sustainable communities (Bell & Morse, 1999; Dresner, 2002; Kates, Parris, & Leiserowitz, 2005; Lele, 1991). Weaknesses in the semantics of poverty reduction, sustainable development and participation need to be conceptualised if a more sustainable society is to be realised (Lele, 1991). Economists and environmentalists associate different ideas and values to sustainability becoming a contested concept such as justice, liberty or development (Dresner, 2002). One needs to accept that there exist different worldviews and definitions of sustainability and according to Eichler (1999, p. 182) *‘there is consensus that there is no consensus on the meaning’* of sustainability as concept. Therefore different perspectives and definitions are provided by different disciplines such as politics, economics and environmental sciences. The lack of agreement and understanding of sustainability as a concept has also been highlighted in the literature as a challenge to embed sustainability in Higher Education. The controversies related to the notion and definition of sustainability obstruct it to be taken as an operational and serious concept, often seen as a political construct, vague and meaningless for some academics (Filho, 2011; Policy Studies Institute et al., 2008). Frequently it is seen as a ‘fashion’ and ‘media’ concept that appears in all the political speeches but meaningless in practice and in the real world. Sustainability is inevitably political and has become *‘the watchword for international aid*

agencies, the jargon of development planners, the theme of conferences and learned papers, and the slogan of developmental and environmental activists... and is poised to become the developmental paradigm of the 1990s' (Lele, 1991, p. 607). Thus the sustainability debate it is also a debate about current socio-economic systems where present values such as progress and quality of life need to be re-evaluated. Moreover a debate exists around 'strong' sustainability and 'weak' sustainability, one with focus on ecological and environmental issues and the other with focus on economic and financial issues (Bell & Morse, 1999; Dresner, 2002). I decided to use the term sustainability throughout my dissertation to emphasise the environmental and social side rather than the development and economic side. I agree with Gough and Scott (2007) in that one needs to acknowledge and accept the presence of multiple different definitions instead of imposing a definition as true and definitive. For Kates et al. (2005) the different ways to define sustainability are as: a concept; a goal; indicators (how it is measured); the values under it; and in practice. However, the argument that the ambiguity of the term represents its main weakness needs to be acknowledged (Lele, 1991). I personally see the flexibility of the term as an opportunity for creating open and dynamic processes of participation, discussion and reflection to be adapted to different contexts and situations (Kates et al., 2005). This intrinsic characteristic enables dialogue and cooperation amongst people from different disciplines and sectors with different worldviews and interests to reinterpret, redefine and adapt sustainability to concrete situations and contexts.

One needs to recognise that sustainability is in the first place a socio-political matter related to the magnitude, quality and type of the social and political processes and change required. Different perspectives exist, such as ecological modernisation vs. ecocriticism (Dryzek & Schlosbery, 2005) or technocratic vs. paradigm shift (Scott & Gough, 2007). The technocratic perspective *'depends upon a reductionist, mechanistic view of the natural world, and exhibits confidence in the ability of human beings to develop scientific and technological solutions to environmental problems'* (Scott & Gough, 2007, p. 15). It is closely related to ecological modernisation, where a simple adaptation of existing patterns is required. In this trend no big structural changes are necessary and it is assumed that the modernisation of technology will be enough to ensure a good quality of life for present and future generations. This viewpoint assumes that mankind and technology have enough knowledge and capacity to deal with sustainability and the natural system. It is the vision of most of the international and national definitions and policies related to sustainable development (Dryzek & Schlosbery, 2005). By contrast, in the paradigm shift perspective it is essential to question existing frameworks and knowledge, because *'society is informed by a paradigmatic way of thinking'* (Scott & Gough, p.16), and existing socio-economic and political structures and systems need to be challenged. This vision is connected with the ecocriticism perspective which calls for a profound

structural change that involves moving from an anthropocentrism vision to an ecocentrism vision (Dryzek & Schlosbery, 2005). These ideas involve a structural change of politics and social organisations, in governance and in the processes of decision-making.

Both perspectives presented above are associated with the mechanistic and ecological view described by Sterling (2001) when referring to education and sustainability. He states that 'ecological thinking entails a shift of emphasis from relationships based on separation, control and manipulation towards those based on participation, empowerment and self-organisation' (Sterling, 2001, p.49). An ecological view of education is translated into more participative and holistic education, connected to the real world, and involves cultural and structural changes. The place of sustainability in education is further discussed in Chapter 3 Sustainability and Higher Education.

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Appendix 2 University of Southampton campus, faculty and academic structure

Campus	Faculty	Academic subjects / centres
Highfield Campus	<u>Faculty of Business and Law</u>	Law Management Winchester School of Art
	Faculty of Engineering and the Environment	Civil Engineering and the Environment Engineering Sciences Institute of Sound and Vibration Research
	Faculty of Health Sciences	Health Sciences
	Faculty of Natural and Environmental Sciences	Biological Sciences Chemistry Ocean and Earth Science, National Oceanography Centre Southampton
	Faculty of Physical and Applied Sciences	Electronics and Computer Science Optoelectronics Research Centre Physics and Astronomy
	Faculty of Social and Human Sciences	Centre for Contemporary China Education ESRC – Doctoral Training Centre Geography Mathematics Psychology Social Sciences Southampton Statistical Sciences Research Institute
Avenue Campus	Faculty of Humanities	Archaeology English Film History Modern languages Music Philosophy
Winchester School of Arts	The Winchester School of Arts is located in Winchester where are placed the art and design subject areas.	
Southampton General Hospital	The Faculty of Medicine is located in the Southampton General Hospital, a teaching hospital in the UK.	
National Oceanography Centre Southampton (NOCS)	The National Oceanography Centre Southampton and the subject areas of Ocean and Earth sciences are located in a campus situated in the south of Southampton	
Campus Malaysia	The university has recently established a campus on engineering in Malaysia imparting undergraduate degrees from October 2012.	

Appendix 3 Review and critique of the international frameworks of Education for Sustainability

International and national agencies have recognised the role of education in building societies based on values of equity, social justice and sustainability, and have developed strategies and action plans (DEFRA, 2005; HEFCE, 2009; United Nations, 2012; UNESCO, 2005, 2009). In Chapter 32 of Agenda 21, the outcome document of the Earth Summit 92, the relevance of education in creating sustainable communities was internationally accepted:

“Education at all levels is critical for promoting sustainable development and improving the capacity of the people to address environment and development issues . . . it is also critical for achieving environmental and ethical awareness, values and attitudes, skills and behaviour consistent with sustainable development”

One of the most remarkable facts in EfS this century was the declaration of the United Nations Decade of Education for Sustainable Development (UNDESD 2005-2014). UNDESD is coordinated by UNESCO and aims at integrating the principles, values and practices of sustainable development into all aspects of education and learning in order to address the social, economic, cultural and environmental problems of the 21st century. According to UNESCO (2005) education is frequently associated with a hope to create a more sustainable future and HE is a main agent for this positive transformation towards sustainability.

Education is considered to play a key role in fostering a more sustainable, equitable and socially just society (UNESCO, 2005). The role and power of HE in leading sustainability has recently been reaffirmed in the UNCED (United Nations, 2012, pp. 44-45):

“We therefore resolve to improve the capacity of our education systems to prepare people to pursue sustainable development, including through enhanced teacher training, the development of sustainability curricula, the development of training programmes that prepare students for careers in fields related to sustainability, and more effective use of information and communications technologies to enhance learning outcomes... teaching sustainable development as an integrated component across disciplines”.

EfS is based on values of justice, fairness, tolerance, adequacy and accountability. It promotes gender equality, social cohesion and poverty reduction, integrity and honesty, and it assigns a priority to care. It is underpinned by principles conducive to the sustainable lifestyle, democracy and welfare of human beings (UNESCO, 2009).

UNESCO (2005, p.17) identifies the following key roles for education:

- Education must inspire the belief that each of us has both the power and the responsibility to effect positive change on a global scale
- Education is the primary agent of transformation towards sustainable development, increasing people’s capacity to transform their vision for society into reality.
- Education fosters the values, behaviours and lifestyles required for a sustainable future.
- Education for sustainable development is a process of learning how to make decisions that consider the long-term future of the equity, economy and ecology of all communities.
- Education builds the capacity for such future-orientated thinking.

The UNDESD has represented a lever for the integration of sustainability in HE across the globe. In 2010 a special issue of the International Journal of Sustainability in Higher Education (IJSHE) was dedicated to this theme. This is evidenced by the existence of several papers and publications that have reviewed the policy context and contributions that different countries and regions are making to the UNDESD and to embedding sustainability in HE (Chhokar, 2010; Kasimov, Malkhazova, & Romanova, 2005; Kitamura & Hoshii, 2010; Naeem & Peach, 2011; Ryan, Tilbury, Corcoran, Abe, & Nomura, 2010; Sherren, 2008). Though the UNDESD encourages and offers leadership, recommendations and guidelines to embed the principles of EfS within educational policy and programmes, it is not a mandatory law, consequently the systematic implementation and evaluation of advancements internationally and nationally remain great challenges (Martin, Martin, Jucker, & Roberts, 2008; Wright, 2002).

UNESCO uses Education for Sustainable Development. As I have discussed in Chapter 2, I chose to use the term Education for Sustainability throughout my thesis because it emphasises the environmental rather than the developmental aspect. However it should be noted that some controversies exist around its definition. A differentiation between education about sustainability, education for sustainability and education as sustainability can be seen as:

Education about sustainability	Content centred. Adaptation of existing curriculum. Sustainability as a separate subject, no change of paradigm is required. Sustainability as a concept (assumption we know the exact meaning of sustainability).
Education for sustainability	Purpose centred. Reformation of existing curriculum and paradigm. This approach is value-laden, the skills, content and values required are known. Is understood as ‘learning for change’. Approach taken by UNESCO and other international and national initiatives.
Education as sustainability or sustainable education	Transformative learning and participative structure. Emphasis in the process and quality of the learning experience. Is creative and reflective, knowledge is provisional. Is understood as ‘learning as change’, based on life-long learning and cooperation. Divergence with existing patterns and models. Difficult to achieve in reality.

Source: Constructed from Sterling (2001)

A critique of the Education for Sustainability or Sustainable Development approach adopted by international and national agencies, and in turn the sustainability programmes they promote, is that it is value-laden and is based in a known definition of what sustainability is and the values required to be aware and deal with it (Sterling, 2001). This vision is seen as an adaptation of the current educational model and is closely related to the environmental education movement that is linked with critical thinking and reflection. However, it does not necessarily imply the ability to envision the world through different lenses. The advocacy for education as sustainability or sustainable education is based on a paradigm shift that challenges existing educational patterns for a transformative learning experience and on learning communities and educational institutions that are participatory (Foster, 2001). A sustainable education is contextual, innovative and constructive, focussed and infusive, holistic and human scale, integrative, process oriented and empowering rather than product oriented, critical, balancing, systemic and connective, ethical, purposive, inclusive and life-long (Sterling, 1996, pp. 22-24). However, integrating this educational process as part of an entire social process of transformation, which would lead to sustainability, is very difficult to achieve in the current political and socio-economic circumstances (Sterling, 2001). Others refer to EfS as a frame of mind, where the main goal is the relationship with nature, the attitudes, and the self and collective identity. The search for the connection with nature in a spiritual sense, human conscience and responsibility, and the sense of belonging to the environment are required to achieve sustainability (Bonnet, 2002). The existence of diverse views of sustainability and diverse ways to embed EfS are acknowledged as a positive element to ensure that new developments are culturally and locally relevant (HEFCE, 2008a).

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Appendix 4 Learning strategies towards sustainability in higher education

The following table summarises the learning strategies used in higher education to work on sustainability (Cotton & Winter, 2010):

Role-plays	Provide insights from standing in another's viewpoint. It contributes to the understanding and respecting of others.
Group discussions	Promote the exploration of students' worldviews, values and beliefs, empowering them to participate actively and share understandings and views. The facilitator role is in generating a positive group discussion environment.
Stimulus activities	Stimulus activities such as real documents, documentaries or films, pictures, newspapers, websites to inspire discussion and reflection on issues. The use of these resources provides opportunities for critical appraisal.
Debates	Debates promote the search for information and the development of an argument. Different groups discuss different arguments. Importance of facilitation to avoid confrontations.
Critical incidents	Students are given a case and they are asked about what actions they would/could/should do. Reflect on personal understandings and future professional roles and responsibilities, or promote group reflection.
Case studies	Widely used in subjects that do not focus on sustainability. Helps promote a holistic understanding of the topic. Case studies that are linked to the community or local issues allow students to research and learn from real contexts and identify possible solutions within the community and companies.
Reflexive accounts and professional development planning (PDP)	Reflective journals or accounts, and PDP, encourage students' reflection on new knowledge and learning for sustainability, by reflecting on, in and for future action and learning, during the whole learning experience.
Critical reading and writing	Critical reading and writing promotes a deep understanding of authors' perspectives and discourses. Identifying different perspectives and ideas contributes to learning for sustainability and framing alternative futures.
Fieldwork	Fieldwork as an experiential learning activity. Experiential learning engages the students emotionally and develops holistic thinking. In sustainability matters it means working with the local community providing students with real world learning opportunities.
Modelling good practice	Lecturers and teaching staff as role models for the students, as examples of good practice in terms of sustainability practice in their daily-life.

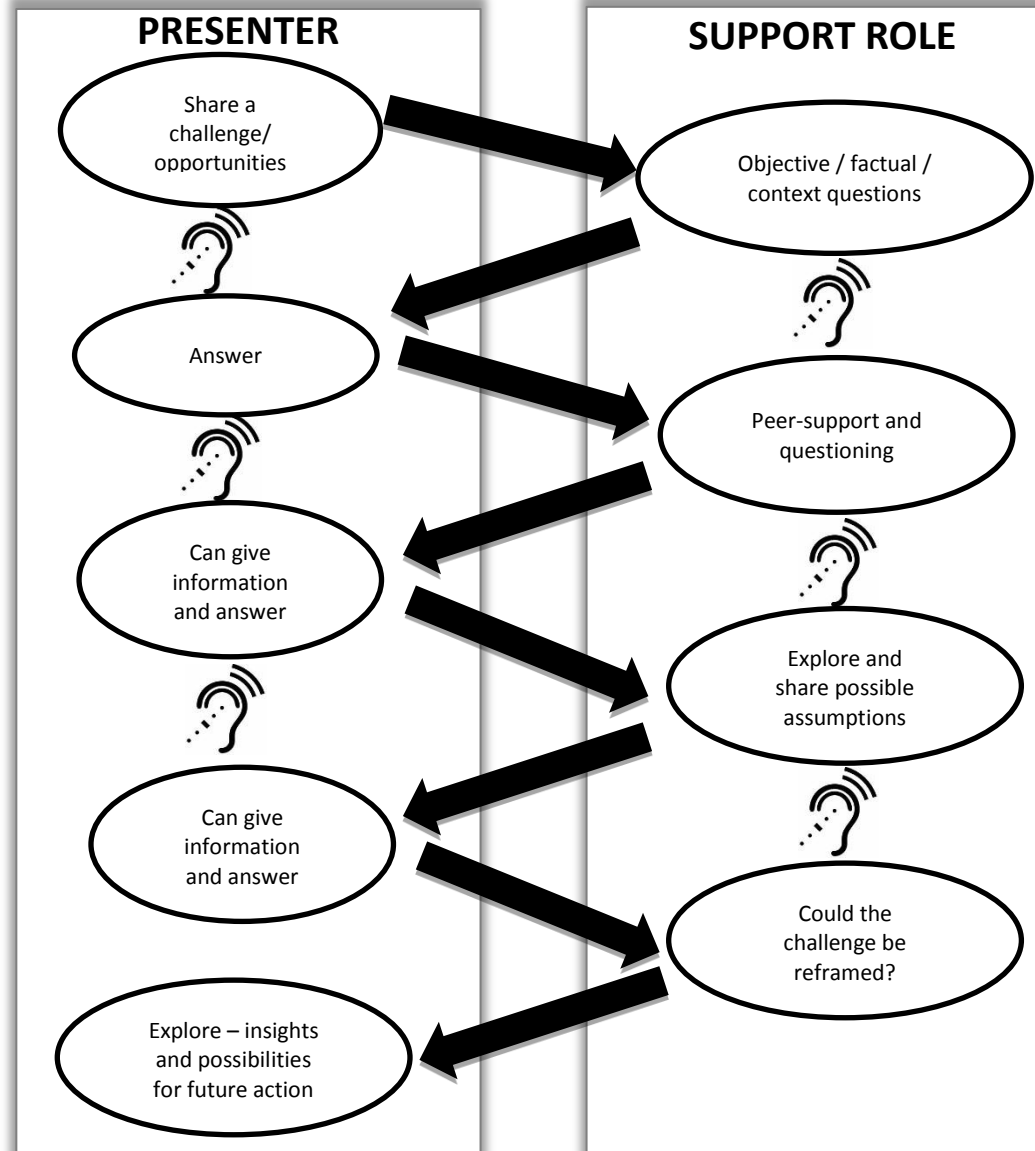
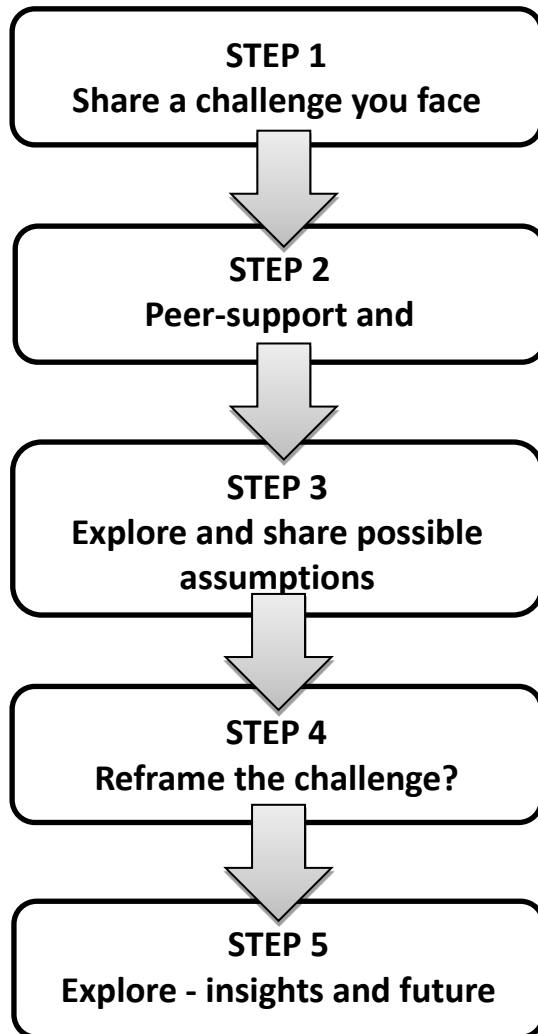
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Appendix 5 Websites of different organisations that provide information, resources and case–studies for teaching sustainability

- HEA – Sustainability Resources:
<http://www.heacademy.ac.uk/education-for-sustainable-development>
http://www.heacademy.ac.uk/resources/detail/sustainability/sustainability_resources
- Environmental Association for Universities and Colleges (EAUC):
http://www.eauc.org.uk/education_for_sustainable_development
- HEFCE – Sustainable development in HE resource guide:
<http://www.hefce.ac.uk/whatwedo/lgm/susdevresources/>
- UNESCO Education for Sustainable Development Publications:
<http://www.unesco.org/new/en/education/themes/leading-the-international-agenda/education-for-sustainable-development/publications/>
- Sustainability Online Resource and Toolkit for Education (SORTED):
<http://www.eauc.org.uk/sorted/home>
- Sustainability Exchange platform to share good practice amongst HE institutions:
<http://www.sustainabilityexchange.co.uk/>
- The OSIER project (Open Sustainability in Education Resource): <http://osier.ac.uk>
- 3-LENSUS project database – collection of innovative ESD projects in Europe:
<http://www2.leuphana.de/3lensus/moodle/>
- Websites of the different HEA Subject Centres. See for example UK Centre for Bioscience:
<http://www.bioscience.heacademy.ac.uk/resources/esd/sdresources.aspx#other>
Subject Centre for Education ESCalate (case studies Education – Higher Education and Schools):
<http://esdgc.escalate.ac.uk/casestudies>

Appendix 6 Information sent in preparation of the action learning set 1 and action learning set structure

As a participant you are asked to: Think of your key challenge related to embedding Education for Sustainability (within your own subject area and/or teaching) and share them with the group. The discussion that will follow will aim to facilitate insights and possible future action based on your challenges. Each participant needs to hold two different roles during the session: the presenter and the support role. Each participant in turn presents their challenge while the other participants listen, ask questions and offer suggestions, acting as a consultant, asking questions or making observations rather than providing advice. The presenter can provide further thoughts, ideas and possibilities for action.



Appendix 7 Participant information sheet Stage I, Stage II and stage III

Participant Information Sheet (Stage I)

Embedding Sustainable Development within the taught programmes at the University of Southampton

Invitation

I would like to invite you to take part in my research study. Before you decide I would like you to understand why this research is being done and what it would involve for you. Ask me if there is anything that is not clear.

It is completely voluntary to take part in the research. The study will be described in this information sheet for you. If you agree to take part, I will then ask you to sign a consent form. You are free to withdraw at any time of the research, without giving any reason, and you may decide not to answer any specific question.

Purpose of the study

I am a doctoral candidate from University's Southampton Education School. The purpose of my study is to develop an understanding of how Education for Sustainable Development could be embedded within the taught programmes across the University of Southampton. As a first stage, I would like to study and find out what is currently going on, or being considered in this respect in each Academic Unit/Faculty.

Sustainability relates to ways of thinking about the world, and forms of social and personal practice that lead to:

- ❖ Ethical, empowered and personally fulfilled individuals;
- ❖ Communities built on collaborative engagement, tolerance and equity;
- ❖ Social systems and institutions that are participatory, transparent and just;
- ❖ Environmental practices that value and sustain biodiversity and life-supporting ecological processes.

(Hall et al., 2003)

The project aims to:

- Find out what is currently going on in the University of Southampton concerning Education for Sustainable Development.
- Acknowledge staff who is already working towards embedding Sustainable Development.
- Gain a deep understanding of how staff from different disciplines are tackling this issue in their subject area and learn from their stories and experiences.
- Identify the factors (obstacles and opportunities) influencing and faced by staff concerning this issue and the uniqueness of the University of Southampton.

In previous work I have interviewed key respondents and studied the cases of 5 United Kingdom universities that have been working towards sustainability for several years and that are considered the good practice ones. The main purpose of visiting these universities as a preliminary work is to learn from their experiences and map different ways to approach this issue in higher education institutions. This work gives ideas in how

this issue can be approached and identify main successes, obstacles and opportunities from higher education institutions that although are different are more advanced and can share their expertise with me.

If you participate you will be asked to – Implications

As a participant you will be asked to participate in a 60 to 90-minute interview. The interview will be audio-taped to facilitate the interview development and transcription.

Risks and benefits of taking part

This first stage of research will allow me to identify the uniqueness of the University of Southampton and think about new insights to design a second step for this research, so the results obtained will be used for further research development. The results and valuable outcomes of your participation will benefit the work of staff and the institution towards embedding Sustainable Development in the curricula.

It is intended to publish the results, which will be made available to you, to discuss the main outcomes of the research. You will be asked for a respondent validation that will be used to avoid errors, omissions and to give you the right to withdraw anything that is not clear or you do not aim to keep from the interview.

The main benefits of taking part are the contribution that you can make with your own expertise and experience as a staff member in the University of Southampton, by sharing your everyday practice and experience.

This study has been reviewed and given a favourable opinion by the Ethics Committee of the University's Southampton School of Education. The Ethics Committee is a group who review research to protect dignity, rights, safety and well-being of participants and researchers.

Confidentiality

The research will use pseudonyms to keep participants confidentiality and anonymity, but this study is limited in the extent to which all the data can be kept anonymous, as people who are closed to you may be able to identify or imagine who is who and where is where.

Extracts from the interviews will be used in the final report, to show evidence and as part of the results and conclusions. Some extracts may be used for further discussion and research group activities within the second step of this research. All participants will be anonymised in the report and in using interview extracts.

Confidentiality will be safeguarded during and after the study. During the study, only I and my supervisors will have access to the data. All project information, including field notes, transcripts, documents, and audio tapes,

will be stored securely, kept in a locked filing cabinet, both during the data collection and analysis period and destroyed after the study has been completed.

You will be asked to participate in the member checking, where feedback will be given about the main results and conclusions of the research. You will be able to contribute to it, as a validation process of the main results and conclusions and as a way to approve the maintenance of confidentiality and privacy.

Further information and contact details

If you have any questions about this study feel free to contact:

Ms Gisela Cebrián Bernat

Southampton Education School

University of Southampton

Building 32

Southampton

SO17 1BJ

United Kingdom

Email: G.Cebrian-Bernat@soton.ac.uk

Participant Information Sheet (Stage II)

Study Title: Embedding Education for Sustainability within the undergraduate curriculum at the University of Southampton

Researcher: Gisela Cebrian

Ethics number: 1102

Please read this information carefully before deciding to take part in this research. If you are happy to participate you will be asked to sign a consent form.

What is the research about?

I am a doctoral candidate in the University's Southampton Education School. The purpose of my study is to develop an understanding of how Education for Sustainability (EfS) could be embedded within the undergraduate curriculum across the University of Southampton.

The purposes of this research are to:

- Identify key elements, strategies and conditions necessary to embed EfS within the undergraduate curriculum taking a holistic and organisational perspective;
- Promote a critical self and group reflection which facilitates acquiring new perspectives and discourses;
- Identify existing contradictions, resistances and challenges and opportunities faced when trying to work with staff in changing thinking and practice;
- Generate personal, professional and organisational learning towards sustainability.

Why have I been chosen?

You have been chosen as an academic member staff at the University of Southampton. Through my research I aim at generating a framework that emerges from real practice, problems, challenges and opportunities identified by the community, to enhance the integration of sustainability within the undergraduate curriculum. You are selected on the basis of willingness to:

- Develop practice and improve the undergraduate teaching towards embedding EfS
- Share personal and professional experiences with colleagues
- Be open to questioning about your own teaching practice

What will happen to me if I take part?

This research will last for approximately 11 months, from February 2012 to January 2013. The researcher will be involved as a facilitator of a group of 5 academic staff members seeking to reflect on and act towards embedding EfS within their undergraduate teaching. The role as a researcher is to provide staff with space for interdisciplinary and critical group reflection and be a catalyser for curriculum development in the area of EfS.

This research is qualitative and as a participant you will be asked to take part in:

- **3 Semi-structured interviews:**
 - **Interview 1:** Starting point concerning EfS (February-March 2012)
 - **Interview 2:** Reflection on introducing EfS/changing practice/challenges faced (May-June 2012)
 - **Interview 3:** Reflection on the process of change, the possible outcomes and key elements, strategies and conditions (November-December 2012)

The interviews will be semi-structured with main topics for discussion, but allowing the participants to talk in-depth about other issues that may be important and relevant to them.

- **3 Facilitated group discussions with the other academic staff in the study:**
 - **Facilitated discussion 1:** Reflection on personal past experiences and EfS framework discussion and theories of teaching and learning (March-April 2012)
 - **Facilitated discussion 2:** Reflection on curriculum design and deliver (May-June 2012)
 - **Facilitated discussion 3:** Reflection on the research process. Personal, professional and organisational conditions (November-December 2012)

Open-ended discussions addressing the needs of participants. At the end of each workshop a brief evaluation form will be provided to evaluate the session, the main outcomes, useful things and possibilities for action.

The interviews will be audio-recorded and the facilitated group discussions will be video and audio-recorded to facilitate the data collection process.

Document analysis: documents produced by participants during the research, facilitated group' discussions outcomes, and other documents such as emails between the researcher and the participants and possible innovations will be analysed but will remain confidential.

Participants are invited to keep a reflective diary during the research process, as a personal reflective account on their participation in the research. The use of diary method is valuable tool to reflect on practice and learning, in a personal, professional and organisational level.

Informal meetings and conversations with the participants during the process will be part of the reflections of the researcher and will be recorded as field notes.

During the process the researcher will help and support participants providing teaching materials in their subject area, with ideas, and will assist them in other issues (i.e. focus-group with students).

Are there any benefits or risks in my taking part?

The results and valuable outcomes of your participation will benefit the organisation as new knowledge about how to embed EfS within the undergraduate curriculum in the University of Southampton will be generated. Additionally it represents an opportunity to reflect on practice and act towards embedding EfS, making a positive contribution to help progress EfS within the university. The main benefits of taking part are the contribution that you can make with your own expertise, learning and experience as an academic staff member in the University of Southampton.

There are no risks involved in taking part in this research. It is intended to publish the results, which will be made available to you, to discuss the main outcomes of the research. You will be asked for a respondent validation that will be used to avoid errors, omissions and to give you the right to withdraw anything that is not clear or you do not aim to keep from the interview. You will be asked to participate in the member checking, where you will be able to give feedback about the main results and conclusions of the research.

This study has been reviewed and given a favourable opinion by the Ethics Committee of the University's Southampton Education School. The Ethics Committee is a group who review research to protect dignity, rights, safety and well-being of participants and researchers.

Will my participation be anonymous and confidential?

In compliance with the Data Protection Act and the University policy this research will use pseudonyms to keep participants confidentiality and anonymity, but this study is limited in the extent to which all the data can be kept anonymous, as people who are close to you may be able to identify or imagine who is who and where is where. Extracts from the interviews and discussions will be used in the final report, to show evidence and as part of the results and conclusions. Some extracts may be used for further discussion and research group activities. All participants will be anonymised in the report and in using interview and discussion extracts. You will be asked to participate in the member checking where you will be able to contribute to the validation process of the main results and conclusions and as a way to approve the maintenance of confidentiality and privacy.

Confidentiality will be safeguarded during and after the study. During the study, only the researcher and her supervisors will have access to the data. All project information, including field notes, transcripts, documents, and audio tapes, will be stored securely, kept in a locked filing cabinet, both during the data collection and analysis period and destroyed after the study has been completed.

What happens if I change my mind?

It is completely voluntary to take part in the research. You are free to withdraw at any time of the research, without giving any reason, and you may decide not to answer any specific question.

What happens if something goes wrong?

In the unlikely case of concern or complaint, please contact the Chair of Ethics Committee at the Southampton Education School (02380 595813, M.A.Nind@soton.ac.uk)

Where can I get more information?

If you have any questions about this study feel free to contact:

Ms Gisela Cebrián Bernat
Southampton Education School
University of Southampton
Building 32
Southampton - SO17 1BJ
United Kingdom
Email: G.Cebrian-Bernat@soton.ac.uk

Participant Information Sheet (Stage III)

Study Title: Embedding Education for Sustainability within the undergraduate curriculum at the University of Southampton

Researcher: Gisela Cebrian

Ethics number: 1102

Please read this information carefully before deciding to take part in this research. If you are happy to participate you will be asked to sign a consent form.

What is the research about?

I am a doctoral candidate in the University's Southampton Education School. The purpose of my study is to develop an understanding of how Education for Sustainability (EfS) could be embedded within the undergraduate curriculum across the University of Southampton.

The purposes of this research are to:

- Identify key elements, strategies and conditions necessary to embed EfS within the undergraduate curriculum taking a holistic and organisational perspective;
- Promote a critical self and group reflection which facilitates acquiring new perspectives and discourses;
- Identify existing contradictions, resistances and challenges and opportunities faced when trying to work with staff in changing thinking and practice;
- Generate personal, professional and organisational learning towards sustainability.

Why have I been chosen?

You have been chosen as a member of the Sustainability Programme group, a new initiative that is being implemented in the University of Southampton related to sustainability and curriculum and organisational development. Through my research I aim at generating a framework that emerges from real practice, problems, challenges and opportunities identified by the community, to enhance the integration of sustainability within the undergraduate curriculum. I am interested to learn from the process of implementing this initiative and your experiences and learning through its development.

What will happen to me if I take part?

This research will last for approximately 11 months, from February 2012 to January 2013. The researcher will be involved in the Sustainability Programme group as a Critical Friend. As a Critical Friend the researcher will provide feedback to the group, assisting the process of reflection and articulating experiences by asking critical and sometimes challenging questions. The researcher will attend the meetings and provide online feedback for each meeting. This feedback may be sent to the whole group or to individuals within the group, and this

approach will be agreed at the first meeting. The focus as a critical friend will be on Efs and curriculum and organisational learning.

This research is qualitative and as participants you will be asked to take part in:

▪ **3 Semi-structured interviews:**

- **Interview 1:** Initial aims and expectations (February-March 2012)
- **Interview 2:** Reflection on the process (June or September 2012)
- **Interview 3:** Evaluation of the 1st year of the intervention (November-December 2012)

The interviews will be semi-structured with main topics for discussion, but allowing the participants to talk in-depth about other issues that may be important and relevant to them.

- **2 Reflective sessions with the Sustainability Programme group (approx. May/June and December 2012)** led by the researcher (critical friend) to reflect upon key issues on Efs emerging from the observations, document analysis and interviews.

The interviews will be audio-recorded and the reflective sessions will be video and audio-recorded to facilitate the data collection process.

Document analysis: documents produced by the Sustainability Programme team during the 1st year meeting outcomes and other documents such as research, strategic documents, emails between the group participants and online feedbacks, will be analysed but will remain confidential within the group

Participants are invited to keep a reflective diary during the research process, as a personal reflective account on the 1st year development of the Sustainability Programme. The use of diary method is valuable tool to reflect on practice and learning, in a personal, professional and organisational level.

Informal feedback and conversations with the participants and the leader of the Sustainability Programme during the process will be part of the reflections of the researcher and will be recorded as confidential field notes.

Are there any benefits or risks in my taking part?

The results and valuable outcomes of your participation will benefit the organisation as new knowledge about how to embed Efs within the undergraduate curriculum in the University of Southampton will be generated. Additionally it represents an opportunity to reflect on practice and improve the Sustainability Programme making a positive contribution to help progress Efs within the university. The main benefits of taking part are the contribution that you can make with your own expertise, learning and experience as a member of the Sustainability Programme team.

There are no risks involved in taking part in this research. It is intended to publish the results, which will be made available to you, to discuss the main outcomes of the research. You will be asked for a respondent validation that will be used to avoid errors, omissions and to give you the right to withdraw anything that is not clear or you do not aim to keep from the interview. You will be asked to participate in the member checking, where you will be able to give feedback about the main results and conclusions of the research.

This study has been reviewed and given a favourable opinion by the Ethics Committee of the University's Southampton Education School. The Ethics Committee is a group who review research to protect dignity, rights, safety and well-being of participants and researchers.

Will my participation be anonymous and confidential?

In compliance with the Data Protection Act and the University policy this research will use pseudonyms to keep participants confidentiality and anonymity, but this study is limited in the extent to which all the data can be kept anonymous, as people who are close to you may be able to identify or imagine who is who and where is where. Extracts from the interviews and reflective sessions will be used in the final report, to show evidence and as part of the results and conclusions. Some extracts may be used for further discussion and research group activities. All participants will be anonymised in the report and in using interview and reflective sessions extracts. You will be asked to participate in the member checking where you will be able to contribute to the validation process of the main results and conclusions and as a way to approve the maintenance of confidentiality and privacy.

Confidentiality will be safeguarded during and after the study. During the study, only the researcher and her supervisors will have access to the data. All project information, including field notes, transcripts, documents, and audio tapes, will be stored securely, kept in a locked filing cabinet, both during the data collection and analysis period and destroyed after the study has been completed.

What happens if I change my mind?

It is completely voluntary to take part in the research. You are free to withdraw at any time during the research, without giving any reason, and you may decide not to answer any specific question.

What happens if something goes wrong?

In the unlikely case of concern or complaint, please contact the Chair of Ethics Committee at the Southampton Education School (02380 595813, M.A.Nind@soton.ac.uk)

Where can I get more information?

If you have any questions about this study feel free to contact:

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Appendix 8 Informed consent forms Stage I, Stage II and Stage III

PARTICIPANT INFORMED CONSENT (Stage I)

Embedding Sustainable Development within the taught programmes at the University of Southampton

Thank you for considering taking part in this research. If you have any questions please ask a member of the research team before you decide whether to take part. You will be given a copy of this Consent Form to keep and refer to at any time.

Please tick

I confirm that I have read and understood the attached information sheet for the above study. I have had the opportunity to consider the information, ask questions and have had these answered satisfactorily.

I understand that my participation is voluntary and that I am free to withdraw at any time without giving any reason, without my care or legal rights being affected.

Select only one of the next two options:

I would like my name used where what I have said or written as part of this study will be used in reports, publications and other research outputs so that anything I have contributed to this project can be recognised.

I do not want my name used in this project.

I understand that if I withdraw from the study the data collected up to that point will be destroyed.

I understand that my words may be quoted in publications, reports, web pages, and other research outputs and further research development but my name will not be used unless I requested it above.

I agree to assign the copyright I hold in any materials related to this project to Gisela Cebrian.

I agree to take part in the study.

Name of Participant _____

Signed _____ Date _____

Name of Researcher _____

Signed _____ Date _____

CONSENT FORM (*Stage II*)

Study title: Embedding Education for Sustainability within the undergraduate curriculum at the University of Southampton

Researcher name: Gisela Cebrian Bernat

Study reference: 1102

Ethics reference: 1102

Please initial the box(es) if you agree with the statement(s):

I have read and understood the information sheet (08/02/2012) /version no. 2 of participant information sheet) and have had the opportunity to ask questions about the study.

I agree to take part in this research project and agree for my data to be used for the purpose of this study

I understand my participation is voluntary and I may withdraw at any time without my legal rights being affected

I understand that this research will use pseudonyms to keep participants confidentiality and anonymity but it is limited in the extent to which all the data can be kept anonymous, as people who are close to me may be able to identify or imagine who is who and where is where. I will be able to participate in a respondent validation and triangulation checking as ways to ensure the maintenance of anonymity and confidentiality

I understand that my words may be quoted in publications, reports, web pages, and other research outputs and further research development but my name will not be used. All data will be anonymised and participant information will remain confidential

I understand that information collected about me during my participation in this study will be stored on a password protected computer and that this information will only be used for the purpose of this study. All files containing any personal data will be made anonymous.

Name of participant (print name).....

Signature of participant.....

Date.....

CONSENT FORM (Stage III)

Study title: Embedding Education for Sustainability within the undergraduate curriculum at the University of Southampton

Researcher name: Gisela Cebrian Bernat

Study reference: 1102

Ethics reference: 1102

Please initial the box(es) if you agree with the statement(s):

I have read and understood the information sheet (08/02/2012) /version no. 2 of participant information sheet) and have had the opportunity to ask questions about the study.

I agree to take part in this research project and agree for my data to be used for the purpose of this study

I understand my participation is voluntary and I may withdraw at any time without my legal rights being affected

I understand that this research will use pseudonyms to keep participants confidentiality and anonymity but it is limited in the extent to which all the data can be kept anonymous, as people who are close to me may be able to identify or imagine who is who and where is where. I will be able to participate in a respondent validation and triangulation checking as ways to ensure the maintenance of anonymity and confidentiality

I understand that my words may be quoted in publications, reports, web pages, and other research outputs and further research development but my name will not be used. All data will be anonymised and participant information will remain confidential

Data Protection

I understand that information collected about me during my participation in this study will be stored on a password protected computer and that this information will only be used for the purpose of this study. All files containing any personal data will be made anonymous.

Name of participant (print name).....

Signature of participant.....

Date.....

Appendix 9 Interview dates Stage I

Pseudonym	Interview date
Albert	12 October 2011
William	17 October 2011
Paul	18 October 2011
Lee	19 October 2011
Arthur	25 October 2011
Bruce	25 October 2011
Ellie	28 October 2011
Eric	28 October 2011
Stephen	01 November 2011
Martha	02 November 2011
George	02 November 2011
Sarah	23 November 2011
Mark	06 December 2011
Adam	19 December 2011

Appendix 10 Interview schedule Stage I

INTERVIEW SCHEDULE – UoS STAFF – 28/10/2011

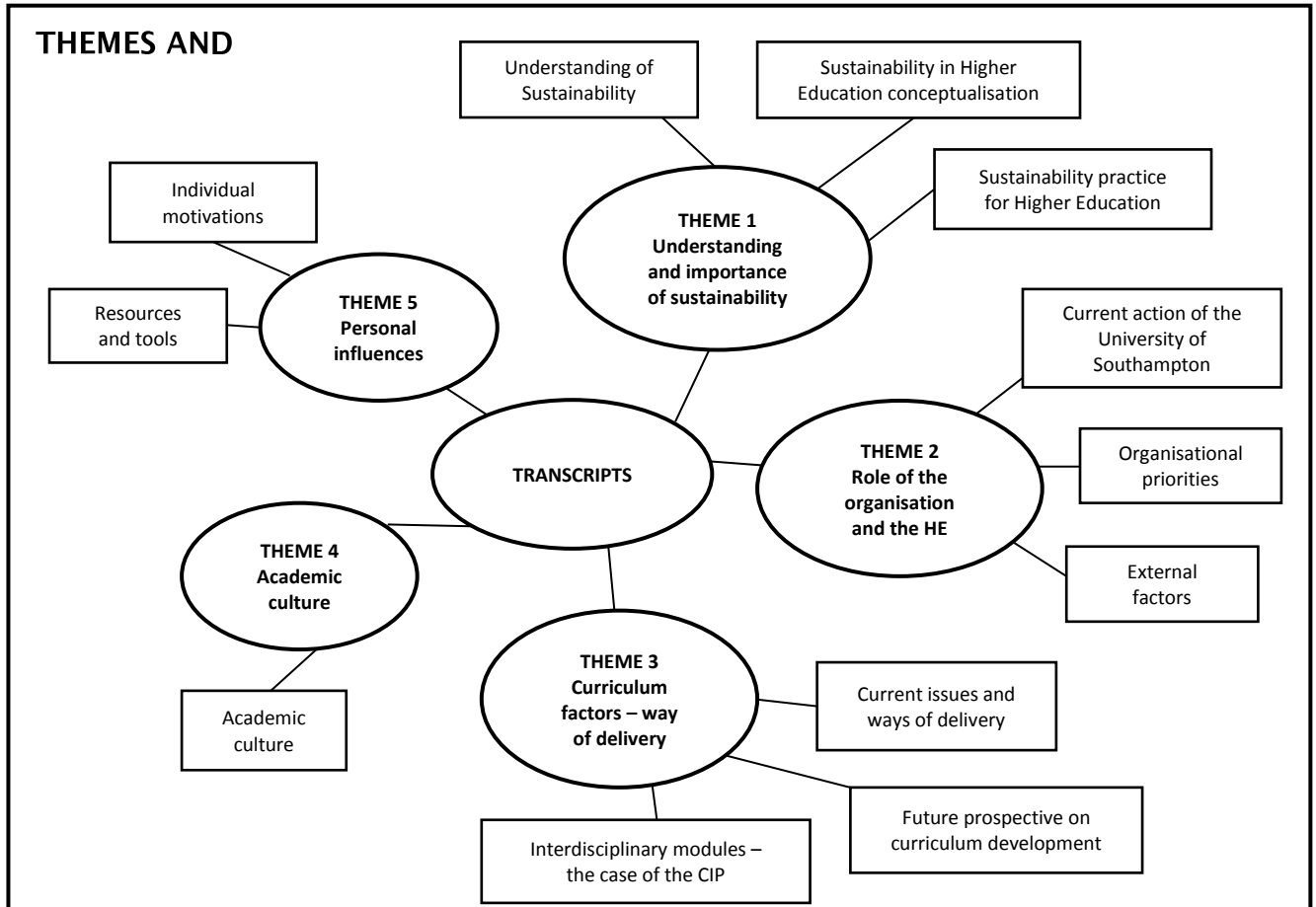
1. Nature of the project, **ethics protocol**.
2. Interviewee's title, **position** and **current responsibilities**
 - Could you tell me about what you are **professionally responsible for** in your academic unit?
 - Can you tell me about your main **teaching role** in the academic unit/university? The nature of current undergraduate and postgraduate teaching responsibilities?
3. **Just to open I would like to ask you... What do you understand by sustainability? What does it involve?**
4. **How do you see the role of Higher Education in educating for sustainability?**
5. **How would you like to see this role change?**
6. **In your experience what factors (positive and negative) influence staff and students' engagement in teaching and learning about sustainability?**
 - At different levels.. Do you think that there are institutional factors? Faculty, Department or School factors? External factors?
 - Do you think are there any factors that can encourage or stop staff/students?
 - Can you tell me about the barriers or the enablers in teaching and learning about sustainability?
7. **What conditions would be necessary to embed sustainability issues in the curriculum of the university?**
8. **Can you tell me something about the way you teach about sustainability? Could you give me any specific examples?**

Debriefing before ending

- I have no further questions, is there anything else you would like to bring up, or ask about, before we end the interview?
- Ask about their experience of the interview and thank them for their willingness to participate.
- Reconfirm confidentiality. *They will be asked for respondent validation that will be used to avoid errors, omissions and to give them the right to withdraw anything that is not clear or they do not aim to keep from the interview. Participants will be asked to participate in the member checking, where feedback will be given about the main results and conclusions of the research. They will be able to contribute to it, as a validation process of the main results and conclusions and as a way to approve the maintenance of confidentiality and privacy.*

Appendix 11 Summary key findings Stage I

SUMMARY OF KEY FINDINGS ON THE FACTORS INFLUENCING ACADEMICS' ENGAGEMENT WITH EDUCATION FOR SUSTAINABILITY



THEME 1: Understanding and importance of sustainability

Different definitions of sustainability were provided by participants: environmental sustainability; economic sustainability; long-term maintenance; and a holistic conceptualisation. Participants who defined sustainability as a holistic concept included economic, environmental and social dimensions, and were academics whose teaching and area of expertise is in sustainability. Sustainability was also linked to the own subject area. Education for Sustainability in the Higher Education context was envisioned as building awareness, and promoting debate and critical thinking amongst students. These roles were linked to the role of Higher Education in fostering active change agents, responsible citizens, and professionals who are capable of influencing change and making a positive contribution towards sustainability in all aspects of their lives. Some concerns existed relating to the difficulty in assessing sustainability skills such as collaboration in Higher Education, the importance of providing space for critical thinking without preaching a right way of thinking about the world, and the need to deliver informed discussions. Although the interview questions focussed on educational and curricular aspects, participants emphasised the importance of the sustainable practices of the organisation including research, operations and states, and staff and students behaviours.

THEME 2: Role of the organisation and the Higher Education sector

A range of organisational factors that influenced academic staff members' action emerged during the discussions. In terms of current action within the University of Southampton and the sector in general, different views were reported. An improvement in the greening of the campus was recognised, however in terms of education some participants felt there was not enough being done. A lack of coordination and external communication on sustainability matters and the importance of communicating the sustainability initiatives and achievements of the organisation were stressed as a way to build awareness amongst the academic community. Moreover, a number of organisational levers needed to occur simultaneously: sustainability as part of the priorities of the organisation, having an institutional framework or action plan, providing staff support, and rewarding examples of sustainability. The need for institutional processes was another driver that emerged during the discussions. However, different perceptions existed on the best kind of approach to engage the university community in sustainability; top-down or bottom-up approaches were envisioned by participants. The role of the Higher Education sector was seen as encouraging, providing support and rewarding universities to encourage embedding sustainability. The importance of benchmarking, external bodies, national priorities, and policies were mentioned by participants as enablers or blockers for realising change towards sustainability in Higher Education.

THEME 3: Curriculum factors – way of delivery

Participants commented on a number of ways they were already introducing sustainability within their current teaching modules such as: debates and group discussions; optional modules related to sustainable practices in specific subject areas; and modules that deal with ethics. Participants provided insights into desired approaches to teaching and learning for sustainability: using sustainable teaching methods such as distance learning; using transformative learning strategies that can challenge students' worldviews and foster change agents; real practice and case studies; student-centred approaches; and co-teaching. However, it was also acknowledged that the use of innovative teaching and learning strategies could represent a challenge with the structure of big lectures with large numbers of students. The suitability of embedding sustainability holistically within the whole curriculum, introducing it in every course, was a controversial issue. A recurrent concern was the need to find the appropriate opportunity in each subject area. Participants also expressed concerns and difficulties about how to deliver it in modules where sustainability was not a core part of the subject. Subjects such as geography, environmental sciences, and some of the engineering modules, lead to a natural inclusion of sustainability, whereas in other subjects such as music, languages or history, places other than the formal curriculum might be more appropriate. The dilemma of making sustainability modules compulsory or optional was mentioned. The Curriculum Innovation Programme and its interdisciplinary modules were envisioned as an existing opportunity and advocated by some participants as the right place to embed sustainability. Re-arrangement of the curriculum, with sustainability being part of assessment and the syllabus, were seen as necessary steps forward.

Theme 4: Academic culture

Academic culture is characterised by the factors raised by participants that are inherent to the culture of being an academic. Culture is understood as the set of ideas, beliefs and actions distinctive to the scholarly community. One's position in the department, the department's view on teaching and research, and individual and departmental priorities and interests were issues that emerged during the discussions as influencing academics. The development of new teaching topics in accordance with new research area developments could be an opportunity to introduce the latest knowledge and contemporary issues such as sustainability in current teaching. Senior staff were

considered key in leading new agendas and changes in the curriculum. Sustainability as part of the routines and daily life of the academic community emerged as a concern. Sustainability needed to be embedded in the academic discussions, however there was a sense that at the moment it was not part of the discussions and culture of academics. Interdisciplinary work and collaboration between disciplines and departments was seen as a challenge. Differences in understanding, teaching practices, and administrative approaches amongst the different disciplines inhibited interdisciplinary collaboration on sustainability teaching. Academic freedom to research and teach, and the existing academic culture could both facilitate or inhibit turning this ideal into reality. Some strongly held views existed on the unsustainability of academic life, in that academics are not encouraged to carry out sustainability practices while doing research, travelling or disseminating their work.

Theme 5: Personal influences

Participants acknowledged a number of challenges and opportunities that could encourage or discourage academic staff members in taking action towards sustainability. The lack of knowledge about sustainability, the perceived lack of relevance to the topic of expertise or subject area, and the lack of understanding of the benefits of changing, were seen as the main personal barriers of academic staff members. On the other hand, a number of catalysts were identified that could endorse their individual actions, such as having examples of good practice, staff professional development, and champions or role models in the departments, or in the university, to assist new teaching developments in this direction. Staff perceived a range of reasons and motivations for colleagues' engagement or disengagement with embedding sustainability within their teaching. Staff personal interests and motivations were regarded as levers to embed sustainability. However, it was also stressed that there could likewise be staff members interested in sustainability personally but not necessarily translating it into their teaching and professional practice. This was associated with the perceived responsibilities as educators.

Appendix 12 Data collection dates Stage II

	William	Eric	Julian	Ruth	Joanna
Informal meeting	15 March 2012 20 March 2012	14 March 2012	16 January 2012 23 January 2012	11 May 2012	23 March 2012
Interview 1	23 May 2012	15 May 2012	09 May 2012	24 May 2012	21 May 2012
Action learning conversation 1	30 May 2012				
Informal meeting EfS future developments and funding	24 September 2012				
Interview 2	14 Dec 2012	04 Dec 2012	31 Oct 2012	01 Nov 2012	07 Nov 2012
Action learning conversation 2	29 January 2013				
Interview 3	17 Apr 2013	09 Apr 2013	08 Apr 2013	18 March 2013	19 March 2013
Action learning conversation 3	20 May 2013				

Appendix 13 Briefing document Education for Sustainability

1. The principles of Education for Sustainability

Although the conceptualisation of sustainability remains controversial and different perspectives and definitions about the term exist (Bell & Morse, 1999; Dresner, 2002; Eichler, 1999), there is political agreement on the need to build awareness and develop strategies and action plans to deal with current societal global challenges such as climate change, social inequality and environmental degradation (DEFRA, 2005; HEFCE, 2009; UNECE, 2009; UNESCO, 2005, 2009). Some definitions are:

“The development that meets the needs of the present without compromising the ability of future generations to meet their own needs (WCED, 1987, p. 43)

“To enable all people throughout the world to satisfy their basic needs and enjoy a better quality of life without compromising the quality of life of future generations” (DEFRA, 2005, p. 6)

“A sustainable society is one that can persist over generations, one that is far-seeing enough, flexible enough, and wise enough not to undermine either its physical or social systems of support” (Meadows et al., 1992)

“Sustainability relates to ways of thinking about the world, and forms of social and personal practice that lead to:

- ethical, empowered and personally fulfilled individuals;
- communities built on collaborative engagement, tolerance and equity;
- social systems and institutions that are participatory, transparent and just; and
- environmental practices that value and sustain biodiversity and life-supporting ecological processes” (Hill et al., 2004)

The existence of diverse views of sustainability and diverse ways to embed Education for Sustainability (EfS) are acknowledged as a positive element to ensure that new developments are culturally and locally relevant. Education is considered to play a key role in fostering a more sustainable, equitable and socially just society (UNESCO, 2005). EfS can be seen as an education for a sustainable social transformation, which stimulates problem-solving, critical reflection and the clarification and reassessment of values, and which should be innovative and constructive, culturally appropriate and action-orientated (Huckle & Sterling, 1996; Tilbury, 2004). The core components of EfS are futures thinking, critical and creative thinking, participation and participatory learning, partnership and systemic thinking (Tilbury & Wortman, 2004). Furthermore it is about encouraging transformative learning, the capacity to challenge existing patterns and worldviews, to construct new knowledge collectively, to challenge and improve practice, and to critique and examine sustainability issues (Sterling, 2001).

Education about sustainability	Adaptation of existing curriculum. Sustainability as a subject, no change of paradigm is required. Sustainability as a concept (assumption we know the exact meaning of sustainability).
Education for sustainability	Reformation of existing curriculum and paradigm. This approach is value-laden, the skills, content and values required are known. Is understood as 'learning for change'.
Education as sustainability or sustainable education	Transformative learning and participative structure. Emphasise in the process and quality of the learning experience. Is creative and reflective, knowledge is provisional. Is understood as 'learning as change', based on life-long learning and cooperation. Divergence with existing patterns and models. Difficult to achieve in reality.

Source: Constructed from Sterling (2001)

Learning processes aligned with Education for Sustainability (Tilbury, 2011)

Collaboration and dialogue	Collaboration and dialogue as a means to build the capacity required to deal with sustainability. These processes can contribute to promote active participation and problem-solving. Importance assigned to multi-stakeholder and cultural dialogue and cooperation. These processes are considered crucial to build more sustainable futures.
Engagement with 'whole system'	Engagement with the system as a whole involves taking a holistic approach, connecting educational practices to other influencing factors such as professional issues and management. Look at the whole system and its interconnections to build a whole picture for comprehensive action.
Innovation	EfS is about building awareness (knowledge, values and theories related to sustainability) but it also looks at generating innovative ways of learning, challenging current worldviews and promoting active and collaborative learning. It encourages values clarification and is action-oriented. It is an education aims at transforming the individual and promotes social and organisational learning and change.
Active and participatory learning	Active and participatory learning approaches have been extensively established to contribute to learning for sustainability because they inspire critical reflection and thinking, values clarification, envisioning constructive futures, systemic thinking, linking theory to action/practice, and discovering past cultural and social customs and new ways of knowing and doing to progress sustainability.

Integrative and interdisciplinary approaches are widely suggested to be crucial to foster sustainability skills such as problem solving, critical thinking, action competence, future-oriented and systems thinking (Jones, Selby, & Sterling, 2010; Stibbe, 2009).

2. Sustainability in Higher Education

Higher Education (HE) is a principal agent for this positive transformation towards sustainability, because of its key mission of knowledge generation and transfer through research and teaching (UNESCO, 2005).

“Within the next 10 years, the Higher Education sector in this country will be recognised as a major contributor to society’s efforts to achieve sustainability – through the skills and knowledge that its graduates learn and put into practice, its research and exchange of knowledge through business, community and public policy engagement, and through its own strategies and operations” (HEFCE, 2009, p. 3)

Integration of sustainability within higher education implies shifts (Sterling, 2004, p. 58)

From	To
Transmissive learning	Learning through discovery
Teacher-centred approach	Learner-centred approach
Learning dominated by theory	Praxis-oriented learning linking theory and experience
Focus on accumulating knowledge and a content orientation	Focus on self-regulative learning and a real issues orientation
Emphasis on cognitive objectives only	Cognitive, affective, and skills-related objectives
Institutional, staff-based teaching/learning	Learning with staff but also with and from outsiders
Low-level cognitive learning	Higher-level cognitive learning

3. Learning for sustainability in Higher Education

This involves active and experiential learning, interdisciplinary approaches to phenomena and the link with the local community and stakeholders as part of the students’ learning experience. Existing teaching and learning approaches for sustainability in Higher Education are based on (Dawe, Jucker, & Martin, 2005, pp. 4-5):

Educators as role models and learners	This orientation places an emphasis on how the tutor can act as a role model for students in order to offer a credible and authoritative perspective on the realities of putting sustainability principles into practice.
Experiential learning	This orientation focuses on real and practical life issues and actual experiences as learning situations. Reconnecting to real-life situations.
Holistic thinking	Many of the skills and knowledge for sustainable development are associated with complex, multi-layered and interconnected systems. This approach encompasses a more open-ended exploration of interdependency and transdisciplinary connections between subjects as well as including approaches to developing and honing critical thinking.

According to HEFCE (2008, p. 34) *‘in general, good sustainable development pedagogy is often simply good pedagogy’*. The literature suggests a number of teaching and learning approaches to sustainability:

<p>Learning based change approaches (Tilbury, 2007)</p>	<p>Participative inquiry: Collective research and learning on relevant sustainability issues within the local community to encourage questioning and new action.</p> <p>Action learning: Reflection on a real problem to develop a plan and implement it, to then evaluate it to learn for future action and from the process and experiences.</p> <p>Action research: Cyclical research process that links action (change) and research (understanding) through planning, acting, observing and reflecting. It promotes innovation.</p>
<p>Transformative sustainability learning (Moore, 2005; Sipos, Battisti, & Grimm, 2008; Wals, 2010)</p>	<p>Cognitive, psychomotor and affective domains of learning.</p> <p>Engage students in challenging existing worldviews, beliefs, feelings, values and assumptions based on past experiences. By a process of critical reflection decisions are taken collectively about new ways of understanding. Four main elements in transformative learning are identified: the individual experience, critical reflection, dialogue and a holistic orientation.</p>

Common learning strategies used to promote Learning for Sustainability in HE

(Cotton & Winter, 2010)

<p>Role-plays</p>	<p>Provide insights from standing in another’s viewpoint. It contributes to understand and respect others.</p>
<p>Group discussions</p>	<p>Promote the exploration of students’ worldviews, values and beliefs, empowering them to participate actively and share understandings and views. The facilitator role is in generating a positive group discussion environment.</p>
<p>Stimulus activities</p>	<p>Stimulus activity such as real documents, documentaries or films, pictures, newspapers, websites to inspire discussion and reflection on issues. The use of these resources provides opportunities for critical appraisal.</p>
<p>Debates</p>	<p>Debates promote the search for information and development of an argument. Different groups discuss different arguments. Importance of facilitation to avoid confrontations.</p>
<p>Critical incidents</p>	<p>Students are given a case and they are asked about what actions would/could/should do. Reflect on personal understandings and future professional roles and responsibilities, or promote group reflection.</p>
<p>Case studies</p>	<p>Widely used in subjects that do not focus on sustainability. Helps promote a holistic understanding of the topic. Case studies that are linked to the community or local issues allow students research and learn from real contexts and identify possible solutions with the community and companies.</p>
<p>Reflexive accounts and PDP</p>	<p>Reflective journals or accounts, and PDP encourage students’ reflection on new knowledge and learning for sustainability, by reflecting on, in and for future action and learning, during the whole learning experience.</p>
<p>Critical reading and writing</p>	<p>Critical reading and writing promotes a deep understanding of authors’ perspectives and discourses. Identifying different perspectives and ideas contributes to learning for sustainability and framing alternative futures.</p>

Problem-based learning	PBL is teaching and learning strategy based on the identification of a problem (sustainability issue), the study of the situation to generate possible solutions to the problem, so it is action oriented and reflection on the process is key. It promotes conceptual knowledge and problem-solving skills.
Fieldwork	Fieldwork as an experiential learning activity. Experiential learning engages the students emotionally and develops holistic thinking. In sustainability matters it means working with the local community providing students with real world learning opportunities.
Modelling good practice	Lecturers and teaching staff as role models for the students, as examples of good practice in terms of sustainability practice in their daily-life.

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Appendix 14 Schedule Interviews Stage II

Interview 1 Academic staff members (2nd Stage) (08/05/2012)

Research purposes

In the previous informal meeting the project was introduced to the participant. The informed consent was agreed. The participant provided ideas of possible modules where to introduce EfS.

A briefing document on EfS and teaching and learning methods will be shared with the participants beforehand (3 days) to provide context for discussion about EfS ideas, what they are already doing and what could be done.

In this interview I seek to have a discussion about:

- How the participant understands EfS in their subject area in relation to the document sent beforehand and what it means to them, do they relate it to teaching and learning methods, what content,...
- The module where the participant is willing to embed EfS, what are the characteristics, why this module is chosen, what are opportunities and some challenges

Education for Sustainability in professional practice

1. In relation to the briefing document provided and the ideas on EfS.. What are your views? What aspects do you agree or disagree with? Are there any new ideas which you might consider using/exploring?
2. When you think about EfS.. How do you perceive/understand Education for Sustainability within the context of your own subject area? What teaching and learning methods/approaches come to mind within your own teaching context? How?
3. In relation to the module where you are considering to embed EfS.. Why is this module more suitable?
4. Now that you have read this document.. would you consider you are already doing/introducing EfS in your module? Could you describe what and how?
5. Does the document help you to think about doing things differently? Could you introduce these ideas? How would you do it?
6. What additional things could you do to embed EfS in your module?
 - o How could sustainability be approached in this module?
 - o Are there any specific places or opportunities in your module where Education for Sustainability could be embedded? Where?
7. Are there any specific needs that you face (i.e. knowledge, skills, etc.)? Any tools that would help you? Can you identify any specific initial challenges you may face when thinking about embedding sustainability within your module?
8. What would be your ideal students' learning outcomes and experiences related to sustainability at the end of the module?

Interview 2 Academic staff members (2nd Stage) (22/10/2012)

Research purposes

Previously to Interview 2, the 'Briefing document Education for Sustainability' was shared with the participants, which was discussed in Interview 1 with each of them individually. In interview 1 EfS ideas and understandings were explored and discussed, what they considered were already doing and what could be done, what might be possible opportunities, challenges, tools and needs faced.

After Interview 1 and the first action learning set, the document 'EfS educational resources' was prepared and share with the participants to inform their practice. This document contains information on different general resources for HE and specific to the subject area when known (research papers, websites, HEA subject centres information, etc.).

Some days before Interview 2 a working document on key ideas that emerged in their individual interview and action learning set will be shared with the participants.

In this interview I seek to have a discussion about:

- Where each participant has got to with the thinking and design of specific Education for Sustainability teaching in their modules or the module selected.
- How they have progressed their initial ideas, that emerged in Interview 1 and the action learning set. How have these ideas changed, developed or undeveloped.
- The progress or lack of progress made, the factors influencing, the challenges/difficulties and opportunities faced.

Education for Sustainability progress

1. In relation to the document on the key themes that emerged during the previous interview and action learning set, what do you think? Would you like to discuss any of these themes in particular?
 - Are you still thinking in those terms? Are you still interested in trying out these ideas? Why?
 - Have your initial ideas changed? Why?
 - What is your view of Education for Sustainability? Has it changed?
2. Could you tell me about what has happened since the last time we met?
 - Have you made progress in any of your ideas? Why?
 - What have been the main opportunities? And the difficulties?
3. What have you learned so far concerning the organisational conditions and dynamics in promoting Education for Sustainability?
4. Are there any specific needs that you face?

Interview 3 Academic staff members (2nd Stage) (13/03/2013)

Research purposes

Interview 2 and the action learning conversation 2 we conducted. A summary of key emerging themes that arose in the individual interviews and a summary of the action learning conversation will be shared with participants beforehand (3 days before).

Reflect on the process of change, the possible outcomes and key elements, strategies and conditions. Discussion on the whole process and the redesign of modules. Identify key factors that have enabled or constrained the redesign of the modules. Evaluate the whole process, provide insights and future perspectives.

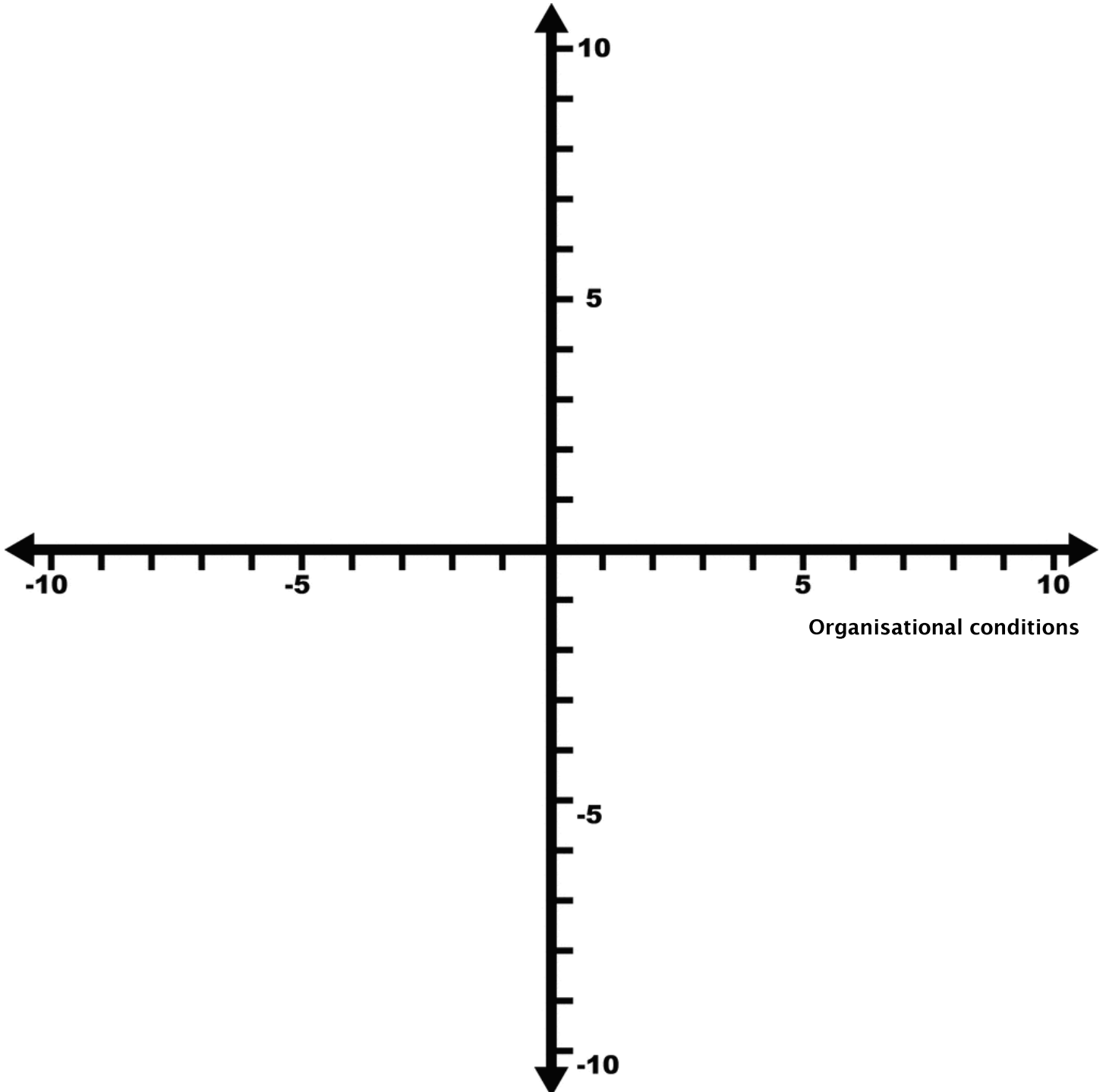
In this interview I seek to have a discussion about:

- Where each participant has got to with the thinking and design of specific Education for Sustainability teaching in their modules or the module selected.
- What are the key elements and conditions that have constrained or facilitated the design or sustainability teaching. Factors influencing, the challenges/difficulties and opportunities faced.
- Reflection on the process and outcomes of the research.

Education for Sustainability – process and outcomes of the research

1. Where would you place your motivation before getting involved in the research and now in terms of embedding education for sustainability within the undergraduate curriculum and the extent to which the organisational conditions were supportive and are now? (*completion of graph*).
 - Where your motivation was and is now in terms of EfS? Why has it changed?
 - How do you perceive the organisational conditions? being supportive or not supportive? where was before? Where is now? Why?
 - What has happened? Why?
 - What has changed? Why?
 - What have been the main opportunities? And the difficulties?
2. In relation to the document on the key themes that emerged during the previous interview and action learning set, what do you think about these themes? Would you like to discuss any of these themes in particular?
 - Are you still thinking in those terms?
 - Have any of your ideas or views changed? Why?
 - What has happened since the last time we met?
3. What factors have been useful and supportive since we started the research? What aspects of my role have been more useful or supportive so far?
4. Is there anything that would have motivated you to be more pro-active in the design and embedding sustainability in your teaching? What?
5. If you were developing a model for the University of Southampton to embed education for sustainability within the undergraduate curriculum, what would you do? What two key actions or conditions would you need to create?

Motivation in terms of EfS



Appendix 15 Action learning set documents for the session

THE PRESENTER	
STEP 1 Share a challenge you face	<i>Shares and describes the challenge and provides some background information.</i>
STEP 2 Peer-support and questioning	<i>Listens and writes down comments or observations but does not respond immediately. At the end can give some insights, more information, and comment on other participants' questions.</i>
STEP 3 Explore and share possible assumptions	<i>Listens and writes down comments or observations but does not respond immediately. At the end can give some insights, more information, and comment on other participants' questions.</i>
STEP 4 Reframe the challenge?	<i>All think about how the question would/could be re-framed in case they consider it suitable/relevant and then share it with the group.</i>
STEP 5 Explore – insights and future action	<i>Can share further thoughts, ideas and possibilities for action and provide key discoveries. The presenter identifies next steps, possible solutions or issues to consider or clarify.</i>

SUPPORT ROLE	
STEP 1 Share a challenge you face	<i>The rest of the participants listen and then ask objective/factual questions for context clarification and more background information.</i>
STEP 2 Peer-support and questioning	<i>Provide peer-support and ask reflective questions that can help the presenter.</i>
STEP 3 Explore and share possible assumptions	<i>Explore and share possible assumptions (of the presenter or themselves for the situation/challenge) and have a brief discussion.</i>
STEP 4 Reframe the challenge?	<i>All think about how the question would/could be re-framed in case they consider it suitable/relevant and then share it with the group.</i>

Appendix 16 Education for Sustainability Resources document

Education for Sustainability Resources

Contents

1. HEA Future Fit Framework (attached)	1
2. Resources and case studies online.....	1
3. Specific subject area resources	2
4. Research papers and journals on Education for Sustainability.....	3
5. Books (accessible from the library or if you were interested I have a paper copy that you could borrow)	3

1. HEA Future Fit Framework (attached)

- Sterling, S. (2012). *The Future Fit Framework: An introductory guide to teaching and learning for sustainability in HE*. Higher Education Academy.
http://www.heacademy.ac.uk/assets/documents/esd/The_Future_Fit_Framework.pdf
This is a comprehensive guide on EfS in Higher Education curriculum, with resources, case studies and ideas to embed EfS in the different subject areas.

2. Resources and case studies online

- Roberts, C. and Roberts, J. (2007) *Greener by Degrees: Exploring Sustainability through Higher Education Curricula*. Centre for Active Learning, University of Gloucestershire.
<http://resources.glos.ac.uk/ceal/resources/greenerbydegrees/> It contains case studies covering a range of disciplines.
- The Higher Education Academy – Sustainability Resources:
<http://www.heacademy.ac.uk/education-for-sustainable-development>
http://www.heacademy.ac.uk/resources/detail/sustainability/sustainability_resources
- Environmental Association for Universities and Colleges (EAUC):
http://www.eauc.org.uk/education_for_sustainable_development
- HEFCE – Sustainable development in HE resource guide:
<http://www.hefce.ac.uk/whatwedo/lgm/susdevresources/>
- Sustainability Online Resource and Toolkit for Education (SORTED):
<http://www.eauc.org.uk/sorted/home>
- Stibbe, A. (Ed.). (2009). *The Handbook of Sustainability Literacy: Skills for a changing world*. Devon: Green Books. <http://www.sustainability-literacy.org/>
- UNESCO Education for Sustainable Development Publications:
<http://www.unesco.org/new/en/education/themes/leading-the-international-agenda/education-for-sustainable-development/publications/>

(Other websites and resources on EfS can be found in *The Future Fit Framework* attached).

3. Specific subject area resources

Archaeology

The HEA – Subject Centre for History, Classics and Archaeology

<http://www.heacademy.ac.uk/hca/themes/sustainability>

Biological Sciences

The HEA - UK Centre for Bioscience

<http://www.bioscience.heacademy.ac.uk/resources/esd/sdresources.aspx#other>

<http://www.bioscience.heacademy.ac.uk/resources/esd/index.aspx>

Sheets on How to make teaching more sustainable. One sheet is on How to make your fieldtrips more sustainable <http://www.bioscience.heacademy.ac.uk/resources/esd/howto.aspx>

Carbon footprint calculator for field work (The GEES Subject Centre - HEA)

<http://gees.ac.uk/resources/hosted/fwCO2/co2fprnt.htm>

Global Footprint Network – Footprint for nations, personal footprint, etc.

<http://www.footprintnetwork.org/en/index.php/GFN/>

Other carbon footprint calculators: <http://www.carbonneutralcalculator.com/flightcalculator.aspx>

<http://www.carbonfootprint.com/calculator.aspx/> <http://www.climatecare.org/home.aspx>

Computer Sciences

The HEA Subject Centre Information and Computer Sciences (case studies on EFS in Computer Sciences)

http://www.ics.heacademy.ac.uk/resources/supp_learning/esd/casestudies.shtml

International Journal of Sustainability in Higher Education – Special Issue: Learning for transformation – special issue from the EESD'10 conference (Engineering Education for Sustainable Development). Volume 13 issue 3 – 2012 - <http://www.emeraldinsight.com/journals.htm?issn=1467-6370&volume=13&issue=3>

Education – Teacher Education

Subject Centre for Education ESCalate – Higher Education Academy (case studies Education – Higher

Education and Schools) <http://esdgc.escalate.ac.uk/casestudies>

Teaching and Learning for a Sustainable Future: A multimedia teacher education programme

<http://www.unesco.org/education/tlsf/>

Education for Sustainable Development Toolkit <http://www.esdtoolkit.org/>

Sustainability and Environmental Education Network (SEEd) <http://www.se-ed.co.uk/research-policy/policy>

Quality Criteria for Eco-Schools - http://seed.schule.at/uploads/QC_eng_2web.pdf

Health Sciences

The HEA Subject Centre Health Sciences and Practice <http://www.health.heacademy.ac.uk/index.html>

4. Research papers and journals on Education for Sustainability

International Journal of Sustainability in Higher Education (IJSHE) - Special Issues focusing on Sustainable Development and Sustainability; University and Climate Change; “Sustainable University” – holistic approach; Sustainability: New Insights for Education; Organizing sustainability learning; Engineering Education in Sustainable Development; Special Students’ Edition, etc.

<http://www.emeraldinsight.com/journals.htm?issn=1467-6370>.

Environmental Education Research - Special Issues focusing on Sustainability in Higher Education Research, Education for Sustainable Development in Higher Education; Resilience in social-ecological systems: the roles of learning and education, etc.

<http://www.tandfonline.com/toc/ceer20/current>

Research papers

Goodman, B. (2010). The need for a ‘sustainability curriculum’ in nurse education. *Nurse Education Today*, 31, 733-737.

Hopkinson, P. and James, P. (2010). Practical pedagogy for embedding ESD in science, technology, engineering and mathematics curricula. *International Journal of Sustainability in Higher Education*, 11(4), pp. 365 – 379.

Sipos, Y., Battisti, B., & Grimm, K. (2008). Achieving Transformative Sustainability Learning: Engaging Head, Hands and Heart. *International Journal of Sustainability in Higher Education*, 9(1), 68-86.

Steinemann, A. (2003). Implementing Sustainable Development through Problem-Based Learning: Pedagogy and Practice. *Journal of professional issues in engineering education and practice*.

Warburton, K. (2003). Deep learning and education for sustainability. *International Journal of Sustainability in Higher Education*, 4(1), pp. 44-56.

Winter, C. & Firth, R. (2007). Knowledge about Education for Sustainable Development: four case studies of student teachers in English secondary schools. *Journal of Education for Teaching: International research and pedagogy*, 33(3), 341-358.

5. Books (accessible from the library or if you were interested I have a paper copy that you could borrow)

Blewitt, J. and Cullingford, C. (Eds.) (2004) *The Sustainability Curriculum: The Challenge for Higher Education*. London: Earthscan.

Corcoran P.B. & Wals, A. (Eds.) (2004). *Higher Education and the Challenge of Sustainability: Problematics, Practice, and Promise*. Dordrecht: Kluwer Academic.

Huckle, J. & Sterling, S. (Eds.) (1996). *Education for Sustainability*. London: Earthscan Publications Limited.

Jones, P., Selby, D., & Sterling, S. (Eds.) (2010). *Sustainability education: perspectives and practice across higher education*. London: Earthscan.

Wals, A.E.J. (Ed.) (2007). *Social learning: towards a sustainable world*. The Netherlands: Wageningen Academic Publishers.

Appendix 17 Brief feedback documents key emerging issues Interview 1 and Action learning conversation 1 Stage II

I.e. PARTICIPANT 15 - KEY EMERGING ISSUES INTERVIEW 1

Views on Education for Sustainability (EFS)

- Sustainability pedagogy is good pedagogy.
- Critical thinking (Graduates who can think critically about issues).
- Different approaches: Some are pro- trying to get horses into the water, more in favour of making them critically aware and give them tools so they can make their own informed decisions. Introduce students to different data sets and space for discussion of different ideas and opinions.
 - o Different approaches related to different levels and groupings.
 - o Flexibility of the approach is good.
 - o 3 levels: basic knowledge, understanding the complexity and action (how to deal).
- Understanding of sustainability:
 - o Need to get solidity on the meaning (sometimes is not well thought in the approaches to EFS - assumptions made on what is to be sustained?).
- Main challenge is the complexity of the term and how to deliver it.
- Importance of deliver - external bodies, government.
- Relevance to the topic to embed it (i.e. CI module has a direct focus). Moral component of EFS - difficulty or challenge – time to discuss the complexity. Good to have specific direct focus modules that allow talking about change and sustainability (understanding and action).
- Elective modules is a good approach.
- Multidisciplinary nature of Archaeology – possibly is in fact embedded because they use different teaching and learning methods, and knowledge from different subject areas.
- Provide the right mechanism - point of engagement (students and staff aware that this is the point of engagement).
- The document mixes lots of different approaches.
- Positives about the document - good range of teaching and learning approaches.
- Literature on Ecosystems services.

Current teaching and learning approach

- Fieldwork, experiential learning.
- Combination of lectures, small group work and discussions (rather than role-play etc.) - this is been working really well. Challenge with academic content - group discussion is very good.

Teaching and learning approaches interested in exploring

- Varies according to students' groups and background (different students' groups need different methods - in how you engage them and you deliver..).
- Differences according to modules - make people think or give a lecture giving just a view - find the appropriate approach depending on the modules - People who are thinking freely and creatively about things.

Module/s to embed EfS

- Doing curriculum review at the moment.
- CI module fits really well.
- Module - some issues to do with social impacts and environmental change - more appropriate to do it in an optional way - be careful in overstating it.
- Modules to think about embedding - Archaeology and Society or Issues in Archaeological Sciences - embed in terms of thinking about broader social applications and impact of science beyond the own field - sustainability is one of the topics to be looking at, and resilience,.. key themes..
- Paleo-economics, Paleo-environmental studies - understanding current situation, link/connect with issues of sustainability. - explicit link to current situation and sustainability, and this could be done in a number of modules, 1st year modules,..

Challenges and opportunities faced

- Challenge is that things are very focussed and have a short time to move students a long distance in terms of knowledge and understanding - complicated to broaden curriculum – reason why elective modules is a good approach.
- Write module outlines - very clear learning outcomes about what is delivered - Be careful - learning outcomes - how it is introduced as a theme in these areas where is not central, and how it matches with module aims. - challenge with the structure of the educational system - module design - embed it without disrupting the learning outcomes, assessment,..
- Surgery - small fragment 1st year broader reaching modules which deal with contemporary issues (probably not possible to embed).
- Students and staff have different perceptions and expect different things.
- Students expectations - they can be very canny - they are assessment focussed, if it is not part of the assessment not interested or don't engage.
- Difficulties to see how to build this topic in subjects that do not lead to it naturally.

Specific needs

- Not enough time given to think what could be changed or improved - critical reflection on direction and what universities are doing in this area. In the Humanities growing awareness of the need to embed sustainability, therefore people are more open.

Participant	Health Sciences
Challenge	<p>Students' expectations and perceptions versus the curriculum. It can limit the effect of planned taught sessions to help students in practice and thinking long-term for future development and lifelong learning.</p> <p>Interdisciplinary and transdisciplinary teaching sessions: students don't see the relevance and don't turn up to some activities.</p> <p>Sustainability as lifelong learning and developing the profession over the next 20 to 30 years. Having the skills to be able to take the profession forward but also providing individualised care.</p>
Issues emerged	<p>Practical view – practical people that see the practical purpose of doing some things and can't see any purpose at all in doing other things (similar to engineers).</p> <p>Students being sort of practical strategic – the way education is devised in learning outcomes, aims and assessment – if it doesn't give a mark not valued – if it's not assessed they don't value it.</p> <p>Are there societal issues? Students come and want to be told instead of learn through guided discovery. It's a change of culture.</p> <p>Students may want old-style apprenticeship education. May not be the model for sustainability and the future. People who can be problem-solvers.</p> <p>Students' voice has become key, they are in every meeting of NSS.</p>
Possible assumptions Reframing the challenge?	<p>Staff-educators are making assumptions of what students want. School making assumptions of what would be good for midwives and student midwives. Students' expectations may differ.</p> <p>Broader educational challenge – how learning is approached; what people should be getting in from education; what they should expect.</p> <p>Transformational learning, putting the learner at the centre but the learner doesn't always want to be in the centre.</p> <p>What kind of research methods or professional methods do you give? What for a profession is future learning going to be based on? There's a problem with all the professions-based work emotions and intellect, but how exactly?</p> <p>Problem educational system – we are half way, half of the time we deliver lots of things according to their expectations, we stand and deliver and then with inquiring learner-centred approaches students are confused.</p> <p>Students do direct cost-benefit at times.</p>
Insights and future action	<p>Find out what is stopping them from moving forward to the next stage in their learning and development.</p> <p>Ask an external to go in and ask them to review, do SWOT analysis.</p> <p>Wonder if some of the issues are because they are students of the university but also learning professions, go into practice and work 30 hours of clinical per week, it's a two-role thing.</p>

Participant	Biology
Challenge	<p>Sustainability from an ecological perspective.</p> <p>Not sure how to add this new aspect into the syllabus, don't know how much emphasis to put on it.</p>
Issues emerged	<p>Whether bolt-on, do something special on it or mainstream it. Bolt-on you can do it and develop it well, mainstream is normally a living thing that you can sprinkle through the other bits of a course.</p> <p>Why do it? Outcome? Good thing to teach to first years, it is topical within the subject area, build awareness.</p> <p>Big group formed by biologists, zoologists, environmental scientists and geographers, different needs. How to teach them? (document – suggestions for innovative teaching but some of them are more oriented towards smaller groups)</p> <p>Critical in view of training this group – sustainability is not a defined term and university level we want them to be critically aware of the implications of these terms. What sustainability actually means for the subject area. Wider awareness and critical skills, wider context of what they study and that's a big task for an additional lecture.</p> <p>Two things: there are truths (positivistic) and values – capacity to have a semi-philosophical debate. These things can't be uncoupled and that's one of the difficulties.</p> <p>Taught them one lecture on human ecology. Students doubts about the evidences of existence of climate change. Feeling she was telling them. Doesn't want to stand up and preach at them about it.</p> <p>No seminars. Probably could give it 2 lectures. Not sure about a practical because have to run it 3 times and it's a lot of commitment.</p> <p>Lack of time to teach it in a lecture. It's a complex subject that requires a knowledge of a variety of different evidence bases (philosophy, social history, earth sciences, ecology). Danger of introducing sustainability uncritically. Danger that people don't appreciate the complexities and can't communicate that to other people.</p>
Possible assumptions Reframing challenge?	<p>Difficulty 1st year to know how to pitch it because they will be covering more in 3rd year. Difficult to think exactly how to put something so big, you either have to do it well or mostly not included at all.</p> <p>Intakes of students are part of the reaction against the truths - Influence of media and publicity creates reaction against truths.</p>
Insights and future action	<p>Do an audit about how much they know about what as a group.</p> <p>Maybe a group seminar for it which could take the place of a practical. Tutorials in Biology for all 1st years. Perhaps zoology and biology students could have a session with their tutor where they could discuss things. This could be an extra thing. Help link tutorials to module as well. Wikis or discussion boards? Discussion boards in Blackboard (one participant comments that small group teaching works best, give papers for discussion and raise questions, and group discussion, better quality of thinking and understanding of the issues – usually the assumption is that in online discussions people get into more depth)</p> <p>Do an experiment – try 3 different things with different groups (truth, values position, both)</p>

Participant	Electronics and Computer Science
Challenge	<p>Teaching 1st year class 180 Computing and IT students.</p> <p>Professional skills module – at the moment is just pushing facts, next year the course is being redesigned. One lecture per week and the rest of time students will be doing things, activities,.. Prepared to give them a week’s worth of activity. Around 8 hours on this. What sort of things could he get them to do that will engage them and do better than before?</p>
Issues emerged	<p>What issues to make them think about? What are the environmental effects of the computing industry, CO2 and chemicals, gold,...</p> <p>Being critical about behaviours, self-critical about their behaviour (i.e. how it effects on the people) + how are their behaviours and their interactions with other in their workplace. Maybe leave that out and go for the straightforward effect on the environment of the computing industry.</p> <p>Feedback from students – how they feel about this kind of lecture? They hate it. Student feedback 3.1 for the course on average. Happy with the lectures but don’t like the content.</p> <p>Compulsory unit and required by the accreditations.</p> <p>Have long threads with some enquiry-based learning in first years, and then problem-based learning and then action learning. Work into smaller groups.</p> <p>Peer-assessment counts towards so many credits, it means that they have to do it. Peer-assessment works surprisingly well.</p> <p>Go to a deeper structural level and relate it to capitalism – capitalism computing, capitalism and gender relations, capitalism and the environment to sell it. Need to find the resources to use for teaching.</p>
Possible assumptions Reframing challenge?	Reframed during the discussion.
Insights and future action	<p>Put stuff across the curriculum much more but difficult with the sort of teachers in computer sciences.</p> <p>Get them into smaller groups to do things and make them produce something on the Wiki. Then think about the assessment, peer-assessment - each group assesses some other groups. Assessment and feedback.</p> <p>Of 10 weeks’ worth of work, approximately 3 weeks’ worth of work peer-assessed and 3 weeks of individual assessment, they assess their own work, and the other 3 weeks of subject marks to it.</p> <p>Students could have some learning materials to go and study in their own time, then come to small groups, and find themselves with the question.. is much more political.. they’ve got facts but they are asked to discuss it as a higher level rather than just presenting facts.</p> <p>Engineers are not good at doing anything that goes into the kind of affective domain of learning, they want facts and how to do things, it is always challenging to do but finding the right environment for them to do it in, small discussion groups can work well.</p>

Participant	Archaeology
Challenge	<p>Leader of the CI module – designed to pull in the different disciplines, the multidisciplinary nature of the subject.</p> <p>Challenge within the educational framework and student expectations. Modules with clear goals, learning outcomes which one can directly match to assessment and students are given the paperwork that shows the link. They want to see progression which doesn't promote wider academic learning or understanding of the importance of context. The value of work is directly related to grades and assessment.</p> <p>The challenge is students' expectations, what they expect, what it's delivering to them, what they see they are getting out of it and that might be very different to sustainability.</p>
Issues emerged	<p>Archaeology is a very odd subject area – engage with a wide variety of disciplines. Colleagues/staff members are happy to engage with sustainability. It is about student expectation or frameworks.</p> <p>Honours paper – look across the whole of the 3 years. Sustainability would fit into that kind of essay question.</p> <p>Change in fees – students paying for a service – students feel as customers rather than partners – students want to be told what is going on rather than being asked to find things out – challenge how education is going to be in the future.</p> <p>University canny with the Graduate Passports but there is pressure in having to market itself. These two things can be in conflict.</p> <p>Multidisciplinary type of weeks – bring things together to deal with big challenges.</p> <p>Students say different things at the end of the course, once they've done the course. They start to understand bankable things.</p> <p>Problem of having a qualifying year.</p> <p>University moved from light touch on assessment down to assessing every time – everything they do gets assessed – now we kind of will move again realising that we can't sustain this for ourselves.</p> <p>Putting in outcomes that we were never given ourselves – knowledge with social purpose.</p>
Possible assumptions Reframing challenge?	<p>We presume that if we don't assess it students don't value it.</p> <p>Sometimes students aren't interested in extending outside the subject boundaries. Staff sometimes have a preformed idea of what students want that tend to reinforce. A lot of students are interested as well. It is about how you engage them.</p>
Insights and future action	<p>What a university is and how staff and students relate to it? <i>(no sense of education or research based university community at times, it's very good at individual centres but not to bring together those things).</i></p> <p>Graduate attributes – ethical leadership. CIP good example of joining things together. Need to have skills based and in-depth driven modules. Some modules don't have space to embed</p> <p>An honours to synthesise things or show applicability – comparable to research grants – expect undergraduates to do it and show impact and social awareness of what their study means.</p>

Participant	Education
Challenge	<p>Teach Education Policy course.</p> <p>For year 2 course thinking about the curriculum content, what he is going to teach and how. In form of a little module, maybe a 2 or 3 week module that would take these issues. Explore knowledge and characteristics at macro, meso, school, classroom level. Impression of not many people addressing these issues within an education course.</p>
Issues emerged	<p>Is the political nature of it? One of the challenges is in terms of the government and its implementation at university level because it is not featuring in the curriculum, so it is hard to integrate into teaching.</p> <p>Not part of the politic debate, not in the media, there is very little awareness of the issues amongst the education research community, not researched and not into practice. It has disappeared as an issue.</p> <p>Marine Academy Plymouth – school using the marine world as a hook.</p> <p>Sustainability is a good hook – everything can be taught on the back of this subject.</p> <p>Power of things like the vents in the planet.</p> <p>Education academic unit plan to do further research with five schools working on this area.</p> <p>It is a non-governmental priority.</p> <p>There’s no knowledge-based.</p> <p>Teach it in a way to point out the issues, raising awareness to have trickle-down effect.</p> <p>British Ecological Society may give small grants towards this kind of research. There’s lot of resources out there even BBC series, teachers’ guide, Frozen Planet.</p> <p>East MEON Sustainability Centre – take students there. Residential place, a lot of school children going there. Driven towards ecology.</p> <p>Education students likely to be very receptive to this.</p>
Possible assumptions Reframing the challenge?	<p>Economic situation – no spare money to have environmental concerns – assumption environmental concerns cost money. Difficult to go broad with the current economic situation.</p> <p>Paradox of the green state – causes a great economic uncertainty and governments get elected on economics and not ecology. Ecosystems services.</p> <p>Can reframe it by not doing it. Only a ‘fool’, not a ‘fool’ but if you’ve got spare time you do it.</p>
Insights and future action	<p>Maybe do autobiographically, kind of life story.</p>

Other key points:

- *Sustainability definition*

At the beginning of the session participants had some concerns and were unsure about the understanding or definition of sustainability. Need to have a ground definition. One of the challenges is understanding what the scope of what it is understood by sustainability is, and what is being sustained. Agreed to make clear what each participant thinks is being sustained when they present their challenge. Sustainability is pre-paradigmatic – no agreement on the outcomes – probably is about accepting that the stage of the field is also the same stage for the group.

- *Final comments of participants*

There is a lot of commonalities and agreement on what the issues and the needs are, for example in students' expectations. Expectations is a huge issue across the university. Good to meet other people with similar problems, get ideas from others to try out. Need for a university level approach that could be driven by the graduate attributes.

- *Funding opportunities and future developments*

Student Centredness Fund (SCF) and Curriculum innovation. 2nd Phase of the CIP. Get people with the existing curriculum to reimagine how to teach larger classes using the same amount of resources to give students interactive and student-led experience. The transformational part of the curriculum innovation, the production and provision of some resources to support different modes of teaching sustainability could be appropriate. Share resources is a very good way forward. A fraction of the budget is for the development of educational resources. A possibility might be the production of some resources to support teaching of sustainability in a range of areas.

Another idea would be to get a researcher to look at the experiences across the five, the pilots, before and after, somebody who would evaluate, look at the delivery of the modules– development money.

Appendix 18 Papers on student attitudes and understandings on sustainability

Dear Julian,

I attach some research papers that have been published on students' understanding, perceptions and attitudes on sustainability. I thought this could be of interest.

I also attach a recently published survey research on student attitudes towards and skills for sustainable development (commissioned by the HEA).

The references attached are:

Kagawa, F. (2007). Dissonance in students' perceptions of sustainable development and sustainability: Implications for curriculum change. *International Journal of Sustainability in Higher Education*, 8(3), 317-338.

Sahin, E., Ertepinar, H., & Teksoz, G. (2009). Implications for a Green Curriculum Application toward Sustainable Development. *H. U. Journal of Education*, 37, 123-135.

Drayson, R., Bone, E., & Agombar, J. (2012). Student attitudes towards and skills for sustainable development: A report for the Higher Education Academy. York: Higher Education Academy.

Nikel, J. (2007). Making sense of education 'responsibly': findings from a study of student teachers' understanding(s) of education, sustainable development and Education for Sustainable Development. *Environmental Education Research*, 13(5), 545-564.

Azapagic, A., Perdan, S., & Shallcross, D. (2005). How much do engineering students know about sustainable development? The findings of an international survey and possible implications for the engineering curriculum. *European Journal of Engineering Education*, 30(1), 1-19.

Many thanks

Best wishes

Gisela

Appendix 19 EfS working document

Definition of sustainability

Current society faces global challenges such as dealing with the economic crises, climate change, desertification, deforestation, environmental degradation, inequalities, wars and poverty eradication (United Nations, 2012). The definition of sustainability remains controversial and different perspectives about the term exist (Bell & Morse, 1999; Dresner, 2002). However there is political agreement on the need to build awareness and develop strategies and action plans (United Nations, 2012). Sustainability faces environmental, social, economic and communication challenges (Martin, Martin, Jucker, & Roberts, 2008). Sustainability is a multifaceted concept which involves dealing with ambiguity, complexity, multiple stakeholders, worldviews and values, and it is difficult to solve because it is an evolving and moving target (Martin et al., 2008).

I understand sustainability as a journey, rather than as a checklist (Tilbury, 2011). As a learning process that encourages transformative learning, the capacity to challenge existing patterns and worldviews, to construct new knowledge collectively, to rethink current practice, to critique and examine sustainability issues (Sterling, 2001). I see the flexibility of the term as an opportunity for creating open and dynamic processes of participation, discussion and reflection to be adapted to different contexts and situations (Kates, Parris, & Leiserowitz, 2005).

Rationale

In this context education is envisioned as a major agent to transform current society into a more sustainable, equitable and socially just one (UNESCO, 2004). Higher education is a principal agent for this positive transformation towards sustainability, because of its key mission of knowledge generation and transfer through research and teaching (United Nations, 2012; UNESCO, 2004). Universities play significant roles as agents for social transformation (Cortese, 2003) and nowadays are critical in addressing the current sustainability challenge that society is facing (Clugston & Calder, 1999). Political leadership in the national and international arena is led by decision-makers who hold university degrees (Orr, 2004). The commitment and action of higher education is critical towards achieving a sustainable society. Therefore this is related to the debate on the social purposes and role of higher education in current society (Corcoran & Wals, 2004; Gough & Scott, 2007).

The need for sustainability literacy

The ability to take steps towards building a more sustainable self, community, society and world requires far more than knowledge about sustainability, it requires sustainability literacy amongst the students (Stibbe, 2009). Sustainability literacy is a set of skills, attitudes, competencies, dispositions and values that are necessary for a key learning outcome and competencies in sustainability and for students to become change agents (Sipos, Battisti, & Grimm, 2008; Weik, Withycombe, & Redman, 2011). Different frameworks exist on sustainability competence. Some elements are the competence to: think in a forward-looking manner, to deal with uncertainty, and with predictions, expectations and plans for the future; work in an interdisciplinary manner; achieve open-minded perception, transcultural understanding and cooperation; participatory competence; planning and implementation competence; ability to feel empathy, sympathy and solidarity; motivate oneself and others; and reflect in a distanced manner on individual and cultural concepts (Wals, 2010, p.386).

PhD aims

The purpose of my study is to develop an understanding of how Education for Sustainability (EfS) could be embedded within the undergraduate curriculum across the University of Southampton. Generate a framework that emerges from real practice, academics' experiences, barriers, challenges and opportunities identified by academics, to enhance the integration of sustainability within the undergraduate curriculum. The purposes of this research are to:

- Identify key elements, strategies and conditions necessary to embed EfS within the undergraduate curriculum taking a holistic and organisational perspective;
- Promote a critical self and group reflection which facilitates acquiring new perspectives and discourses;
- Identify existing contradictions, resistances and challenges and opportunities faced when trying to work with staff in changing thinking and practice;
- Generate personal, professional and organisational learning towards sustainability.

Role of the researcher in the research process

My role as a researcher is to provide staff with space for interdisciplinary and critical group reflection and be a catalyst for curriculum development in the area of EfS. Active role of the researcher who becomes a research instrument. Therefore my role is active and aims to be supportive with participants by sharing educational resources, allowing time and space for reflective practice on teaching and learning and sustainability, learning from the real practice and the process.

Assumptions of the researcher

Sustainability is a journey and a learning process rather than a checklist or a target with an endpoint.

The use of certain type of pedagogies and teaching and learning approaches and strategies included in the next textbox foster competencies or skills necessary to deal with sustainability such as critical and creative thinking, problem-solving skills, action competence, collaboration, futures thinking, therefore empowered and global and responsible citizens and professionals who can become active change agents.

Key themes - ways of embedding sustainability

- **Use the campus as a living laboratory** – this idea is gaining force as a suitable strategy towards embedding sustainability in the curriculum and culture of universities and linking the operations, research, students' experience and the community (McMillin & Dyball, 2009). Potential for improving sustainability performance of the university, enhancing students' experiences on real interdisciplinary sustainability issues, establishing linkages with the community and contributing to the application and generation of knowledge and research.
- **Innovative and interdisciplinary work and practice are key** – the complexity of sustainability, which embraces social, environmental and economic dimensions makes of interdisciplinary work and practice a necessary approach to better understand and research sustainability issues (Jones, Selby, & Sterling, 2010).
- **Transformative learning experiences** are required to deconstruct existing ways of knowing and understanding, to critically reflect on the values, beliefs and worldviews that underpin them and to co-construct alternative paths and shared meanings that can contribute to foster sustainability (Sterling, 2001; Wals, 2010). Critical thinking and reflection is necessary to challenge existing worldviews and current unsustainable practices (Huckle & Sterling, 1996).
- **Provide real world learning opportunities** through the use of student-centred approaches such as problem based learning which implies the application of knowledge to real world problems and situations (Thomas, 2009) and experiential and active and participatory learning, referring to self-reflection, self-directed inquiry, learning-by-doing, engagement with real life problems and issues, and learning collaboratively within communities are required (Moore, 2005).

Different levels and approaches to embedding sustainability within the curriculum have been identified as (Rusinko, 2010; Segalàs, 2009; Thomas, 2004):

- Including some content and material on sustainability issues in exiting courses of a programme.
- Offering separate courses within a programme that deal with sustainability issues, offering minors, discipline specific or interdisciplinary compulsory or optional courses available to any students
- Creating new discipline-specific or cross-disciplinary programmes on sustainability related topics
- Integrating sustainability issues into all courses, having embedded the sustainability discussions through the programme and developing an understanding from the subject area context and the study programme. This has been basically developed in areas that are leading to sustainability such as environmental sciences and geography or by offering specialised undergraduate or postgraduate degrees on sustainability (Thomas, 2004).

FINAL REFLECTIONS

This is how I am defining sustainability and these are the themes I would like to address through my research. However different interpretations and perceptions of the need for embedding sustainability exist.

How do you understand these terms? Do any challenges come to mind? Do you see other aspects, requirements, needs or demands as being equally or more important for higher education? What? What are we trying to achieve through higher education - how do you view the social purposes and role of higher education?

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Appendix 20 Structure Action Learning Conversation 2

29th January 2013

Introduction:

1. Introduce participants to the structure of the session
2. Remind ground rules
 - All information that emerges during the session is confidential
 - One person speaks at time
 - Really listening to each other is the key
 - Switch off mobile phones
3. Briefly introduce themselves
4. Any questions before starting

Structure of the session:

Part 1 (20 to 30 min) – Discussion around the EfS working document

After conducting the second interviews it seemed appropriate to prepare a short paper on my definition of sustainability, rationale, PhD aims, role of the researcher, key themes - ways to embed sustainability. I have also included some reflections and possible questions to think about as a starting point for the discussion. During the session it is my aim to discuss how you understand these terms, and different views and interpretations.

Part 2 (1h15 min = 15 minutes each challenge) – Action learning conversation

Follow the action learning conversation structure that we followed in the first group session, where each participant needs to hold two different roles: the presenter and the support role.

I would like to ask you if you could share with the group where you have got to with the thinking and design of sustainability teaching. I would also like you to share your key challenge or issue that you have faced or are facing related to the design of sustainability teaching. I am keen to hear thoughts from you at any stage of development considering that the research is interested in the process and the reality of trying to implement change, whether this happens very speedily or not at all! The discussion aims to facilitate insights and possible future action based on your challenges.

Brief explanation action learning process:

- a. 2 roles – Presenter (the one introducing the challenge) and support' role (the ones helping, listen, ask reflective questions, role of consultant/critical friend rather than adviser, not give advice)
- b. Process of questioning + they don't have to participate in all the rounds if they don't want to – only say something if they have.. or want to.
- c. We have around 15 minutes to go through each of the challenges

Part 3 (20 min) - Feedback session

Feedback on the session and other topics such as future developments or i.e. Hugh is willing additional support for developing educational resources to offer to the other participants, as he is running a unit and his team could provide support in this.

Appendix 21 Sustainability questionnaire

We are asking for your help in learning more about the level of understanding and knowledge that undergraduate students have regarding the environment and sustainability. The results of this survey will help us to improve the existing and develop new teaching programmes related to this area. We may also publish the findings of the research.

Please tick here if you agree to take part in this study and agree for the data to be used for the purpose of this study.

I agree

Please respond to the following items as honestly and carefully as possible, your response will be confidential.

Please tell us about yourself:

Gender (please circle): Female Male

Degree enrolled on: _____

Year of study (please circle): 1 2 3 4 5

The country you come from: _____

Age: _____

For all questions, please circle your response (unless you are asked to provide other information)

How familiar are you with the terms: sustainability or sustainable development?

Very familiar Quite familiar Quite unfamiliar Not at all familiar

Please write 4 keywords to show what sustainability means to you:

1:

2:

3:

4:

Did you learn about sustainability at your school/sixth form college?

Yes

No

Are you involved in extra-curricular sustainability-related activities, such as a student society?

Yes

No

If Yes, what?: _____

What is your attitude to sustainability and sustainable development in your everyday life?

I think it is a waste of time and effort

I am not really bothered

It is OK if others want to do it

I think it is a good thing

I am a passionate advocate

Please choose a response to the following statements about the environmental aspect of sustainability:

Plants and non-human animals have as much right as humans to exist

Strongly disagree Disagree Undecided Agree Strongly Agree

As a society, we should radically change our way of living to offset the danger of climate change

Strongly disagree Disagree Undecided Agree Strongly Agree

The so-called 'environmental crisis' facing humankind has been greatly exaggerated

Strongly disagree Disagree Undecided Agree Strongly Agree

The earth has plenty of natural resources for future generations

Strongly disagree Disagree Undecided Agree Strongly Agree

Please write any comments you have about the environmental aspect of sustainability:

Please choose a response to the following statements about the economic aspect of sustainability:

Environmental protection creates jobs and contributes to economic growth

Strongly disagree Disagree Undecided Agree Strongly Agree

We should care about using UK products

Strongly disagree Disagree Undecided Agree Strongly Agree

In order to protect the environment, the UK needs economic growth

Strongly disagree Disagree Undecided Agree Strongly Agree

We should preferentially use public transportation, even if we can afford our own cars

Strongly disagree Disagree Undecided Agree Strongly Agree

Please write any comments you have about the economic aspect of sustainability:

Please choose a response to the following statements about environmental values:

Humans have moral duties and obligations to other animal species

Strongly disagree Disagree Undecided Agree Strongly Agree

Humans have moral duties and obligations to plants

Strongly disagree Disagree Undecided Agree Strongly Agree

Humans should adapt to nature rather than modify it to suit them

Strongly disagree Disagree Undecided Agree Strongly Agree

Humans have the right to alter nature to satisfy wants and desires

Strongly disagree Disagree Undecided Agree Strongly Agree

Please write any comments you have about environmental values:

Please choose a response to the following statements about sustainable lifestyles:

I make an effort to use less water when brushing my teeth or bathing

Never Rarely Sometimes Frequently Always

I purchase food produced locally rather than imported ones

Never Rarely Sometimes Frequently Always

I encourage people involved in environmentally destructive behaviour to stop

Never Rarely Sometimes Frequently Always

I consider politicians' attitudes towards environmental degradation when voting

Never Rarely Sometimes Frequently Always

I have attended a protest march or demonstration for environmental reasons

Never Rarely Sometimes Frequently Always

Please write any comments you have about sustainable lifestyles:

Please choose a response to the following statements about the current sustainability practice of the university:

The university practices and promotes good social and sustainability practices

Strongly disagree Disagree Undecided Agree Strongly Agree

All courses in the university should introduce students to sustainability and current global challenges

Strongly disagree Disagree Undecided Agree Strongly Agree

Please write any comments you have about the sustainability practice of the university:

Importance of sustainability skills for graduates:

Are there any sustainability skills or topics you would like to be introduced as part of your university education?

Please rank the following skills in terms of their importance in being included in your course for a graduate in your field, **where 1 is the most important and 8 is the least important:**

- | | |
|--|--|
| | Understand people's relationship to nature |
| | Analyse using many subjects |
| | Act as a responsible citizen locally and globally |
| | Plan for the long term as well as the short term |
| | Use resources efficiently |
| | Think of the whole system and the links when considering new ideas |
| | Adapt to new situations |
| | Consider the ethical issues of your subject |

Thank you for your help

Appendix 22 Brief feedback documents key emerging issues Interview 2 and Action learning conversation 2 Stage II

i.e. PARTICIPANT 16 – KEY EMERGING THEMES INTERVIEW 2

Comments on previous summary documents:

- Agrees on limitations: 1st years, not much discussion, big class, no small seminars.
- Interesting to see how sustainability can be seen from so many different perspectives.
- Next group session - useful to have an introduction on the project - research aims - set scene.

Interests – evolution of initial ideas:

- Suggestion focus-group 1 - Survey the students to inform session taking place at the end of the module - what students already know about sustainability - address some of the issues in the last sessions - teaching more directed. Personal interest and easy to do it. Questionnaire at the beginning and at the end.
- Change in a positive way – unsure to start off with but roundtable was very helpful – get ideas from different people and it seems more achievable.
- Interested on the results of the research and see what happens as a result of it in other modules and other departments.

Progress:

- Contact World Land Trust for carbon offsetting- they haven't get back.
- Noticed links GCB sent for carbon offsetting - HEA resource - interesting and easy to do for Fieldtrip module.
- Ecology module - fits at the end - a lot of theory on ecology - looking at human impacts and sustainability from that perspective - Planning to put in a lecture.
- No much progress because module is in Semester 2.
- Not designed the lessons yet. Focusing on Semester 1 modules.

Opportunities:

- Sustainability Programme work - case study University of Southampton - Sustainability Programme could help fulfil the teaching - what is it doing and how could it fit - interesting evaluation report.
- It can be really subject specific- facilitates the integration of sustainability across the curriculum - good to keep it contextualised according to subject area that is taught - contextualised for students and reduces work for module leaders.
- Have something very specific to focus on and as a starting point – evolution – subsequent years – see what things can work.
- Students would be engaged.

- Weekly Conservation Club – build and keep up-to-date with subject knowledge – ecological and climate change issues (these are not own research area) - perspective to take for teaching.

Challenges/difficulties:

- Not yet identified - see more once developing and doing the teaching.

Organisational conditions and dynamics:

- No knowledge about the Sustainability Programme work - heard about through individual search from a HEA email update.
- Sustainability Programme may have a high profile in sustainability, but this is not visible in the university - not mentioned in any communication staff get from the university i.e. email updates or Voice. Need to make people aware of it.
- It can take lots of different focuses - sustainability from an ecological perspective but it can take lots of different focuses across different subject areas – departments at the university.

Specific needs:

- Support on developing the questionnaire – questionnaires that have been used as an starting point.

ACTION LEARNING CONVERSATION 2

Facilitator: Gisela Cebrian Bernat (GCB)

1. Key outcomes discussion '*EfS working document*'

Sustainability definition

- Useful paper 'EfS working document' – clearer understanding - definition and rationale more understandable than in earlier documents shared.
- Sustainability conceptualisation in the document - implicit rather than explicit – key challenges such as dealing with climate change, social justice, etc. – abstract/broad concept to allow subject area contextualisation.
- Sustainability presumes maintenance of a particular way of being or state of a system – unclear on what is to be sustained. Is it about global humanity and the planet or is it socio-political?
- Classic challenge of the definition of sustainability – sustainability is the goal, there might be a journey and different ways to achieve it but the core term has never been defined. This can hinder getting to the goal.
- Challenge existing literature – not much progress in the last years, unresolved issues such as the end results – not simple field of research. Literature is vague.
- Sustainability not seen as a learning process – it implies a learning process - in order to achieve a sustainable society we would need to change.
- Sustainability is a moving target for this reason is more a journey than a checklist.
- There are scientific, political, economic issues – it becomes an interdisciplinary subject.

Challenges

- Tension transformative paradigm – change in people's attitudes and understanding – issue of directing people to a particular viewpoint of what needs to be sustained or created - education that is driving towards a particular vision of a sustainable future or getting people to think about these issues and develop their own awareness? – transformative learning to challenge existing patterns and worldviews.. to critique and examine sustainability issues. Aims of higher education to produce critical thinkers.
- Methodology of sustainability - The extent to which transformative pedagogy is different/more sustainable compared to normal pedagogy and why? – not clear about the extent to which sustainability implies more than just a destination – it is a worldview and a methodology as well – new field. Not much on methodology and end state.
- Paper argues that teaching sustainability is a worthwhile goal in its own right – by teaching people skills such as problem-solving and critical thinking and analysis - this will potentially lead to a more sustainable society.
- Sustainability discussion has dropped off - redirected because of the economic crises – politic and economic reasons. Primacy on sustaining a particular for economic reasons. It has acquired a different form.
- Nature of education – higher education – not necessarily teach in that respect – concepts of sustainability are inherent in the discourse in different modules – depends on research taken forward and value to people.
- Semi-philosophical topic – it does not fit into the current academic silos. I.e. REF evaluation.

- Higher education requires people to have foundations in a subject area. Prior knowledge of students A-levels specific subject knowledge. Feeling not much in schools at the moment apart from science curriculum. It can be vague and amorphous for students. Few schools are sustainable or eco-friendly schools in the UK. It features some aspects of the curriculum but not as a worldview.
- Students could be confused because of the different sustainability perspectives – this is not necessarily seen a problem, students recognise different perspectives and ethical arguments.
- In most subject areas freedom in curriculum and what to teach. Persuade academic staff members to embed sustainability – cultural change can be difficult in this respect. Also academic staff have embedded it because of personal initiative/interest.
- Significant changes in the university in the last years– sustainability changes such as recycling and Blackout.
- Sustainability understanding moving fast in the university – younger generation of academics more aware and influential on what happens in the university.
- PhD challenges – what the group is going to measure common impact on - quantitative measurement of impact – survey with staff or students (pre- and post-test) - baseline data what is already going on at the university. Look at the delivery – challenge of timing.

2. Part 2 – Action Learning Conversation 2

Participant	Biology
Current stage	<p>Teaching a first year <i>Ecology</i> module Semester 2.</p> <p>Previously included one lecture on human ecology at the end, which mentioned sustainability. Intention to expand it.</p> <p>Work with GCB to put together a sustainability questionnaire based on existing questionnaires – looking at current sustainability knowledge and attitudes. Potentially inform the teaching if it is analysed on time. Otherwise pre- and post-test. See any changes that have happened.</p> <p>Lectures on sustainability not written yet. Session planned at the end of the term.</p>
Challenge	The challenge is to have time to analyse the data. Find the time to use what is learned from the questionnaires to inform the teaching or just generally teach them about it.
Aspects discussed	<p>Discussion on the questionnaire content and structure (qualitative + quantitative measures).</p> <p>Range of degree subjects in module: zoology, biology, environmental sciences, geography.</p>
Possible assumptions	-
Insights and future action	Send questionnaire to the rest of the members (GCB). General interest and positive valuation of the questionnaire by other participants. Other participants interested in doing it.

Participant	Education
Current stage	<p><i>Education policy</i> course - put in a lecture on sustainability and an associated seminar –reading and discussion in the seminar. Planning to do it Semester 1 but he got ill and could not do it.</p> <p>GCB resourced with some resources –interested in using UNESCO materials.</p> <p>Planning to do it next academic year Semester 1. Move it up to week 2 or 3. GCB may contribute to the module.</p>
Challenge	<p>No challenge in the practicality of going into this area.</p> <p>Students seemed not very interested or enthusiastic about it. Students have selected education policy not sustainability. Challenge to motivate them.</p> <p>Delivering sustainability to a group of people that hadn't thought about it and hadn't realised that it was part of the course they chose.</p>
Aspects discussed	<p>Degree in education – education as an academic subject. ¾ of them will become teachers – important position in society – they should know about this.</p> <p>95% female group – could there be some gender implications?</p> <p>Student cohort – probably no science courses at school, not part of their lives or engaged in the discourse before. Occasionally exposed and read about it in newspapers and media.</p>
Possible assumptions	<p>Maybe took an excessively values debate or philosophical stand rather than more practical/applied science of education. Way of presenting it and engaging them was not right. Probably oversold it.</p>
Insights and future action	<p>Student engagement – think through how to sell it - make it relevant to the students – more educational science - how it is relevant to what they are studying and now is what they are paying for.</p> <p>Interested in trying out the methodology of the pre- and post-questionnaire with students.</p>

Participant	Archaeology
Current stage	<p>Teaching CI module– directly guided towards delivering this content - second year of delivery of this module.</p>
Challenge	<p>No challenge. First year some challenges to do with differing outcomes were improved. Now it is leveller because it is a self-selecting group.</p> <p>Broad curriculum to enable students to judge for themselves. No overly-didactic in terms of position for the environment and interpretation. Provide the tools. Emotive issue – no overrun with material.</p>
Aspects discussed	<p>Aspects of teaching: archaeology - environment side, combined social and environment over time. CI module is deliberately bringing people together from different faculties who work on environmental change and societies. Ocean and earth sciences, physics and geography, philosophy, and social sciences.</p> <p>Positive evaluation first year of deliver – optional module – self-selecting group is easier – people who have an interest. High quality of work produced by students.</p> <p>CI module: seminars and small groups.</p>

Possible assumptions	Students are interested and they may be doing it because they think the CI modules are going to be easy. Students might have different reasons for doing these modules.
Insights and future action	<p>CI modules related to sustainability - it is a buzzword on sustainability – is a draw. Global challenges have got in the CI modules, students were interested in learning about these topics.</p> <p>Try out different methodologies for different groups within the module – experimental variation within the group – i.e. resource seminar differently – to get a sensitivity in terms of method.</p> <p>Interested in trying out the methodology of the pre- and post-questionnaire with students.</p> <p>Ask enthusiastic students from the CI module to lecture/encourage non-enthusiastic students (another participant’s students). Ask individual students. Participants interested in exploring this.</p>

Participant	Electronics and Computer Science
Current stage	<p>Teaching Personal and professional issues module Semester 2 – 130 computing students.</p> <p>Redesign of the module - change of the syllabus - previously personal development, management issues and IT, professional issues and IT, legal issues and IT. In the new online version it has become – personal issues, management, ethics and legal issues and sustainability.</p> <p>Students do self-study, group presentations and annotated bibliographies. Allowed to choose a topic from management, ethics, sustainability and legal issues.</p> <p>Personal development bit – write a technical report - four out of six of the topics are sustainability related (student choice) - smart meetings and Green IT and Green Computing. I.e. the head of the IT services at the university wishes to know how they could save energy. Extra measure – balance in choosing sustainability related topics is and how they will define it.</p>
Challenge	Seeing it through.
Aspects discussed	<p>Second part of the course not developed yet. Idea to put an activity on sustainability. Maybe go and look at a couple of videos and work through some evidence and answer some questions online – interactive activity.</p> <p>Fill in the questionnaire – could be one of the online activities students have to do.</p>
Possible assumptions	-
Insights and future action	<p>Interested in trying out the methodology of the pre- and post-questionnaire with students.</p> <p>Any guidance would be helpful at this stage – what to ask to the students and what GCB or the group wants to measure at the end. Case study of some kind - good activity.</p>

Participant	Health Sciences
Current stage	<p>Sustainability from midwifery professional perspective. Fit for purpose – new values-based curriculum.</p> <p>Introduce students to research from day one. For each cohort – two small groups of 23 midwifery students per year. Provide research skills useful for assignments and the third year research module and dissertation.</p> <ul style="list-style-type: none"> - First years have three research in practice days - Journal club – get used to look at research articles related to practice areas they are in and critique evidence. Done the first one. They have references to 4 papers, search them and talk through in the session. - Second years have three research in practice sessions – last October qualitative research, two more sessions in quantitative research and mix-methods. In the morning discuss/critique 4 papers and afternoon do a mini-research project.
Challenge	Students don't want to read. How do you get them to read and engage them in the process?
Aspects discussed	<p>Not assessed on those aspects. Optional sessions.</p> <p>Size group – 23 in the groups – for the research activities groups of 3 or 4. Some of the groups very serious and some not motivated. Hard work to motivate them.</p> <p>Others face the same problem – do activities in the sessions which involve them doing some reading. HD approach - make them do the activities and tick them through to know what they have done. I.e. do reading and watch a video – chunked into small sizes. Small amount of marks. Blackboard allows knowing if they have done it or not.</p> <p>Qualitative session conducted – different persons had different roles – challenge with transcribing – students didn't want to do it. Lack of motivation to do some tasks.</p> <p>Type of papers – qualitative research papers – papers chosen are very linked to the areas they are in practice.</p> <p>Issue throughout higher education – the idea of flipped classrooms and try to make them actually do the reading.</p> <p>Pragmatic students – want to be in practice - be hands on with the women.</p>
Possible assumptions	Assumption – students were going to be interested. Students do not necessarily see the benefits. The ones that come are not necessarily interested.
Insights and future action	<p>Fit it into the assessment – give marks. Small percentage mark.</p> <p>Use of available technologies such as Blackboard.</p> <p>Possible ideas: 2nd year tutorials – get each student to read a paper and then discuss each. Get them to make a presentation about the paper - peer pressure. The groups of 4 or 5 get together beforehand and have to make a presentation. Each group something slightly different. Take a register of who turns up and then correlate it with their assignment mark.</p>

Appendix 23 Structure Action Learning Conversation 3

20th May 2013

Introduction:

1. Introduce participants to the structure of the session
2. Remind ground rules
 - All information that emerges during the session is confidential
 - One person speaks at time
 - Really listening to each other is the key
 - Switch off mobile phones
3. Any questions before starting?

Structure of the session:

Part 1 (1.15 min = 15 minutes each challenge) – Action learning conversation

Follow the action learning conversation structure that we followed in the first and second group session, where each participant needs to hold two different roles: the presenter and the support role.

I would like to ask you if you could share with the group where you have got to with the design and delivery of the sustainability teaching. I would like to ask you to reflect on the changes that you have made in your teaching practice and main outcomes of the intervention and project, in aspects such as your approach to education for sustainability, new content, teaching and learning methods, new activities or elements that you have introduced and assessment methods, and what can be learned from this experience. In case you haven't been able to make any changes to your teaching practice, you are invited to reflect on future plans and actions that you are considering to take.

I would also like to ask you to think about, share during the session and send me beforehand (if you can) your key challenge or issue that you have faced related to the delivery of sustainability teaching at a personal, professional and/or organisational level. The discussion will aim to facilitate insights and possible future action based on your challenges.

Brief explanation action learning process:

- 2 roles – Presenter (the one introducing the challenge) and support role (the ones helping, listen, ask reflective questions, role of consultant/critical friend rather than adviser, not give advice).
- Process of questioning + they don't have to participate in all the rounds if they don't want to – only say something if they want to.
- We have around 15 minutes to go through each of the challenges.

Part 2 (30 min) – Reflect on the research process

Reflect on the research process – mirror aims of catalyst role/action research process and engaging them in an action learning process – introduce key features of the method used and discuss with participants the extent to which they feel they have engaged in this process.

INFORMATION SHARED WITH THE ALC3 PARTICIPANTS

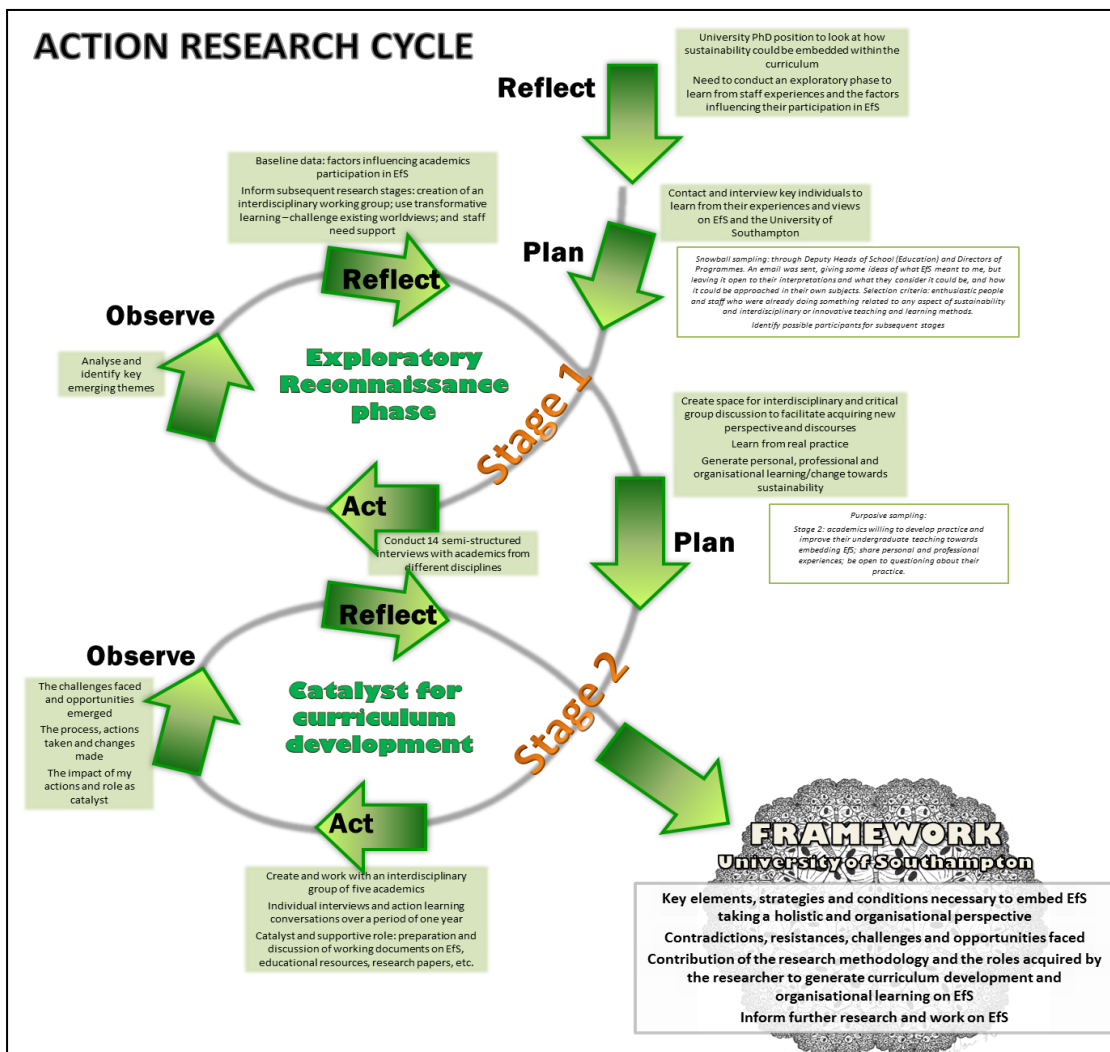
Catalyst role and second-order action research

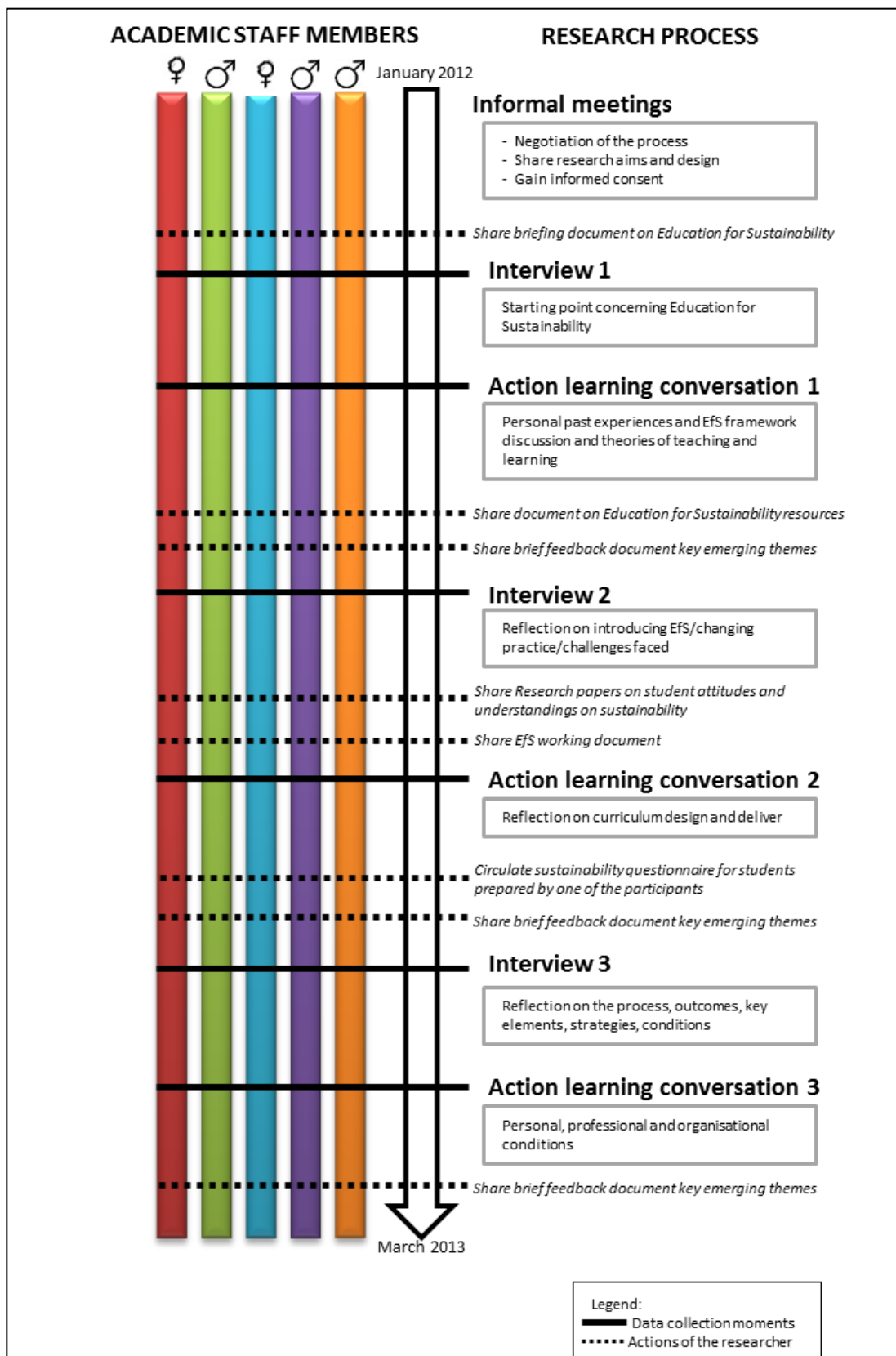
Through individual interviews, sharing documents and resources, preparing summary documents, conducting the action learning conversations I have aimed to engage the participants in a critical reflection and learning process – this process was willing to challenge existing worldviews on sustainability and education for sustainability with the aim to develop new understandings and practices. Part of my role of being a catalyst - supportive – identify possible needs such as having case studies – action research process - *Plan-act-observe-reflect*.

Action learning process

“A continuous process of learning and reflection that happens with the support of a group or 'set' of colleagues, working on real issues, with the intention of getting things done. The voluntary participants in the group or 'set' learn with and from each other and take forward an important issue with the support of the other members of the set” (McGill & Brockbank, 2004, p. 13)

Action learning programs are based on tackling real problems in real time; problems are relevant to participant’s workplace and professional practice; supportive collaborative process; take action between set meetings (Smith & O'Neil, 2003, pp. 63-64). The group sessions’ structure has been based on action learning conversations framework. This emphasises on the critical reflection on possible assumptions made by the set members. I chose this method because it promotes critical reflection, learning and the development of new understandings, insights and innovative solutions for action amongst the set members.





McGill, I., & Brockbank, A. (2004). *The Action Learning Handbook: Powerful techniques for education, professional development and training*. Abingdon: RoutledgeFalmer.

Smith, P. A. C., & O'Neil, J. (2003). A review of action learning literature 1994-2000: Part 1 - bibliography and comments. *Journal of Workplace Learning*, 15(2), 63-69.

Questions to pose to the group:

- To what extent do you feel that you have engaged in this process?
- To what extent has this happened?
- What do you think about this method? The outcomes of the research process / project?

Part 3 (5 min) – Feedback session

Feedback on the session and other topics such as future developments.

Possible questions:

1. How did you feel during the session?
2. What do you think are the main outcomes of the session? What have you learned during today's session?
3. What have been the more positive aspects of the session?
4. What could be improved for the next sessions?

Appendix 24 Data collection dates Stage III

	Bob	Lucy	Andrew	Richard	Martin	Jack	Mary
Informal meeting	19 January 2012 (presentation of the research)						
Interview 1	19 July 2012	10 May 2012	30 Apr 2012	08 May 2012	08 May 2012	25 Apr 2012	<i>engaged later</i>
Interview 2	01 Nov 2012	15 Nov 2012	01 Nov 2012	21 Nov 2012	30 Oct 2012	14 Nov 2012	02 Nov 2012
Reflective Session 1	23 Nov 2012						
Interview 2	21 March 2013	08 Apr 2013	22 March 2013	11 March 2013	25 March 2013	12 March 2013	11 March 2013
Reflective Session 2	29 May 2013						

Participant Observation	Sustainability Programme meetings' dates
1	19 January 2012
2	06 February 2012
3	14 March 2012
4	16 April 2012
5	22 May 2012
6	28 June 2012
7	19 July 2012
8	29 August 2012
9	25 October 2012
10	29 November 2012
11	21 January 2013
12	21 March 2013
13	24 April 2013
14	9 May 2013

Appendix 25 Schedule Interviews Stage III

Interview 1 Sustainability programme members (3rd Stage) (26/04/2012)

Research purposes

To gain a deep understanding of the context and conditions under which the Sustainability programme is operating.

To find out initial successes, challenges and opportunities faced, and the desired outcomes and the personal aims and expectations of each participant.

To understand their views and experiences related to EfS and curriculum and organisational development within the UoS.

Interview questions

1. What is your main role in the university? What is your role in the Sustainability programme?
2. What is your understanding of 'embedding sustainability within the Higher Education curriculum'? What is the approach of the University of Southampton/Sustainability programme in curriculum development for sustainability?
3. Are you clear about the aims and expectations of the Southampton Sustainability programme? How would you describe them?
4. What do you see as the potential impacts and contributions of the Sustainability programme in terms of curriculum development related to sustainability? And in terms of organisational learning and change?
5. What has been achieved so far?
6. What do you consider are the conditions required to transform the curriculum towards embedding sustainability?
7. What are the main opportunities and challenges (obstacles) faced in implementing the Sustainability programme? What are the factors that facilitate and constrain the initiative? How can they be overcome?
8. How would you characterise/define an organisation that learns to change?

Interview 2 Sustainability programme members (3rd Stage) (22/10/2012)

Research purposes

Interview 1 was conducted with each member individually. Initial key emerging issues that arose in the interviews will be shared with the participants beforehand (3 days before).

To find out what has happened since the last interview. How the group is getting on with the initiative, characteristics of the process, what continue to be challenges, what are new successes and opportunities that have emerged.

Interview questions

1. In relation to the document on the key emerging themes that arose during the previous interviews, what do you think? Would you like to discuss any of these themes in particular?
2. What has happened since the last time we met in relation to the Sustainability programme?
3. What achievements have been made since the last time we met?
4. What are the disappointments?
5. What continue to be the challenges for the Sustainability programme? Have new opportunities emerged?
6. Has the vision changed or evolved?
7. What are the next steps for the Sustainability programme? What are the priorities for the Sustainability programme now?
8. What have you learned so far concerning the organisational conditions and dynamics in promoting the Sustainability programme?
9. Are there any specific needs that you face?

Interview 3 Sustainability programme members (3rd Stage) (13/03/2013)

Research purposes

Interview 2 and reflective session 1 were conducted. A summary of key emerging themes that arose in the interviews and a summary of the main outcomes of the reflective session will be shared with the participants beforehand (3 days before).

To find out what happened since the last interview and reflect on the process and implementation of the programme so far, key achievements, current challenges, opportunities and future insights.

Interview questions

1. In relation to the documents on the key emerging themes that arose during the previous interviews and reflective session, what do you think about these themes? Would you like to discuss any of these themes in particular?
2. What has happened since the last time we met in relation to the Sustainability programme?
3. What achievements have been made since the last time we met?
4. What are the disappointments?
 - a. Are there any areas in which the programme has not progressed as expected? Why has progress in these areas has been difficult?
5. What continue to be the challenges for the Sustainability programme? Have new opportunities emerged?
6. Has the vision changed or evolved?
7. What are the next steps for the Sustainability programme? What are the priorities for the Sustainability programme now?
8. What have you learned so far concerning the organisational conditions and dynamics in promoting the Sustainability programme?
9. If you were developing a model for the University of Southampton to embed education for sustainability within the undergraduate curriculum, what would you do? What two key actions or conditions would you need to create?

Appendix 26 Brief feedback document key emerging themes Interview 1 Stage III

INTERVIEW 1 – KEY EMERGING THEMES SUSTAINABILITY PROGRAMME

Current state:

- Early stages. There is a sense that the first year of the intervention has been baseline work, set up the scene in a more strategic level. Now it is turning this into reality.
- There is a sense that it has influenced a lot but has not implemented much yet.
- First stage: mapping to identify and celebrate what is already going on and identify the gaps. Second stage: engage with programme directors, lecturers and faculty members in discussion and reflection. The mapping will help to know what the areas of focus and main contribution can be. Working out its strategy.

Main achievements:

- The creation of the group in itself – bring people from different sectors of the university to work together.
- Get the funding for a Sustainability Programme assistant to drive the programme and the person (members have the enthusiasm but do not have the time).
- Sustainability Programme included in the Environment and Sustainability strategy – top level support and commitment.
- Publicity – building awareness activities.
- All members make a very positive evaluation of what is been achieved in the first year.
- Blackout.
- ISO 14.001 – Eco-Campus.
- Sustainability programme has mirrored where the UoS is in relation to other universities in terms of sustainability.

Vision:

- Shared vision of the members – embedding sustainability in the curriculum as a broad issue involving the whole student experience, operations, research and curriculum (CORE). Things like the Blackout, the Waste Audit, PhD students doing research on the operations side of the university are emphasised as existing examples of this vision.
- Be a sustainable university – practice sustainability in all the university activities *'be the change you want to see'*. Sustainability in the structures (i.e. promotion criteria, sustainability positions, job descriptions).
- Be leaders on sustainability - Increase the profile of sustainability – reputation.
- Sustainability programme as flexible, practical, responsive and forward thinking – willing to change. Recognise diversity and openness.
- Sustainability programme as a hub: coordinate, foster internal linkages at different levels, bring people together, build relationships and collaborations within the university – *'it is not about reinventing the wheel'*.

- Capacity-building, resource people, disseminate, encourage and engage– support rather than create more work – help understand. Work with academics to make sustainability explicit, identify existing opportunities, build into what is already there. Help staff see the benefits.
- Cultural and behavioural change – shift in people’s mind-sets – it takes time.

Current key issues:

- Communication strategy (what and how?). How to engage the university community. Need to communicate what the group is doing. Strengthen communication. People don’t know about the Sustainability Programme.
- Profile, identity and recognition of the programme across the university. Need to create a profile and get the Sustainability Programme known.
- Students engagement and voice – Student expectations are acquiring a central role, these may differ from expectations of the Sustainability programme; and with senior management.
- Academic culture – gold rush mentality – resistance of some academics to embed things – academia favours individualism – academics don’t collaborate and communicate much – research evaluation framework - external bodies accreditations and committees – university roles – research intense university.
- Overarching long-term goal is clear but need to establish defined objectives-targets. Ambitious but achievable targets. Plan and assessment to be defined. Work out its plan, strategy and focus after the mapping (1st stage) and talking to people (2nd stage).

Curriculum approach university of Southampton/Sustainability Programme:

- Curriculum Innovation Programme Sustainability Module as an early win.
- Link research, operations, teaching and student experience. Campus as a living laboratory. Extracurricular activities.
- Graduate attributes and learning outcomes.
- Interdisciplinary work. Use of expertise and linkages around the university.

Challenges and opportunities:

- Amount of work – no time - multiple responsibilities – people is overworked.
- Era of changes and cuts - change fatigue – people don’t like change.
- Competing demands - lecturers have been asked to embed different agendas (real engagement). It doesn’t become like other agendas such as employability.
- People think it is not relevant to them.
- Commitment at the strategic level – translate senior management commitment into reality.
- Politics and structures of the university – nature and characteristics of universities (academic unit, faculty structures, collaboration...).
- Competition with other universities as a lever.
- Sustainability skills and employability; community and industry benefits.

Appendix 27 Structure Reflective session 1

REFLECTIVE SESSION 1 SUSTAINABILITY PROGRAMME GROUP (*reflective session structured – document for the researcher*)

Research purposes of the session

- Provide feedback to the group
- Assist the process of reflection and articulating experiences by asking critical and sometimes provocative questions
- Promote a critical group reflection which facilitates acquiring new perspectives and discourses.

STRUCTURE OF THE SESSION

1. Introduce them to the process (5 min)

- Make clear that there have been lots of achievements and successes such as Blackout, the creation of the group, but the purpose of the session is to reflect on key and current challenges/issues the initiative or group is facing and acquire new perspectives and discourses.

2. Adaptation of the Diamond 9 activity (15 min)

- Adaptation of the diamond 9 to start the group reflection and get them to discuss. They will be asked to reflect and prioritise a set of keywords (key issues the group is facing at the moment – the ones I have selected and they have been reflecting on during interview 2). These keywords are listed in the table below.
- The researcher asks them to explain why they have prioritised certain issues.

3. My insights on the key themes (30 min)

9 KEYWORDS KEY THEMES	WHAT WORKED WELL	WHAT DID NOT WORK (My insights)	KEY QUESTIONS I WILL ASK TO THE GROUP
Engagement, establishing linkages and collaboration	Strategic side done Students' engagement Links within the group	Need for more collaboration with other groupings and people within the organisation, and more engagement	What can be done to foster more collaboration and engagement? How can we engage more people? Engage someone from other background in the GA group? Would that be useful? Revise membership?
Group dynamics – teamwork	Sustainability programme group links different groupings of the university	The group could maybe have a space for reflection and more participation and new ideas could emerge in each meeting. At the moment the meetings are basically going through the minutes.	Do the group dynamics work? Could the group dynamics be improved/enhanced? Could we search for more participation and generation of new ideas/insights during the meetings? What can the group do differently? Can we improve our teamwork/group dynamics? Could more experiences, insights, knowledge and skills be shared? How?
Politics	Environment and Sustainability strategy. Sustainability programme is included.	The group has a sense that there is not enough political commitment or support.	Are we doing enough in terms of engaging senior management? What can be done to ensure that there is political will and commitment?
Identity Branding	??	Not clear about the name and branding.	Does the Sustainability programme need branding and identity? What is the name? Why this name is better? What are the opportunities?

Place the initiative within the organisation – long term	Flexibility of the programme in order to be responsible	It is important to think where they want to be and where they place and see the initiative going.	How do you see the place of the group within the university? Is it a long-term group or short term? Where do you see the initiative placed within the next 5 or 10 years?
Strategic thinking and planning	Shared view Clear overarching goal	A sense that the small steps to get to the overarching goal are not clear enough. No agreed action plan with targets and dealines.	What is the essence of the programme? From where we are now how can we get to where we want to be? What are the small steps to get us to this vision? Could we do something better?
Communication	A number of things such as the Voice, staff club information, etc.	A lot of people don't know about the Sustainability programme yet.	Do we want be out there? Do we want to get the Sustainability programme known? How do we go about communication? What is key in terms of the communication? What is needed? What is the message of sustainability?
System thinking	Work on all the activities of the university. Done in fact through the creation of the group.	I think that maybe more could be done in curriculum.	What could be done more? How to influence all the areas? Could we be doing more in terms of the curriculum? How to influence more the curriculum?
Monitoring, benchmarking and assessment	??	No monitoring system of the intervention at the moment	How can monitoring and assessing the programme can help us? Would monitoring the progress be useful?

The kind of questions I need to have in mind for each of these themes is:

- What do we need to do?
- What can be done differently? What can we do more?
- What key features/issues need to be addressed?
- What structures currently exist for this issue?
- What? So what? Now what?

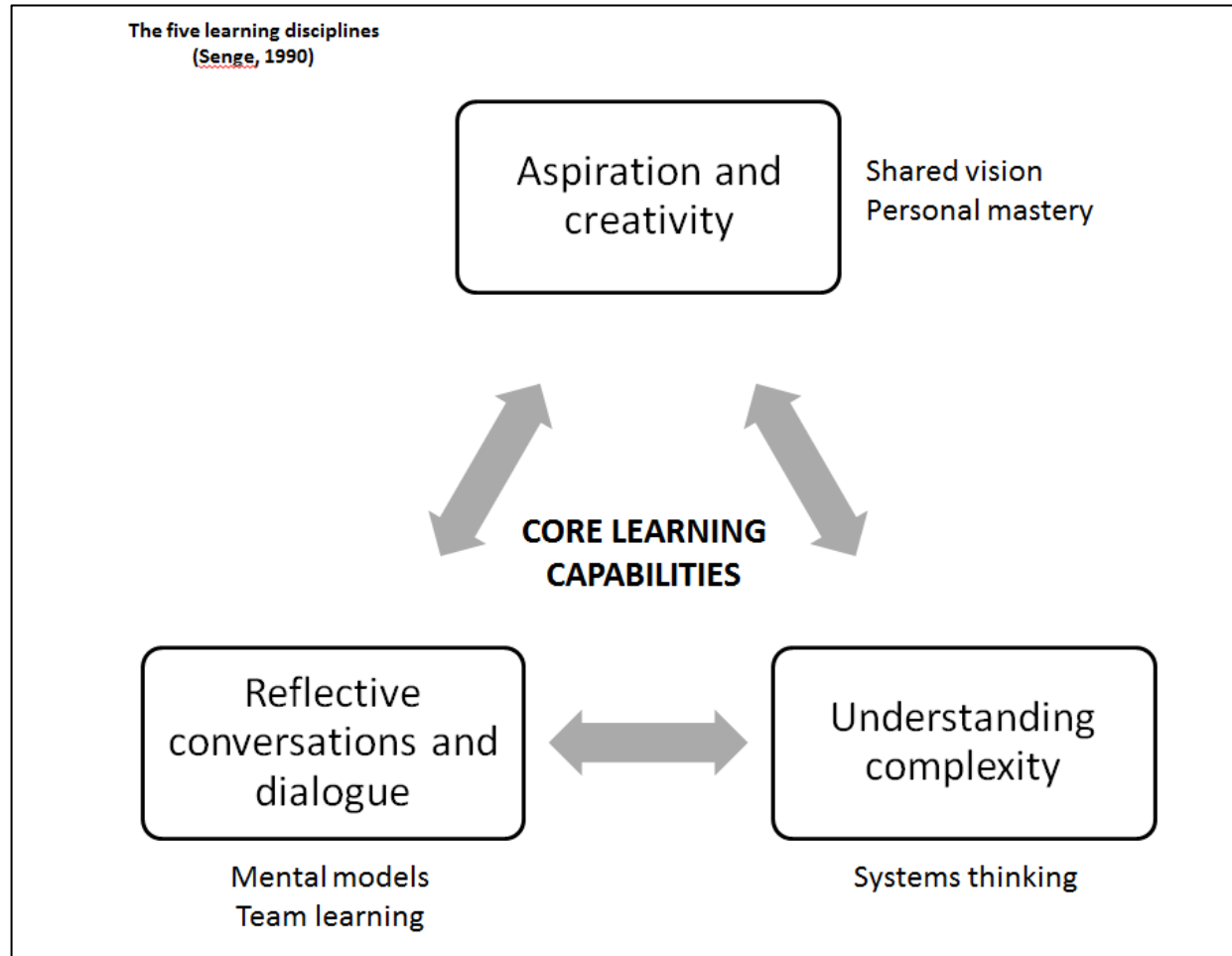
4. Introduce the learning organisation idea (15 minutes)

- Brief introduction of the learning organisation idea (Senge, 1990; 2006). The five learning disciplines that are necessary for an organisation to become a learning organisation: shared vision; systems thinking; mental models; personal mastery; and team learning. Commonly used with leaders, need to work on improving all the disciplines.
- My reflections are based on how the Sustainability programme is contributing or can contribute to make the University of Southampton become a learning organisation towards sustainability. An organisation where *'its members continually expand their capacity to create the results they truly desire, where new and expansive patterns of thinking are nurtured, where collective aspiration is set free, and where people are continually learning how to learn together'* Senge (2006, p.3).
- A document is shared with the participants with the key ideas underpinning the learning organisation ideal and some questions that link to the Sustainability programme and the University of Southampton. This is introduced as a tool for reflection. These questions are:
 - o Do we have all these elements as an organisation? What do we need more?
 - o What the Sustainability programme can do to cultivate a learning organisation towards sustainability?
 - o How can the Sustainability programme contribute to develop/improve these learning disciplines within the university? What could we do more?

5. Reflection on the session (5 minutes)

- Do a round and ask brief feedback on the session to all the members. How they feel about it?

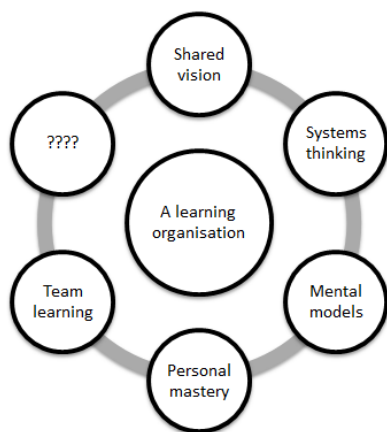
4.- Introduce the learning organisation idea (15 minutes) - document prepared for the participants in the reflective session 1 (Stage III)



The five learning disciplines (Senge, 1990; 2006)

- **Personal mastery** is 'the discipline of continually clarifying and deepening our personal vision, of focusing our energies, of developing patience, and of seeing reality objectively' (Senge, 2006, p.7). Personal mastery is related to lifelong learning of individuals, and their abilities and skills to continually improve their own situation to realise their personal and professional goals. Thus, the learning ability of organisations depends on its members' capacity to learn. Personal vision and desires.
- **Mental models** are 'deeply ingrained assumptions, generalizations, or even pictures or images that influence how we understand the world and how we take action' (p. 8). There is often a lack of self-awareness of prevailing mental models and the resulting way of understanding, interacting and acting. The starting point for this discipline is to reflect on internal values and beliefs that frame our worldviews in order to challenge them.
- **Shared vision** is the 'capacity to hold a shared picture of the future we seek to create' (p. 9). This discipline aims at bridging the existing gap between individual visions and shared vision among the social organisation, which encompasses having into consideration future pictures or desired outcomes which are fundamental to nurture empowerment and commitment rather than indifference and passivity amongst the organisation community.
- **Team learning** can enhance individual learning capacities and increase collaborative achievements by dialogue and open discussion. Team learning can lead to a greater individual learning. The starting point is "dialogue", the capacity of members of a team to suspend assumptions and enter into a genuine "thinking together" (p. 10). Recognising and overcoming challenges and difficulties related to group interaction is important as they can constrain learning.
- **Systems thinking** is the fifth discipline that embraces the other disciplines, all the disciplines need to be taken into consideration as a whole and here remains the importance of systems thinking in integrating all the disciplines. Understanding the complexity and interconnections present in the organisation.
- ???

The five learning disciplines (Senge, 1990)



Its members continually expand their capacity to create the results they truly desire, where new and expansive patterns of thinking are nurtured, where collective aspiration is set free, and where people are continually learning how to learn together
(Senge, 1990, p.3)

- Do we have all these elements as an organisation? What do we need more?
- What the Green Academy can do to cultivate a learning organisation towards sustainability?
- How can the Green Academy contribute to develop/improve these learning disciplines within the university? What could we do more?

Appendix 28 Brief feedback document key emerging themes Interview 2 Stage III

INTERVIEW 2 – KEY EMERGING THEMES SUSTAINABILITY PROGRAMME

Progress and key achievements since last interview:

- A lot more implementation. Excellent evaluation of the work done and involvement of the group across the university. Quick development of actions compared to other groups in the university.
- Blackout and Waste audit in the halls with first year students. Blackout data used for continuing communications. Other activities such as the Clothes swap (to be held).
- Curriculum mapping finished – beneficial process - valuable data on what's already going on.
- Engagement and value of all members and the different roles of each of them.
- More student engagement - great work by the student intern over summer (sustainability audit SUSU, review policy documents, workshop with sabbatical officers, pre-seasonal, etc.).
- Development of a sustainability strategy for SUSU as an outcome.
- Increased communication: seminar; notice board in the staff club; some extra funding.
- CIP module: good feedback from students; valuable experience.
- Highly commended at Green Gown Awards and nomination for Times Higher Education Awards – profile rising nationally.
- Vice-Chancellor mentioned Sustainability programme work in a speech at graduation.
- More engagement started with staff from the social sciences (*need perspectives, insights and contributions of people from other parts of the university*).

Vision evolution and influences:

- External influences - changes in the politics of the organisation and outside influence the sustainability agenda and Sustainability programme within the university. External situation in the university has changed: senior manager taking the agenda; sustainability science research group; PVC supporting it moving; new PVC.
- Overarching aim is the same but the journey - how to go about it - has evolved/changed.
- Under a period of change with the name of the programme and its focus and place within the organisation. Found focus on curriculum and experience but it seems that this is not a finished discussion. Think about the graphical representation, communication strategy and possible effects and ramifications of new focus.

Challenges:

- Still finding its place within the university – the roles of the group in the university – long-term
- Engagement – need to engage more people to help facilitate Sustainability programme aims- build a support network.
- Structure and politics - representation of sustainability higher up in the organisation – organisation and delivery across the university. Collaboration and coordination. Ensure no fragmentation and a unified message.
- Workload and time of members – only one person working full-time on the programme.
- Time and resources – staff overloaded.
- Keep the focus of the programme.
- Communication champion is moving elsewhere.
- Maintaining the momentum - also maintaining the momentum with the students.
- Avoid green washing and purely marketing usage - ensure sustainability practice of the organisation and senior managers are engaged and support it.
- Get a student officer to be a sabbatical post (*potentially effective way to impact the university – cultural change*).

Opportunities:

- Student engagement – SUSU sustainability strategy (*potentially effective way to impact the university – cultural change*).

- Change of student representative (*could also be a barrier*) – bring in fresh and new ideas, extra motivation and impetus. However there are also some risks in getting someone not so committed. Ensure consistency in the role.
- Rebranding.
- New PVC could be an opportunity depending on his/her interests.
- Current situation of change in HE - new fee structure – likely to increase student focus - sustainability could become more important.
- Sustainability research agenda is stronger.

Disappointments:

- Pace - progress slowed down – some of the actions are not moving as fast as expected because of politics, structure, bureaucracy and other external factors. I.e. get a more formal role for sustainability officers, carbon conversations, engagement and others.
- Vice-chancellor could be more active for sustainability.
- Time taken to get someone in post.
- Publicity not in place yet – lack of awareness of the programme and sustainability activities in staff and students.
- Lack of resources to do extra activities.
- Some applications for funding rejected.
- Education group not set up yet – external factors and the right structure not found yet.

Next steps/priorities:

- Name and identity.
- Politics, roles and integration – coordinated action with senior manager – common strategy and unified message. Find out the priorities and support of the new PVC. Politicking.
- Ensure long-term sustainability – key role on sustainability – permanent senior manager position – ensure buy-in from senior managers (as high as possible).
- Sustainability booklet/report – show information gathered and reporting to increase visibility of the group.
- Ensure funding for the post and additional funding to have more capacity. I.e. interns over summer.
- Engage with academic staff members – pilot in the Faculty of Human and Social Sciences. Still work to do on the approach to take, make sure well planned and communicated. Current plan is to start with programme directors. Expectation to do it for all faculties. Start pilot in February or March 2013. Set up the education panel first or after?
- Communication, dissemination and awareness-raising to engage people and be recognised (*new website, website more engaging for students, seminars, etc.*) – need to sort out the name before - communication plan needed?

Organisational conditions and dynamics

- Restructuring in the university – new faculties and changes in staff organisation – administrative and academics.
- University structure, processes and procedures influence things and can hinder innovation.
- Academic culture: personal interests; research and teaching pressures; REF; assessments; publishing; need to bring in funding; competition; reputation; egos; get rewards; entitlement; promotion criteria.
- Politics – need suitable political situation - right timing - decision-makers - contacts - sustainability in the agenda and one of the priorities.
- University conditions and dynamics change significantly at different times of the academic year. I.e. summer break, after February easier to influence things and business.
- Complex and diverse organisation – multiple stakeholders and pressure points.
- Competition sensitive to certain competitors – Russell Group universities.
- Strong research focus, some concern with attention given to education and teaching. I.e. closure of LATEU and current fragmented structure of academic development.

Appendix 29 Brief feedback outcomes Reflective Session 1

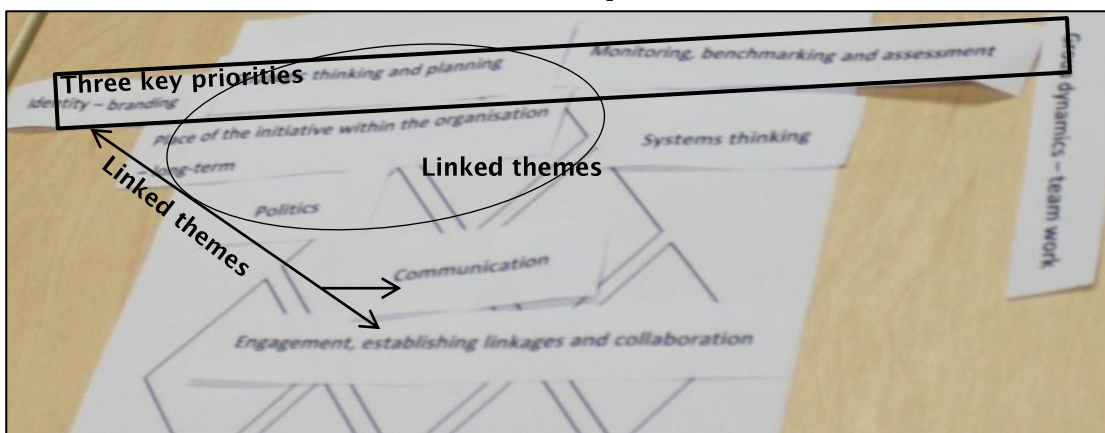
REFLECTIVE SESSION 1 SUSTAINABILITY PROGRAMME GROUP

Reflective session facilitator: Gisela Cebrian Bernat

3. Adaptation of the Diamond 9 activity

GCB identified 9 key themes that emerged during the individual interviews and asked the team members to prioritise them: identity – branding; politics; communication; engagement, establishing linkages and collaboration; systems thinking; place of the initiative within the organisation – long-term; group dynamics – teamwork; strategic thinking and planning; monitoring, benchmarking and assessment.

Picture of the final prioritisation



4. Key outcomes of the discussion according to the key themes

9 KEY THEMES	KEY OUTCOMES OF THE DISCUSSION
Identity and branding	<p>Key priority identified by the group, which is linked to strategic thinking.</p> <p>Need for a rationale for the need to change the name (why is there a need to do so?).</p> <p>Opportunities global citizenship: it fits with the university strategy and the graduate attributes; the group could drive it for the university; people already identify it and it is easier to get buy-in theoretically; all the elements of sustainability are encapsulated in global citizenship; differentiation from the rest of the sector; recognition.</p> <p>Needs: to find out expertise and groups that may already be driving global citizenship at the university; senior management group engagement with it; to develop a strategy on global citizenship – message, how to engage people, make people realise sustainability is part of it; to look at how is it defined in the university strategy; to think about possible impacts or negatives of changing the name; to think about where global citizenship would sit within the Environment and Sustainability strategy; to find out what Human Resources are doing on health, well-being and global citizenship.</p> <p>Concerns: be careful that global citizenship doesn't become a buzzword like 'sustainability'; does it have any effects on where the Sustainability programme sits within the Environment and Sustainability strategy?</p> <p>Action points: explore the idea with senior managers such as sustainability champion, Vice-chancellor and Pro-Vice Chancellor. There was discussion on the strategy to approach the senior management team: who is better to contact first? who is going to contact them? and what needs to the way forward? Senior management commitment is key on this.</p>

Strategic thinking and planning	<p>Changes have taken place in the sustainability strategy, groupings, etc. at the University. Sustainability programme needs to rethink its remit.</p> <p>General perception that the sustainability message has become very focussed on the green agenda and environmental sustainability.</p> <p>Develop a definition and strategy for global citizenship. Some ideas that emerged are to link it to employability, global leaders, cultural awareness.</p>
Monitoring, benchmarking and assessment	<p>Methods suggested: EMS system. Plan-do-check-act. Cyclical process: monitoring and baseline first, strategic thinking and planning, then benchmarking and assessment (no agreement on the exact order of it, first planning or monitoring?).</p> <p>GCB commented on the need to develop monitoring and assessment tools of the initiative.</p> <p>Considerations: everything contained in the plan needs to be monitored to have evidences of positive impact, but is everything that the group is doing being monitored? Could it be? How could the impact be measured?</p> <p>Concerns: difficult to assess or monitor certain themes like engagement, and because the Sustainability programme process is not linear.</p> <p>Possible ideas: Programme assistant could go back to academic staff members after a few months and ask what has happened as a result of the chats with them.</p>
Place of the initiative – long term	<p>Politics and the place of the initiative would go together – politics is part of finding the place of the initiative.</p>
Politics	
Systems thinking	<p>No issues were discussed.</p>
Communication	<p>There is a sense that more people know about the Sustainability programme Southampton externally than internally.</p> <p>Before developing a communication strategy and plan the identity and branding need to be sorted out. Communication is delayed because of the identity issue.</p> <p>There has been communication but staff have not necessarily engaged with it.</p>
Engagement, linkages and collaboration	<p>GCB asked about the need to review membership and engage staff members from different backgrounds in the steering group. Group agreed that in case global citizenship is the new branding, review of the membership would be necessary.</p> <p>Consider engagement of a staff member from the communication team.</p> <p>More engagement with other people and groupings within the university is needed– first step is to clarify the name and direction.</p> <p>Priority for February is for programme assistant to start discussions with staff in the Faculty of Social and Human Sciences as a pilot. This will help find out possible points of engagement, opportunities and focus.</p> <p>There is positive evaluation of the progress made on students’ engagement – summer student internship and the work done by student representatives leadership. Great work of programme assistant in establishing relationships with students.</p>
Group dynamics – teamwork	<p>GCB commented on the need for more space for reflection within the group or meetings.</p> <p>There is a sense that programme assistant would need more support to be able to achieve more.</p> <p>Possible ideas: have thematic sessions; have 20 minutes of reflection every 3 meetings; organisation of an away-day.</p> <p>Action points: organise an away day and maybe have a critical friend during the session, outsider or insider, another academic staff member from the University.</p>

5. Use of the learning organisation model as a tool to reflect

GCB shared a document with the key ideas underpinning the learning organisation ideal (Senge, 2006) and some questions on how the Sustainability programme could contribute to make the University of Southampton become a learning organisation towards sustainability.

LEARNING DISCIPLINES (Senge, 2006)	BRIEF DESCRIPTION	KEY OUTCOMES OF THE DISCUSSION
Shared vision	This discipline aims at bridging the existing gap between individual visions and shared vision among the social organisation, which encompasses having into consideration future pictures or desired outcomes which are fundamental to nurture empowerment and commitment rather than indifference and passivity amongst the organisation community.	Difficult to have a shared vision. Impossible to have a shared vision amongst 27.000 people from different backgrounds, culture and disciplines. Probably the only shared vision is that the organisation should survive and should continue doing research and providing education to students. Capacity to achieve shared vision depends on the definition we find sitting within the university strategy.
Systems thinking	The fifth discipline that embraces the other disciplines, all the disciplines need to be taken into consideration as a whole and here remains the importance of systems thinking in integrating all the disciplines. Understanding the complexity and interconnections present in the organisation.	Important in what the Sustainability programme is trying to achieve. Systems thinking is a key discipline for sustainability.
Mental models	Worldviews and assumptions that influence how we understand, think and act. There is often a lack of self-awareness of prevailing mental models and the resulting way of understanding, interacting and acting. The starting point for this discipline is to reflect on internal values and beliefs that frame our worldviews in order to challenge them.	Using this discipline to influence change in people's values is a huge challenge. Too big discipline– they don't have the power as group – the learning organisation ideal is too big for anything they are trying to do, is something more systemic within the organisation.
Personal mastery	Personal mastery is related to lifelong learning of individuals, and their abilities and skills to continually improve their own situation to realise their personal and professional goals. Thus, the learning ability of organisations depends on its members' capacity to learn.	Not achievable in sustainability or global citizenship. Sustainability is a very big area – it is not possible to claim personal mastery.
Team learning	Enhancement of individual learning capacities and increase of collaborative achievements through dialogue and open discussion. Team learning can lead to a greater individual learning. Recognising and overcoming challenges and difficulties related to group interactions is important as they can constrain learning.	Terms of collaboration and establishing the linkages. Sustainability programme however it evolves can help by allowing that collaboration necessary to work on sustainability issues. Current value of the Sustainability programme group – current members come from different areas in the university.

Senge, P. (2006), *The Fifth Discipline: The Art & Practice of The Learning Organisation*,

6. Facilitator's reflections on the session

Further comments, insights and reflections of GCB:

- Tangible achievements and successes such as Blackout, the mapping, students' engagement and the creation of the group. There is a noticeable shared vision and clear overarching goal amongst the members of the group. It would be helpful to consider periodic review of the action plan, steps necessary to achieve the vision, targets and deadlines.
- The flexibility and resilience of the programme is one of its strengths and at the same time represents a challenge in terms of strategic planning, however it is important to think about the long-term maintenance of the initiative and its long-term place within the organisation.
- Engagement of senior management. Could the group do more in terms of engaging the senior management team? Is there anything more that could be done to ensure that there is political will and commitment?
- Need to ensure that things are not duplicated or fragmented; especially now taking on the Global Citizenship branding.
- Are there any other agendas/priorities of the university that could be linked to the initiative such as employability or internationalisation? It could be appropriate to explore what the opportunities are in that sense.
- Communication strategy is critical – internal communication within the university community and widening participation to engage university community. What does the strategy need to be? What is the message? What is key, and what would be needed?
- Possible widening participation events or actions that were considered in past meetings such as an open forum as a starting point, Sustainability and Education Forum, seminars, etc. Look at different approaches for the creation of a steering group or committee, as senior management roles have changed and this has delayed this action, this could represent a way forward. Role and levels of commitment. Consider use of participatory approaches/actions amongst the university community.
- Monitoring, benchmarking and assessment tools of the initiative – consider the use of some indicators on sustainability performance or monitoring and assessment tools that could help the programme in some ways?
- Periodically provide space/time for reflection, participation and generation of new ideas within the group.

Appendix 30 Structure Reflective Session 2

REFLECTIVE SESSION 2 SUSTAINABILITY PROGRAMME

Research purposes of the session

- Give feedback to the group.
- Assist the process of reflection and articulating experiences by asking critical and sometimes provocative questions.
- Promote a critical group reflection which facilitates acquiring new perspectives and discourses.

STRUCTURE OF THE SESSION

PART 1 - My insights on the key themes (70 min)

- Go through the nine themes identified by GCB for the first reflective session. These are still key themes for the group. I have prepared feedback for each of these themes – point out progress and further insights of the critical friend. The purpose is to go through each of the themes, provide feedback, foster critical reflection and have an open discussion to acquire new perspectives and actions.
- Themes:
 - o engagement, establishing linkages and collaboration
 - o group dynamics – teamwork
 - o politics
 - o place the initiative within the organisation – long-term and strategic thinking and planning
 - o monitoring, benchmarking and assessment
 - o branding – identity
 - o communication
 - o curriculum and student experience (new – this is now the focus of the Sustainability programme)
 - o systems thinking – deleted because it is part of everything – cross-cutting theme!

The kind of questions I need to have in mind for each of these themes is:

- What do you think about my suggestions and insights? Would you like to comment on anything?
- What are your insights? What can be done in terms of future action?
- What can be done differently? What needs to be done?
- What key features/issues need to be addressed?
- What structures currently exist for this issue?

PART 2 - Insights on Stage II Method (20 min)

- Share insights on Stage 2 with Sustainability Programme members.

PART 3 - Reflection on the session (5 min)

- Do a round and ask brief feedback on the session to all the members. How they feel about it?

PART 1 – Document shared with the group - my insights on the key themes (70 min)

1. ENGAGEMENT, ESTABLISHING LINKAGES AND COLLABORATION

What has worked well?

- Blackout is a key event in terms of student and staff engagement, collaboration and also in terms of wider awareness building across the university. More activities have taken place such as the Sustainability Programme seminar, clothes swap shop, etc.
- Next step – engaging with staff in the Faculty of Human and Social Sciences is going to be key for establishing these linkages and future collaborations.

What could be improved?

- Difficulty in engaging with other groups across the university (i.e. sustainability science group SSS).
- I think it is necessary to work more on the engagement side, establishing collaborations with other groups and engaging the broad university community.
- I feel there is a sense of protectiveness of the programme – not easy to get involved if you are an outsider to the group – most of the university staff and students do not know about it. At the moment few are the opportunities for staff to engage in activities, specific actions or projects.

My insights:

- It is necessary to think about the goals of participation – is it to inform, consult, involve, collaborate, empower? (International Association for Public Participation, 2007). To think about the goals could help develop more focussed action in this area. It would be worth to look at some of the International Association for Public Participation publications and tools.
- In a recent expert review, Tilbury (2011) highlights important education for sustainability processes and learning such as:

Collaboration and dialogue	Collaboration and dialogue as the means to build the capacity required to deal with sustainability. These processes can contribute to promote active participation and problem-solving. Importance assigned to multi-stakeholder and cultural dialogue and cooperation. These processes are considered crucial to build more sustainable futures.
Engagement with 'whole system'	Engagement with the system as a whole involves taking a holistic approach, connecting educational practices to other influencing factors such as professional issues and management. Look at the whole system and its interconnections to build a whole picture for comprehensive action.
Innovation	EfS is about building awareness (knowledge, values and theories related to sustainability) but it also looks at generating innovative ways of learning, challenging current worldviews and promoting active and collaborative learning. It encourages values clarification and is action-oriented. It is an education aims at transforming the individual and promotes social and organisational learning and change.
Active and participatory learning	Active and participatory learning approaches have been extensively established to contribute to learning for sustainability because they inspire critical reflection and thinking, values clarification, envisioning constructive futures, systemic thinking, linking theory to action/practice, and discovering past cultural and social customs and new ways of knowing and doing to progress sustainability.

Thirteen case studies are also presented that capture a wide range of experiences that could serve as starting point.

- What could be done to enhance these processes within the university?
- The development of an engagement/collaboration action plan would be useful – with goals and strategic actions.
- The creation of working groups, open meetings, forums for staff and students to contribute and engage in the programme. Engage research students, develop cross-faculty

projects, engage with different stakeholders, committees, education board? How is this idea progressing?

- It is necessary to think about what could be engagement points with the SSS. Could research be an engagement point with the SSS and other university groupings?
- Need to create a constructive, collaborative and productive context for change to happen.

2. GROUP DYNAMICS – TEAMWORK

What has worked well?

- Sustainability Programme group links different grouping within the university – students, estates and operations, teaching staff and senior staff from different faculties. The creation and maintenance of the group is a strength.

What could be improved?

- I think more space for reflection and participation would be needed, where new ideas could emerge and be discussed. At the moment the meetings focus on going through the minutes and reporting back, which is needed, but it would be necessary to ensure space for on-going discussion and reflection.
- I think the roles and responsibilities within the group are rather static/established and I wonder if having a more distributed and shared leadership would be positive for having more work capacity and ensure success. At the moment I think some members are more pro-active than others. Could members acquire responsibilities and different roles?
- During the last months it seems that there has been a loss of momentum, in that in the last meetings not all the members have been able to attend and the internal communication between meetings is inexistent with some of the members.

My insights:

- Bringing in new members from different backgrounds and faculties could bring in their expertise, new ideas, workforce and increase the work capacity of the group. This would help disseminate, build awareness, have a bigger impact and engage more people.
- If the focus of the Sustainability Programme is experience and curriculum – would it be necessary to engage staff from the professional development unit? Or curriculum/educational development? CIP? This person could bring in its expertise, experience, skills, insights and influence across the university.
- Distributed/shared leadership - I think members could acquire different responsibilities and lead specific actions/projects. Creating for example specific working groups on specific areas that could be led by different members. For this it would be necessary to set the different responsibilities and roles in the activities.
- Regularly updates on what the other members are doing could be a solution to ensure internal on-going communication – monthly reports? Does internal communication need to be improved?
- Formalise reflection and discussion as part of the meetings. Formalise open discussion for example during the last ten or fifteen minutes of the meeting where members can bring in issues, new ideas or projects.

3. POLITICS

What has worked well?

- Senior management commitment on sustainability has increased. Carbon targets, recruitment, efficiency, economic reasons. Sustainability has become a university priority.

- More engagement with senior managers.

What could be improved?

- Senior management is critical. The group has a sense that there is not enough political commitment or support. I.e. funding.

My insights:

- Leadership ideas could help ensure that there is political commitment and support. These are introduced in section 4.
- Participatory and transparent decision-making. Engage the university community in the decision-making process and combination of top-down and bottom-up approaches actively involving departmental units. I think the Sustainability Programme could be a catalyst for participatory and transparent decision making processes.

4. LONG-TERM PLACE OF THE INITIATIVE WITHIN THE ORGANISATION and STRATEGIC THINKING AND PLANNING

What has worked well?

- Shared vision and clear overarching goal within the group (CORE model).
- The group is much clearer now about what is the focus of the initiative – being student experience and curriculum.
- Resilience of the programme is a strength and a challenge in terms of strategic thinking and planning.

What could be improved?

- I think there are still some doubts about the long-term place of the initiative within the organisation.
- Need to work more on strategic planning and thinking. A sense that the small steps to get to the overarching goal are not clear enough. Sometimes it can result abstract to understand what the group is exactly doing. Lots of bits and pieces but it can be abstract as an outsider.
- No agreed action plan with targets and deadlines.
- Idea of the Hub has not progressed and there is another group willing to take the idea of the hub forward.

My insights:

- Does the group need a more formalised structure to ensure long-term place/maintenance within the organisation? Could there be a more formalised or recognised structure?
- Are there any strategic actions to make sure that the Sustainability Programme group is a key player in a possible Hub?
- Need to think about what the group wants to achieve long-term. Need to do more strategic thinking.
- It is necessary to establish appropriate and viable priorities for action and checklist – action priority list. Set a more detailed action plan with clear goals, targets, actions and timelines – with periodic reviews and updates. The action plan could be a life document and it could guide the programme more.
- Leadership is key. See *Turnaround Leadership for Higher Education* (Fullan & Scott, 2009) and *Turnaround Leadership for Sustainability in Higher Education* (Scott, Tilbury, Sharp, & Deane, 2012). Develop the university staff' and leaders' capabilities to lead effective

change. Engage and empower staff as an intrinsic aspect of the success of the change to develop shared ownership.

Ten key steps identified by current ESD leaders that universities could take to embed sustainability holistically (Scott et al., 2012, p.3-4)

11. Acknowledge the distinctive challenges & complexity of ESD leadership.
12. Sharpen the focus & understanding of ESD across the higher education system.
13. Context counts: ensure organisational integration and system alignment to support ESD & its leaders.
14. Track & improve ESD program quality more systematically.
15. Put in place the right incentives.
16. Engage the disengaged and the institution's senior leadership.
17. Apply the key lessons on successful change management in higher education.
18. Focus on the change leadership capabilities identified in this study.
19. Review ESD leadership position descriptions, selection processes and succession strategies in the light of the study's findings.
20. Apply the most productive approaches to leadership learning identified in the study to the professional development of ESD leaders.

To create successful change processes in higher education, both Fullan and Scott (2009) and Scott *et al.* (2012) assign a key role to training and development of leadership capabilities, contextualisation, participatory processes and engagement, and implementing monitoring and benchmarking systems.

5. BRANDING - IDENTITY

What has worked well?

- New identity and branding sorted out – Sustainability Programme. This is a significant step to move forward as this has been stopping the group in terms of communication and engagement with the wider university community.

What could be improved?

- Need to make the necessary changes to existing communication tools that are out there such as university website, staff club, etc. Need to avoid confusing people.
- Need to communicate the change name as soon as possible.

My insights:

- Important to think about what is the message of sustainability.

6. COMMUNICATION

What has worked well?

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What could be improved?

- A lot of people do not know about the Sustainability programme yet.
- The communication of the programme is key for building awareness, engaging the wider university community in the Sustainability programme and ensuring reconnaissance and in turn funding and long-term maintenance of the group/initiative.

- I experienced myself not receiving the information about the Sustainability Programme seminar through any formal communication channel, or information on how to get involved in Blackout or other activities such as TEDx through formal channels.
- Need to improve internal communication within the group (see *Group dynamics – teamwork*).

My insights:

- It would be necessary to have a communication plan.
- Think about what is the message of sustainability. Think about the approach and engagement points. People will engage for different reasons, so it is necessary to think about different engagement points when creating communication tools.
- Create a mailing-list or periodic email to all the university community (staff and students) with existing activities and opportunities to get involved in sustainability actions, working groups or committees.
- Website?
- Survey could be a way to get Sustainability Programme known – staff survey with 2 or 3 questions – engagement – also help identify key individuals.
- Internal communication – think about updates?

7. CURRICULUM

What has worked well?

- Curriculum mapping (focus on the syllabus, content and learning outcomes).
- Pilot with the Faculty of Human and Social Sciences as a first step to identify the approach to engage with staff in terms of curriculum development.
- CIP module.
- Engagement with directors of programmes is very valuable in terms of looking holistically at the programmes.

What could be improved?

- Curriculum approach/strategy is not very clear. I think a wider discussion within the group on the curriculum approach and approach to faculties would be necessary. I think this has not been discussed in-depth.
- Use more the university as a living laboratory. Sustainability Programme could be a catalyser of this.
- Need to enhance curriculum innovation modules – interdisciplinary work.
- Work more on the professional development side.
- Dissemination of the curriculum mapping to the wider community.

My insights:

- Different strategies to work on curriculum development at different levels could be:
 - Research projects as levers
 - Professional development and education development to enhance and foster curriculum development. I.e. PCAP, professional development unit activities, training programme/sessions for staff on ideas on how to do it.
 - Use more the university as a living laboratory. Link it with formal curriculum and students getting involved and doing research.

- Work more closely with the curriculum innovation programme – with the staff involved.
- Use the mapping more. I think it would be good to make it public and accessible to the wider university community –engage staff in a feedback/participatory process? – use the curriculum mapping as a tool for discussion. The mapping could also be published in e-Voice or SUSSED for example.
- Need to clarify curriculum approach to sustainability (content, values or as a philosophy/paradigm shift?) – Education about sustainability, education for sustainability or education as sustainability/ sustainable education? What is the approach to curriculum and student experience? Is this reflected in the curriculum approach and strategy?

Education about sustainability	Adaptation of existing curriculum. Sustainability as a subject, no change of paradigm is required. Sustainability as a concept (assumption we know the exact meaning of sustainability).
Education for sustainability	Reformation of existing curriculum and paradigm. This approach is value-laden, the skills, content and values required are known. Is understood as ‘learning for change’.
Education as sustainability or sustainable education	Transformative learning and participative structure. Emphasise in the process and quality of the learning experience. Is creative and reflective, knowledge is provisional. Is understood as ‘learning as change’, based on life-long learning and cooperation. Divergence with existing patterns and models. Difficult to achieve in reality.

Constructed from Sterling (2001)

- Key strategies/ways for embedding sustainability. What is the current approach? What could be done?

- **Use the campus as a living laboratory** – this idea is gaining force as a suitable strategy towards embedding sustainability in the curriculum and culture of universities and linking the operations, research, students’ experience and the community (McMillin & Dyball, 2009). Potential for improving sustainability performance of the university, enhancing students’ experiences on real interdisciplinary sustainability issues, establishing linkages with the community and contributing to the application and generation of knowledge and research.
- **Innovative and interdisciplinary work and practice are key** – the complexity of sustainability, which embraces social, environmental and economic dimensions makes of interdisciplinary work and practice a necessary approach to better understand and research sustainability issues (Jones, Selby, & Sterling, 2010).
- **Transformative learning experiences** are required to deconstruct existing ways of knowing and understanding, to critically reflect on the values, beliefs and worldviews that underpin them and to co-construct alternative paths and shared meanings that can contribute to foster sustainability (Sterling, 2001; Wals, 2010). Critical thinking and reflection is necessary to challenge existing worldviews and current unsustainable practices (Huckle & Sterling, 1996).
- **Provide real world learning opportunities** through the use of student-centred approaches such as problem based learning which implies the application of knowledge to real world problems and situations (Thomas, 2009) and experiential and active and participatory learning, referring to self-reflection, self-directed inquiry, learning-by-doing, engagement with real life problems and issues, and learning collaboratively within communities are required (Moore, 2005)

Different levels and approaches to embedding sustainability within the curriculum have been identified as (Rusinko, 2010; Segalàs, 2009; Thomas, 2004):

- Including some content and material on sustainability issues in exiting courses of a programme.
- Offering separate courses within a programme that deal with sustainability issues, offering minors, discipline specific or interdisciplinary compulsory or optional courses available to any students
- Creating new discipline-specific or cross-disciplinary programmes on sustainability related topics
- Integrating sustainability issues into all courses, having embedded the sustainability discussions through the programme and developing an understanding from the subject area context and the study programme. This has been basically developed in areas that are leading to sustainability such as environmental sciences and geography or by offering specialised undergraduate/postgraduate degrees on sustainability (Thomas, 2004).

8. MONITORING, BENCHMARKING AND ASSESSMENT

What has worked well?

What could be improved?

- No formal monitoring and assessment tool of the programme at the moment.

My insights:

- Monitoring, benchmarking and assessment are regarded as levers and important features of organisational change processes in sustainability (Ryan, 2011; Thomas, 2004). Need to implement a monitoring and assessment tool. Lozano (2011) and Shriberg (2002) have reviewed existing tools and the state of sustainability reporting at the university level.
- Some of the existing tools are:
 - Auditing Instrument for Sustainability in Higher Education (AISHE) (Roorda, 2001)
 - Graphical Assessment of Sustainability in Universities (GASU) tool (Lozano, 2006)
 - The Sustainability Tracking, Assessment & Rating System (STARS) (AASHE)²⁸
 - Sustainability Assessment Questionnaire (SAQ) (ULSF)²⁹
 - Sustainability Tool for Auditing University Curricula in Higher Education (STAUNCH) (Glover, Peters, & Haslett, 2011)
 - The Graz Model for Integrative Development (GMID) – five principles: leadership and vision; social network; participation; education and learning and research integration (Mader, 2012)
- Monitoring systems, benchmarking and strategic networking and collaboration with other institutions in order to unify efforts, enact effective implementation and improve possible solutions. Could this be something to suggest to the Sustainability programme nationally?

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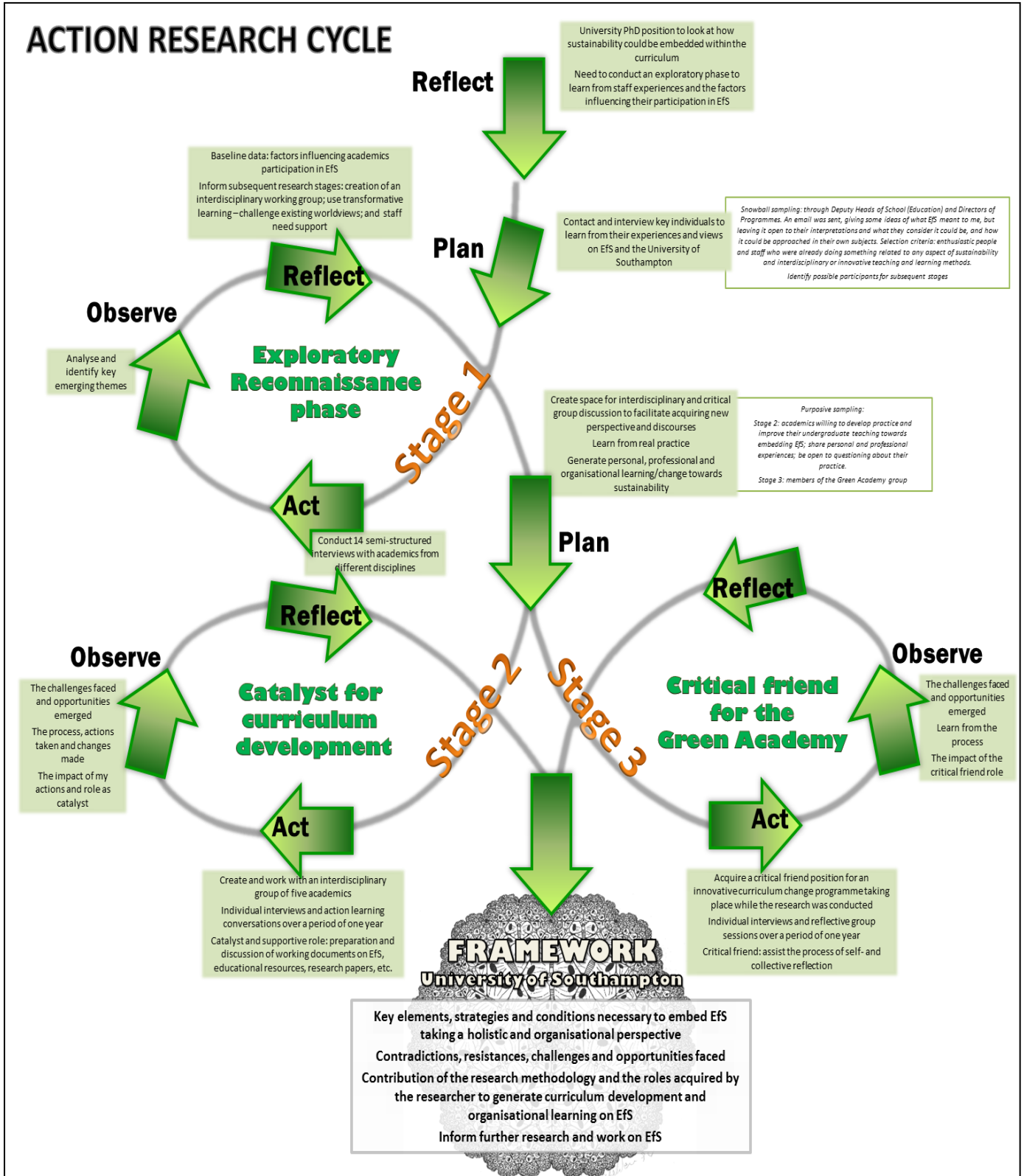
²⁸ For more information on STARS please visit: <https://stars.aashe.org/>

²⁹ For more information on SAQ please see: http://www.ulsf.org/programs_saq.html

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PART 2 - Insights on Stage II Method (20 min)

REFLECTION ON THE RESEARCH PROCESS STAGE II

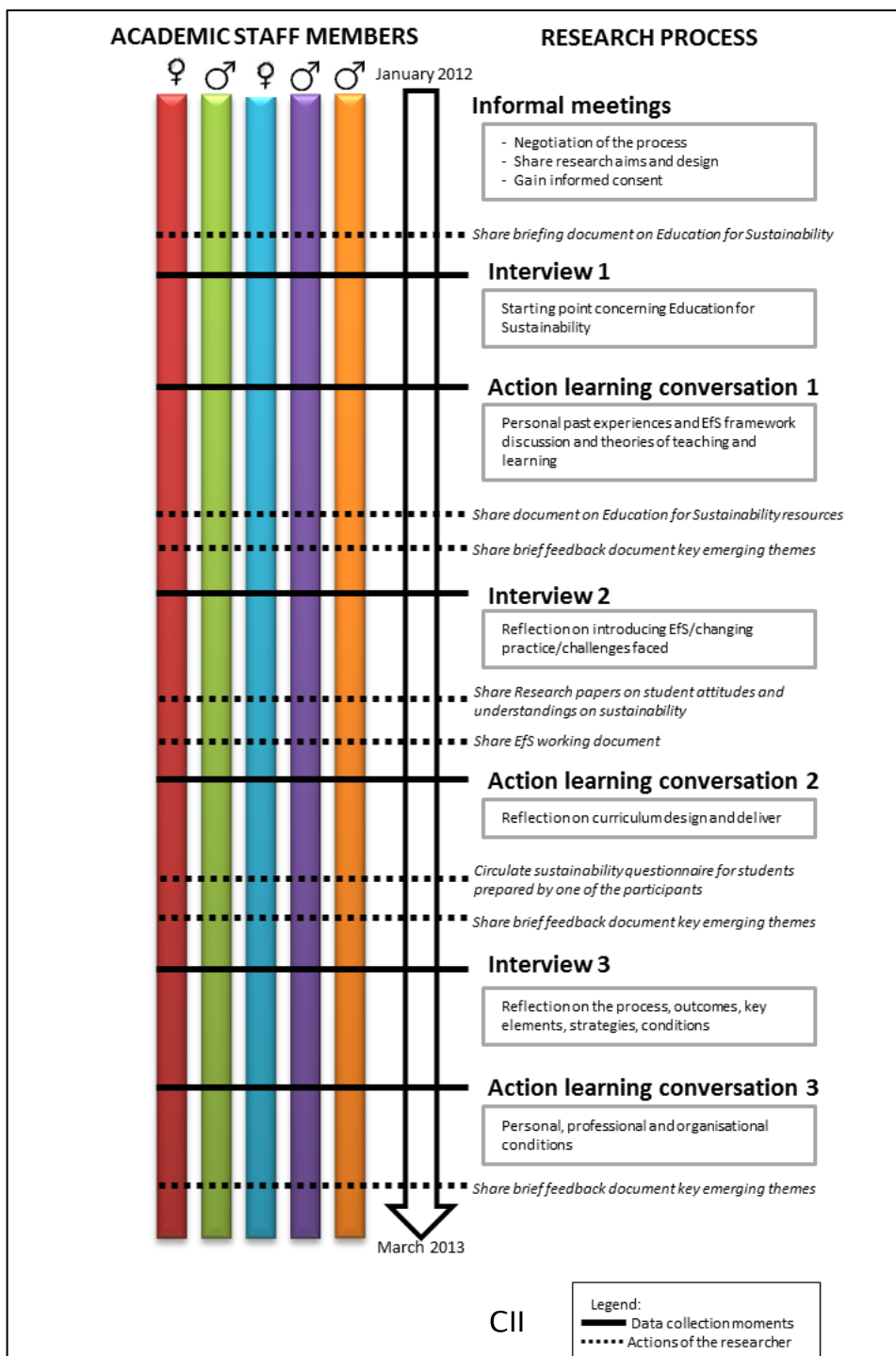


Overview of the different research stages:

Stage I: Identify the factors influencing academic staff members’ participation in sustainability education issues. Fourteen academic staff members from different disciplines were interviewed as part of an exploratory study and reconnaissance phase of a typical action research cycle.

Stage II: Work with an interdisciplinary group of five academic staff members from different disciplines to critically reflect and act towards embedding Efs in their educational/professional practice (*creation of an Action learning set*). The role as a researcher in this stage was to provide staff with space for interdisciplinary and critical reflection and be a catalyst-catalyser for curriculum development in the area of Efs.

Stage III: Fulfil the role of critical friend position for the University Sustainability programme group. The role as a researcher in this stage was to provide feedback to the group, assisting the process of reflection and articulating experiences by asking critical and sometimes provocative questions. The focus as a critical friend was on Efs and curriculum and organisational learning.



Participants	<p>Worked with five academic staff members - learned from real practice on how to embed EfS within the undergraduate curriculum.</p> <p>I started with enthusiasts – people who had an interest (I think the Sustainability Programme group will need to make a decision on this)</p>
Approach to sustainability in the curriculum	<p>Education for sustainability. I understand sustainability as a journey, rather than as a checklist (Tilbury, 2011) as a learning process that encourages transformative learning, the capacity to challenge existing patterns and worldviews, to construct new knowledge collectively, to rethink current practice, to critique and examine sustainability issues (Sterling, 2001). Sustainability literacy as a set of skills, attitudes, competencies, dispositions and values that are necessary for a key learning outcome and competencies in sustainability and for students to become change agents (Sipos, Battisti, & Grimm, 2008; Weik, Withycombe, & Redman, 2011). The use of certain types of pedagogies and teaching and learning approaches and strategies can foster competencies or skills necessary to deal with sustainability, such as critical and creative thinking, problem-solving skills, action competence, collaboration, futures thinking, and therefore empower and create globally responsible citizens and professionals who can become active change agents.</p> <p>It is a combination of content and teaching and learning methods, plus contextualisation within each subject area. I do not come with ready-made answers. Individuals need to develop their own approach/strategy with me acting as a catalyst.</p>
Method	<p>Catalyst role and second-order action research</p> <p>Through individual interviews, sharing documents and resources, preparing summary documents, conducting the action learning conversations I have aimed to engage the participants in a critical reflection and learning process – this process was willing to challenge existing worldviews on sustainability and education for sustainability with the aim to develop new understandings and practices. Part of my role of being a catalyst is being supportive – identifying possible needs such as using case studies. Follow action research cycle - <i>Plan-act-observe-reflect</i>.</p> <p>Action learning process</p> <p>A continuous process of learning and reflection that happens with the support of a group or 'set' of colleagues, working on real issues, with the intention of getting things done. The voluntary participants in the group or 'set' learn with and from each other and take forward an important issue with the support of the other members of the set (McGill & Brockbank, 2004, p. 13)</p> <p>Action learning programs are based on tackling real problems in real time; problems are relevant to the participant's workplace and professional practice; supportive collaborative process; take action between set meetings (Smith & O'Neil, 2003, pp. 63-64). The group sessions' structure has been based on an action learning conversations framework. This emphasises the critical reflection on possible assumptions made by the set members. I chose this method because it promotes critical reflection, learning and the development of new understandings, insights and innovative solutions for action amongst the set members.</p>
Key learning	<p>Importance and understanding of sustainability – first step is to reflect and think about the definition and understanding of education for sustainability. Sustainability is a complex concept and staff do not fully understand it. Progress could be difficult because of this. It is necessary to allow time to work on the understanding. Understanding the concept and seeing the benefits is a motivating factor for further developments and action.</p> <p>Provide resources and support: Importance of giving support to staff – professional development activities or tools such as sharing resources and useful case studies.</p>

	<p>People need examples of good practice.</p> <p>Working groups: sharing ideas and discussing with other staff members ideas on how to embed sustainability has been inspiring and key to foster critical reflection, learning and further action.</p> <p>Interdisciplinary work: having academic staff members from different disciplines and with different views and understandings has been very valuable for academics. Learning from others' perspectives.</p> <p>Research: Linking it with research was a motivating factor. This could motivate people to get involved because of the University of Southampton being a research-led university. Research projects could be a good way to get buy-in from people.</p> <p>Work with module leaders or programme directors.</p> <p>Work with staff that are reviewing programmes or modules. Modules that are being redesigned.</p> <p>Build trust and rapport - build personal relationships.</p> <p>The research process – the project has increased participants' motivation and there are some tangible outcomes such as introducing a lecture on sustainability, case-study week on sustainability, acquiring a more pro-active view on sustainability. Transformative learning has been evidenced – participants have moved in their understanding of sustainability. These are good as starting points.</p>
<p>Difficulties and challenges</p>	<p>Difficult to move from discussion to action - difficult to make change happen – time constraints, workloads, other priorities/pressures.</p> <p>It took a long time to understand education for sustainability principles. Tendency to think about sustainability from an environmental perspective. Academics do not necessarily buy into education for sustainability ideas. There is a tension between these ideas and academic freedom and the role of higher education in fostering critical thinkers (need to avoid indoctrination).</p> <p>Time limitation – it would have been good to have one more year to build on the first interventions and see what would be achieved with another year of working together.</p>

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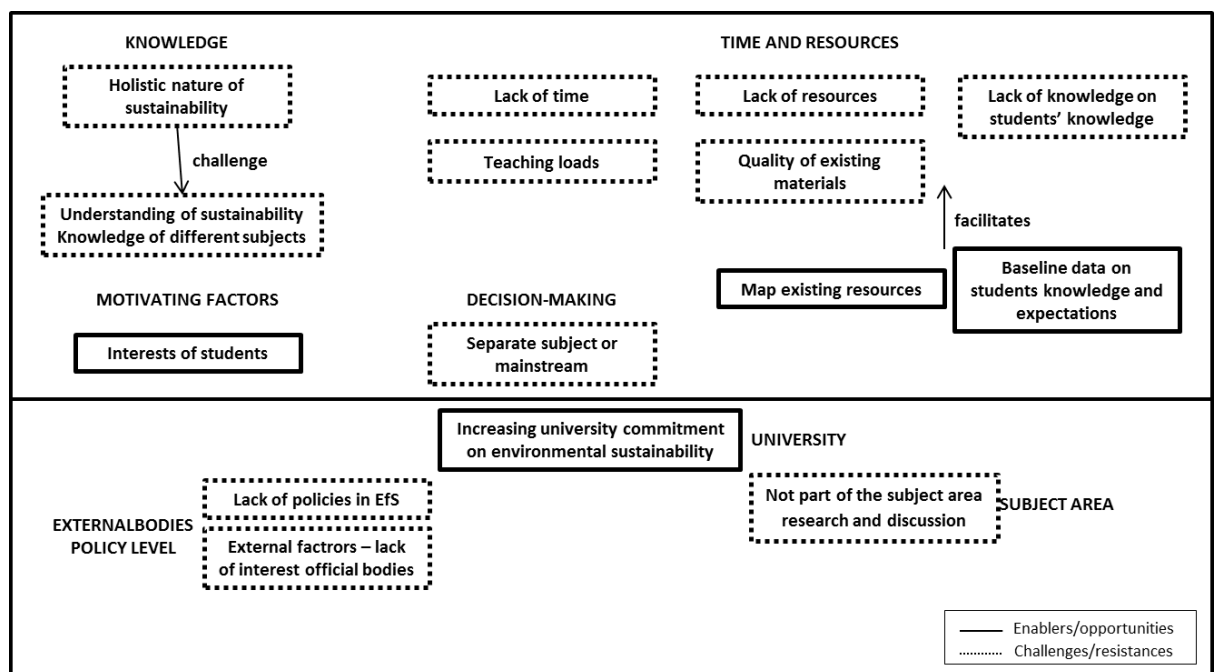
Appendix 31 Overview of the individual factors and outcomes of delivery of Stage II participants

This appendix provides an overview and analysis of the outcomes of delivery for the five academics involved in Stage II. I provide an analysis of the factors influencing them and the main outcomes of delivery achieved through the research process. I look at the factors, identifying what are enablers and opportunities, and the challenges and resistances that Stage II participants identified as relevant to progressing EFS in HE. Participants' progress in terms of embedding Efs within their teaching practice differed as well as the factors perceived to influence engagement in and practice of Efs because of different backgrounds, subject areas and teaching contexts.

- *The case of William*

Figure 1 outlines the factors identified by William when trying to embed Efs ideas within his teaching. This figure has been built from the data gathered in Stage II.

Figure 1 Factors influencing embedding Efs identified by William



William saw as the main challenges and barriers to embed Efs within his teaching practice knowledge of sustainability due to its holistic nature and a lack of time to revise his teaching and create new materials. Sustainability not being part of his research area discussion, lack and quality of teaching resources and external factors such as a lack of policies and leadership by official bodies were seen as barriers. The students' interests, mapping existing resources,

having baseline data on students' knowledge and increasing commitment of the university in environmental sustainability of the campus were seen as opportunities and enablers. Change from his existing practice was perceived to take time and effort and the mandate to do so was his self-motivation and lack of a greater organisational emphasis and support on curriculum development.

Treating sustainability as a separate subject or mainstreaming it throughout the curriculum was his main challenge in terms of embedding EfS. William planned to embed sustainability in one of his modules of semester 1 academic year 2012/2013 but he got sick the weekend before the lecture, so he had to cancel the teaching. In this course he provided students with background material on the subject area and then introduced some case studies. William decided to put in sustainability as one of these case studies to work with the students, allocating a lecture and associated seminar to it. This meant that students would have three to four hours of previous reading and the lecture and seminar, where students would discuss key issues related to sustainability in group settings. The fact that he had planned to prepare the lecture the weekend before teaching it, shows the lack of time that academics have to devote to revise existing teaching and create new teaching materials. The following interview extract makes reference to this issue:

“When I got ill I think it was a Friday, I got ill precisely the weekend I was due.. I work on a Sunday writing my lecture for the week after, I got ill precisely at that time, and I looked at everything you ever sent me and skimmed it but at precisely the time I was going to sit down and write the lecture and work out what do I know about this area that's when I got ill so I didn't do it.. so in terms of my intellectual development there's been very little of it, because other than just skimming your stuff I didn't have a chance because I was ill at writing my lecture” (William - Interview 2)

At the moment of finishing the research he was planning to do it for the following academic year 2013/2014 and he expressed that his motivation was even greater after this unfortunate event. He considered his intellectual development was little because when he was due to prepare and write the lecture he got sick.

“I was going to do this teaching and now I didn't do it but I'm still very interested in actually taking this group of people and actually doing some interventions to try and see what we can do in different ways. Yeah more interested than ever because I'm still clapped out” (William - Interview 2)

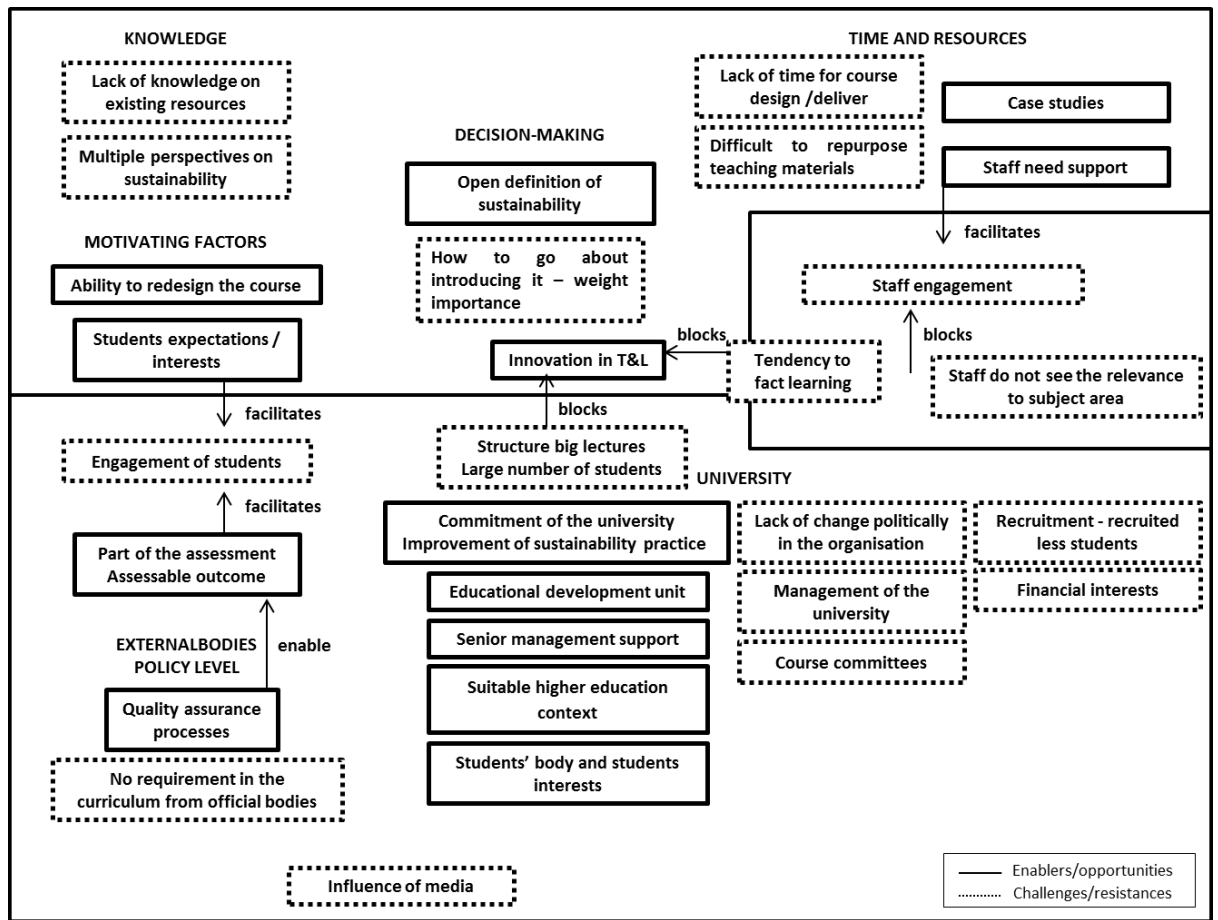
William's case is a clear example of the time constraints that academics face in terms of introducing or embedding new topics into their teaching. The lack of time to search for information, do background reading and prepare the teaching materials such as readings and design of new activities are clear challenges to embed EfS. Therefore organisational support in

terms of providing staff with the space and time to develop new teaching materials and sessions is critical.

- *The case of Eric*

Figure 2 outlines the factors identified by Eric when trying to embed EfS ideas within his teaching. This figure has been built from the data gathered in Stage II.

Figure 2 Factors influencing embedding EfS identified by Eric



Lack of knowledge on existing resources and on sustainability, lack of time for course design and delivery, lack of change politically in the organisation in terms of teaching, current university structures such as course committees and the fact of sustainability not being one of the requirements in the curriculum by official bodies were the main challenges and barriers identified by Eric. However in his view the university was driven financially which was in contradiction to embedding sustainability and become a more sustainable university. The influence increased student interest on sustainability, a suitable higher education context, increased environmental commitment of the university, the ability to redesign the course, having support and case studies and the support of the university were seen as enablers and

opportunities to embed EfS. Quality assurance processes and making of sustainability part of the assessment were seen as strategies to embed EfS, however EfS ideas were in contradiction to current structure of teaching with big lecture and large number of students.

When we started the research Eric was already thinking about changing one of his modules in terms of delivery, to make it more student-centred and engaging for the students. As the next interview extracts show he was willing to provide students with an understanding of sustainability and them having the critical thinking skills to research it.

“That [students] will have demonstrated the skills to go and research rather than take the Sun newspaper’s statements as being true. So they will go and do some thinking and some research, and find out real facts rather than take the facts that are pushed at them by people with an interest” (Eric - Interview 1)

Eric and his teaching fellows had a personal motivation and interest to embed sustainability more proactively in the redesigned module. In the previous students had a lecture on an environmental sustainability subject-related topic at the end of the module. In the new module students had an optional lecture per week that was introductory to the content and then had some activities that they needed to pursue in order to move to the next activities. He acknowledged that being part of the research pushed him to introduce sustainability more officially in the syllabus, which was added as one of the headings of the syllabus.

“[the syllabus] is still pretty much the same thing as the previous one, except that we pushed sustainability in more officially into it, in the past we just had this kind of one lecture we did on green [subject area] and which was the last lecture of the term and didn't often get very well attended anyway” (Eric - Interview 3)

Eric and his colleagues chose to introduce sustainability as a topic, due to the different requirements and pressures it could not be given more importance and due to the fact of their knowledge on the topic. Furthermore in this new module students had two new activities related to sustainability, where they had to write a technical report and do an oral presentation. Three main topics with two sub-topics each were given to the students that could choose to write a technical report on any of these topics. Four out of the six sub-topics were on sustainability-related topics. Students were given a set of problem statements on university, energy companies, private companies and city council sustainability cases and had to write a technical report based on these and mark two reports from other students. In the last ALC3 Eric shared with the members the format

“the course now has a number of places where the students are actually studying some aspects of sustainability.. names like green [subject area] and things like that.. so we gave them a choice of six report titles, they have to choose one of them, and four of them were related to sustainability.. and similarly when it came to doing presentations,

they didn't get a choice there, they get told what they were doing - group presentations I think there were maybe two out of the twelve topics.." (Eric – ALC3)

Eric referred to green [subject area], so the main focus was on environmental practices, however ethical practices of the profession were also covered as part of the module. During my conversations with Eric he also planned to do an activity using the HEA resources that I shared with them in the document *EfS educational resources* (see appendix 16). In ALC3 he reported that time constraints and an already crowded module blocked the final inclusion of this activity.

"That fell off the end, they didn't do the activity that we were meant to do, which was around those HEA resources yeah.. that's where we lost it.. and the exam questions are still in there.. a couple of very little ones" (Eric – ALC3)

I could not collect clear evidence on the impact that the research had in Eric's making these choices of delivery, as he was planning to do this regardless of his involvement in the research. However he recognised that the project had reinforced his initial ideas.

"your project has been interesting but we would have done this.. this was going to happen and to some extent it was already happening, so maybe what the project did was make us reinforce it, put more of it in" (Eric – ALC3)

However some evidence was collected on the change in Eric's understanding on sustainability (see section 8.3.5.2) in our last ALC3 he made reference to green [subject area]. Therefore a move in his understanding would not necessarily mean that this affected and was translated into curriculum delivery providing a broader view of sustainability to students, as most of the new teaching was still focusing on greening aspects of the profession.

- *The case of Ruth*

Figure 3 outlines the factors identified by Ruth when trying to embed EfS ideas within his teaching. This figure has been built from the data gathered in Stage II.

in previous years. She was very pro-active in following-up some of the resources that I sent and some of the organisations that she knew could provide some insights into her teaching practice in sustainability. The following extracts indicate this:

“I've noticed you sent me a link on something which is just on the Higher Education Academy website where they could adapt their carbon footprint, and that I think I'm going to get them to do that for the fieldtrip because I think that's interesting, hopefully they might think to do that on any trip they take afterwards who knows” (Ruth - Interview 2)

In ALC1 William shared with the rest of the members the idea to do a pre- and post-intervention with the students. Distribute a questionnaire to find out students' knowledge and attitudes on sustainability at the beginning of the module, which could inform the design of the course, and then distribute it again to have evidence on the impact on students' learning. William saw this as an opportunity to create a course starting where students were in terms of knowledge of sustainability and expectations. Ruth liked this idea and decided to take it forward, which led to the design and distribute a sustainability questionnaire (See appendix 21) amongst students.

“I suppose because I noticed one of the suggestions was to survey the students to find out what they already know and then to maybe take these sessions more towards the end of the module to address where they maybe have incorrect information about sustainability and that would make the teaching more directed” (Ruth - Interview 2)

The need to collect baseline data on students' knowledge and expectations on learning sustainability arose during the ALC discussions. Because of this and Ruth's interest on developing a sustainability questionnaire for the students, I sent to all Stage II participants existing papers on students' surveys on sustainability knowledge and attitudes. I also assisted her with my feedback and insights in developing, distributing and analysing the questionnaire as part of my facilitator role. This makes evident the importance of having support in order to develop new teaching materials and innovative practice. In ALC2 she shared the idea of doing a questionnaire with the students to inform the teaching with the rest of participants. The rest of participants seemed very enthusiastic about it and this motivated her to pursue this idea. As I will further discuss in Chapter 9 I tried to challenge Stage II participants to use a mix-method approach to gain insights into students' knowledge and expectations combining the questionnaire with interviews or focus-groups with the students. Limitations in the ability to conduct interviews or focus-groups, strong held views of participants who came from a positivist paradigm and a lack of time were the main reasons that blocked the use of a mix-method approach.

The questionnaire results informed the session on sustainability taking place at the end of the module. Findings from the questionnaire showed the interest of students on sustainability, however it also indicated a lack of connection between what students know and think about sustainability and their everyday life and practice. As the next extract from ALC3 shows the questionnaire findings strengthened her motivation and facilitated introducing sustainability.

“one of the challenges was thinking about how to introduce something new and exactly how to do it and thinking about what would be introduced so as you know Gisela and I developed this questionnaire together to find out what the students already know, and got some quite interesting results from it and I was actually able to show the students some of those results as a follow-up, so what I decided to do is a follow-up lecture based on the questionnaire and then we re-surveyed them” (Ruth – ALC3)

The new lecture included aspects such as: the findings from the survey which were shared and discussed with the students; discussion on the definition of sustainability; links to university, local, national and global data and current action on sustainability; links to existing websites and resources to think about sustainability in their everyday life and practices; resources on innovative practices on sustainability subject related elements; peer-discussion about the sustainability of a cup of tea including aspects such as the distribution channels, origin and milk supply. Ruth introduced the new lecture, however as the next extract from ALC3 shows she did not incorporate it formally in the assessment because the lecture was not designed until having the questionnaire findings.

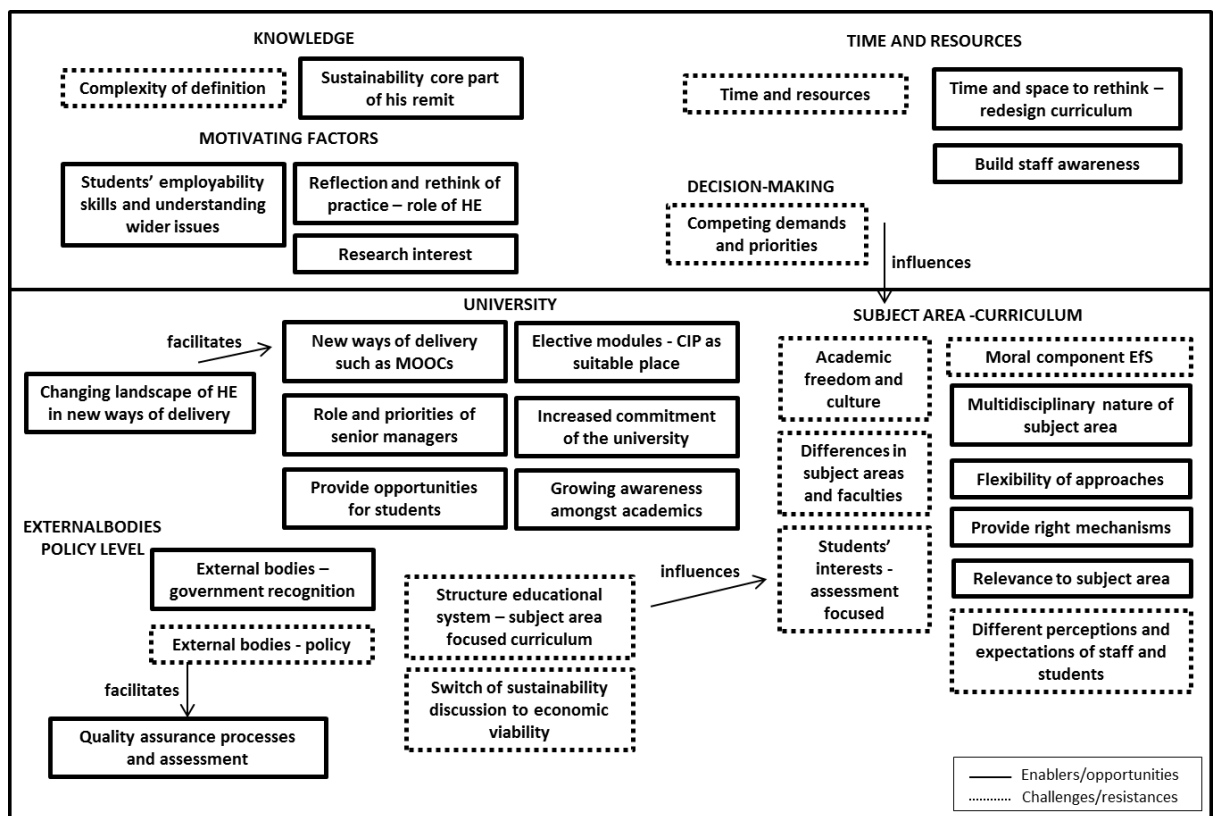
“we were waiting for the results from the questionnaire, now that I've got a lot outlined, the next time will be a lot easier to think about incorporating in the assessment because we have written those essay questions so far in advance” (Ruth – ALC3)

The idea of the questionnaire and Ruth's approach was very well accepted amongst the rest of participants. They viewed it as a very interesting approach. Eric and Julian wanted to do it for their modules, time limitations and the big amount of questionnaires that students already received blocked it.

- *The case of Julian*

Figure 4 outlines the factors identified by Julian when trying to embed EfS ideas within his teaching. This figure has been built from the data gathered in Stage II.

Figure 4 Factors influencing embedding EfS identified by Julian



Sustainability was a core part of Julian’s remit therefore he considered himself as to be already embedding EfS within his teaching. Provide students with employability skills, have opportunities to reflect and rethink practice and the role of HE and sustainability being one of his research interests were the main opportunities he indicated to engage in the research. Lack of time and resources, competing demands and priorities in terms of curriculum deliver, academic freedom and culture and students being assessment focussed due to the narrow structure of the UK educational system were the main challenges and resistances he suggested could block embedding EfS. The new landscape of HE that was opening up new ways of delivery, increasing university, external bodies and government recognition and a growing awareness amongst the academic community were seen as clear enablers. One of the contradictions he envisioned was the moral component of EfS. Differences in subject areas and faculties, differences in staff perceptions and expectations and the need to find the right mechanisms and relevance to of sustainability to each subject area were perceived as challenges to the ideal of embed EfS.

In our first interview Julian decided to focus on two of the modules he was teaching in his subject area, as he thought that could think about introducing sustainability more broadly. However between interview 1 and 2 the higher education change situation had led to a

moment of reflection and rethink of current practice and structures at a faculty level. All the undergraduate and master programmes were being redesigned, therefore the two courses he had suggested previously would probably be reframed or disappear. This was one of the main difficulties that he envisioned in terms of introducing sustainability, as there was some degree of uncertainty on the importance and priority given to sustainability and other contemporary issues as opposed to other competing demands such as employability. As he stressed in interview 2:

“there's a strong commitment to taking on board these questions and ones that are contemporary relevant within education so that promotes education for sustainability on the one hand but the competing it of lots of different things which we have to deliver are also been taken into consideration at the moment, so I think it's just sort of the time of wait and see.. to see which priorities, or what topics are going to be a priority at the present..” (Julian - Interview 2)

The academic year 2012/2013 was the second year of delivery of the curriculum innovation module that Julian was leading and teaching. He considered a development in his engagement with different students' cohorts, as in the second year more students coming from non-environmental sustainability related subject areas took the module. Students had different understandings and engagement with sustainability that enriched his understanding on how to deliver this content to a broader audience of students. The fact of identifying their interest helped him think about other ways in which it could be integrated and delivered. As he stated:

“the thing I'm seeing is that more students are taking, I've got more students this year studying this sort of theme or themes which pull out these elements, and that changes the behaviour of the cohort and their background knowledge and so it's getting a better understanding of what different people's levels of knowledge is, previously it's always been people who are very active in this area and understand it very well, and this year I'm seeing more a broader interest in people who have less and un-established knowledge-based, so getting across them core concepts it's been both an opportunity and challenge” (Julian - Interview 3)

The next interview extract gives evidence on how the project helped him reflect on curriculum content from the perspective of EfS, having an impact on his ideas of delivery of sustainability and EfS. He acknowledged that he moved from a more descriptive and analytic approach to a more pro-active approach to teaching sustainability and that he begun to think about it in different ways.

“in terms of content as well, I think what - convey the what and the why, and considering what's included and what's not included did change because of thinking about this concept of education for sustainability. And I put slightly a different purpose on it, from one from describing and reporting and analysing, to one which has gone much more pro-active agenda about it really, and that's something we're not always very comfortable with in sort of environmental sciences but it's good to think about it and good to push” (Julian - Interview 3)

The changing landscape of higher education and the involvement of the University of Southampton in delivering MOOCs also contributed to move on his thinking about other ways of delivering sustainability to students. Open online and free accessible courses made these topics accessible to the wider community and were seen as a suitable way forward. At the end of the research Julian reflected on this aspect.

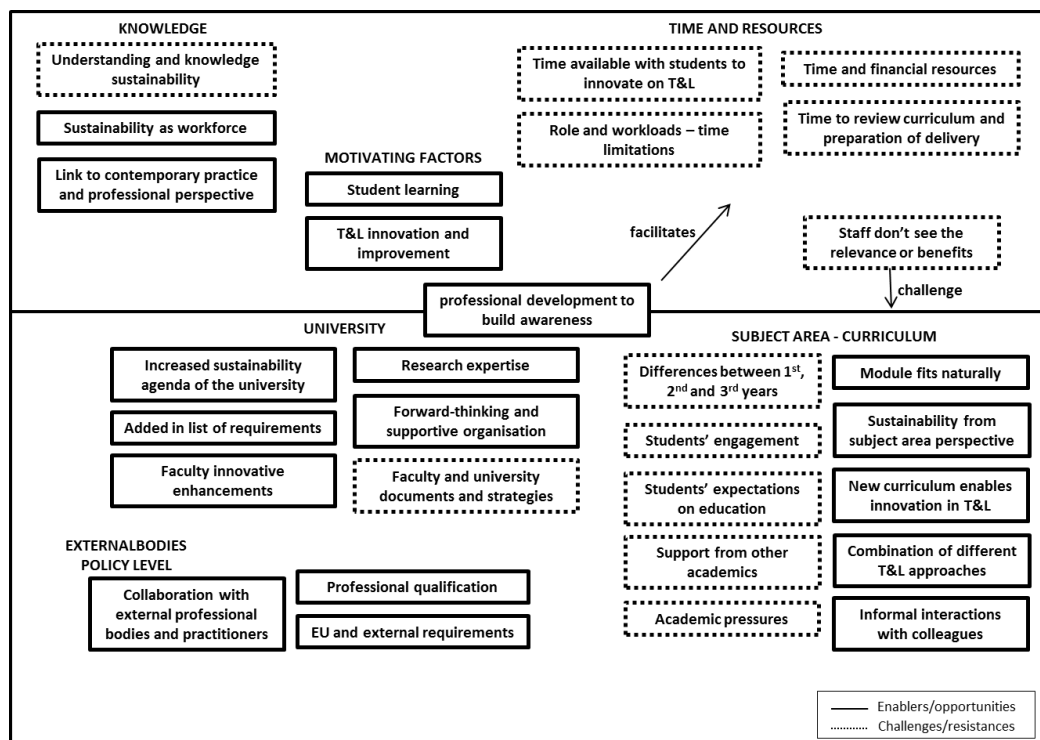
“so I think my ideas about delivery a bit are beginning to shift in terms of some of these new ideas that we've got in terms of opening online and free accessible modes of engagement and they might very appropriate ways to deliver some of these things, because again and ask people to opt-in freely and easily to engage with some of these issues, whereas previously they've had this premium attachment in terms of education, and these are themes which should be accessible to people” (Julian - Interview 3)

As I discuss in Chapter 9 Julian acted more as a critical friend within the group, as he had a very good grasp on sustainability because it was one of his areas of research and teaching. His comments and reflections during the interviews and ALC helped myself and the group reflect on deeper issues to do with the conceptualisation of sustainability, the EfS rationale and the broader social purposes of HE.

▪ *The case of Joanna*

Figure 5 outlines the factors identified by Joanna when trying to embed EfS ideas within his teaching. This figure has been built from the data gathered in Stage II.

Figure 5 Factors influencing embedding EfS identified by Joanna



Understanding and knowledge of sustainability, lack of time and financial resources, existing workloads were the main challenges that Joanna faced in order to embed EfS. Differences between undergraduate years, lack of students' engagement in student-centred approaches, student expectations of education, academic pressures and lack of support from other academics were stressed as challenges to provide students with learning opportunities for sustainability. She envisioned as opportunities defining sustainability from the subject area perspective, the new curriculum which was more hands-on and experiential, the combination of different approaches and the fact that sustainability fitted naturally to some of the modules. The research expertise of the university, an increased sustainability practice of the university, making of sustainability part of the list of requirements and the faculty and organisation being forward-thinking and pro- teaching and learning enhancements and innovation were seen as other opportunities. External agencies and professional bodies' requirements conditioned what was taught and therefore could be clear enablers to embed EfS.

The initial ideas of Joanna in terms of embedding EfS were to introduce action learning sessions while students were in practice, to link evidence-based research to what students were doing in practice. This was reframed during the research process and she decided to focus on a set of sessions with students that she named 'research-in-practice'. An informal chat with a colleague, tutor of another profession, helped her develop this idea, which she considered was contributing to foster critical thinkers and evidence-based practice amongst students. They were implementing a new curriculum which was research-based, as the next interview extract shows this was the main reason for deciding on this approach.

“The focus is about it being a research-based curriculum and embedding research from day one on this new curriculum, but you can't do that if you're not doing the research, where you're not talking about it, so the groups, because we talked about whether or not we could bring in an action learning group, I think at the moment we need to bring in basic understanding of research, so journal clubs and then students can talk through the issues, so in a similar way to the action learning sets but they'll be talking about research papers and linking that to their practice and their practice experience” (Joanna - Interview 2)

These sessions contributed to students learning about research and research skills linking it to the every-day practice of the practitioner. The fact that the University of Southampton being one of the Russell Group University, with a strong research-focus, was an opportunity to enhance the existing research expertise as I have outlined in section 8.3.4. Joanna was the programme director and in several occasion emphasised that this role and internal changes in university and faculty structure had increased the workloads of academic staff members. As she stated in interview 2 this was her main challenge.

“My role has increased.. the extra part of the role has come because there's a push to get more research active, and that's.. that I would say for me that's a big change, so it does mean that my brain is flitting all over the place with all the different roles that I have to do and try and fit in, so I would say I'm probably not as on the board or on the case with things as I could be because I've just.. my workload has increased” (Joanna - Interview 2)

The research-in-practice sessions were designed and implemented during the academic year 2012/2013, these corresponded to three sessions for first years that focussed on reading and criticising research paper that were useful to students' practice and that Joanna called Journal Clubs. For second year students she designed three day-sessions looking at qualitative, quantitative and mix-method research that would help students with their final dissertation. She explained her design to rest of the participants in ALC3.

“For the new curriculum was research in practice days and journal clubs, for the first and second years, so that they could have the skills that would help them to continue and be sustainable in their roles” (Joanna – ALC3)

At the end of the research, as the following interview extract shows she suggested to have a session on EfS in one of the third year modules on autonomous practice because if fitted with lifelong learning and being a contemporary practitioner, which the module was focusing on. The findings of the research could be disseminated and used with the students.

“what would be really useful, my third year module next year, which is developing a contemporary [subject area] practitioner so it's all about autonomous practice and maybe we could have a session in there where we consider that autonomy and lifelong learning, and I could have a session in there called education for sustainability based on the findings of what your research brings out..” (Joanna - Interview 3)

Joanna framed EfS as sustainable workforce. She considered the research-in-practice days were successful however faced some challenges in students doing the reading and engaging with the discussions.