Education for Sustainable Development: Towards the Sustainable University, PedRIO Occasional Paper 9, April 2015

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Education for Sustainable Development: Towards the Sustainable University

Edited by Lynne Wyness

PedRIO paper 9

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**CENTRE FOR
SUSTAINABLE
FUTURES
WITH
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We planned this conference in anticipation of the end of the UN Decade of Education for Sustainable Development (DESD), and the start of the next phase for those involved in ESD here and internationally. At Plymouth University, 2015 marks ten year anniversary since cross-institutional work on sustainability and sustainability education was spearheaded by the founding of the Centre for Sustainable Futures (CSF). Coincidentally, 2015 also marks a ten years since the influential HEFCE policy document 'Sustainable Development in Higher Education' was released.

Holding the conference in January – named after the Roman god of doorways, of endings and beginnings – we sought to look at some of what has been achieved in sustainability education to date and explore its prospects as we move forward.

Following an enthusiastic response to the call for abstracts, the conference featured a diverse range of research papers, posters, and roundtable presentations from academics and practitioners across the UK and beyond. The conference was arranged around three overarching themes:

ESD Pedagogy: Criticality, Creativity, and Collaboration

What are the teaching and learning processes that enable students to develop their own capacity to think critically and creatively in the face of global sustainability challenges and, secondly, to act collaboratively in ways that pursue more hopeful and sustainable futures?

Innovative Learning Spaces for ESD

What are the physical environments that provide opportunities for new forms of sustainability education to flourish? What lies beyond the lecture hall that is conducive to student learning through inquiry-based, active, participatory, interdisciplinary and experiential methods?

Towards the Sustainable University

What are effective approaches for leading institutional change, organisational learning, and staff CPD towards sustainability?

This publication focuses on the last theme – **Towards the Sustainable University**. The previous PedRIO Occasional Paper 8 looks at the first theme ESD Pedagogy: Criticality, Creativity, and Collaboration.

We wish to thank all of the presenters and delegates who together made this a memorable and inspiring conference.

Paul Warwick, Stephen Sterling, and Lynne Wyness
Centre for Sustainable Futures
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To 'LIFE, THE UNIVERSITY AND EVERYTHING': how should universities educate for a constrained future?'

Jane Davidson, University of Wales, Trinity St. David

What are the challenges and opportunities in embedding sustainability throughout a university in relation to the institution's culture, campus, curriculum and the relationship with the wider community? How do we on the one hand ensure that universities have the appropriate structures to embed futures thinking in everything they do – while still satisfying all the other pressures such as REF, discipline benchmarks, QAA, etc and, on the other hand, how does such an institutional commitment translate itself into winning hearts and minds to new ways of working among staff, students and employers? I would argue that there must be fundamental principles and systems in place to ensure success.

For the purposes of looking at a systemic approach to embedding any strategic aim into a university's culture, I will use the word 'sustainability' as a shorthand for a commitment to building in future-proofing, systems thinking, creative problem solving, self-awareness/open-mindedness towards difference, understanding of global issues/power relationships and optimism and action for a better world – i.e. the skills and graduate attributes needed for a constrained future and the role universities should play in that.

Moving expectations of the role of an education system is a long job. Employers recognise excellence of knowledge acquisition and potential in university graduates, but rarely question the content of undergraduate courses, despite the prevailing narrative from business organisations that students do not come into employment with the right skills. Even very large employers don't generally use their influence to work with universities to define appropriate graduate attributes for those seeking employment in a constrained world. Yet those same businesses are acutely aware of the shifting contexts of climate change, resource depletion, globalisation, insecure energy sources and unstable fiscal mechanisms. A student who has been encouraged to think critically about these issues, within and beyond their discipline, has experience of working in an intra-disciplinary team and has developed values about social justice, diversity and human rights is far better placed to explore creative solutions than one who has had no such challenges. Universities have a fundamentally important role in addressing the deficit in the statutory education system which is largely focused on depth rather than breadth.

Thinking sustainably is often seen as a difficult concept, and one where people often feel powerless and frustrated individually when they see governments and others acting in what they perceive as unsustainable ways. If you interpret sustainable thinking as a process leading to better resource management and better long term decisions, there is a very important role for universities to reduce their own negative impacts and lead by example. Through joint HEA/NUS longitudinal research, we have a four-year evidence base to show first year students consistently demonstrating that they see an important role for universities in developing sustainability skills and want their institutions to practice what they preach. In universities, the sustainability agenda often starts with Estates Management staff because there are real savings to be had by better carbon, energy, water, waste and environmental resource management systems. The process of thinking about the issues in a whole life-cycle way leads to new and creative opportunities. But there is still often a dislocation between action at the estate level and not engaging similarly with curriculum opportunities. What is

important, for universities which promote sustainability actively, is that they can demonstrate such values across all aspects of their delivery.

Our experience in the University of Wales Trinity Saint David of embedding sustainability throughout the university has used Professor Stephen Sterling's *Future Fit Framework* published by the HEA. Our drivers to encourage our University Council to support the sustainability agenda were many. Among them were the opportunity to create a USP for a new multi-campus dual-sector university; employers' demands for sustainability skills (creative problem solving/active citizenship); students' expectations (NUS/HEA studies); research funding opportunities and the 'Wellbeing of Future Generations' Bill' expected to pass into law in 2015. The Bill will legislate to make 'sustainable development' the central organising principle of the Welsh Government and public bodies in Wales and create an independent sustainable development body for Wales (a Commissioner for Sustainable Futures). We wanted to take this principle and demonstrate that making sustainability a core value to frame the development of the new university would have positive outcomes for all.

This was not without its challenges however. We needed staff buy-in, management buy-in, governors' buy-in, student buy-in, community buy in and we needed to show on our campuses that we are serious about the agenda. We started by creating a Sustainability Skills Survey to understanding our staff skills, expertise and experience, identify champions and give us an indication of what capacity building was needed. Asking staff for their views on how the University should take this agenda forward gave us the opportunity to create a bottom up approach and quantitative and qualitative data on how to use our staff resources to best effect.

Alongside this work, the University also rewrote its strategic plan, *Transforming Education, Transforming Lives*. This defined our high level ambitions, including Sustainable Development, and led to the concept of the University providing to all its students '*[a]n 'Inspired' Education' to ensure that our graduates are fit for the future and that their professional practice is sustainable for generations to come*.' (Professor Medwin Hughes, Vice-Chancellor). However, the governors in particular were keen to see that this was not simply rhetoric but would be delivered as part pf a coherent approach across the university. Four key performance indicators were established for 2014-2015:

- Improve our classification in the People and Planet Green League.
- Embed Faculty sustainability plans throughout the academic and support structures
- Complete curriculum audits and develop the curriculum with regard to sustainability
- Maximise research, project and consultancy income related to sustainability

The University also revisited its graduate attributes adding in:

- Active Citizenship: able to appreciate the importance of environmental, social and political contexts to their studies;
- Creative Problem Solving: able to think creatively, holistically, and systemically and make critical judgements on issues;

Now, with faculty plans in place which are monitored regularly, the first curriculum audits across all faculties completed last year, validation procedures that fully reflect the strategic commitment to sustainability; sustainability requirements incorporated into staff development and job descriptions;

regular meetings with Deans, Heads of School, Sustainability Link Contacts in all departments and INSPIRE student interns, we can say that the University is at the starting blocks. Delighted as we were that we rose from 113th to 8th in the UK and 1st in Wales in the People and Planet University League in 2015, we know that this is the beginning. For this agenda to work across the University, staff and students need to see how it enhances their student experience and improves their employability.

One of the desired outcomes of promoting sustainability through the university must be to encourage staff and students to also live more sustainably in their own lives, for example through taking the Best Foot Forward ecological footprint test developed by the World Wildlife Fund. While not arguing that the ecological footprint is anything more than a proxy indicator, what it does for people who are starting on this agenda is enable them to see quickly and clearly how their personal decisions in relation to housing including energy (25%),food (20%), transport (18%) and stuff (37%) impact on their scores. Those people who think recycling their own waste can replace driving gas guzzling cars, taking regular flights or consumerism will have a rude awakening if they respond to the tool honestly and will find they are using upwards of three planets to support their lifestyle instead of the one we have available to us.

If we are going to do our job properly as educators of the next generation, we need to make sure that the curriculum is fit for purposes and as relevant as possible, recognising the challenges of our age. Education for a more sustainable future is about ensuring that students leave university with in depth knowledge from their discipline and an approach to life that is adaptable, resilient and questioning. In the Faculty of Humanities in the University of Wales Trinity Saint David, our second year undergraduate students learn about research skills through a sustainability lens and engage in inter-disciplinary work on an intra-faculty basis to report outcomes through a student conference. How much more exciting, challenging and relevant than a more traditional method of learning? If we take this philosophy and apply it across all that we do in universities, we will educate the next generations' leaders to be more socially and economically responsible and have greater regard to environmental limits. And in the words of the experts:

> If you always do what you've always done, you'll always get what you've always had. (Mark Twain)

> It is not the strongest of the species that survives, nor the most intelligent, but the one most responsive to change. (Charles Darwin)

> Do unto future generations what you would have past generations do unto you. (John Rawls)

The Art of Science Communication

Stacey DeAmicis and Peter Bray, Plymouth University, UK

Science and arts are arguably manifestations of the same human creativity (Jemison, 2002). By discovering the value of creative writing as a cathartic, cognitive, and communicative component of traditional learning, the transformative experience of studying for a science degree can be enriched, offering greater understanding.

The Art of Science Communication

The ability to effectively communicate is fundamental in today's society and is one of the top five desired skills that employers seek in graduates, regardless of discipline (DuPre & Williams, 2011; Koc & Koncz, 2012). Although many students develop writing skills that are discipline specific whilst at university, very few have the opportunity to undertake and develop a wide range of writing styles and/or other modes of communication during their academic studies in the UK, as teaching students how to write is a low priority, specifically within STEM curricula (Drury & Jones, 2010).

At U.S. universities there has been a shift towards 'Writing across the Curriculum (WAC) and Writing in the Discipline (WiD)' (Hill, *et al*, 2010). Taking the academic literacies approach utilised in WAC and WiD, whereby the development of student writing underpins course design, enables students to become active participants in meaning-making, or co-creators of knowledge, whilst exploring language, identity and the contested nature of knowledge through critical analysis (Lea, 2004).

Why Embed Creativity?

Deficiencies in written communication skills are an on-going concern in STEM disciplines (Drury & Jones, 2010). However, within the U.S. there is a movement towards turning STEM into STEAM, adding the arts, then into STREAM by adding 'the thinking skills embodied in Reading and wRiting' (Root-Bernstein & Root-Bernstein, 2011). Nobel Laureate scientists are typically persons of great learning in several fields of study (i.e. polymaths) and are significantly more likely to engage in arts and crafts avocations than Royal Society and National Academy of Sciences members, who are in turn significantly more likely to do so than the general public (Root-Bernstein et al. 2008). If scientists regularly engage in hobbies such as writing poetry, creating fine art, music and photography, they are better equipped to connect the knowledge and skills gained in their avocation with those in their vocation, which can help them solve important scientific problems through abstract thinking (Root-Bernstein *et al*, 2008).

Creativity and Experiential Learning Spaces

Each session began with readings from selected published natural historians, followed by a short discussion about the language and imagery used to create a 'sense of place'. Often, students were taken outdoors to spend time observing. To hone students' observational skills, we visited 'experiential learning spaces' on the PU campus. Here, students overturned flag stones, smelled the herbs growing in the garden, and scrutinised the micro-world within the garden walls, essentially making the hidden world seen through their words.

Transformative

Students who attended sessions benefited as they were able to reconsider the natural world and how we communicate as scientists in new and engaging ways. Here are some students' comments from the sessions:

> These workshops have really helped in building my confidence in both practical and group work. I particularly feel it has helped with my scientific writing.

> Without this [type of] communication it is difficult to encourage people to join or take interest in the field of science and harder to solve global scientific problems in which the public play a key role.

> The Natural History Writing sessions reawakened my more creative side and really made me look at the natural world in different way, instead of from a systematic standpoint; I was looking at the minor details, and thinking about the organisms and environment more poetically. It also opened my eyes to different ways of communicating science, in a more accessible way that could possibly make the public more empathetic to the issues of today.

The Benefits: Facilitators' Perspectives

Peter Bray (Student of Marine Biology and Coastal Ecology)

The best scientists are discoverers of new landscapes. They walk through microscopic jungles and draw maps of their new concepts and ideas. Documenting this journey through traditional methods is fundamental, yet creativity can assist and catalyse the process. Through the workshops we facilitated students' discovery of creativity in science. Students came to sessions and saw a garden weed as a solar power station or a wall as a great desert plain for a slug. Science is about much more than facts and figures; it is about seeing and communicating the beauty and awe of nature. At first this may sound 'woolly', a watering down of a subject based on precision. However, we live in an age of increasing concern over the security of our natural world, increasing stakeholder engagement in conservation, and a greater need for the general public to understand the implications of science. Communication and inspiring laypeople is in increasing demand. Our workshops have begun to address this, but the possibilities for expansion are vast. Creative writing hones skills useful in decoding scientific mysteries (Brown, 2015) and transferring useful knowledge across domains is a powerful cognitive tool (Kurtz & Loewenstein, 2007). Through writing poetry in these nature writing workshops, I explored 'the intersections… of the always migratory identity' (Spry, 2001).

Dr Stacey DeAmicis (Lecturer in Marine Ecology)

As we live in a world with radically shifting baselines, developing solid communication skills across a variety of media is essential – funding bodies, traditional media, and social media outlets all require scientists to engage more with the public. These skills improve employability prospects and empower students by enhancing academic and personal self-confidence. Level 4 students enthusiastically engaged with this extracurricular activity - a true testament that students desire more from university than just their degree qualification. As a facilitator, learning in collaboration with students was personally rewarding as these sessions forced me to take time to read, to observe, and to consider my own voice. As an academic, acting as a role model for students is an effective tool to drive future engagement. If students feel that academic lecturers are passionate about and supportive of such initiatives, they themselves are more likely to understand the potential benefits of their involvement, engage more deeply, and commit long-term.

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Personal Autonomy and Well-being in Education for Sustainability

Glen Crust, Plymouth University, UK

Well-being is a big, beautiful concept (Kumar, 2013). An individual's well-being is challenged by distress in their community. The well-being of the community meshes with well-being in human society which meshes with well-being in the natural world. It seems reasonable to expect sensitivity to my own well-being and the well-being of the living world to co-develop in a reinforcing virtuous cycle, consistent with the positive impact on human health of time spent in natural places (Newton, 2007). This paper seeks to explore what undergraduate education would look like if universities' main aims included education for well-being and personal agency. Figure 1 illustrates an example of the commercial answers to that question.

Figure 1: Well-being and Personal Agency in Undergraduate Marketing and Recruitment

Subjective well-being extends students' higher education choice criteria, offering an explicit life-quality alternative to graduate salary as a measure of return on investment. Table 1 compares outcomes from technology and education degrees programmes. An opportunity exists for HEIs to respond to the recent surge in students' costs with a measurably enhanced outcome offer.

Table 1: Comparing Graduate Outcomes 6 Months after Leaving Course

	Computer Science	Education Studies	UK Adults ONS, 2013
Average salary	£22,000	£14,000	-
In managerial or professional job	77%	30%	-
More than 7/10 Satisfied with life	80%	88%	77%
More than 7/10 things in life seem Worthwhile	76%	89%	81%
More than 7/10 Happy	69%	80%	72%
More than 6/10 Anxious	23%	26%	21%

Michaelson et al. (2012) propose the dynamic model of individual well-being in Figure 2. Secure External Conditions (such as income, albeit loaned) in residential higher education can provide outstanding opportunities for students to explore, experiment and take risks with how best, as unique individuals, they achieve Good Functioning.

Figure 2: An Outline of the New Economics Foundation Dynamic Model of Well-being
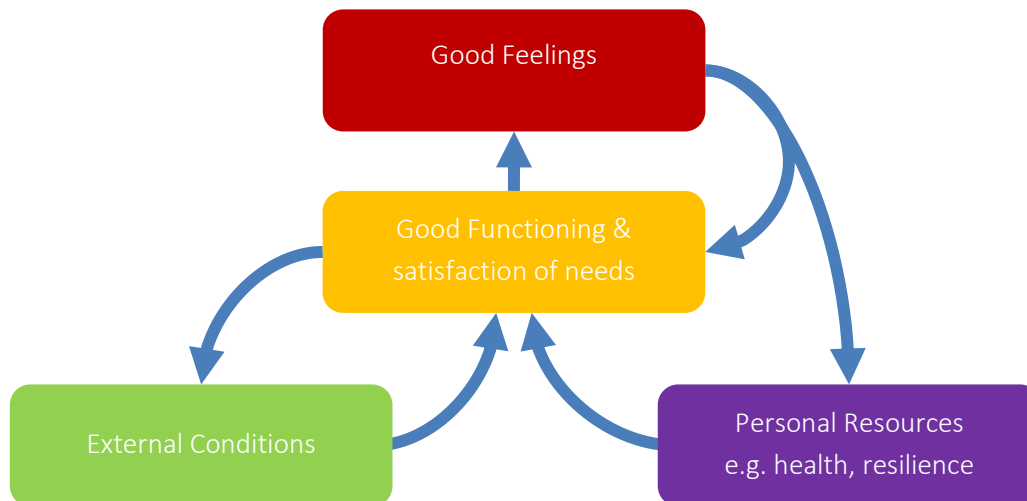
Well-being initiatives are often described using the more superficially appealing but trivialising term 'happiness'. Table 2 compares Seligman's (2012) PERMA model (in which five factors characterise psychological Flourishing) with the UK Office of National Statistics (ONS) subjective well-being (SWB) items (ONS, 2013) supplemented with a social trust question promoted by Michaelson et al (2012).

Table 2 the closely-related ONS and PERMA well-being models

ONS SWB & Michaelson et al (2012)	Seligman's PERMA
Satisfaction with whole life	(achieved through) Engagement and Accomplishment
Things you do are Worthwhile	Meaning and purpose
Happiness yesterday	Positive emotions
Anxiousness yesterday	Contrasts with Positive emotions
Social Trust	Positive Relationships

Education about well-being and education for well-being are inexpensive and convenient for universities to achieve on a significant scale. Higher education providers accepted 382,500 applicants from England in 2014 (UCAS, 2014). All HEIs collect destination data from 80% of their UK domiciled graduates (HESA, 2014) largely by telephone, as part of HESA's Destinations of Leavers from Higher Education survey. In 2013 and 2014 Plymouth University supplemented the institutional DLHE survey with the ONS SWB questions, collecting and processing 4,600 responses on a zero budget. Example graduate SWB data mapped against fields including subject of study, occupation, ethnicity, age and gender is outlined in Crust and Hicks (2013). This data supports interventions, outlined below, that

aim to measurably improve students' well-being and personal agency, consistent with the All-Party Parliamentary Group on well-being Economics maxim 'measure well-being, get well-being'.

Enhancing Students' Lived Experience

SWB provides an evaluative framework with which students can review and improve their academic and campus experience, such as their background reading and research, business simulations, clinical assessments, communal living, dissertation, final critiques, evening highlights, exam preparation, exams, extra-curricular life, field work, group presentations, group projects, in-class tests, informal discussion, informal peer critiques, lectures, mid-term critiques, peer assessments, portfolio development, professional practice, laboratory work, presentations, project supervision, project work, seminars, studio practice, summer vacations, tutorials, weekend highlights, whole modules, work-based learning and written assignments.

In-class reviews can include three stages:

Stage 1: expectation raising

Academics or professional staff such as careers advisers can introduce the work with institutional graduate SWB data and a preamble along these lines: '*In return for relieving you of £60,000 and 3 years of your working life, this academic course builds the habits of a self-directed life that feels worthwhile, satisfying, happy and socially connected, where you experience little uninvited anxiety, and earn a respectable salary doing what you love in an effective, personally authentic style with like-minded like-motivated colleagues*'.

Stage 2: review and benchmarking

The four ONS SWB questions provide the framework for benchmarking, for example: '*Looking back at your recent seminars (or some other specific aspect of university experience), on a scale of zero to 10, to what extent was the experience Satisfying, Worthwhile, Happy, Anxious, Socially-connected and collegial?*' With the help of two student volunteer counters, the academic or facilitator can collect data by show of hands, key the data into an on-screen spreadsheet and show students frequency distributions, means, etc. In the medium term this data can be used to show students trends in the SWB scores associated with a range of specific academic activities.

Stage 3: solution sharing and enhancement

The academic or facilitator can invite students to discuss what one thing they can change to make their next seminar etc. feel less anxious and more Satisfying, Worthwhile, Happy, and socially connected. Such work - beginning in pairs, progressing to small groups, then the whole group with feedback to an on-screen document - enables students to hear a range of strategies, and engages the worst performing students without labelling them as failures. In the medium term this work also provides material with which to improve the student experience through annual module reviews.

Enhancing Agency, Graduate Employability, KIS Data and Undergraduate Recruitment

While Raz (2004) explores well-being as a consequence of personal agency rather than as an end in itself, businesses also have a commercial interest in employees' autonomy and control in their choices. Around 90% of new hires fail due to attitude rather than skill problems (Murphy, 2012).

Many businesses develop employee skills such as project management, but few select graduates with no curiosity and then send them on a curiosity course. Table 3 illustrates the association between autonomous occupational choice, subjective well-being, graduate level work and income. HEIs that collect SWB data through their DLHE surveys can explore this data with their students, as part of workshops that review students' weekend highlights, and main reasons for getting involved in those highlights, as case studies for their emerging occupational choice habits.

Table 3: Autonomous choice, subjective well-being, graduate level work and income

Main reason for taking the job	Mean ONS SWB Scores						Grad.Level		Salary	
	n	S	W	H	A	SWB	n	Mean	n	Mean
Fitted plan / work I wanted	647	8.1	8.4	7.8	3.0	31.2	647	83%	517	£19,536
See if I would like the work	30	7.8	8.3	8.0	3.5	30.6	30	63%	21	£17,429
Progress in the organisation	72	8.0	7.8	7.5	3.2	30.1	72	61%	65	£18,096
Job was well-paid	39	7.6	7.3	7.6	2.5	30.0	39	51%	32	£19,859
Gain experience to get job I want	197	7.6	7.9	7.6	3.4	29.8	197	54%	119	£15,521
In the right location	88	7.4	7.5	7.6	3.2	29.3	88	53%	59	£16,181
Best job offer I received	102	7.4	7.5	7.1	3.0	28.9	102	54%	70	£17,307
To earn a living/pay off debts	591	7.0	7.1	7.3	2.9	28.4	591	18%	421	£11,915
Only job offer I received	68	6.7	6.9	7.1	2.8	27.9	68	34%	49	£13,263

Abbreviations: S=Satisfaction, W=Worthwhile, H=Happy, A=Anxious, SWB=10+S+W+H-A,

Grad.Level = % in graduate level jobs (Standard Occupation Codes with leading figures 1 to 3).

The emergence of principled commitment and initiative, ingenuity, determination, drive for ambitious results etc. when a person's choices are sensitised to their values is described by Cutler and Gyatso's (1998) change process. First learning, then conviction, determination, action, and finally effort bring about sustainable change.

Drawing on Parks and Guay (2009), Figure 3 illustrates how students use values and personality to choose worthwhile occupations and achieve satisfying performance. SWB work with students links the 'Worthwhile' values-based occupational choice theme (Knafo and Sagiv, 2004), through the attitudes of productivity, into 'Satisfaction' seeking, personally authentic goal striving styles (Briggs Myers and Myers, 1980) and the productivity literature such as Dweck (2006) and Covey (1989).

Figure 3: Values and Worthwhile Occupations, Personality and Satisfying Performance

Does this goal respond to my values? How?
Values-based occupational choice: will I adopt this goal?

Values, for example beginning with Schwartz (2012) → Goal content

How will I achieve this goal?
How will the skills I need express my authentic style?

Personality, for example beginning with Myers-Briggs Type → Goal striving

Goal accomplishment
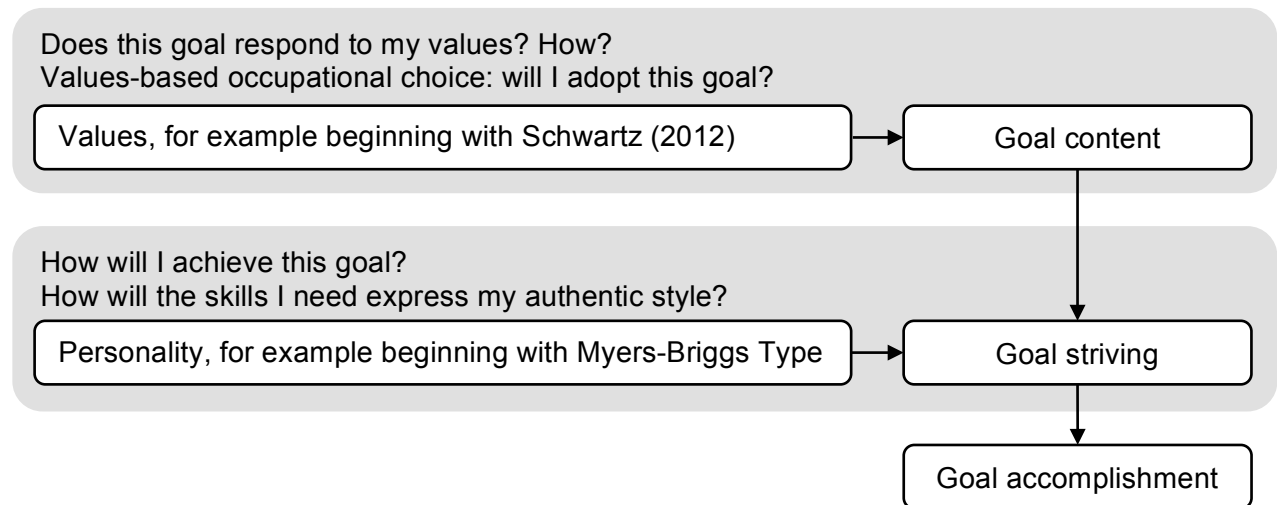
Example Interventions and Resources

If a healthy life-wide human existence is characterised by autonomy, and a sense that activities feel Worthwhile, Satisfying, Happy, Socially Connected and relatively free from unwanted Anxiety, then healthy student day-to-day discourse will employ this explicit expectation and this language to plan, review and improve lived experience.

Crust 2015a outlines an example practical intervention for developing students' personal agency.

Crust 2015b illustrates an example approach for developing students' subjective well-being.

Crust 2015c illustrates as a diagram how well-being emerges through higher education.

Crust 2014 illustrates as a video how well-being emerges through higher education. This work in progress forms the basis of a 60 minute introduce-view-discuss workshop that I will deliver through timetabled undergraduate workshops starting in Feb 2015.

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Plymouth Growing Futures - ESD in Motion

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There has been considerable discourse and action about the sustainable university (Sterling, *et al,* 2011) (Corican and Wals, 2004), and a general consensus that this must include community, culture, operations, and curricula to ensure that sustainability is understood and enacted beyond a financial remit or a tick box exercise. During my time as a student at Plymouth University I felt the insensitive landscaping and building programme needed to be addressed. By serendipity and taking up every opportunity that came my way, I was able to formulate and come to realize an outdoor learning for sustainability concept. One that would help to enhance the culture of the campus, increase the planting on campus and bring people together. Plymouth Growing Futures is a quest for a more integral and holistic, transformative learning opportunity steeped in hope for a sustainable, peaceful, and happy future. It focuses on the now and how we present ourselves to each other and relate to the natural environment. The group welcomes students, staff, and the wider community, and the tangibility and nature of the project has meant that Plymouth Growing Futures is developing as a hub, a catalyst, and as a generator of ideas drawing diverse people together, helping people to realise what might be meant by sustainability and creating new opportunities based around the ideals of the project.

The focus was to create a grass roots movement to increase the growing and biodiversity on campus by enlisting, students, staff and people from the community, with the aim that the action-based collaboration could simultaneously create an aesthetic (Spivak, 2010), social (Bandurra,1977), and engaged learning for sustainability. Providing participatory provision to help people to broaden and deepen their knowledge and skills of sustainability literacy (Stibbe, 2009) and become skilled in the 'fields of green' (McKenzie *et al*, 2009) was crucial to this project as it became an evolving, dynamic community connecting with the wider community of Plymouth. In this way, by fostering a positive culture of sustainability on campus and through into the city, it supports the project of embedding ESD into higher education.

Regarding the outside campus as a commons has made it useful for people to imagine how they might be included in making a difference to the campus. We are also making a political statement about the importance of people and the emotional tie they hold to place in general and it is through our relationships with each other and nature that we come to understand this. Drawing attention to the non-material aspect of environment, as well as the material, is vital to the learning experience. Significantly, this includes living and working places that have become degraded, either through neglect or poor landscaping (McClaren, 2009). Communities coming together and valuing individuals and what they have to offer is key (Martusewicz, 2009).

Disciplines within the Humanities, Arts, or Sciences all have a stake in planetary and people wellbeing and the tangible nature of PGF acts as a hook to engage students and staff and the community of Plymouth in conversation and action about sustainability. Presently students have made use of the project to enhance their academic work and work chances and it has been incorporated in formal course work.

The learning process continues with informal learning about gardening and cooking and incidental learning such as learning about our place in nature, the joy afforded by attending to plants, mindfulness, the realization that you can make a difference, the need for collaboration to making things happen, and that having fun is good for us!

What is really important is that each generation grow up well equipped to face the world and with the cognitive, emotional, technical, and spiritual capacity to function appropriately in a sustainably literate way (Bonnett, 2002). This simple idea of Plymouth Growing Futures has been taken seriously by the Teaching and Learning Directorate and the Centre for Sustainable Futures at Plymouth University. Consider this model as a pulse that people are free to replicate and modify and so creating new pulses ad infinitum; strengthening the flow and flooding society at all levels with genuine, good sustainability from the grass roots up.

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The marketisation of English Higher Education and the sustainability agenda: contradictions, synergies, and the future of Education for Sustainable Development

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The 'sustainability agenda' and Education for Sustainable Development (ESD) have become ubiquitous areas of research and practise across universities in England. The backdrop to this growing agenda is a Higher Education sector that is increasingly being positioned at the service of the country's economic, business, and innovation engine; students who are increasingly conceptualized as consumers and encouraged to interpret their identity in employability terms (McArthur 2011); and academic systems which face mounting pressure to quantify and demonstrate value for money, the merits of their student experience, and their responsiveness to student and governmental demands. The creation of this competitive HE marketplace has been underpinned by two interlinking political-economic ideologies which successive governments have used to reform and reorientate English university systems over the past few decades. Neoliberalism, the first of these, is based upon the principles of economic liberalisation, decentralisation, open markets, privatisation of public services, and a decrease in the welfare role played by state (Giroux, 2002; Harvey, 2007). Neoliberal ideology is complex and contested, with 'theoretically' market-led governments often relying heavily upon accompanying measures of centralised state control and steering of the public sector, commonly known as New Public Management (NPM), which is the second, linked ideology (Gamble, 1988; Middleton, 2000; Deem and Brehony, 2005; Ferlie *et al.*, 2008). A few key characteristics of neoliberalism and NPM in English HE include:

- More fiscally-focused, business-like environments
- Focus on outputs, efficiency, value for money, strategic planning
- Proliferation of accountability, quality assurance, audit processes, league tables
- Increasing competition for governmental research funds (RAE/REF) and associated reputational benefit
- Increasing financial power given to students through tuition fees
- Vice-Chancellors more akin to CEOs from the business world

Sustainability educators have advanced and grown their work within this complex neoliberal system and will continue to do so into the near future. It is therefore vital that we are able to critically examine both the ideological and the practical relationship between sustainability and the increasing marketisation of higher education, to enable us to understand the challenges and the contradictions, as well as the opportunities and the synergies that this relationship presents for our work. Is education for the public, socio-democratic, sustainability 'good' within the neoliberal university a paradox or a possibility?

The neoliberal transformation of universities has been seen by many as antithetical to the core purpose and mission of higher education and to the values which we associate with a socially, environmentally, and ethically responsible university. One way of exploring this dichotomy further is through critical pedagogy theory which challenges us to rethink universities as radically democratic, social, and political institutions and to confront the monolithic nature of the neoliberalism (Amsler *et al.*, 2010; Cowden and Singh, 2013.). One eminent critical pedagogy theorist has commented:

> *There is no such thing as a neutral education process. Education either functions as an instrument which is used to facilitate the integration of generations into the logic of the present system and bring about conformity to it, or it becomes the 'practice of freedom', the means by which men and women deal critically with reality and discover how to participate in the transformation of their world. (Shaull, 2000:34)*

There are strong parallels between critical pedagogy theory and sustainability education theory, with many ESD practitioners believing that genuinely transformative ESD requires radical and fundamental change, which goes beyond 'embedding' or 'mainstreaming' sustainability within HE. A distinction has been drawn between 'whole systems', transformative, cultural shifts, and the sorts of sustainability advances which occur from within our current HE system, but do not fundamentally change the paradigms and ideologies of the system itself (Cortese, 2003; Ryan, 2012; Blewitt, 2013; Sterling, 2013; Tilbury, 2013; Jucker, 2014). Jucker (2014: 38, 41) has commented, '*There is no real progress in the sense of the necessary paradigm change...ESD is only possible with a radical paradigm change*'. Blewitt (2012:1) also agrees that by 'colluding' with managerialism, sustainability education has lost its radical edge and must resist further corporatisation to make real progress. Considering this issue from a more pragmatic angle, Maxey (2009) believes that we need to move beyond the binary divide which is often painted between sustainability and corporatisation within HE, encouraging wider and more active engagement with this 'double edged sword', he notes that the relationship is 'contested, ongoing and very much up for grabs' (448).

If we look back over all of the sustainability and ESD progress made in the last ten years, it is clear that the prevailing neoliberal and managerialist regime has presented multiple opportunities for us to grow and develop our work. So while we play the Green League game, work for ESD guidance from the Quality Assurance Agency, 'sell' sustainability under the employability umbrella and vice-versa, use the 'Students at the Heart of the System' White Paper to push students as the new champions of sustainability and to lever the £5 million Students' Green Fund, use our sustainability credentials as a marketing tool, fight for Green Gown Awards, and hope for an ESD-related question on the National Student Survey, we might want to reflect upon how we have all exploited the marketised characteristics of our universities to successfully advance our sustainability work to date. Moreover, how might further raising the profile of sustainability and ESD as important and distinct areas of academic discourse, through strategic alignment with the marketised control mechanisms, which govern institutional, departmental, individual academic, as well as student behaviour, lead to further legitimisation and growth of ESD developments? Or… if we continue to work within the paradigm we seek to shift, are we unwittingly helping to sustain it, compromising the radical potential of ESD and working against the sustainable future we all so want? I invite you to answer these questions honestly.

Notes

This paper is based on doctoral research being undertaken by the author. If you are interested in reading more about this research you may wish to access this recently published paper which is available online:

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Experimentalist governance and ESD: de-problematising decentralisation

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Sustainability necessitates the development of a responsible and responsive organism – thinking here of Gaia and complexity theories - with distributed ownership, responsibility and autonomy, characterised as a complex organism. Yet, top down governance solutions are embedded in dominant thinking in relation to the implementation of sustainability in HE.

The University of Bristol has used sustainability governance theories in devising models to support change for sustainability. Whilst there is a strategic commitment to sustainability, that is not at the centre of the approach. Instead, we have adopted a social change model using experimentalist governance approaches to seek to embed sustainability education, developing initiatives from the bottom up.

The University can be characterised, in broad terms as a 'self-organising network' – a complex community in which culture, values and inter connections can drive change outwith central dictat. The term 'governance' is widely used to describe this sort of power system, with the network characterised by trust, inter-dependence and mutual adjustment. The Bristol approach to ESD is predicated on harnessing the power of such networks, as a positive alternative to what is often perceived by academics and students to be overly managerialist cultures in HE. These new governance techniques centre upon networks of actors as opposed to hierarchies in achieving change.

Within the network, each element has ownership, responsibility and autonomy within the complex whole. Power is dispersed, complex and multi-layered. Whereas government models rely on hierarchies and formal authority, governance models rely on networks and activities underpinned by shared goals. This last point is critical - governance approaches cannot impose change, they rely on sufficient people within the organisation sharing the goals at an appropriate level of abstraction.

Governance has a number of merits as a model for thinking about sustainability change. Sustainability resonates with a range of inherently counter-cultural movements. It is difficult to impose and requires embedding in the cultural and ethical milieu to succeed. Governance models can be more flexible, innovative and creative, than command and control hierarchies. It cannot be blocked as easily, as power is dispersed and it maps onto pedagogies of sustainability. In essence it enables us to do what we teach.

Experimentalist governance is particularly attractive in this context. It stresses maximum discretion at the lowest level. Shared goals drive change and provide a context for evolving new goals, solutions and strategies. However, it is about more than factual devolution, it posits that local experiments not merely do, but *should* operate in parallel. Innovation requires experimentation, and in this model successful innovation is horizontally diffused. The process of change becomes an iterative process, in which peer review is essential to distil lessons learnt and feed into goal review. The process is multi-centred and mutually adjusting – with institutional leadership co-ordinating and monitoring, distilling lessons and then discerning a growing clarity around good practice emerging from experience: what could be called institutional reflexive learning.

Von Hohmeyer considers this sort of approach as particularly suitable for sustainability challenges where solutions require behaviour change by front line stakeholders, where problems are highly complex with diffuse sources, and where there would be weak enforcement mechanisms for top down solutions.

Leadership in experimentalist governance adopts a different approach to change, considering that it will fail to deliver sustainable change if it is regarded as definitive and prescriptive. Rather, the role of leadership is to give permission validity, recognition, and value to initiatives. It encourages change, and offers coherence and visibility to what is happening, rather than requiring what is happening to fit a centrally determined model. Leaders are there to create innovative space, so that change comes from the myriad ideas of staff and students, supported from the top, not the other way round.

This repositions and redefines the role of institutional leadership, whilst still central, the relationship is one of trust, where innovation occurs at diverse points, and where the centre co-ordinates and articulates broad goals, reviewing them in light of feedback. It recognizes that the centre does not have a monopoly of expertise and widens the possibility of new collaborations leading to innovation. However, to deliver change this approach does need some degree of consensus, either articulated or in terms of zeitgeist.

This approach of course involves risks. Not all staff or students will be comfortable with the uncertainties inherent in such approaches, will have other priorities, or will need support. New staff may find it takes longer to map into the zeitgeist and external stakeholders may demand greater visibility of a strategy. But top down approaches also provoke resistance, particularly within the rhetoric of managerialist Higher Education. By working with permission not compulsion there is a massive opportunity for change. The evidence from Bristol is that such models mean change is driven by user need/demand, it facilitates rapid reaction to ideas, fosters a culture of experimentation, and is flexible. It produces an open culture, in which everything is shared and in which the focus is upon action not writing strategic documents.

In this model we are not telling people what to do or think – a University is a community of thinkers committed to pushing boundaries of understanding. Leadership is about unleashing that energy to take action on sustainability, providing resources and offering broad direction, refined iteratively. Everything Bristol staff and students have achieved around sustainability has been achieved through a network of stakeholders, derived from the institutional and city zeitgeist, with light touch reporting direct to senior leadership, in an empowerment culture. Although the institution has now established a Sustainability Committee, bringing together key stakeholders, it is still using an experimentalist governance approach, so the committee is a co-ordinating group, mapping what is happening, increasing visibility and distilling lessons, rather than dictating change.

Conclusion

Many Universities who have made progress in relation to sustainability have been operating in an experimentalist manner. What we have not done is to articulate the conceptual basis for this. This paper argues that Experimentalist Governance offer a strong and successful alternative to neoliberal models.

Inclusion and Sustainability: Similar discourse, different outcomes

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The discourse surrounding education for sustainability has produced a multiplicity of definitions, producing a significant body of discursive literature centred on definitions and a multiplicity of disparate aspirations. The result has at times been close to what Shallcross *et al* (2007) have called 'definition dementia'. Such debates and divides of course are far from unique, but a particularly interesting parallel in education may be found in the dialogue surrounding the subject of 'inclusion'.

Both the areas of sustainability and inclusion have developed over the last few decades thereby experiencing the same economic and political contexts relative to their development and implementation. However, the debates surrounding definitions, implementation strategies, pedagogical approaches have striking similarities.

This paper will explore the debates within each of the two areas of sustainability education and inclusion in education, initially presenting an exposition of key similarities and contrasts. The presentation will, however, go on to explore the recent evident divergence in their achieved outcomes. Whereas inclusion in both a curriculum and operational sense are now key aspects to the ethos and operation of educational institutions, sustainability on the other hand, has recently been dropped from the National Curriculum for England (2014) and still remains as something of an option for implementation in the FE/HE sector.

This paper investigates the seemingly more effective promotion protocols and persuasive strategies adopted by those academics allied to the inclusion debate and suggests ways in which their value to the active in the promotion of education for sustainability. This exploration has been done through colleagues sharing their own knowledge and experiences of the development of the two disciplines which mirror wider developments outside of education. The result is the output of a shared engagement with two particular personal perspectives rather than a systematic study

The two authors are colleagues in the Institute of Education at Plymouth University, working on amongst other things, a BA Education Studies programme. This programme has a number of identified pathways - one of these focuses on issues of inclusion and another on sustainability. Cath works primarily on inclusion and Roger on sustainability. A serendipitous event happened during a period of assessment marking that drew attention to some startling similarities between the language used in written assignments for inclusion and sustainability modules. Cath noted that some sustainability assignments read in very similar ways to inclusion assignments. There seemed to be a convergence in the language, style and approach of the two kinds of assignments and both were drawing on common sources and ideas. Following analysis of the student texts, we experimented with exchanging the terms 'inclusion' and 'sustainability' in classic texts we recognised from our own disciplinary studies. We noted how much sense remained when we did this; a text about sustainability could become a text about inclusion with very little loss in meaning, relevance and impact.

There then followed a period of developing time lines of the two disciplines. We looked separately at key events, publications, reports, and policies that have happened globally, as well as in the UK, and

those that are specific to education contexts and compared our timelines. Again, there were remarkable similarities in the timings and scale of these key events. For example, the rights and activist movements of the 1960s were moments where rights of all kinds were set up as something worth fighting for; gender, disability, race, and the environment were all the focus for rights based activism.

Divergence in the impact of these two areas of policy and practice is seen in surveys of contemporary education (and wider social) policy and practice. We argue that there is evidence that inclusion has become a much more pervasive part of contemporary society than sustainability. Issues of inclusion seem to have more social traction and more progress has been made in making inclusion a part of everyday lives of individuals, private and public institutions. A clear difference identified in the two sets of policy development in the UK context seemed to be the impact of legislation. The Disability Discrimination Act of 1995, which led to the Equality Act of 2010, permeates most of our lives: work, services, education, building design and construction, transport, etc. This watershed legislation has its history in the rights movements of the 1960s (some argue it was long before this). Legislation which secured the right to equality was a key driver, along with a commitment to change attitudes and behaviours in the disability rights and subsequently the inclusion movement. Although there is much to critique of this particular legislation and attention is drawn to the continuing inequalities and injustices in human society, it can be argued that progress has been made here. It is now illegal, in the UK for example, to discriminate on the grounds of race, gender, disability, etc. and all facilities and service must be accessible by all, by law.

Legislation in relation to sustainability has been more piecemeal, more pragmatic and has not been closely associated with human rights agenda. The case of enshrining the rights of children to a clean sustainable future in law has never materialised and if such concepts have emerged it has been a commitment to a future that looks exactly like the present.

We argue that is perhaps this achievement of a framework of wide reaching inclusion legislation that permeates all society that is a key difference in outcomes of the two movements.

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Mapping the Future: the search for alignment between curriculum and the University's Education for Sustainable Futures (ESF) objectives

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Introduction

Canterbury Christ Church University's Mission, as stated in our Strategic Framework (2015-2020), asserts the importance of '*transforming individuals, creating knowledge, enriching communities and building a sustainable future*' in the pursuit of '*excellence in higher education*'. The importance of '*preparing individuals to contribute to a just and sustainable future*' is also acknowledged amongst our values. Sustainability is a Cross Cutting Theme that provides foundation for and pervades strategic objectives. This paper is a brief account of the key points that emerged from a review carried out on ESF mapping exercises by several HE and FE institutions and presents the developmental process of our mapping strategy to date. We will discuss issues encountered when seeking to tailor the exercise to our own needs, navigating through top-down and bottom-up strategies, and an underlying concern to avoid a focus on accountability in favour of a positive and facilitative approach.

What we learned

A review of mapping exercises from different HE and FE institutions (Dawe, *et al*, 2003; Dawe, *et al*, 2005; Eames, 2012; Bridgend College, 2013; Bunting, *et al*, 2012; Hoover and Burford, 2013; IFS, 2014; Kendal, 2014; Tierney and Tweddell, 2012a) suggests an overall will to both assess gaps and opportunities in ESF, and to celebrate ESF coverage throughout the curriculum. Mapping exercises used varied combinations of quantitative and qualitative methods, and based their definitions and principles on various frameworks, to target a wide range of goals and to address a wide range of ESF issues: staff familiarity with sustainability in university's strategic plan; understanding of ESF concepts; knowledge of global issues; enhancement of student experience and sustainability literacy; use of ESF pedagogies; opportunities for personal choices to effect change; development of partnership working; barriers to change and learning about ESF; familiarity with sustainability centres/support available within their organisation; developing a willingness to attend ESF staff development opportunities. Such exercises have met with difficulties related to the great diversity in the way in which sustainability is understood by individuals; narrow understanding of ESF amongst curriculum leaders; inaccurate data regarding student engagement; lack of clear description or visibility of ESF content within modules; and inconsistency in addressing ESF in the curriculum due to a lack of clarity regarding strategic objectives, as well as organisational obstacles, including time and staffing constraints.

Overall, mapping provides opportunities to identify areas in need of support in relation to ESF professional development, and developments in the formal, informal and campus curriculum. Above all, it can assist the alignment of the curriculum with the University's strategic objectives, helping to develop visibility and awareness of sustainability related policies, initiatives and support network amongst the academic and professional body.

Targeting the widest range of ESF related elements is however a time and resource consuming exercise.

A mapping exercise to suit our needs

The *Futures Initiative* (*FI*) was launched in 2011 to develop capacity and to engage increasing numbers of staff and students with the sustainability agenda (Futures Initiative, 2014). Through a grass-roots approach, it funds and supports initiatives to embed Education for Sustainable Futures in formal, informal and campus curriculum, to enhance the employability of our students in a changing world. Within the rationale of the *FI*, mapping emerges as an opportunity to promote alignment between the CCCU Strategic Framework (2015-2020), the QAA (2014) guidance and Quality in HE directives, guiding the enhancement of student experience, recruitment and employability. The proposed mapping is not intended to be an accountability exercise; rather, it is part of a process of enrichment and development designed to highlight and celebrate aspects of curriculum that already focus on sustainability and to reveal opportunities for further development. It is also used to promote holistic provision, where all four areas of sustainability categorised in the QAA guidance (Global Citizenship; Environmental Stewardship; Social justice, ethics and well-being; and Futures thinking) are used to inform learning.

A facilitative and developmental approach

	A	B	C	D	E	F	G	H
	Area of activity	Global citizenship	Environmental stewardship	Social justice, ethics and wellbeing	Futures-thinking	Evidence	Opportunities	Barriers
2	Prospectus	0	0	0	0			
3	Programme publicity	0	0	0	0			
4	Programme handbook	0	0	0	0			
5	Module 1	0	0	0	0			
6	Module 2	0	0	0	0			
7	Module 3	0	0	0	0			
8		0	0	0	0			
9		0	0	0	0			
10		0	0	0	0			
11		0	0	0	0			
12		0	0	0	0			
13		0	0	0	0			
14								
15								
16		Coding:						
17		0 -	Not applicable					
18		1 -	Opportunities not yet developed					
19		2 -	Opportunities partially developed					
20		3 -	Opportunities fully developed					
21								
22	Possible / Proposed actions							
23								
24	Action 1							
25	Action 2							
26	Action 3							
27	Action 4							
28	Action 5							
29	Action 6							
30	Action 7							
31	Action 8							
32	Action 9							
33	Action 10							

Figure 1: The mapping tool.

A toolkit is being piloted by four programme leaders from different faculties. The spreadsheet provides an initial scoring matrix, which allows programme directors and module leaders to consider and score the presence of each element. Three boxes are then provided which allow brief comments to describe the form in which the enhancement takes, as well as the opportunities and barriers to further progress. At the end of the review, a series of actions can be identified, which may include staff development activities, specific module developments, enhancement of programme publicity or handbook. Piloting the toolkit has allowed a deeper understanding of the diversity that exists at

organisational level between different faculties and departments, which has to be taken into consideration. Initial feedback has indicated a need to make the rationale of the mapping exercise very clear to avoid it being seen as a 'tick-boxing exercise'. The timing of the mapping process also needs to converge with other curricular reviewing mechanisms, such as Annual Review or Periodic Programme Review (every six years). Figure 2 shows how the Periodic Programme Review (PR) process can be used as an opportunity to align the development of ESF within programmes with the existing academic infrastructure:
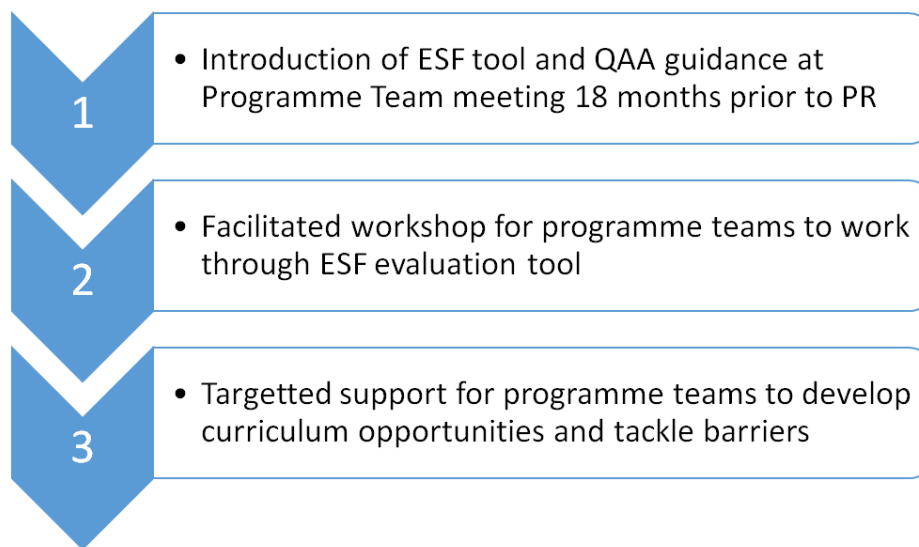

1 • Introduction of ESF tool and QAA guidance at Programme Team meeting 18 months prior to PR

2 • Facilitated workshop for programme teams to work through ESF evaluation tool

3 • Targetted support for programme teams to develop curriculum opportunities and tackle barriers

Figure 2: Aligning the mapping process with Periodic Programme Reviews (original from Dr Nicola Kemp).

Team meetings and workshops will be used to enable the identification of barriers and opportunities and of further support requirements. The Exploring Sustainability Website, created by Dr Stephen Scoffham, provides an excellent resource for staff and students to develop their thinking about and understanding of sustainability issues, and will be used in guiding and informing the process.

Conclusions and next steps

Ultimately, it is expected that the University business planning process will be used to drive forward strategic intent and that annual programme reviews will be used to introduce and update the mapping process, providing an ongoing picture of the ESF landscape.

The knowledge and understanding gained from the mapping exercise will inform the development of a route map for enhancing sustainability in the curriculum. The *Futures Initiative* will continue to inspire and inform academics about the relevance of sustainability in their disciplines, and support them in their development and enhancement of the curriculum.

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Quality Education for Sustainable Development: Framing Perspectives on post- DESD and post-2015 Education by Integrating Education for Sustainable Development and Quality Education.

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Emphasizing Qualitative Improvements in Education

Drawing on education for sustainable development (ESD) research findings, existing literature and current discourse on the future of education (especially at conferences), this paper discusses aspects of quality education and ESD and proposes that the two should be merged into quality education for sustainable development (QESD). QESD should be the cornerstone to achieving human development that is sustainable.

The enshrinement of education in the Universal Declaration of Human Rights in 1948 and subsequent promotion at the international level is an indication of its importance in sustainable human development. Even though education has been recognised as the primary mechanism for achieving sustainable development and a basis for national progress, its implementation and promotion have encountered several challenges. The earlier education programmes and initiatives such as Education for All (EFA) and Millennium Development Goals (MDGs) 2 and 3 that were launched a decade and a half ago focused on the number of enrolment and attainment of children in schools and this has resulted in significant increases in that regard. However, that trajectory of quantitative improvements has overshadowed important aspects of quality education. Although particularly developed countries have achieved maximum student enrolment and attainment, 250 million children in school are still not really learning, and the current system of education is unable to provide students with the essential competencies to adapt to future sustainability challenges. The overwhelming consensus in response to this is on enhancing quality that emphasises more holistic and practical solutions to education. This is particularly important at a time when the present systems of education are at the crossroads underpinned by the completion and launch of several education programmes simultaneously. Furthermore, the importance of good (quality) education has recently been confirmed by the web-based United Nations MY World global survey. As at January 2015, over seven million people from around the globe consider education as the top priority issue for human well-being. Additionally, the Open Working Group (OWG) final document on the SDGs expresses the term quality education in the educational goal. The word 'quality' is mentioned several times in the educational targets despite roughly half of them still focusing on educational access and attainment, a trend not different from what the MDG Goal 2 and EFA goals set out to do and consequently failed to promote quality improvements in education.

QESD: Integrating Quality Education and ESD

Although the nature of quality education is not yet fully clarified, its characteristics, underlying factors, objectives and steps needed to achieving it are known (Ofei-Manu and Didham, 2014; Fien, 2012). On the other hand, over the past decade, ESD initiatives, programmes and strategies that cover the recognised dimensions of sustainable development at local, national, regional and international levels and across all educational settings have been successfully implemented (Tilbury, 2010). In addition to common strands relating to structure and context, content, process and outcomes, ESD has substantial quality education aspects inherently embedded. However, bringing

ESD to the mainstream of education has been rather slow due to several implementation barriers at both policy and practice levels.

QESD, the result of integrating of ESD perspectives and quality education, will take a more holistic and comprehensive approach to education in relation to:

I. the content of what is to be learned
II. the process of how to teach and learn
III. the environment in which to learn and with whom to learn
IV. in what socio-economic, cultural and political context to learn.

QESD will also result in higher order learning and as a result provide the needed competencies. QESD should consist of both quantitative and qualitative inputs and throughputs that provide support at the policy and practice levels. QESD will help to make appropriate educational institutions and programmes available and accessible to everyone, ensure that educational content and teaching processes are acceptable and capable of adapting to the changing needs of learners and society (GCE, 2013), and incorporate the much broader perspectives of ESD through transfer of relevant knowledge, skills and values and utilisation of ESD concepts, practical methods and tools. QESD should not only be for future jobs but for empowering individuals to make transformative choices towards sustainability.

Recommendations for Effective Implementation of QESD

1) Education (as QESD) should be made a priority and framed around a development philosophy that recognizes the planetary boundaries and the constraints they bring to bear as well as distinguishes between the quality of life and standard of living (Constanza, *et al*, 2013).
2) The impacts of education on social, economic and cultural stability and world order should be part of global development discourse. The recent global economic meltdown and resultant social chaos should justify the need to examine the role of education in society.
3) Education (as QESD) should be re-emphasized as a basic human right. Power dynamics and relations that emerge in forms of culture, ideology, religion, etc. and significantly impact education need to be considered as 'politically correct' enough for open discussion.
4) QESD should feature prominently in other international policy processes besides featuring as a standalone process during UNESCO deliberations. QESD should also be integrated into national development plans and strategies.
5) The higher education institutions (HEIs) acting as agents of change should adequately train teachers and fundamentally overhaul the tenets of tertiary education through the lens of sustainability, especially what is taught in economic departments and business schools. Research institutes of education and affiliates should reorient their research goals and objectives significantly towards sustainability.
6) Debunk mindsets on the current acceptance of quality education as preparing skillful and competent children for future jobs (e.g. 21st Century education, PISA) without a sustainability perspective.
7) Develop effective methods and tools to measure the implementation and practice of QESD. One such tool that could effectively consolidate QESD is the ESD Learning Performance Framework (LPF) whose development was based on actual research.

8) Strengthen the platforms and/or networks that link (national) policy and (grassroots) practice with regard to QESD implementation and delivery by enhancing the roles of the Regional Centres of Expertise (RCEs) and similar entities.

9) Creation a platform to bring together existing educational programmes/initiatives and hence their common challenges and potential linkages as well as identifying potential areas of synergy should be one of the prime objectives of QESD.

10) The means of implementing QESD should include a) strengthening the supply of qualified teachers and the capacity of other actors such as policy makers, administrators, researchers and practitioners, b) providing finance and encouraging investments, and c) promoting technology, especially ICT to support improvement of educational delivery.

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Exploring the views of postgraduates on higher education sustainability

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Introduction

The end of the United Nations' Decade of Education for Sustainable Development (2005 -2014) finds higher education institutions attempting to include sustainability in their teaching, policies and practice. 'Greening' the campus and the curriculum is dictated not only by governmental policies and funding councils, but also by students' environmental sensitivity and prospective employers, who need to safeguard their corporate social responsibility profiles (Sterling, 2011). As a result, higher education providers are striving to improve their sustainability credentials and performance (Sterling, 2011).

Background

While sustainability initiatives are blooming in most universities, the impact of this activity on students has not been formally estimated. Harraway *et al*. (2012) claim that universities generally lack the formal processes that could identify the impact of sustainability initiatives on student experience. A key obstacle to this endeavour is the lack of a consistent and comprehensive definition of sustainability in higher education (Policy Studies Institute, 2008; Kawaga, 2007; Moody and Hartel, 2007; Emanuel and Adams, 2011; Wachholz, *et al*, 2012).

Due to this lack of an established definition of sustainability in higher education (HE), the majority of the literature focuses on university students' perceptions of sustainability in general (Zwickle *et al*., 2013; Stubbs and Cocklin, 2008) but not university sustainability in particular, as a phenomenon taking place within the time and space of HE. Researchers are beginning to address certain aspects of university sustainability; for instance, Moody and Hartel (2007) examine students' attitudes to sustainability in the university curriculum, while Jones *et al*. (2013) explore students' opinions of sustainability in university management. A three-year longitudinal study (2010-2012) by the National Union of Students and Higher Education Academy (Drayson, *et al*, 2012) addresses students' attitudes to university sustainability. However, there remains limited research that assesses both students' attitudes and knowledge on university sustainability.

The current study aims to explore students' attitudes and knowledge of the emerging field of university sustainability in terms of teaching, research, estates and corporate management, as specified by the Higher Education Funding Council for England (HEFCE). The survey focuses on students of two postgraduate programmes at the University of Exeter; the MSc in Educational Research and the MSc in Sustainable Development. Postgraduate students are chosen because they are a relatively under-researched group in the literature and most importantly because they have a longer and more holistic experience of higher education settings. Previous literature presents the chosen programme of study as a determining variable of students' sustainability attitudes (Ewert and Baker, 2001; Wysor, 1983 ; Harraway *et al*. 2012; Hodgkinson and Innes, 2001). The aim of the survey was to identify whether the programme of study would influence these respondents' sustainability attitudes and knowledge.

Methods

The survey was chosen as the research method for this study as it provides standardized measurement consistent across all respondents, enabling statistical analysis of the data collected (Fowler, 2002). An on-line questionnaire was considered to be the most suitable instrument as it would allow a rapid turnaround in data collection while facilitating accessibility. The instrument included ten items measuring attitudes towards sustainability, ten items measuring knowledge towards sustainability and two items selecting information on gender and programme of study. The respondents were asked to state their level of agreement or disagreement with the statements using a Likert scale. A coloured theme was applied to make it more appealing while only 22 items were included with questionnaire brevity in mind. To enhance readability, items were kept as short as possible consisting of less than 20 words each. The ordering of the items can affect motivation and initial questions should '*impose minimal respondent burdens*' and '*build rapport*' (Krosnick and Presser, 2010: 291). Thus, the attitude scale was placed first as the use of the first person singular encourages participant identification and no right or wrong answers are entailed in the attitude statements, which makes them less stressful. The knowledge scale was placed next while background information items were placed at the end of the questionnaire, as they require less mental effort to fill in and are less likely to suffer from fatigue effects. The responses were coded, while negatively worded items were reversed before entering the data in the statistical package SPSS21. Preliminary analyses were conducted to check parametric assumptions. The reliability of the measuring instrument was checked using Cronbach's alpha. As data met parametric requirements Pearson's product moment correlation coefficient was used to examine the relationship between knowledge of and attitudes towards sustainability.

Findings

The findings indicate a positive correlation between knowledge of and attitudes towards sustainability. The programme of study is seen to influence sustainability knowledge, with sustainable development students scoring higher (42%) in the knowledge scale than educational research students (35%). These results compare favourably with findings from previous research, which supports infusion of sustainability content across the curriculum as a means of improving graduate sustainability literacy.

Discussion

Exploring how the programme of study impacts students' sustainability attitudes needs to be further researched as correlation does not necessarily indicate causality and factors other than academic experience might have influenced student performance. The convenience sample used for data collection does not allow transferability or generalizability of the results. Moreover, since attitudes are a latent construct that cannot be measured directly, extra qualitative data might have offered a more comprehensive insight into student responses to HE sustainability.

Conclusion

With the increase of tuition fees, student voice is gradually becoming a crucial component of universities' development and the demand for a comprehensive understanding of student sustainability needs emerges. The current study attempted to address this necessity through an investigation of postgraduates' views on HE sustainability. A suggestion put forward by this paper is

that assessment of the impact sustainability initiatives have on student experience might be more efficient if audits focus on university rather than universal sustainability issues.

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Integrative Training in Inter- and Transdisciplinary Research Settings

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Research on global change and sustainable development issues requires a special approach to ensure close cooperation between different scientific disciplines on the one hand, and between scientists and other societal actors on the other hand. Training researchers to develop the necessary skills in this context is a challenge. The purpose of the special research approach for sustainable development is to enhance *systems knowledge* (i.e. increase understanding of how current systems work), encourage participants in the research process to develop *target knowledge* (i.e. a vision of what are the 'right' things that need to be achieved), and enable them to explore *transformation knowledge* (i.e. knowledge on how to shape the transition and 'do' the right things (Pohl and Hirsch Hadorn, 2007). In the process, a reflection on the normative dimension of sustainable development is essential (Hurni & Wiesmann, 2014). This, ultimately, will enhance the societal relevance of research.

Figure 1: Societal Relevance of Research (cartoon by Karl Herweg)

What training approach is appropriate to support this type of research? Within the context of a twelve-year international research programme addressing global change and sustainable development issues, we experimented with different ways of conducting 'integrative training', i.e. training that integrates students from different scientific disciplines, researchers and practitioners, and different cultures in academic training. We started in 2002 with a very conventional format, where each discipline offered one-time lectures on the topics it found particularly important within the context of the specific research projects that had been designed at the time. The result was a very fragmented two-week course with a set of separate field excursions to illustrate selected research issues in each of the separate projects. Over the years, the research partners agreed to developing a more integrative training approach, under the lead of the management centre, and to

try and offer PhD candidates a more consistent approach to interdisciplinary and transdisciplinary work.

The core of this integrative training concept is now a case-study-based learning approach, implemented during an annual ten-day summer school somewhere in one of our partner countries in the global South, during which our doctoral students design a common transdisciplinary research strategy (Herweg, *et al*, 2012). During the summer school, participants choose to join a group based on their interest in an *issue* rather than in a specific disciplinary research question, and they go through the process of becoming an interdisciplinary group with the intention of conducting societally relevant research. At the beginning of the summer school, they all attend half- or one-day seminars on conceptual, thematic, and methodological issues, with inputs from senior trainers selected on the basis of their ability to communicate matters in an academically sound and consistent but broadly understandable way. Interdisciplinary groups are formed, followed by a half-day introduction by local researchers to a broad context of real-world problems and potentials. This socioeconomic, ecological, cultural, and political context constitutes the milieu within which a two- to three-day fieldwork module then takes place. Each group is given a clear set of tasks and instructions to prepare for the field trips; they are asked to determine adequate procedures for achieving the very general objectives they are given, and to decide who will play what role during the field trips. Their work is self-organized from this point. Senior researchers are available on demand at all times to help them find information, understand relations between different problems they identify in their case study, explore methodological and theoretical concerns, or simply overcome a stand-still or conflict in their common work. The fieldwork simulates an exploratory survey that provides the interdisciplinary teams of participants with an opportunity to interact with several non-academic actors. Each group is asked to identify what kind of knowledge they will need to address at what stage of their fictive research project, and what strategies they will need to elaborate to co-produce this societally relevant knowledge.

This setting and corresponding didactic approach provides a space for learning in which participants must cross epistemological and other borders. Over the years we have observed how these young researchers have to go through the experience of acknowledging that the definitional power they have gained through their disciplinary training can in fact be a barrier in their attempt to conduct interdisciplinary (and transdisciplinary) research. Confronted with the inevitable academic divide between the North and the South, Northern students learn how to adopt a more humble attitude for communicating in a productive way with Southern students. The groups always go through ups and downs, with moments of elation when they succeed in finding a common language and conceptualization of their research issues, and when each individual manages to integrate what they have learned before into this new conceptualization in a way that is productive for the whole group. Importantly, the senior trainers have proven to be most successful in guiding the group work when they themselves have shed the attributes of power they have garnered as part of their academic career: by becoming supportive coaches who do not know much more than the students, rather than being seniors and professors, they gain participants' trust and become models of what each participant must be as well: someone who knows a great deal and yet knows nothing at all and has everything to learn from others. With this preparation, encounters with non-academic stakeholders in the field are more fruitful.

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Starting a New Conversation between Enterprise Education and Sustainability Education

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Enterprise and entrepreneurial thinking have pivotal roles to play in the shift towards a sustainable future. Enterprise and sustainability, and the two 'educations' that promote them (Enterprise Education *EE* and Education for Sustainable Development *ESD*), have shared similar trajectories in Higher Education over recent years, edging their way in from the margins to reach more validated positions within mainstream agendas. The two fields share many similar characteristics: both provoke debates over their 'definitions' and both have suffered from a bolt-on approach where regular learning activities have been 'retrofit' with an element of sustainability or enterprise. Both are 'future-facing' and share similar pedagogical approaches to this end - systemic thinking, experiential and active learning, participatory approaches, and analytical problem-solving. Yet, the two fields have remained largely bound to their respective camps from where, until very recently, they have spied the other with a degree of mutual suspicion. A new research partnership between the Centre for Sustainable Futures and the Futures Entrepreneurship Centre aims to bring these two educational agendas into closer conversation.

The 18-month research project '*Different Languages, Shared Goals? Exploring the Potential for Merged Pedagogies in Enterprise Education and Sustainability Education*' (funded by PedRIO, Plymouth University) aims to identify and examine the synergies between Enterprise Education (EE) and Sustainability Education (ESD) and to evaluate the potential for a merged pedagogical approach, critically informed by best practice in both fields. It starts from the premise that it is becoming vital for future business leaders and entrepreneurs to understand and work with sustainability principles, enabling them to tackle the most pressing environmental and social challenges in the 21st century, and mitigate the risk associated with an unsustainable and unstable society. Equally, we recognise that future sustainability leaders and change agents require the entrepreneurial mind-set and skills necessary to bring about rapid change. The project employs a variety of methods including the mapping of the literatures in both educational fields, surveys to educators delivering EE and ESD programmes both nationally and internationally, semi-structured interviews of thought leaders in each field, and participant observation in pedagogical contexts in both fields to enhance shared learning within the research team. A mapping exercise of both sets of literature has indicated eight points of synergy that suggest that future dialogue between the two might yield valuable outcomes. These points are outlined in brief here:

- Both EE and ESD are **intimately connected to societal outcomes -** of macro-economic growth and prosperity for EE, and sustainability and social justice for ESD - which drive their rationale. Such outcomes are, of course, only measurable through longitudinal studies, across life stages and employment contexts, which are rare to deliver in educational research for obvious reasons. The long-term success of EE and ESD interventions is problematic to quantify, therefore, presenting a challenge for proponents of both educations to argue the case for further investment based on evidence of 'what-works'.
- Both educations play widely acknowledged roles in equipping the next generation of graduates with the **knowledge, skills, and attitudes** necessary to effect change within

an uncertain and risky future, and both seek to develop key graduate attributes that explicitly address the pervasive 'challenges' of the 21st century (Boyles, 2012). The development of innovative and flexible pedagogies that push the boundaries of current educational practice in Higher Education (HE), and nurture these skills and competences, will be imperative in the transition to a more sustainable future.

- In relation to the point above, both EE and ESD share a **prevailing instrumental perspective**, which indicates that students can 'acquire' competences and knowledge and will change their behaviour as a result. In EE, for example, it is envisaged that a student acquires an entrepreneurial 'mind-set' and set of competences from which they will start a business and contribute to macro-economic growth. Similarly, in ESD, it is anticipated that students gain a set of values and competences, will engage in pro-sustainable behaviours, and thus contribute towards societal and planetary sustainability.

- There are academics from both EE and ESD who propose **the overhaul of education system** (Sterling, 2001; Lautenschläger & Haase, 2011), suggesting the current educational paradigm hinders the creative growth of learners and highlighting a need to foster active learners and thinkers for the future welfare of society. This is a well-rehearsed idea in sustainability, where it is argued that sustainability can no longer be viewed as a 'bolt-on' topic, but as presenting a radical opportunity to rethink education in its broadest sense. Both educations share the concept of Education *about, for,* and *as* enterprise and sustainability.

- EE and ESD both experience a **lack of consensus** around the definitions of 'sustainability' and 'enterprise' or 'entrepreneurialism' and, therefore, over what should constitute the overarching purpose, content, objectives, and pedagogy of their education.

- Following on from this point, the literatures of both EE and ESD still appear to place heavy **emphasis on knowledge-based education** and on the effective delivery of the more readily teachable components such as business structures and policy, principles of marketing, business plans, and case study analysis. This is often at the expense of skill and attribute acquisition, and the more elusive affective qualities of creativity and innovation, confidence for risk-taking and action, the 'mindset' of entrepreneurialism, and the values and ethics underpinning sustainability. Consequently, there is far less emphasis on the **pedagogies in both EE ad ESD** and less corresponding research.

- There is an understanding in each field that **teachers need to 'walk the talk'** – in EE, teachers often have experience as entrepreneurs or business owners, and those who teach ESD must be demonstrably 'sustainable' (QAA, 2014). In addition, the genealogy of each 'education' is driven by experienced individuals with life experience in each area with associated values, ethics, beliefs, and commitments underlying each. Entrepreneurs and sustainability change agents have life trajectories or 'storied identities' (Hytti, 2003), although the theory of identity is more developed in Entrepreneurship Education.

- Finally, there is a **shared ontological perspective on the nature of the world** as constructed, complex, and uncertain. Both entrepreneurship and sustainability educators grapple with the challenge of providing an education that prepares the student for this perspective on the world and a sense of agency to work within it?

Next steps

Despite this common ground, it is surprising that there has been very little dialogue between the two fields and little understanding of how entrepreneurial skills might be valuable to, and harnessed by,

sustainability practitioners. It is clear from speaking with both sustainability and entrepreneurship educators that the distinct 'languages' of both fields are often in tension and this might hint at why conversation has been limited until recently. How the 'languages' (and speakers) of each field might be brought into meaningful and productive dialogue remains an important question. What, and how, might sustainability educators learn from those well-versed in entrepreneurship, and vice versa? How might educators within the CSF and Futures' communities of practice bring the two fields together more explicitly and purposefully within Plymouth University? This research continues to address these questions and, through seeking closer alignment between the twin agendas of sustainability and enterprise, has the potential to inform and enrich the delivery of transformative learning opportunities for students at Plymouth University.

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