



SUSTAINABILITY IN HIGHER EDUCATION

CHALLENGES AND OPPORTUNITIES

CONFERENCE PROCEEDINGS

Canterbury Christ Church University, July 2016





Sustainability in Higher Education: Challenges & Opportunities

CONFERENCE PROCEEDINGS

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Foreword

It was a great privilege for Canterbury Christ Church University to hold the second Sustainability in Higher Education Conference. The conference was a great success in terms of the quality and content of the presentations and the ideas exchanged. The opening, in the grounds of St Augustine's Abbey, provided an inspirational start which infused the atmosphere and spirit of the conference.

These proceedings describe the rich and wide ranging nature of the presentations. The presentations and workshops required the active engagement of participants who needed little encouragement. It was hoped that the conference would lead people to feel empowered and invigorated to turn the ideas and suggested projects into action in their own institutions.

These conference proceedings have been produced to record the content and to further inspire the participants and other readers to ensuring that Higher Education Institutions are leading the way in sustainability.

Tony Lavender
Pro Vice-Chancellor
(Research and Knowledge Exchange)

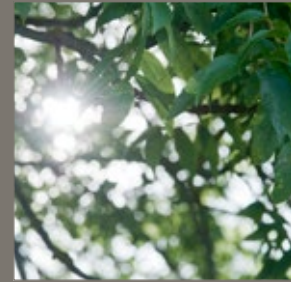
The CATALYST conference series

Advancing Higher Education for Sustainability

Conceived by Canterbury Christ Church University (CCCU) in conjunction with University of Plymouth, this conference marks the second of the CATALYST Conference Series focusing on Sustainability in Higher Education (SHE). The Global Action Programme for Education for Sustainable Development (ESD) following on from the UN Decade of ESD continues to highlight the key role education, and in particular Higher Education, has to play.

The ambition of this conference series is to provide a common learning space. This aims to be 'catalytic' in spirit; offering creative, deliberative and dialogic opportunities to participants. The conference will provide a range of interactive spaces making use of creative arts and presentation formats including paper presentation, interactive workshops and informal showcases.

It also aims to be fully inclusive both within HE (bringing together academic and professional services staff and students) and to partners beyond the sector to bring fresh and challenging perspectives. The hope is that it will provide an energising catalyst for all participants and help to facilitate future collaborations in the spirit of partnership working.



Heritage, Hops & Harmony Pre-conference social



On 7th July 2016 Canterbury Christ Church University (CCCU) hosted the second in the CATALYST conference series developed in collaboration with Plymouth University to explore Sustainability in Higher Education. Attracting 120 delegates from across CCCU and within the HE sector more generally, the conference provided an opportunity to showcase CCCU and its distinctive approach to embedding sustainability across the campus environment, the curriculum, research and knowledge exchange activity and staff and student experience.

The conference was preceded by an evening event 'Heritage, Hops and Harmony' held at St Augustine's Abbey which gave delegates an opportunity to meet informally and as one person said, "to contemplate, to laugh, to challenge, to rejoice, to be inspired." Music from Frances Knight and Stephen Bridgland and a performance from the 'Old Lone Gin Band' created a relaxed atmosphere - also helped no doubt by the availability of the University's Green Chapel Ale!

Jeremy Law's opening speech made the connection between the sites' heritage, higher education and sustainability and provided an inspiring start.

Opening Address: Heritage and Sustainability

Jeremy Law (Dean of Chapel, Canterbury Christ Church University)

The opening address was delivered in the ruins of St Augustine's Abbey which date back to the sixth century. Jeremy Law used the site and its historic connotations to draw parallels between monastic traditions which respected the environment and the modern need to live sustainability within planetary limits. This set the scene for the conference and established reference points and gave it a unique 'Canterbury' perspective.

HERITAGE

The place where we now stand – in the remains of the Crypt Chapel of the great mediaeval Abbey church – is the reason not just for the University's sense of place, but also for Canterbury's self-identity, and has contributed to what it means to be English.

In 596, the Bishop of Rome, Gregory the Great, launched an ecclesiastical experiment. He chose Augustine, Abbot of St Andrew's Monastery in Rome, and sent him with a small band of others to the 'end of the world': to place of harsh climate and a different tongue; in other words, to here! In 596, following the collapse of the western arm of the Roman Empire, and under the ensuing influence of the Jutes, Saxons and Angles, all the 'English' kingdoms were officially pagan; by 696 they were all *officially* Christian. Augustine's arrival (along with the complementary work of a number of Celtic missionaries from the north) made the difference.

Augustine arrives with a band of 40 or so on Isle of Thanet in 597. Ethelbert meets him in the open air on advice, so as not to be tricked by magical powers! Ethelbert's wife, Queen Bertha, is a Christian from the Frankish kingdom over the water (and a condition of marriage is that she stays one). Ethelbert invites Augustine and his party to Canterbury, where he sets up his mission headquarters in St Martin's Church (already place of worship from earlier in the 6th Century). The King converts in c. 601. The best evidence for this date is a letter from Gregory the Great to Ethelbert on duties of a Christian monarch. Shortly after, in c. 602, the building of this Abbey begins without the walls of the city, and by c. 604 Augustine has died. Despite the briefness of Augustine's time in England his achievements are impressive:

- Under his influence, the first code of law in the English language (modelled on Roman paradigms) is produced by King Ethelbert;
- Augustine's Abbey flourishes, and by 669, with the arrival of Theodore of Tarsus as Augustine's successor as Archbishop of Canterbury, is becoming a renowned centre for international education;
- In fact, notwithstanding the later Viking incursions, the Abbey continues to thrive until the death knell of Henry VIII's Dissolution of the Monasteries in 1538.

SUSTAINABILITY

Is sustainability the right word? It only works via a pretty sophisticated bit of applied interpretation. On the face of it, sustainability implies the prolongation of the present into the future. But there are many habits, actions, perceptions and ideologies of the present that we might not want to sustain. Where is there room for change and transformation in this word? And words matter...

Pure facts, if they exist, are meaningless. This much we have learnt from postmodernity. Mathematically, isn't space just endless, uniform extension: one metre exactly the same as another. Isn't all space infinitely reusable. This space where the Abbey now stands was once the seabed of a warm ocean. Yet, an abstract and objective measure of the world doesn't do justice to human experience. To come alive and be meaningful, facts need interpretation; so too does this space. You need to know that these stones from part of the Crypt Chapel of the great Medieval Abbey before you can fully appreciate them; and knowing this changes one's perception of them. Reality shifts with interpretation (just think of the non-objective value of something of so-called sentimental value). Yet, not all interpretations are equally successful (these remains are really what's left of a medieval rocket launching pad). To insist on the inescapability of interpretation is not to open the door to relativism gone rampant. But neither is the meaning of the world (of anything) entirely stable; it depends on how it is viewed and interpreted. There is no reality without interpretation – because without interpretation nothing can be perceived!

While the 'environmental crisis' manifests itself in the environment – pollution, desertification, climate change, soil erosion...and in human society poverty, disease, early death - it is not itself a crisis of the environment. It is nothing less than a crisis of human values, a crisis of human interpretation. Thus how we see and imagine things really matters.

HERITAGE AND SUSTAINABILITY

This Abbey ran according to the Benedictine Rule (c.530) – a map of how to live. It contained five key principles: prayer, work, study, hospitality and renewal. Work means, mainly, working the land – living in cooperation with its **sustaining** (self-sufficiency), **healing** and **renewing** (in part via its beauty) properties. St Francis' community of creation (brother sun, sister moon) is bolder; but it would have been entirely recognisable.

The Benedictine community here would not have recognised the word 'sustainability'. But they used their own word beginning with 's': stability. Stability concerns commitment to a particular place and location where one may well remain for the rest of one's life. In this way, then, stability means seeking the flourishing of where one is, not moving on to attempt to cover one's mistakes, or of seeking an elusive utopia elsewhere. *Stability means so living in a place today so that one can still live in that place tomorrow!*

For the foreseeable future earth is the only home we have; stability is what we need! Stability stands against the 'throw-away culture', or of always seeking the next thrill, or of the 'use it up and move on' mentality.

The Monastic community here survived from 602 – 1538 (with minor interruptions courtesy of the Vikings), that is for 936 years. And that's not bad! It seems then that there's a *wrong kind of change which both stability and sustainability are directing our attention towards*: unthinking notions of progress (in the case of the latter) and an unreflective privileging of novelty (in the case of the former).

After the Dissolution of the Monasteries, this land eventually fell into private hands: by the start of the 17th Century those of Lord Wootton. In 1615 he employed John Tradescant (the elder) 'father of English gardening' and an enthusiastic plant collector to begin work on the development of ornamental gardens and mazes at St Augustine's Abbey. This too is part of the heritage of this place. So how does our heritage affect us?

'**Bioiversity**' (from biodiversity and university) is our response to the sense of place that our campus engenders, linked to a 1400-year history of 'knowledge, community, and stewardship'. It is a powerful interpretive lens through which to view our relationship to questions of the desirable future while drawing upon the inspiration of the past. Essentially it involves the creation of an urban biodiversity hub alongside a set of key interpretive markers:

- Planting species and rare varieties that reflect the monastic and wider heritage of Kent;
- The Tangled Bank, a wildflower area (with homage to Charles Darwin);
- A Jubilee Orchard: Kentish apples (includes Beauty of Kent (Victorian)& Cat's Head (11th C) and cobnuts (Kentish Cob (Victorian)));
- An Olive Grove;
- A Physic (medicinal) Garden;
- A Taxonomic Garden (proposed);
- Mural ecology;
- Edible (and drinkable) campus;
- Becoming Heritage Seed Guardians;
- The enhancement of a sense of community and individual well-being.

In all these ways, we hope, our campus becomes a living classroom.

So, if you still have some Green Chapel Ale left (a conspicuously enjoyable product of the Edible Campus project), raise a glass to this place of rich heritage, and the questions, perspectives and challenges to us which are still its gift!

Conference Programme

TIME	ACTIVITY
9.00 - 9.30am	Registration and refreshments
9.30 - 9.40am	Welcome: Prof Tony Lavender Introduction to the conference
9.40 - 10.00am	A Framework for Sustainability Dr Peter Rands
10.00 - 10.30am	Speaker: Martin Wright 'Engaging with Sustainability'
10.40 - 11.50am	Parallel sessions 1. 10.40 - 11.00 2. 11.05 - 11.25 3. 11.30 - 11.50
12.00 - 12.45pm	Lunch and opportunity to browse Whole Earth? exhibition
12.45 - 1.30pm	Interactive workshops/tours
1.35 - 2.45pm	Parallel sessions 4. 1.35-1.55 5. 2.00 - 2.20 6. 2.25 - 2.45
2.45 - 3.30pm	ESD Sustainability Showcase Café with afternoon tea
3.30 - 4.00pm	Panel Discussion
4.00pm	Closing remarks: Dr Paul Warwick University of Plymouth

The CCCU sustainability framework introduced by Peter then provided a structure for the rest of the day. Martin Wright, a communication consultant, provided the keynote presentation and tackled the controversial issue of 'engaging with sustainability.'

In this he challenged conventional approaches based on invoking fear and guilt and argued the case for more good news stories and positivity.

The rest of the day included thirty formal paper presentations which were offered as four themed parallel sessions.

1. The big ideas: exploring philosophical and conceptual understandings (p.19)
2. Strategic approaches to sustainability (p.26)
3. Advocacy, activism and transformation (p.32)
4. Education for Sustainable Development (ESD) in practice (p.39)

A choice of interactive workshops and a campus tour were offered after lunch and during the afternoon an informal Education for Sustainable Development (ESD) showcase was held in the University's Chapel and included ten exhibits and included the unveiling of a tapestry developed by staff and students in response to the Whole Earth exhibition.

Abstracts from the contributors are included here in either an abbreviated or extended format together with photos taken during the day by Jade Barker, a CCCU Photography graduate.

Please note that abstracts and all content are the original work of the cited authors and are not the views of Canterbury Christ Church University.

The conference itself started with a welcome from Tony Lavender (Pro Vice Chancellor with responsibility for sustainability) and was followed by a presentation from Peter Rands, Director of Sustainability at CCCU.

Strategic Intent in a Bottle

Peter Rands (Director of Sustainability, Canterbury Christ Church University)

For Canterbury Christ Church University, this conference marks a significant milestone in our journey towards sustainability. It was ten years ago that we setup our sustainable development committee and published our first environmental policy. Within 18 months of my appointment in 2010, the first with a role for sustainability at the University, I led a team on the first Green Academy. Some years before, an optional 20 credit module on 'Environment and Society' had been introduced as a University-wide 'starred module'. It failed to attract any interest!

At the Green Academy we reflected on this and concluded that it had been symptomatic of wider issues. These are clearly articulated in the introduction to 'Sustainability Education' (Jones, Selby & Sterling 2010), as the 3 principle inhibitors:

1. Academic staff, jealously guarding their academic freedom, see education for sustainable development as an imposition, something not commensurate with their discipline or student expectations of their discipline.
2. Academic staff, both converts and contrarians, consider themselves as lacking the knowledge and skills, expertise and experience to implement sustainability-related teaching and learning.
3. Academics and administrators hold that the ethos of the institution is not favourable for successful integration of sustainability across teaching and learning programmes of the institution.

By 2011, the University had moved on; a new vice chancellor was having a strong impact on inhibitor 3; inhibitor 1 was still evident, but there was definitely a ground swell of interest and concern in sustainability; inhibitor 2, in many ways seemed the most significant and also the most productive aspect to tackle. Thus, our focus moved specifically to the enhancement of knowledge and skills, expertise and experience for Education for Sustainable Futures (ESF), and we chose frame sustainability around the concept of 'Wicked Problems'.

And so, the Futures Initiative was borne! A simple idea that offered seed funding for curriculum development projects. Projects could involve formal, informal and campus (subliminal) curriculum, which impacted on students and the formal curriculum on the longer term. The money could be spent on anything from hospitality and external speakers, to travel, conferences or books. What was fundamental to the principle was that projects outcomes were less relevant than the experience gained by those involved; this is simply an action learning process, in which individual transformation was the prize!

After 5 years of the Futures Initiative and more than 90 funded projects, a clear transformation can be seen. The secret of its success in the early years was that it gave permission to individuals to do something they were passionate

about, but didn't have the resource or time allowance to follow. This became the strawberry patch principle, in which, for a short period of time the clutter of weeds (other priorities) around an idea were cleared to allow the strawberry plant to flourish! For the Sustainability Team, the first 3 years was evolutionary, but resulted in the development of a clearly articulated approach; one that aligns with the heart of Christ Church and its academic strategies (Figure 1).

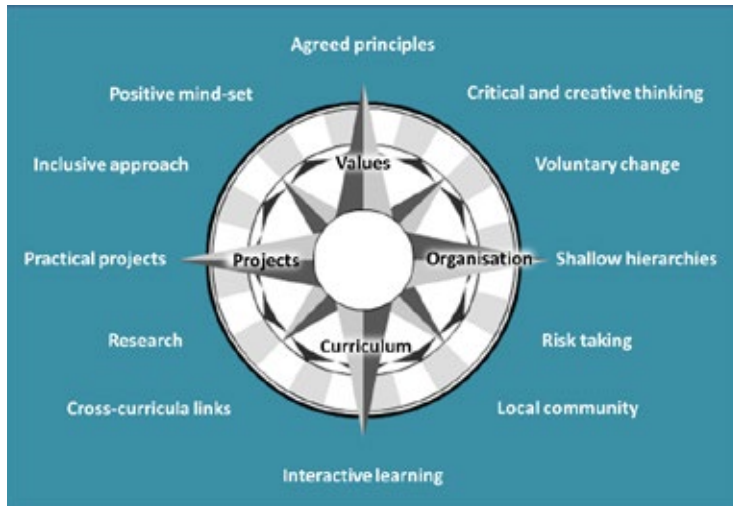


Figure 1: The Futures Initiative Approach

Whilst successful grass roots developments are critical to cultural and transformational change, sooner or later this needs to be matched by institutional strategy. Organisational alignment came in the shape of a timely review of institutional strategy and the creation of a new Strategic Framework.

The Futures Initiative clearly influenced the strategy greatly, as well as supporting a restatement of the University's Mission and Values statements. Sustainability was articulated as a key cross-cutting theme and in 2015 a Framework for Sustainability was approved, which presents 4 theme areas in which sustainability will be developed (Figure 2).



Figure 2: The CCCU Framework for Sustainability

However, whilst it is neat to cut up the sustainability cake, to disaggregate a wicked problem, it presents a simplistic model that also has a sense of choice and optionality. But much of what we choose to do in order to engage students and staff in sustainability revolves around discrete projects. These frequently cross boundaries, and provide opportunities to explore many different facets of a problem or situation.

Our Canterbury Campus sits on the site of the outer precincts of St Augustine's Abbey, a place of learning for more than 1400 years! Whilst much of the site is a Scheduled Ancient Monument, and we are unable to do without consent, an inspirational section of archaeology stands above ground; that of the end wall of the ancient brew / bake house (Figure 3).



Figure 3: The Brew/Bake House

This recently became the catalyst for our Beer, Bread & Honey project. We planted heritage varieties of locally grown hops, which students tend and harvest; yeast is isolated from the site to provide student research opportunities; marketing materials and bottle labels are developed by students from the Media and Communications Programme; and the beer is brewed in partnership with the Canterbury Brewers (Figure 4).

This project crosses the boundaries of all 4 themes within our Framework for Sustainability, and demonstrates how small discrete projects frequently respond to a wide range of agendas:

STUDENT AND STAFF EXPERIENCE

- Brought students and staff together to work on a project with a sense of place and facilitated connection with each other and the environment

EDUCATION FOR SUSTAINABILITY

- Provided a work experience opportunity linked to the Media and Communications programme
- Provided 3rd year individual study project on disease control in hop gardens

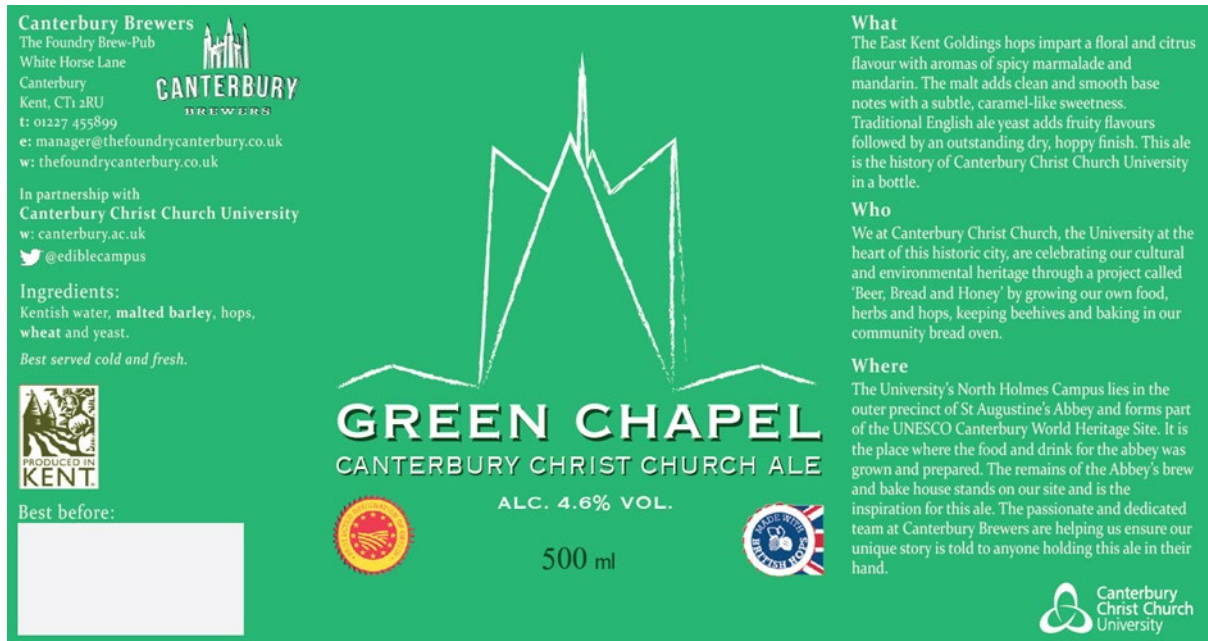


Figure 4: CCCUGreen Chapel Ale label

RESEARCH AND KNOWLEDGE EXCHANGE

- Provided opportunity for student research into yeast isolation and culture, which will enhance the product in the future and potential for direct link to the Abbey site
- Provided opportunity for partnership development with local businesses and resultant knowledge exchange activity

OUR ENVIRONMENT

- Enhanced the Campus grounds and biodiversity, creating a further pocket habitat

Using our sense of place in our Historic City has been inspirational! We call it: STRATEGIC INTENT IN A BOTTLE!

1 The big ideas: exploring philosophical and conceptual understandings

1.1 Ideology, and the language of Sustainability

Dick Vane-Wright (Visiting Senior Research Fellow and Ecology Research Group, School of Human and Life Sciences, Canterbury Christ Church University, Canterbury CT1 1QU. Also DICE, University of Kent, and Life Sciences, Natural History Museum, London)

Contact: dickvanewright@btinternet.com

Ever since Paul Ehrlich's dire warning of the Population Bomb, and his advocacy of the Zero Population Growth campaign, those in pursuit of the Sustainability agenda have fought a mostly losing battle with conventional economic models based on an imperative of growth. Two things have to change if Sustainability, and its necessary concomitant of steady-state-economics, is ever to win the day: a major shift in public awareness based on the principles of Ecological Literacy, and a change in our language to present Sustainability not as protest, but as fundamental and desirable ideology on which to base political decisions. As has been said, "ideologies compete over the control of political language as well as competing over plans for public policy". At its simplest, it is necessary to persuade the majority that care is more enjoyable than exploitation. This brief talk will consider how the language of Sustainability needs to change if it is to succeed.

In terms of the conference themes, this brief academic paper relates to:

- challenges of engaging with sustainability [within a Higher Education context]
- futures thinking

For extended abstract see appendix 1

1.2 The Big Picture: Why higher education must engage critically with the global as well as local politics of the environment

Amelia Hadfield (Reader in European Foreign Affairs, Politics and International Relations, School of Psychology, Politics and Sociology, Canterbury Christ Church University)

Peter Vujakovic (Professor of Geography, School of Human and Life Sciences, Canterbury Christ Church University)

Contact: amelia.hadfield@canterbury.ac.uk

Both politics and geography critically examine substantive topics related to sustainability and development, both contested terms. From the sheer range in size, resource opportunity, and interdependence of states and regions, to the complexity of demographics and the multi-layered composition of governments and governance structures, our role as educators is to grapple with the sheer spread of the topic that we teach. Our research paper examines (1) the nature of ‘grand discourses’ at work in the disciplines of geography and politics; (2) teaching and learning methods by which students can feel encouraged to engaged and familiar with both ‘big ideas’ and ‘supra-structures; (3) how the concept of ‘political geography’ may operate helpfully to pull together students from a wide range of disciplines (geography, politics, IR, law, IPE, sociology and psychology) and give them a critical foundation by which to get a handle on big concepts, spaces and powers. Keying into the ‘global citizenship’ dimension of sustainability, we aim to examine the pedagogic implications of teaching the large, possibly alienating and distancing topics inherent in political geography in a way that encourages students to identify, deconstruct and ultimately and identify with these same topics. A possible case study here could include the way in which Arctic states use UNCLOS to close the region to external interference, demonstrating that students need to understand how big picture politics works, but can also be manipulated.

For extended abstract see Appendix 2

1.3 Rewilding Universities: finding a place for debate, dissent and difficult knowledge

Alan Bainbridge (Senior Lecturer, Canterbury Christ Church University)

Contact: alan.bainbridge@canterbury.ac.uk

Natural rewilding engages with the re-introduction of keystone species with the intention of restoring and protecting natural resources. Such projects are said to increase the complexity of ecological systems and consequently their sustainability. This presentation will argue that futures thinking is at risk unless we take steps to rewild academic spaces: these will be spaces where ‘keystones’ of knowledge and thinking processes are re-introduced and will ultimately encourage learners to move from compliancy to positions where they can debate, dissent and be prepared to engage with difficult knowledge.

I shall discuss this in the context that human social and cultural evolution has out-paced neurological development and as a consequence the human experience has become separated from the ‘natural’ environment (Howard-Jones, 2015). This ‘untenable violation’ also provides insight into understanding adult learning. I shall draw on the work of Gert Biesta (2015, 2001, 1999) and suggest that learning is not (solely) about adaptation but rather as a response to the ‘other’. It is about the process of ‘coming into presence’ (Biesta, 1999, 2001) which requires individuals to consider the interplay between the social and intersubjective world and to respond in a manner that does not dominate or control. It is this response to the other that defines our identity and our responsibility towards the other. One facet of modern education systems has been to separate human learning from wider social, cultural and natural worlds and ultimately from intimate and supportive ‘holding environments’. I shall argue that education process that are capable of ‘holding’ the anxiety of learners will be ones where difficult knowledge can be encountered and thought about. It is here that ‘wild futures thinking’, or real learning, can take the place of simplistic notions of ‘student engagement’

1.4 Embedding Education for Sustainable Development through the Well-being of Future Generations (Wales)

Carolyn Hayles Academic Lead, the Institute of Sustainable Practice, Innovation and Resource Effectiveness (INSPIRE), University of Wales Trinity Saint David (UWTSD)

Contact: carolyn.hayles@uwtsd.ac.uk

The Well-being of Future Generations (Wales) Act 2015, the first of its kind in the World, where the well-being of future generations is considered at the heart of government decision making, was brought into Law in Wales in April 2016. In delivering the Act, the Welsh Government has identified seven Development Goals, which align themselves with the principles of Sustainable Development, namely: A Prosperous Wales; A Resilient Wales; A Healthier Wales; A More Equal Wales; A Wales of Cohesive Communities; A Wales of Vibrant Culture and Thriving Welsh Language; and A Globally Responsible Wales.

The University of Wales Trinity Saint David (UWTSD) has a distinct National profile and its strong presence in South West Wales with campuses in Swansea, Lampeter and Carmarthen, alongside its local FE partnerships, makes it an important voice in the region. Many students are locals, living and working in the region. Importantly a majority of these also intend to live and work in the region on completion of their studies, contributing to its economy, environment and culture. As a result, it is critical UWTSD equips its students with a comprehensive understanding of the Well-being of Future Generations (Wales) Act and how it relates to their chosen profession. They can achieve this if they are given an opportunity to gain knowledge, skills and practical experiences that can be applied to the delivery of the Act in their chosen professions.

To that end the University is changing the way it validates its degree programmes to consider the inclusion of teaching and learning activities pertaining to the Act and its seven Development Goals. This paper provides an examination of the validation process, its assessment of sustainability content in the curriculum and its original approach to embedding teaching and learning activities relating to the Well-being of Future Generations (Wales) Act.

1.5 Meeting the Sustainable Development Goals: A baseline study of the contribution of UWE, Bristol

Georgina Gough (Senior Lecturer in Education for Sustainable Development, University of the West of England, Bristol)

Jim Longhurst (Assistant Vice Chancellor for Environment and Sustainability, University of the West of England, Bristol)

Contact: Georgina.Gough@uwe.ac.uk

On September 25th 2015 at the General Assembly of the United Nations, 193 nations adopted a set of goals to end poverty, protect the planet, and ensure prosperity for all as part of a new sustainable development agenda (1). These goals build on the Millennium Development Goals and are intended to complete what the MDGs did not achieve. The Sustainable Development Goals (SDGs) provide an agenda for sustainable development that will stimulate collective action to address areas of critical importance for humanity and the planet.

The University of the West of England, Bristol welcomes the clarity and universality of the SDGs and recognises the urgency attached to their implementation. Education is key to many of the goals and their subordinate targets. In reflecting on how it contributes to the achievement of the SDGs the university has examined its portfolio of programmes of study, its public and community engagements and its research activities. In so doing it has created a baseline assessment of the contribution of its arts, creative industries, education, health, science, business, law, environment and technology disciplines to meeting the SDGs.

This paper will discuss the method used to identify the baseline position, consider how this knowledge this will inform the development of a process to track the ongoing contribution and consider how this might inform both curriculum development and research activities within the institution.

(1) Resolution Adopted by the General Assembly of the United Nations.

Available at <https://sustainabledevelopment.un.org/post2015/transformingourworld>

For extended abstract see Appendix 3

1.6 Education for Sustainable Development: Exploring Tensions, Paradoxes and Denial

Stephen Scoffham (Visiting Reader in Sustainability and Education, Canterbury Christ Church)

Email: s.scoffham848@canterbury.ac.uk

There is now ample evidence that sustainability issues are set to dominate life in the twenty first century, yet many students appear reluctant to acknowledge the challenges that lie ahead. This paper considers some of the barriers and inhibitors which affect the successful implementation of new modules and teaching initiatives on sustainability in a UK university. It focuses especially on the challenges of negotiating contested and contingent knowledge, the disabling effects of denial and the need for new narratives about our relationship to the natural world. The paper concludes that sustainability education presents with universities with particular challenges at an institutional, operational and academic level. Some key arguments are summarised in the extended abstract below.

Keywords: barriers, indoctrination, narratives, sustainability, values, wicked problems

For extended abstract see Appendix 4

2 Strategic approaches to sustainability

2.1 Rethinking aims: The responsible university

Chris Wilmore (Professor of Sustainability and Law, University of Bristol)

Contact: chris.willmore@bristol.ac.uk

Future Universities will need to engage values as well as knowledge, link theory and practice and develop new forms of communication including narrative expression in students to enable them to live sustainable lives and contribute to the task of sustainability. If Universities are to ensure their graduates are informed and active participants in change, this poses challenges. Bristol University has embarked upon an ambitious project to link formal, informal and subliminal curricula to deliver this change. The experience of developing this project raises questions about the differences between permissive, experimentalist approaches to institutional change and mandatory approaches and the role of change resistors.

Keywords: future university, values, narrative, theory/practice, Bristol Futures, experimentalist governance

For extended abstract see Appendix 5

2.2 Do 'Subject Silos' mean that Sustainability will always be a Cinderella subject in Higher Education and education in general?

David Dixon (Freelance Education Leadership Consultant)

Contact: daviddixon649@gmail.com

Despite the need for a more wide-reaching understanding of sustainability, it appears that the Neoliberal political and Neo-Classical economic narratives leave little room for it in Higher Education and education in general. This paper aims to describe why this is the case and highlights what needs to change in order to bring sustainability into mainstream paradigms. Innovative thinking and practice is infinitesimal if one considers the planetary damage which continues to escalate at an exponential rate. Some scientists believe that we are entering a new geological epoch called the Anthropocene, caused by human changes to the biosphere and lithosphere. Climate change is only one aspect of this and it does not take into account the social and cultural damage being inflicted as a global economy continues to homogenise and commodify every aspect of life. Mass extinctions are already underway and yet the scale of action required to deal with this is sadly lacking. What sort of leadership is required to alleviate this situation? Should we just mitigate, or should we actively alleviate and reverse damage to the environmental and social fabric of our world? We need more debate in HE as to why, despite the challenges we face, the Growth model still predominates, with much of the HE sector being oblivious to the consequences of it within narrow subject silos, hidebound by its control or complicit in its promotion.

Keywords: Anthropocene, Change, Cross-curricular, Earth-Overshoot, Lobbyists, Market-economy, Multi-disciplinary, Neoliberal

For extended abstract see Appendix 6

2.3 More Than Scaling Up': A Critical Inquiry into Sustainability Competencies

Paul Warwick (Centre for Sustainable Futures Lead, University of Plymouth)

Stephen Sterling (Professor of Sustainability Education, Centre for Sustainable Futures, University of Plymouth)

Contact: paul.warwick@plymouth.ac.uk

This paper will draw from a collaborative research project between Plymouth University (UK), the University of Vechta (Germany), and the Western Michigan University (USA). The project takes as its starting point the UNESCO DESD Final Report's call that in HE, 'more than scaling up of good practice' and 'greater attention to systemic approaches to curriculum change and capacity building for leaders will be needed' (UNESCO 2014: 31). The project is informed by this challenge, and by the transformation of educational policy and practice necessary to meet the heightened expectations of education in an increasingly volatile and challenging world – as reflected in the context of the UN's ambitious Sustainable Development Goals (SDGs) and the response of UNESCO's Global Action Programme (GAP).

In this paper we touch on four related project questions:

1. Is the current debate on sustainability competencies sufficient and, if not, what additional key questions persist and how can these be best addressed systematically on national and local scales, while still retaining a global perspective?
2. How far does HE policy accommodate and reflect the need for sustainability competencies and how can capacity for teaching for competencies be built and supported through new policies?
3. How can curricula and pedagogy be better aligned to facilitate the building of sustainability competencies in learners and teachers?
4. What effect and influence do education for sustainability competencies have in terms of facilitating transformative social learning, supporting systems structure change, and cultivating informed responsibility?

Drawing from the lessons learnt within this research project we will share some of the current resources and approaches being developed at Plymouth. This includes a graduate competency framework that integrates the four dimensions of global citizenship, social justice, ethics and wellbeing, environmental stewardship and futures thinking.

2.4 Benchmarking Sustainability Research: A methodology for reviewing sustainable development research in Universities

Victoria Hands (Director of Sustainability Hub, Kingston University)

Richard Anderson (Environmental consultant, Sustainability Hub, Kingston University)

Email: v.hands@kingston.ac.uk and richard.anderson@kingston.ac.uk

International frameworks (Wright, 2002), and the UK Research Councils (Research Council UK, 2014) highlight the need for Sustainable Development Research (SDR) and yet indicators to measure this are only slowly emerging (AULSF, 2009; REF 2014). This research study is a first attempt to establish a practical methodology for an SDR indicator. The web profiles of 465 staff at Kingston University were analysed using content and thematic analysis to identify research relating to sustainable development, broadly defined as ‘economic, social, environmental, community, wellbeing, global and future equity’. The analysis identified evidence of external viability factors: ‘sustainability content’, ‘research impact’, and ‘knowledge transfer viability’. The methodology is intended to be replicable and promises to raise the profile of sustainable development research encouraging researchers to engage in sustainable development as an exciting discipline in its own right, contributing solutions to contemporary issues and supporting the delivery of the Sustainable Development Goals (UN 2015)

Keywords: Sustainability, Sustainable Development, Research, Benchmarking, Higher Education, Universities

2.5 ESD, forward planning and food security: some radical ideas

Howard Lee (Lecturer in Sustainable Agriculture, Hadlow College)

Will Hughes (Lecturer in Animal Management, Hadlow College)

Email: howard.lee@hadlow.ac.uk

Previously one author has published reviews of urban agriculture and likely food security (Lee, 2012), which has led to the futures thinking of an antifragile approach (Taleb, 2012) to education for sustainable development (ESD) in higher education (HE) and especially the land based sciences of horticulture and agriculture (Lee, 2015). Recent ideas by educational innovators such as Guang et al., (2014) are of interest for ESD, when striving for antifragile food security in the UK. This paper suggests some radical ideas based around Hadlow College’s ongoing HE land based teaching and its research links to local communities for communal food projects at two campuses in Hadlow and SE London.

A case study is used to demonstrate how small-scale, exploratory and collaborative food projects can help towards ESD, enhanced community health and more secure future food supplies, even in the face of an unpredictable future.

Keywords: Food security; antifragility; local; ESD; Cloud.

For extended abstract see Appendix 7

2.6 Sustainability in Higher Education Reported

Katerina Kosta (Faculty of Humanities and Social Sciences, Oxford Brookes University)

Contact: katerina.kosta-2016@brookes.ac.uk

Sustainability policies are an important integrative tool for sustainability in higher education (SHE) as they have normative and coercive powers. In 2013, following government requirement, all UK universities have a sustainability strategy, policy, plan or report publicly available on their websites. Comprehensive sustainability reporting is attempted in these plans, including provision for education, research, estates and engagement. Despite the importance of sustainability policies to the institutionalization of sustainability in higher education, few studies to date have explored the nature or content of these documents. Even less have focused on sustainability research as conceptualised within them. In the literature, research appears as a rather overlooked area with estates and operations dominating the SHE discourse. This study aims to explore university sustainability policies in the UK in order to identify how they address sustainability research in comparison to teaching, estates and engagement. The study also explores how sustainability research is conceptualized in these documents, creating a description of what constitutes SHE research. The sample consists of policies from the top thirty universities in the People and Planet University League 2015, based on the assumption that these institutions are more likely to have a comprehensive policy inclusive of references to sustainability research. Content analysis is employed for the exploration of the documents, assisted by QSR NVivo 10.

The findings indicate that research is the second most common theme in the policies, after estates and operations with references to research focusing mostly on the creation of new research centres and the sustainability impact of research. Describing what is sustainability research constitutes a challenging yet important task as delivery on sustainability is becoming the core of many EU and UK funding initiatives.

Keywords: Sustainability research, sustainability strategies, sustainability in higher education.

3 Advocacy, activism and transformation

3.1 Whole Earth? Meeting the University Challenges

Jim Longhurst (Assistant Vice Chancellor for Environment and Sustainability, University of the West of England, Bristol)

G.K. Gough, V. Harris and L.K. Howells (University of the West of England)

Email: James.Longhurst@uwe.ac.uk

Whole Earth is “a powerful exhibition of the environmental and sustainability challenges” that we face. The Hard Rain Project who curated the Whole Earth? exhibition, have invited students and universities to share their sustainability work that might underpin future security for all. Embedded in the exhibition is a series of challenges to the university sector. When UWE Bristol opened its Whole Earth? Exhibition, the President of the Students’ Union formally requested that the university respond to the University Challenges presented in the exhibition. In May 2016 UWE Bristol published its response to those challenges. The publication of a specific response to each University Challenge is a unique, sector leading initiative to demonstrate to students, staff, partners and neighbouring communities the university’s commitment to prepare its graduates with the learning and skills they will need to confront the sustainability challenges they will face in their private and professional lives. Across 19 challenges from the Arts and the Media, to Science and Technology, Politics and Teacher Training, UWE Bristol has presented detailed examples of ways in which it is preparing its students to understand the sustainability challenges and to develop the skills and knowledge they need for life in the 21st century. The report was presented to the President and Vice President of the SU in a specifically convened ceremony preceding the 2016 EAUC Annual Conference. The Response then featured in a well-attended EAUC 2016 conference workshop.

Keywords: education for sustainable development; university challenges; university – students’ union partnership

For extended abstract see Appendix 8

3.2 A 'dialogue' on teaching, learning, and transforming; does 'sustainability' change everything?

Ian Jasper (Senior Lecturer, School of Teacher Education and Development, Canterbury Christ Church University)

Liz Pichon (Senior Lecturer, School of Teacher Education and Development, Canterbury Christ Church University)

Contact: ian.jasper@canterbury.ac.uk

This paper examines the experience of a group of mature adult students who followed a module entitled 'Lifelong Learning and Sustainability' on a degree programme. The students were adult educators working in a wide variety of settings including prisons, military training establishments, colleges, the health services and social care. All of these students and their teachers considered the 'Sustainability' module to be 'transformative' but we were trying to develop a deeper understanding of what this meant. The dialogue mentioned in the title was centred on trying to elaborate this meaning and especially on the implications 'transformations' have on the students' lives beyond the degree course.

The module is unusual in that it posits the problem of 'sustainability' as an existential threat to humankind. When the module was first introduced onto the programme its inclusion was challenged. A common question we were asked and not always in a collegial manner, was 'What has sustainability got to do with Lifelong Learning?' Even today we are sometimes asked this question though never by students who have followed the module.

The idea of existential threat has a transcendent importance and in our opinion qualifies the module as 'transformative' if we apply the criteria suggested by Stephen Brookfield (2000 p.140). Brookfield argues that truly transformational learning and teaching can be said to have occurred only when:

... the learner came to a new understanding of something that caused a fundamental re-ordering of the paradigmatic assumptions she held about the idea or action concerned. (p.140)

A few learners begin the module with an understanding of sustainability similar to that of the teachers, almost all complete the module with a 'fundamental re-ordering' of their understanding of the problem. A series of structured conversations were opened in which the learners and their teachers examined the impact of the sustainability module. This paper will present what we believe emerged from this dialogue.

3.3 Business and Sustainability: A shared experience

Tan Yoke Eng (Senior Lecturer, Business School, Canterbury Christ Church University)

Contact: yoke-eng.tan@canterbury.ac.uk

One of the aims of university education is to prepare young people to be responsible citizens for the future. In the business world, the notion of sustainability is increasingly recognised as an important agenda. Both the Higher Education Funding Council (2008) and the Quality Assurance Agency (2014) acknowledge the critical role of higher education in educating socially responsible and ethically aware graduates. In line with this trend, many business schools have responded by offering sustainability related subjects and exploring pedagogical tools for engagement. Developing sustainability literacy (Stubbe 2011), shifting mindsets (Stubbs and Cocklin, 2008), developing critical thinking skills (Brookfield, 2011) and creating significant learning experiences for students (Dee Fink 2003) are just some examples of approaches which have proved successful. However, such initiatives and the concept of sustainability itself pose some difficult educational challenges for both educators and students.

This paper explores the impact of an innovative module on business and sustainability entitled Develop Sustainable Enterprises which is offered as an option to second year students in the Business School at Canterbury Christ Church University. This is the second year that the module has run and sixty-five students elected to participate. Evidence of impact has been gathered (a) using a pre and post module questionnaire; (b) through the ‘voices’ of four students who have responded to the module in different ways. Tutor reflections provide an additional viewpoint. The student contributions make this an unusual and strongly grounded presentation which will illustrate a shared experience between students and tutor on a learning journey.

For extended abstract see Appendix 9

3.4 I feel like I know a little of everything and nothing in particular': The experiences of students studying interdisciplinary sustainability degrees'

Zoe Robinson and Sophie Bessant

(School of Physical and Geographical Sciences, Keele University)

Contact: z.p.robinson@keele.ac.uk

Our educational system encourages disciplinary silos, and despite the acknowledgement of the need for interdisciplinary working to address sustainability, there are few attempts to develop the interdisciplinary skills and attitudes of undergraduate students - society's next researchers and leaders. There are however, an increasing number of undergraduate sustainability-focussed degree programmes bringing together different disciplines in the context of tackling sustainability issues. This research presents the experiences of undergraduate students undertaking interdisciplinary sustainability degrees, drawing on data from several different institutions in the form of interviews, focus groups, questionnaire data, and reflective learning journals completed by students. The research presents students' expectations and experiences of their degree studies, and what they feel are the implications for their future employability. Initially many students had relatively narrow views of what should be covered in a sustainability course, and struggled to see the relevance of certain aspects of their programme, only coming to value their relevance later in their degree. There were also conflicting views about the appropriate depth with which to cover different topics, and a sense from several students that discipline expertise was more valuable than breadth. This paper concludes by reflecting on the role of the generalist vs specialist within our society, and the role of our educational systems in developing graduates with the attributes to tackle the interdisciplinary sustainability challenges that we face.

3.5 Best Practice Stakeholder Participation - keys to success

Diana Pound (Environmental Consultant, Dialogue Matters)

Contact: diana.pound@dialoguematters.co.uk

Participation in environmental projects is now taken as routine. However, whilst most stakeholder participation activities are carried out with the best of intentions, they often fall well short of good practice and fail to deliver on their promise. Environmentalists know you shouldn't mess with the environment without knowing the risks, but too often forget that the social sphere is equally vulnerable and interventions also require skill, planning and sensitive delivery. Getting it wrong can cause long term damage to potential collaboration, miss out on resources for positive action - or worst of all - trigger a negative back lash.

This presentation will explore proven keys to success. These include: designing a cohesive process with clear architecture and functional links between different elements, knowing the difference between inclusion and deliberation, recognising and managing adversarial negotiation behaviour, framing questions and tasks in a constructive way, ensuring there are clear roles and responsibilities within the process, maximising stakeholder influence and where feasible shifting to a co-production approach.

The presentation will explain these key elements for good practice and highlight the benefits they bring.

3.6 Student Capital: The role of students in city transformation

*William Clayton, Georgina Gough, James Longhurst (University of West of England)
Ash Tierney, Hannah Tweddell, Amy Walsh and Chris Willmore (University of Bristol)*

Contact: chris.willmore@bristol.ac.uk

Bristol has a university student population of approximately 50,000 – comprising over 10% of the population of the entire city! This represents an enormous potential, and in 2015 the Student Capital project mobilised the student community to tackle the challenging sustainability issues facing our city, our society, and our planet.

Many of the sustainability issues which we face require action at the community level. HE institutions are most often well connected within their area – they have good links with local organisations and many of their staff and students live and work as part of the community. Therefore, HEIs are well placed to engage with local communities, and can connect students with organisations through a number of pathways, for example: volunteering opportunities, placements, internships, or projects. The University of the West of England, Bristol (UWE) and the University of Bristol – with their respective Students’ Unions – have been working in partnership with the city and local communities, using HEFCE Catalyst funding to promote student involvement in Green Capital activities across Greater Bristol.

Student Capital created a broad programme of citywide impact during Green Capital. The project has changed Bristol’s view of student engagement, making students highly visible sustainability change agents in and around the city. The 3,500+ students engaged by Student Capital have given an incredible 137,649 hours of their time and effort, equal to 80.9 years’ worth of work and adding £1.3 million to the city’s economy, and the project’s legacy activities will ensure that this work continues into the future.

Keywords: Future university Green Capital, Student-city partnership, student engagement, university and Students’ Union partnerships

For extended abstract see Appendix 10

4 ESD in practice

4.1 Case Study: Embedding Sustainability and Mapping Graduate Outcomes in a BA Media and Communications Programme: Helping you comply without much extra work!

Joanne Woodman (Senior Lecturer, School of Media, Art & Design, Canterbury Christ Church University)

Ken Powell (Director of Curriculum, Canterbury Christ Church University)

Contact: joanne.woodman@canterbury.ac.uk

Since the UK Sustainable Development Strategy made clear the role of education to ‘make ‘“sustainability literacy” a core competency for professional graduates’ (HM Government, 2005), Education for Sustainable Development (ESD) has become a pressing agenda for the learning and teaching community. For example, both the QAA (2013) and HEA (2014) have identified education for sustainable development as having, ‘broad relevance to the purposes of higher education and its wider context in society’. Sustainability is one of the central challenges facing the world in the twenty first century and universities are expected to play a key role in developing a principled response to current issues. The paper therefore offers a case study of how ESD was embedded into a Media module at Canterbury Christ Church University and how this might offer a basic toolkit for embedding and measuring student engagement with sustainability. It includes an analysis of data from a 2-year longitudinal study using a likert scale, to demonstrate how student perceptions of their learning are linked to HEA learning outcomes for ESF.

To support the HE community in the delivery of Education for Sustainable Development, the paper also explains the process of mapping graduate outcomes and adapting the curriculum to ensure coverage of HEA learning outcomes. By employing the HEA/QAA (2014) definition of ESD as ‘the process of equipping students with the knowledge and understanding, skills and attributes needed to work and live in a way that safeguards environmental, social and economic wellbeing’, the paper discusses how ESD can be linked to wider cross-curricula issues such as Employability, Internationalisation and Enterprise and Entrepreneurship, relevant to most modules in Higher Education.

4.2 Mind the Gaps: Delivering and Receiving Sustainability Education

Alison Greig (Director of Education for Sustainability, Global Sustainability Institute, Anglia Ruskin University)

Grace Phillip (Coordinator, Global Sustainability Institute, Anglia Ruskin University)

Contact: alison.greig@anglia.ac.uk

At an increasing number of Higher Education Institutions (HEI), including at Anglia Ruskin University, Education for Sustainable Development (ESD) is established as part of the strategic fabric of the organisation as well as a legitimate field of research. Much of the published scholarly activity on ESD either uses a variety of practical and philosophical lenses to focus on its justification as part of the student's educational experience or provides 'good practice' case studies to demonstrate it can be delivered within the formal or informal curriculum. This paper argues that, while the delivery of ESD may be an important milestone, there is a risk that we are losing sight of its overall role as an "indispensable element for achieving sustainable development" (UN General Assembly, 2002) and that the delivery of ESD may become a meaningless metric of success. The authors point to the widening gap between ESD delivery, sustainability literacy and sustainable practice and look to behaviour change theory and higher education's continued pre-occupation with knowledge to explain these gaps. The authors recommend that the ESD community should not lose sight of the fact that there are additional steps in the learning and teaching that are essential if we are to progress and produce graduates that are able to contribute towards a sustainable future and for sustainable development to be achieved.

Keywords: Education for Sustainable Development, ESD, Efs, behaviour change

For extended abstract see Appendix 11

4.3 Whole Earth: Developing an early childhood response

Polly Bolshaw (Senior lecturer, School of Childhood and Education Sciences, Canterbury Christ Church University)

Nicola Kemp (Senior lecturer, School of Childhood and Education Sciences, Canterbury Christ Church University)

Contact: polly.bolshaw@canterbury.ac.uk

Whilst Education for Sustainable Development (ESD) is now a growing area of research interest particularly within the Higher Education sector, Early Childhood Education for Sustainability is by contrast much less well developed. The issue of how Early Childhood Education can contribute to sustainability is the central concern of this paper. It details the ways in which one University has used the provocation of a photographic exhibition (Whole Earth?) to engage staff, students and practitioners working within the field of Early Childhood with sustainability. A series of case studies from local settings within Kent and Medway are used to illustrate the responses developed by participants to the exhibition highlighting changes in perspective and understanding.

4.4 Education for Sustainable Development in the formal and informal curriculum: A Case Study

Aldilla Dharmasmita (Academic Associate for the Green Academy, Nottingham Trent University)

Lina Erlandsson (ESD officer for Green Academy of NTU)

Petra Molthan-Hill (Team Leader for Green Academy at NTU)

Contact: aldilla.dharmasmita@ntu.ac.uk

The purpose of this paper is for The Green Academy at Nottingham Trent University (NTU) to showcase two innovative projects which promote the ESD initiatives at the Institution, both as part of the formal and informal curriculum. The idea behind the Sustainability in Practice (SiP) Challenge Day came from students' feedback, and it is a way of offering students an alternative of completing the online-only SiP Certificate. The day consists of both theoretical work, whereby students work through the online modules, complimented by some practical work on our campus allotment. The 'hands on' portion of the challenge day allows students to reflect on the knowledge acquired during the theoretical sessions. The 'Education for Sustainable Development: Future Thinking Learning Room' is a staff-facing online learning room that holds a library of ESD teaching resources intended to act as inspiration for the inclusion of sustainable development themes within courses. The content includes resources such as ready-made lectures, tutorial suggestions, YouTube playlists, articles, and information on how to access physical learning resources such as games and other activity-based materials.

These projects, along with others run by the NTU Green Academy, have been implemented with the prospect of them being replicated by other HEIs on a national and global level, to further enhance the Future-Thinking agenda, and move towards the achievement of the Sustainable Development Goals (SDGs) (Sustainable Development Goals, 2016).

Keywords: ESD, Sustainability, Formal, Informal, Curriculum, Teaching Resources, Online, Digital.

For extended abstract see Appendix 12

4.5 Everything must change in order to stay the same: Conveying the extremely radical implications of the closing climate-change window through an undergraduate module

Peter Harper (Visiting Lecturer, University of Bath)

Contact: peter@peterharper.org

The module is part of an undergraduate degree programme in Natural Sciences at the University of Bath, and consists of seven lectures, two practicals, two on-campus study visits, a 3000-word essay and a standard two-hour examination. It does not deal with ‘classical’ environmentalism. It focuses on physical sustainability at the global level, similar to the notion of ‘Planetary Boundaries’, with special emphasis on climate change. Greenhouse gas emissions are used as a measurable and conserved proxy for other serious environmental problems, with emphasis on thresholds and the need to alter strategies as thresholds are approached.

The practicals involve group work with spreadsheet models, looking at measurable carbon emissions at both household and geopolitical levels. They are designed to show the interactions between quantitative physical variables and personal/political factors. The students make short assessed reports. Study visits take advantage of the fact that the campus itself is essentially a small town with all services, most of which have a bearing on physical sustainability. ‘Haptic’ learning outside the classroom is regarded as an important complement to theoretical work. Past visits have included the university’s energy system (including energy efficiency measures, control systems, CHP and photovoltaics); the solid waste system (including separation, re-use, arrangements for further use, recycling markets); and ecosystem services (including habitat diversity, productivity calculations, biomass of different trophic levels). Such trips generate real data which can be used in exam questions. Lectures cover the historical genesis of present trends, basic concepts, energy, materials, waste, food and land use, future scenarios and lifestyles. Developed forms of the Centre for Alternative Technology’s Zero-Carbon Britain series are used as a framework for exploring sustainable futures in the UK.

4.6 Implementing and evaluating a method of Co-operative Inquiry to embed Education for Sustainable Development (ESD) across all programmes offered by the Plymouth Institute of Education (PIoE)

Ciaran O'Sullivan (Lecturer, Plymouth Institute of Education, University of Plymouth)

Contact: ciaran.osullivan@plymouth.ac.uk

PIoE has an established core of excellence in the field of ESD, but, whilst there is evident good practice in embedding ESD within certain PIoE programmes, we face the challenge of extending this across the Institute. Therefore, this project aims to:

- embed elements of ESD in all PIoE programmes, utilising a co-operative inquiry (Heron & Reason, 2001) approach; and
- critically evaluate co-operative inquiry (CI) as an effective mechanism for the implementation of ESD in HE.

An already-established core team of five staff with extensive ESD experience is facilitating individual co-operative inquiry groups comprising colleagues and students from a range of programme areas to develop:

- a scoping study to identify current good ESD practice and areas for development in PIoE;
- the engagement of teaching teams in recognising opportunities to embed ESD within their programmes;
- the promotion of research-led, team-guided, ESD innovation within each programme; and
- a critical evaluation of co-operative inquiry in supporting professional, personal and curriculum development.

Three PIoE development days focused on the ESD agenda have been attended by colleagues and students enthusiastic about developing this agenda in their practice. These days resulted in the formation of four CI groups, facilitated by the core team with support from the Centre for Sustainable Futures, to address the following areas:

- Pedagogic Principles of Sustainability
- Learning Outside the Classroom
- Social Justice and Sustainability
- Embedding ESD across all phases of Initial Teacher Education (ITE) across the phases – Early Years, Primary, Secondary, and Further Education

This presentation will report on progress in using co-operative inquiry to encourage development, and in planning the implementation of ESD in our programmes, giving examples of work from each of the four CI groups.

Interactive workshops

	Title	Lead
W1	How bad are bananas? The Great Carbon Footprint Game: Enhancing carbon literacy through play	Emma Fieldhouse (Future We Want) Zoe Robinson (University of Keele)
W2	Environmental stewardship as past, present and future thinking: A decade of biodiversity on campus	Mat Baldwin, Alex Metcalfe, Paul Sims, Rob Thrower & Peter Vujakovic (CCCU)
W3	Digital stories for assessment	Curie Scott & Rebecca Clifford (CCCU)
W4	ESD Professional Development – Learning from European Best Practices	Alex Ryan (University of Gloucestershire)
W5	'Re Enchanting Space Through Language - The Kingsmead Field Story.'	Antonia Linehan (CCCU)
W6	A stitch in time – develop your own creative response to the conference	Tan Yoke Eng (CCCU)
W7	Whittle and Talk: connecting head ART and hand	Alan Pagden (CCCU)

W1. How bad are bananas? The Great Carbon Footprint Game: Enhancing carbon literacy through play

Emma Fieldhouse (Consultant, Future We Want)

Zoe Robinson (Reader in physical geography and sustainability, Keele University)

Contact: emma@futurewewant.co.uk

Developed by an LSBU student in 2015, the award-winning Great Carbon Footprint Game (GCFG) is taking the HE sector by storm. Using a simple higher or lower premise, players of the game are encouraged to choose everyday items and activities with the highest carbon footprints.

The game is rented and sold into other HEIs across the UK and has been successfully tested with primary and secondary school age children. Keele University in partnership with the UK vendor - Future We Want - will research the efficacy of the game in delivering ‘carbon literacy’.

With the challenge of meeting COP15 targets on the horizon, teachers and sustainability professionals need to find engaging ways of educating the masses on the importance of carbon reductions. Part of that process will be to demonstrate where the biggest carbon impacts can be found in an average lifestyle, hence improving carbon literacy. The value in the GCFG is that it does not just appeal to those who are already sustainability literate but has been shown to attract players who have no previous understanding of carbon foot printing or GHG emissions. It is sophisticated enough to engage even the most educated and never fails to impart new information to all who play it.

The game is flexible enough to be played with an individual, pairs or even large groups of players (the most players at one time has been as high as 50!). The game was recently expanded so it can be themed by transport, food, waste and other ‘activities’ (e.g. sending emails, taking baths etc.). The workshop will engage participants through playing the game; explore the opportunities for different uses of the game with varied audiences and contexts; and consider the game as a means of improving carbon literacy drawing on experiences and research from different situations.

More information: www.futurewewant.co.uk

W2. Environmental Stewardship as Past, Present and Future Thinking: A decade of biodiversity on campus

*Mat Baldwin, Alex Metcalfe, Paul Sims, Rob Thrower and Peter Vujakovic,
(Canterbury Christ Church University)*

Contact: peter.vujakovic@canterbury.ac.uk

The stewardship of ‘nature’ is an important aspect of the sustainable management of university and college estates. This workshop explores the initiatives undertaken at Canterbury Christ Church University during the last decade, and represents roles played by a wide range of staff (both professional services and academic) as well as students.

The Grounds and Gardens team had long been instrumental in developing a range of management approaches to protect and enhance biodiversity on site - including such initiatives as the provision of dead-wood as invertebrate micro-habitats and placement of bird-boxes on site. In 2006 the university first presented a coherent strategy for biodiversity on its main campus as part of St Augustine’s Abbey within the Canterbury UNESCO World Heritage Site. The talk, entitled ‘Biodiversity, Curriculum and Community’ (given at the EAUC conference on ‘Biodiversity on Campus’, University of Hertfordshire) outlined an approach to biodiversity that linked it to the university’s cultural heritage and led to the Bioersity initiative, which now provides the main focus of environmental stewardship on the site.

This workshop explores the development of the Bioersity initiative, with its particular focus on the monastic heritage of the Abbey site. The initiative does not seek to recreate the monastic past, but uses it to explore contemporary issues, for example, the importance of medicinal herbs to modern society through the creation of a physic garden, or the scientific conservation of rare varieties of apples as part of the Jubilee Orchard project. The initiative is devoted to the concept of life-long-learning, with future ‘thinking’ at its very heart. The initiative has also led to the development of the ‘Edible Campus’ and ‘Bread, Beer and Honey’ projects, which engage both staff and students from across the university. The most recent development is the ‘Tradescant 400’ initiative that celebrates the fact that John Tradescant the elder - renowned gardener, explorer and plant collector - worked for Lord Wootten on the St Augustine Abbey site from 1615. The workshop will involve an introductory lecture on the development of the Bioersity initiative, followed by a guided walk of the site by key staff involved in its management and interpretation as a UNESCO World Heritage Site.

For extended abstract see Appendix 13

W3. A student and lecturer perspective on creating digital stories for assessment

Curie Scott (senior lecturer in School of Nursing, Canterbury Christ Church University)

Rebecca Clifford (2nd year adult nursing student, Canterbury Christ Church University)

Contact: curiescott@canterbury.ac.uk

This workshop summarises outcomes from the Futures Initiative funding gained in May 2012 as part of the Education for Sustainable Development agenda. Funding enabled upskilling, by a professional digital storytelling company, of ten lecturers. Lecturers developed individual stories and subsequently facilitated nursing students to create a digital story for the assessment of the Enhancing Person Centred Care (EPCC) module. The assessment is for a second-year module in the Interprofessional Learning Programme, based on ‘flipped classroom’ principles. This creative means of teaching and learning was a distinctive curriculum innovation for both lecturers and students.

For effective person-centred care, clinical decisions should be guided by a patient’s needs but also their values, beliefs and preferences. The module addresses several dimensions such as emotional intelligence, solution focused nursing, and spirituality as well as technical skills to build a digital story. Students explored the benefits and tensions of myriad issues in cogent and provocative ways via story-telling. They negotiated the often fraught emotional terrain of caring for others whilst navigating the complexities of institutionalised practices compounded by having to meet high standards with ever-decreasing resources. The creation of digital stories enables images, colour, rhythm, words and silence to entwine, synergistically creating powerful narratives. Students developed perspectives beyond their own life-worlds, such as the motivations and actions of the health care team; the health and social care system; and patients and their families. Students watched each other’s stories in a finale to module.

In this workshop, we will share the challenges and opportunities of the process from the perspective of a student (Rebecca) and a lecturer (Curie). You will watch Rebecca’s four-minute story; engage with prompts to create story elements yourselves in a non-threatening environment and discuss potential transferability into your own work.

W4. ESD Professional Development – Learning from European Best Practices

Alex Ryan (Director of Sustainability, University of Gloucestershire)

Contact: aryan@glos.ac.uk

Higher education is ideally positioned to address sustainable development as it prepares the future generation of professionals, challenges dominant paradigms and produces ground-breaking research. International movements and university initiatives have triggered a wave of activity over the past 10 years to advance learning for sustainability in higher education. However, there is evidence of the need for stronger focus on professional development to achieve lasting curriculum change and to engage more widely with the academic community on sustainability.

Despite interest in Education for Sustainable Development (ESD), its approaches to learning and education are not yet in common practice in the higher education sector. There are still large ‘translation gaps’ in applying ESD ideas in different subjects and courses, so that the learning process can contribute to more sustainable futures.

The University Educators for Sustainable Development (UE4SD) project tackles this need by focusing on the professional development of academic staff to advance ESD. UE4SD is led by the University of Gloucestershire and funded by the European Commission Life Long Learning Programme. It commenced in October 2013 and involves 53 partners (mostly universities) in 33 European countries over three years, organised through 4 hubs of regional partner (North, West, East and South Europe).

The project concludes in 2016 and the workshop will share insights and practices from its outputs:

- a state of the art report that mapped national policy and new practices in the area
- a leading practice publication of different approaches to ESD professional development
- a training academy residential for university teams using action learning principles
- an online toolkit of resources, including practical experiences and new examples

The aim of the workshop will be to briefly share an outline of the project and then to offer an interactive dialogue with participants about challenges, tips, experiences, as well as ways to adapt and use the professional development materials the UE4SD project has generated in one’s own institution and area.

W5. Re enchanting Space Through Language – The Kingsmead field Story

*Antonia Linehan-Fox (Senior Lecturer, School of Language Studies and Applied Linguistics
Canterbury Christ Church University)*

Contact: antonia.linehan@canterbury.ac.uk

This is a summary of a presentation/workshop given at the Conference for Sustainability in Higher Education: Challenges and Opportunities. It maps a case study of curriculum practice in language and linguistics highlighting aspects of environmental stewardship and global citizenship

This workshop focused on the collaborative input on sustainability I carried out with students in the School of Language Studies and Applied Linguistics. The aim was to engage students more actively through the theme of sustainability to create a real awareness of issues related to language change and encourage the students to become critical learners.

The work aims to reflect the values of environmental stewardship and aspects of global citizenship through an examination of language and linguistics.

The inspiration for this session comes primarily from three sources: David Almond, prize winning children's author and Professor of Creative Writing at Bath Spa University; Robert McFarlane, naturalist and nature writer and the activities such as 'Hedge Art' carried out by my students as they engaged with and supported the local community in their campaign to save a small but significant area of riverside land, Kingsmead Field from building development and to preserve it as a green space.

Keywords: Embedding sustainability, curriculum development, language development, green spaces, local communities, student engagement, linguistic value, Kingsmead Field

For extended abstract see Appendix 14

W6. A stitch in time – develop your own creative response to the conference

Tan Yoke Eng (Senior Lecturer, Business School, Canterbury Christ Church University)

Contact: yoke-eng.tan@canterbury.ac.uk



W7. Whittle and Talk: connecting head ART and hand

Alan Pagden (Senior Lecturer, Faculty of Education, Canterbury Christ Church University)

Contact: alan.pagden@canterbury.ac.uk



ESD Showcases

	Title	Leads
S1	Learn Act Engage Create	Amy Walsh & Hannah Tweddell (University of Bristol)
S2	Best Practice Stakeholder Participation: What are the benefits, challenges and solutions for environmental management and participatory research?	Diana Pound (Dialogue Matters)
S3	Supporting Curriculum Innovation for Sustainability at the University of Bristol	Aisling Tierney (University of Bristol)
S4	'I would have been/ could be amazing': A social justice oriented visual art rejoinder to Whole Earth	Toni Wright & Art Therapists (CCCU)
S5	Criminology Picks up the Gauntlet: Responses to the Whole Earth Exhibition	Katja Hallenberg & Margit Guenther (CCCU)
S6	Sustainability Showcases: Sustainability Internships Programme (SIP) at the University of Gloucestershire	Megan Baker (University of Gloucestershire)
S7	A Sustainability Showcase: Sustainability in Science – The Current Setting and Future Directions	Martin Farley (King's College London)
S8	'The Critical Global Educator: Global Citizenship Education as Sustainable Development'	Maureen Ellis (Open University & UCL, Institute of Education)
S9	Challenging minds and breaking-down barriers while embedding sustainability in the curriculum - The Psychology of Sustainable Living	Ana Fernandez (CCCU)
S10	"A Wonder-Web of Life" tapestry - a womanist response to the issues raised by the Whole Earth? exhibition To be unveiled by Mark Edwards, co-creator of the Whole Earth?	Artwork by Esther Miles and workshop participants - students and staff of CCCU. Inspired by poem of same name, the collaborative result of a creative workshop for staff and students facilitated by poetry therapist Victoria Field.

S1. Learn Act Engage Create

Amy Walsh (Student Engagement Projects Coordinator, University of Bristol)

Hannah Tweddle (Sustainability and Engaged Learning Coordinator, University of Bristol)

Contact: amy.walsh@bristol.ac.uk

Learn Act Engage Create is the journey through which students are guided during their time at University of Bristol to equip them with the skills and knowledge necessary to be responsible global citizens during their university experience and beyond.

Bristol SU's NUS Student Green Fund project, Get Green, developed the four-step model of student engagement for sustainability which was critical in engaging over 10,000 student in sustainability. It brought together the formal and informal ESD curriculum to maximise the impact of ESD work. The approach provided a coherent method to support and develop a strong cohort of change makers who have been engaging their peers in sustainability and creating change through their own ideas and campaigns.

S2. Best Practice Stakeholder Participation: What are the benefits, challenges and solutions for environmental management and participatory research?

Diana Pound (Environmental consultant, Dialogue Matters)

Contact: diana.pound@dialoguematters.co.uk



S3. Title: Supporting Curriculum Innovation for Sustainability at the University of Bristol

Aisling Tierney (Research Associate (ESD), University of Bristol)

Contact: A.Tierney@bristol.ac.uk

The University of Bristol's Green Apple Scheme supports curriculum innovation for Education for Sustainable Development through small annual grants. Any projects that relate to taught programmes, including undergraduate and taught postgraduate, are eligible to apply. Since the scheme was launched, ten initiatives have been funded, in subjects as diverse as primary care, teacher training, immersive performance, archaeology and anthropology fieldtrips, and anatomy. Overlapping themes of ethics, future thinking, environmental considerations, and wellbeing are addressed using different teaching and learning approaches.

This session will explore the scales of projects supported, and how small grants can make a big difference to the student learning experience. For early career researchers, the scheme offers the opportunity to get funding and test new ideas, and provides 'permission' to try something beyond the core curriculum. The scheme is directly supported by the ESD Team, from application through to reporting. This overcomes the issue of a lack of confidence in ESD subject matter. The session will focus on the successes and learning points for each project, and how projects can serve as models for other institutions.

The University also supports projects outside of the Green Apple Scheme process. One example is the funding of community and student research-engaged opportunities within the annual Berkeley Castle Project (BCP), using funds acquired from HEFCE. This award-winning research and training archaeology project hosts a multitude of public engagement events that also offer student volunteers the chance to develop a wide range of transferable skills through sustainability action.

S4. I would have been/could be amazing: a social justice oriented visual art rejoinder to Whole Earth?

Dr Toni Wright (England Centre for Practice Development, Faculty of Health and Wellbeing, Canterbury Christ Church University)

Email: toni.wright@canterbury.ac.uk

Art psychotherapists:

Lucy Bruty (Kent Art Therapy, UK)

Marybeth Haas (Private practitioner, UK)

Ezme Le Feuvre (Kent and Medway NHS and Social Care Partnership Trust, UK)

Tracie Peisley (Private practitioner, UK)

Lisa Royal (Action for Children, UK)

Karen Wright (Sussex Partnership NHS Foundation Trust & Kent Art Therapy, UK)

Art psychotherapists from Kent and Sussex, as University research partners, came together to offer visual art pieces for audiences to view and engage with as a collective rejoinder to Whole Earth? Since 2014 the art psychotherapists have been working with the Faculty of Health and Wellbeing at Canterbury Christ Church University on a project focusing on the importance of social justice to their practice, and by extension the impact that has in sustaining good mental health for service users and wider communities. This group of art psychotherapists identify as practicing a radical praxis, as raisers of critical consciousness through their work towards transformation for individuals, communities and society (Mohanty, 2003). The art psychotherapists provide art psychotherapy, ‘a form of psychotherapy that uses art media as its primary mode of expression and communication...’ (BAAT, 2016) to vulnerable and often socially-marginalised people. They work with service users living with learning disabilities, life limiting illnesses, mental ill health and psychological emotional trauma/s in a broad range of service settings including schools, care homes, hospices, NHS and charitable organisations. Also practicing artists, they make work for personal reasons as well as engaging the viewing public with the issues they meet and manage through their professional work.

Keywords: Intersectional feminist, art therapy, social justice, sustainable communities

For extended abstract see Appendix 15

S5. Criminology Picks up the Gauntlet: Responses to the Whole Earth Exhibition?

Dr Katja Hallenberg, Dr Maryse Tennant, Georgia Cole, Margit Guenther, Fleur Elise-Williams, Justine Michaud, Ashleigh Torrance, Nana Gaituah, Danielle Howland, Elizabeth Collier-Brown (School of Law, Criminal Justice and Computing, Canterbury Christ Church University).

Contact: katja.hallenberg@canterbury.ac.uk

We would like to showcase an extra-curricular project exploring criminology/criminal justice students' responses to the Whole Earth? Exhibition (<http://www.hardrainproject.com/>). The exhibition highlights the problems facing humankind and the planet we inhabit, with a focus on solutions and ways to enact positive change. It raises a number of 'university challenges' for core disciplines but there is no specific challenge for criminology as such. Our project aimed to address this by encouraging students to draw connections between criminology and the themes raised by the exhibition: it was time for criminology to pick up the gauntlet. Our project involves a number of directed activities, alongside photo and reflection blogging, to encourage students to draw connections between sustainability and criminology. It also aims to refocus the global perspective of the exhibition by enabling students to consider their local context and develop a 'critical lens' through which to view the issues of (in)justice and (in)sustainability in their own communities. We tried to embed the principles of education for sustainable development (ESD) into the project and so it is values-driven, collaborative (students as co-authors of any dissemination), authentic and locally relevant (UNESCO, 2005; HEA/QAA, 2014). It therefore fits well with the conference's focus on challenges and opportunities around sustainability in higher education. The project is now half way through and it has been an encouraging experience for us and the students. The showcase would aim to present a poster detailing the activities undertaken as part of the project and the ways in which this has enabled students to develop an increased awareness of sustainability and justice over the course of the project. It would also display some of the entries from the photo blogging exercise. Students and staff would both be present to explain the project in more detail.

S6. Sustainability Showcases: Sustainability Internships Programme (SIP) at the University of Gloucestershire

Megan Baker (Sustainability Engagement Manager, University of Gloucestershire)

Contact: mbaker1@glos.ac.uk

This exciting internship programme was launched in September 2015, engaging students; University staff and external organisations with developing their work in sustainability and responses to this agenda. The SIP offers bespoke internships for students focussed on current sustainability challenges in the workplace, across different professions. The aim is to give students an ‘edge’ in their professional development, by linking workplace experience with the sustainability agendas organisations are facing.

Case studies will be shared of innovative in-house internships within University departments and external opportunities with local organisations through our partnership platform, UNU RCE Severn.

Current internships include:

- **Communications Officer (Sustainability team)** – A final year Journalism student is working with the sustainability team to help communicate our news, events and projects through social media and student/staff news
- **Visual media designer (Sustainability team)** – A 2nd year Graphic Design student has been putting his creative skills into practice, producing posters and visual content for our website
- **ICT Research Intern (ICT team)** – A 2nd year Forensic Computing student is supporting the ICT team in producing an advisory report on sustainable disposal of ICT equipment and data/information as well as researching sustainable sourcing options
- **Gloucestershire Green Economy Researcher (Cheltenham Green Doors)** – 1st year Business student is conducting a piece of research for a local sustainability charity, working to quantify the value of the Green Economy to Cheltenham and Gloucestershire

During their internships, students are offered mentoring from the department they are situated within as well as sustainability training and support from the Sustainability team. This model of a professional development programme for HE students showcases bespoke training and learning opportunities which empowers students to make a positive difference in the work place through delivery of projects connecting their studies with the real world.

S7. “Sustainability in Science – The Current Setting and Future Directions

Martin Farley (Research Efficiency Officer, Kings College London)

Contact: martin.farley@kcl.ac.uk

A large portion of UK higher education revolves around STEM (science, technology, engineering and maths) subjects, and yet sustainability too often is not included in the practice and study of science. Research practices themselves are extremely energy intensive and often account for the bulk of energy consumption in universities. Their needs have grown substantially in the past 20 years, and modern campuses will frequently reflect this. Furthermore, while ethics courses exist in some institutions, gaps exist between the teaching of the scientific methods and their implications.

This showcase will feature a quiz created to highlight the issues and opportunities for improvement within sustainability and science. Attendees are invited to participate together or fill-out the questions individually, and then to discuss the answers as a group. Each of the 12 questions have been selected to trigger a different topic of conversation related to the field. For more information about Green Labs, sustainable and efficient science, or anything related, contact Martin Farley. “

S8. The Critical Global Educator: Global Citizenship Education as Sustainable Development

Maureen Ellis (UCL-IoE London / Open University)

Contact: t-ellis2@hotmail.com

Globalisation, potentially powerful social media, cyborg identities, oblige educators to deploy educational tools, toys, texts and technologies for oecumene, global bioethics, political justice for all. Based on an Unconditional Pass PhD studying ‘The personal and professional development of the critical global educator’, this paper advocates an applied linguistic, depth hermeneutic approach: ‘word made flesh’. Published by Routledge in 2015, ‘The Critical Global Educator: Global Citizenship Education as Sustainable Development’, demonstrates theorised passion, (w)holistic political literacy which relates micro-politics, politeness, political correctness, policy to macro- global politics.

A Jungian mandala synthesises Critical Realism, Linguistic philosophy, Critical Theory, psycho- , socio- , neuro-, and cognitive linguistic research. Critical ethnographers challenge contemporary architecture, extending transdisciplinary critique to the sociology and anthropology of disciplines. Material, sensorial, spatio-temporal and symbolic multimodality, once theorised, successfully integrate thought, word and deed. Halliday’s Systemic Functional

Linguistics offers methodology and practical analysis to educators who mediate and model diverse disciplines to honestly, consistently, engage consciousness.

Engestrom's Cultural Historical Activity Theory provides a 15-question Interview Schedule for self- or negotiated evaluation of critical global educators. Surveys, focus groups, and structured interviews involved over 500 practitioners, teachers, teacher educators and academics in Britain and overseas. Investigations probed the political economy and cultural politics of discipline, faculty, and discipleship, as sources of individual and institutional integrity.

Findings reveal factors which translate personal transformative learning and professional transaction into transformational political capability. Service learning, international NGO participation, crowd-sourcing, digital citizenship, communication with/in community, multimodal performativity expands consilience, consciousness, conscience. Eight recommendations call for urgent conceptual deconstruction, redefinition, reassessment.

In the face of closing philosophy departments, communities of praxis justify principled infidelity: 'Universe-cities' focused on epigenetic, memetic transfer of disciplinary values, using biography, narrative and creative writing, scrutinising powerful metaphor to convey meta-reality, balance physical and metaphysical dialectics, restoring educational vision and managed mission.

Keywords: Critical Realism; Linguistic philosophy; Dialectic Materialism; Holistic; Heteroglossia; Multimodality; Transformative; Communities of Praxis.

For extended abstract see Appendix 16

S9. Challenging minds and breaking-down barriers while embedding sustainability in the curriculum - The Psychology of Sustainable Living

Ana Fernández (Senior Lecturer, School of Psychology, Politics & Sociology, Canterbury Christ Church University)

Contact: ana.fernandez@canterbury.ac.uk

In 2012, the Psychology Programme underwent a revalidation that resulted in a fundamental shake-up of the structure and approach to learning and teaching. One of the driving principles of the revalidation was to focus on the applied nature of psychology – not only with regards to research or practice but in everyday issues, in order to highlight the relevance of the discipline to the 'bigger questions'. This approach was in line with professional guidelines and with the University's Strategic Plan. Making sure that our graduates are sustainability-literate was part of this endeavour and, as a result, we decided to include a new core module in year 3: The Psychology of Sustainable Living.

The module is research-informed by past and current projects in the psychology team, including a cross-disciplinary, Futures Initiative funded project. The aim of the module is to get students to engage with sustainability debates and to consider how psychology can contribute to the agenda, but always with a critical eye, asking students to consider ethical issues and question motivations and personal stance. With this in mind, sessions are mainly hands-on and the assessment asks students to choose one aspect of sustainability and design an intervention that applies psychology models and theory to tackle it. They are also asked to reflect on this process. Having run for the first time this academic year, the module is still a work in progress and it has not been without its challenges. However, it has had the most profound effect on staff and students and it shows how valuable it is to embed sustainability in the curriculum and the importance

S10. A Wonder-Web of Life" tapestry - a womanist response to the issues raised by the Whole Earth? exhibition

Unveiled by Mark Edwards, co-creator of the Whole Earth?



Conclusions

The conference closed with a panel discussion. One of the highlights of the event was the way it brought together academic and professional services staff and students. The student contributions were notable throughout the day but particularly so in the closing panel where Michelle Cole, a Foundation Degree student (Health and Social Care) and Margit Guenther, a third year BA student (Crime and Policing) sat alongside staff to present their thoughts about the challenges and opportunities facing Higher Education. As one delegate noted “I thought the students contributions were outstanding.” Feedback has been extremely positive and one went so far as to claim it as “by far the most enjoyable conference I have ever attended”.

STUDENT REFLECTION – MICHELLE COLE

I attended the sustainability in Higher Education: Challenges and Opportunities Conference as a student and was invited to participate on the panel discussion around perspectives on the challenges and opportunities within Higher Education regarding sustainability. I began by giving an insight to my job role followed by my perspective. My Health Trainer role provides support, guidance and motivation to adults who would like to make health behaviour changes, such as eat a healthier diet, increase physical activity and improve well-being. Health Trainers are based in their local community and work with individuals on a 1-1 basis. Sessions are tailor-made to suit the individual and further sessions are offered to support people in maintaining their behaviour change within the life they lead. I hadn't even considered the relevance of my role to sustainability until my tutor (Chloe Griggs) pointed it out and then it became obvious. This ignited an interest in me to learn more around the connections between health and well-being and sustainability.

At the same time, I began working on a workplace health assignment and this really was a catalyst for me in seeing the connection between my role and sustainability as I read about our current demographic climate and its impact on organisations and well-being. People are living faster paced and more hectic lifestyles than ever before and as result of this stress and common mental health issues are on the rise. Also, I began thinking about my sustainability and how I had managed my well-being during my time at University. I realised how fortunate I was as due to my role and knowledge around well-being, even though at times I have felt very overwhelmed, I was able to use strategies to cope and even improved my well-being during this time and this enabled me explore sustainability, living well and our future further.

With our current global climate I could see a challenge and began to wonder if individuals embracing University life take the time to consider their own sustainability as they may only be focussing on the study and to succeed. I feel that there are many opportunities within University to focus on sustainability but I strongly believe it begins with the self. The University is an ideal environment for people to make a connection regarding their health and well-being and sustainability as people are attending, ultimately to better themselves. There is a captive audience. Individuals who begin by focussing on their own well-being, by using health and well-being tools and setting small achievable goals can improve their own health, can have a wider effect reaching friends, family and community and enhance, enjoy and sustain their University experience.

Importantly, small changes can lead on to further changes and when individuals can see the connection to themselves and sustainability then there is a possibility that they will continue to lead a sustainable life having a positive impact on future generations.

Initially, attending the conference felt daunting, however the morning speakers were all inspiring and thought provoking. When Peter Rands gave his talk around the Green Chapel Beer, I could clearly see a connection to health and well-being. With students and teachers connecting, giving time, being active, learning, caring for planet and taking notice (6 Ways to Well-Being). Martin Wright also mentioned that people want to live well and go on living well but just don't trash stuff while you're at it. I believe if people sustain themselves in order to live well then they can be inspired not to trash stuff and begin to take more notice of what is occurring around them (such as their carbon footprint) as they are happier and in control of themselves.

I felt honoured to be a part of the sustainability conference, listening and hearing the passion and commitment from the various speakers and their topics. My knowledge and understanding has grown. Since leaving the conference, I felt inspired to carry on learning around how I personally can make a difference to sustainability in my home life, Uni and work as small changes can make big differences. I intend to increase my knowledge around my carbon footprint and will begin with grocery shopping!

Appendix 1- Ideology, and the language of Sustainability

Dick Vane-Wright (Visiting Senior Research Fellow and Ecology Research Group, School of Human and Life Sciences, Canterbury Christ Church University. Also DICE, University of Kent, and Life Sciences, Natural History Museum, London)

Contact: dickvanewright@btinternet.com

THE GOAL

“The choice is ours: form a global partnership to care for Earth and one another or risk the destruction of ourselves and the diversity of life. Fundamental changes are needed in our values, institutions, and ways of living. We must realize that when basic needs have been met, human development is primarily about being more, not having more.”
Earth Charter, 2000

Sustainability – living within the means that the Earth can sustain (or perhaps within our co-constructed human/biosphere affordances, sensu Walsh, 2015) – is a huge challenge to our current, especially ‘western’ or globalised, ‘neoliberal’ way of doing business. “We might learn to do without telephones and radios and newspapers, without machines of any kind, without factories, without mills, without mines, without explosives, without battleships, without politicians, without lawyers, without canned goods, without gadgets, without razor blades even or cellophane or cigarettes or money. This is a pipe dream, I know.” (Miller, 1941 (2007: 47–48))

Is it possible to make such a pipe dream a reality? That is, for all of us to live sustainably, and many billions of humans already on Earth to be happy with less?

THE BASIC PROBLEM

The basic, fundamental problem is simply the extraordinary and continuing rise in the global human population from the mid-18th Century – the time when we were perhaps ill-advisedly named *Homo sapiens* by Linnaeus! Since 1942 the human population has more than trebled, doubling to reach over 7 billion in the past 50 years alone (Fig.1).

THE REALITY

Despite Paul Ehrlich’s (1968) dire warning of the Population Bomb, and his advocacy of the Zero Population Growth campaign, those in pursuit of the Sustainability agenda have in reality fought a mostly losing battle with conventional economic models based on an imperative of growth. Two things have to change if Sustainability, and its necessary concomitant of Steady-State-Economics, is ever to win the day: a major shift in public awareness based on the principles of Ecological Literacy, and a change in our language to present Sustainability not as protest, but as fundamental and desirable ideology on which to base political decisions.

As has been said, “ideologies compete over the control of political language as well as competing over plans for public policy” (Freedden, 2003). At its simplest, it is necessary to persuade the majority that care is more enjoyable than exploitation. The language of Sustainability needs to change if it is to succeed.

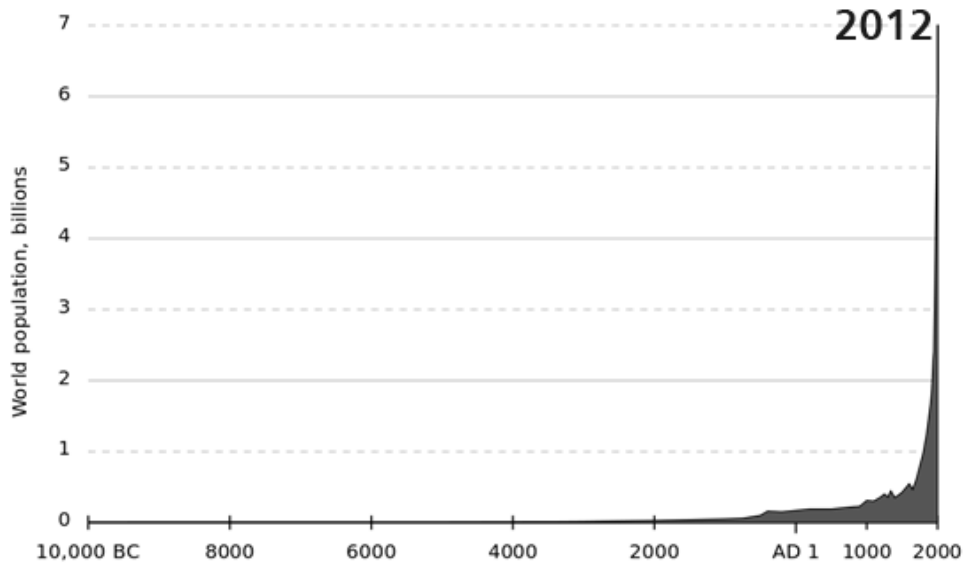


Figure 1. Growth of human population in billions since 10,000 BC (data from USCB, 2016)

FOUR PROPOSITIONS:

1. The sustainability agenda can be usefully addressed as a (political) ideology
2. Taken as a single issue, Sustainability is a ‘thin ideology’ ... but it has a radical core
3. A key element in making an ideology successful is effective (attractive) language
4. Sustainability could realise its radical core within the En’owkin ‘four societies process’ or some holistic equivalent

Considering each of these propositions in turn:

1) Ideologies are often seen negatively

If so, why would it be a good idea to see Sustainability as an ideology? According to Freedon (1996, 2003), a political ideology is a set of ideas, beliefs, opinions and values that:

- a. has a recurring pattern
- b. is held by significant groups
- c. competes over plans for public policy
- d. aims to change social and political arrangements and processes

Those advocating sustainability wish to achieve c) and d), so they need to aspire to b).

2) Why is Sustainability ‘thin’ – and what is its radical core or nature?

Before proceeding it is necessary to acknowledge, as various ‘green parties’ have come to discover, that being in effect a pressure group or one-issue movement is what Freedon (2003) calls a ‘thin ideology’ – which of itself is insufficient, in comparison with a ‘thick’ or broad political ideology such as socialism, liberalism or conservatism, to inform and direct all aspects of public life, including justice, health, redistribution of wealth etc.

However, in my view Sustainability has at its heart a core issue that challenges almost all current major political systems – the need for a radical shift from relentless economic expansionism to steady-state-economics – of the sort championed by Herman Daly and John Cobb (e.g. Daly & Cobb, 1994). The subtitle of their major work says it all: redirecting the economy towards community, the environment, and a sustainable future.

3) How do successful ideologies use language, and why does the language (and imagery) need to be ‘attractive’?

“Ideologies compete over the control of political language as well as competing over plans for public policy; indeed, their competition over plans for public policy is primarily conducted through their competition over the control of political language.” (Freedon, 2003)

Here is an individual political comment about environmentalism:

“I consider myself to be an environmentalist, that is I like clean air and clean water. The environmentalist movement however is filled with radicals who wish to use the environment to destroy capitalism, to move their radical left wing/ communist agenda forward and to stop human progress including progress that leads to cleaner methods of creating energy.” (Miles, 2013)

Sustainability has to find attractive language that does not reinforce such egregious misunderstandings while, at the same time, is capable of winning mass support.

4) What is the En’owkin ‘Four Societies Process’ – and could the radical core of Sustainability be implemented within or through it?

The word En’owkin comes from the high language of the native Okanagan people of Canada. It represents a philosophy perfected to nurture voluntary cooperation – an essential foundation for everyday living.

For the Okanagan People, the understanding that the total community must be engaged to attain sustainability is the result of a natural process of survival. However, the word cooperation is insufficient to describe the organic nature by which members cultivate the principles basic to care-taking for one-another and other life forms (Armstrong, 2009).

The ‘four societies process’ is a fundamental part of En’owkin, involving a dialogue between individuals, each acting out one of four essential roles:

- Youth – innovative possibilities
- Elders – connected to the land
- Mothers – policy, workable systems
- Fathers – security, sustenance, shelter

En’owkin refers to reaching collective understanding and decisions through a gentle process of integration. Its holistic nature demands our responsibility to everything we are connected to – the heart of sustainability.

“It is time for brilliant university educated people to stop attempting to solve vital environmental problems solely with the tools that created them, as if you could just go further and further and further into technology and come out into unity at the other end. Unity is not something to observe, dissect, analyze or critique to excess. It is something to embody.” (Rhenisch, 2005)

CONCLUSIONS

Compare these two views:

“... a thousand years hence men will wonder at our blindness, our torpor, our supine acquiescence in an order which was doomed.” (Miller, 1941 (2007: 197))

“Our enormously productive economy demands that we make consumption our way of life, that we convert the buying and use of goods into rituals, that we seek our spiritual satisfactions ... in consumption ... We need things consumed, burned up, worn out, replaced, and discarded at an ever increasing pace.” (Victor Lebow, 1955:7)

We are engaged with and by ideologies all our lives, aware of it or not, like it or not. Sustainability has at its core belief in holism and ecological principles which, to be realised, require social integration and steady-state-economics. Politics involves not only decision making but, within any sort of democracy at least, mobilisation of public support for collective action. Mobilisation will depend on widespread understanding of ecological literacy (education) and

the use of effective political language. In particular, Sustainability will need to convince a majority that care for the Earth, ourselves and each other is more attractive than material gain – and that seeking “spiritual satisfactions in consumption” is futile. However, this is an extremely difficult path – holism is currently alien to much (westernised) individual, economic and cultural thought which, in the globalised system, frequently emphasises aspirations or beliefs such as ‘individual liberty’, ‘progress’, ‘growth’, ‘technology’, ‘consumerism’ and ‘nationalism’ (Blackburn, 2001). To make Sustainability sustainable, we need to understand and teach systems ecology – and find positive language!

DISCLAIMER

I am a biologist, not a political scientist. The views expressed are personal; I do not represent or belong to any political organisation or party.

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Appendix 2 - The Big Picture: Why higher education must engage critically with the global as well as local politics of the environment

Amelia Hadfield (Reader in European Foreign Affairs, Politics and International Relations, School of Psychology, Politics and Sociology, Canterbury Christ Church University) and Peter Vujakovic (Professor of Geography, School of Human and Life Sciences, Canterbury Christ Church University)

Contact: amelia.hadfield@canterbury.ac.uk

INTRODUCTION

Both politics and geography critically examine substantive topics related to sustainability and development, both contested terms. From the sheer range in size, resource opportunity, and interdependence of states and regions, to the complexity of demographics and the multi-layered composition of governments and governance structures, our role as educators is to grapple with the sheer breadth of the topic that we teach. Our paper examines several themes, first, the nature of ‘grand discourses’ at work in the disciplines of geography and politics; secondly, teaching and learning methods by which students can feel encouraged to engage and become familiar with the ‘big ideas’ and ‘wicked problems’ relevant to sustainability; and finally, how the concept of ‘political geography’ may operate, helpfully, to pull together students from a wide range of disciplines (geography, politics, IR, law, IPE, sociology and psychology) and give them a critical foundation by which to get a handle on big concepts, spaces and powers.

Keying into the ‘global citizenship’ dimension of sustainability, we aim to examine the pedagogic implications of teaching the large, possibly alienating and distancing topics inherent in political geography in a way that encourages students to identify, deconstruct and ultimately and identify with these same topics.

GRAND DISCOURSES - DEFINING WORLD-VIEWS

Children in the UK have been encouraged from an early age to think in terms of ‘global citizenship’ - to think globally and act locally. Lesson plans for Key Stage (KS) 2 (7-11 years) encourage students to make global connections and understand that we live in an interdependent world. This is later developed in terms of the need for international cooperation and governance if issues related to environment and development are to be effectively tackled. At KS 4/5, for example, the Royal Geographic Society suggests providing a full definition of globalization which involves ‘...the increasing connections between places and people across the planet, established through trade, politics and cultural exchanges...helped by technology and transport.’ (RGS, undated)

Without necessarily making the concept overt, this privileges an ‘idealist/integrationist’ view of international relations and geopolitics, over its alternative, a ‘realist’ approach. Realists have traditionally conceptualized international relations in terms of power and interest, with security defined in terms of a state’s ability to promote its own interests within a largely anarchical international system. Idealists, on the other hand, place emphasis on notions of international cooperation and collective security. For the latter, power struggles are understood in terms of fear of attack rather than attempts to gain dominance (Dalby, 1990). While it is understandable that a liberal society might wish to inculcate an idealist approach, students do, nevertheless, need to be made aware of the fact that many governments, major corporations and other institutions and political organisations act in ways which can only be conceived as driven by a realist agenda.

From the perspective of political and social sciences, students are introduced to the range of ‘big ideas’ in the form of schools of thought, from a variety of classical and contemporary canons, including International Relations, Global Governance, International Political Economy, Foreign Policy Analysis, Security Studies, Public Policy Analysis and a variety of theories from cognate disciplines, including law, psychology, sociology, economics, and geography. Across the course of three undergraduate years, students are introduced in relatively chronological style to (1) the spectrum of theories in terms of how they compare and contrast with each other; (2) the more complex ways in which seemingly rival theories, ontologies, worldviews, etc. actually overlap with each other, producing relational symbioses rather than oppositional stand-offs that are evident only through patient insight rather than superficial readings; (3) the qualitative and quantitative tools needed to deconstruct and manage a theory (e.g. structure and agency, form and content, input and output, domestic and international, etc.) and (4) the practical application of theories as forms of social behaviour, political preference and economic interest in the world.

Deconstructing the ‘big ideas’ inherent in political philosophy in the form of theory and reconstructing them as aspects of policy, is one of the key challenges of teaching, and if done right, a source of real satisfaction for students and academics alike. A lesson learned from teaching such ‘big ideas’ is to ensure that students appreciate the ‘big’, and while understanding the role of ‘ideas’. In terms of international relations for example, this means imparting the crucial need to know more about war, peace, sovereignty, intervention, alongside the knowledge of why such ideas operate both hypothetically, as abstract ideas in the form of theories, and practically, as material practices in the form of policies. A well-struck balance should leave students with an enduring curiosity about the fundamentals of cooperation and conflict as witnessed in local, regional and international events, as well as an analytical appreciation for how these dynamics operate in top-down fashion as an overarching principle, and bottom-up as a series of practices that form our daily lives.

In terms of teaching ‘big ideas’, there are cautionary tales: beware lectures at the beginning of the term entitled ‘models, what they are, why we need them, and their role on the final exam’, or something similar. Blunting student curiosity in an opening, limp lecture is an easy mistake to make. Unfortunately it is a tough mistake to remedy – usually because it occurs in year one (or the beginning of a new term). Lecturers run the risk of permanently reducing student interest in subsequent content having failed to communicate the importance of the form itself. Over the years, a very basic explanation of a theory as a set of conceptual spectacles is easily enough.

As the family of theories emerges across the term, to be discussed, compared, dissected, and allied against reality, it becomes apparent to all (or most) how worldviews operate independently of and interdependently with each other and as an organising principle by which to explain (and possibly predict a host of historical and contemporary behaviour. The final week - rather than the first week - can then be a satisfying overview of 'theories I have known: mad, bad and worse'.

Other pitfalls to avoid: beware poor fits between a given 'big idea', and its counterpart a theory and/or case study example. Also, avoid case studies that fall outside the lived reality of your student demographic, at least to begin with. Our students are no longer post-Cold War citizens, or even 9/11-aware. Many have only a fleeting idea of the former and no lived recollection of the latter. From the perspective of foreign policy analysis, while it is tempting to tackle big ideas regarding war, aggression, territory, diplomacy and peace using the Cuban Missile Crisis, contemporary examples of Syria, Libya, Ukraine are better examples to begin with, given their increased contemporaneity.

In terms of grasping grand discourses, another helpful approach is through differentiating between a variety of oppositions, and then showing how they may in fact be related, and indeed relational: form vs content, structure vs agency, substance vs. procedure etc. In a sense, we are attempting to get to grips with big ideas from a variety of angles: their definitions, their origins, their developments, their actors, their structure and forms, their application and implementation, their contestation, and ultimately how we evaluate them. Further, the deconstruction/analysis and reconstruction/synthesis approach is valuable. Teaching an idea as it operates within, or as a policy is a challenge. Using a phasic approach to break down the cycles of a policy for example is a provably helpful way to break down something as large as defence policy (foreign) or recycling (public). The policy cycle is a key component of US-oriented public policy analysis (PPA), and is invaluable in helping students get to grips with a 'big idea' operating as a major piece of legislation of a key policy. Simply put, policies are divided into their inputs and outputs. Inputs entail the idea itself, including its definition, its agenda setting, supporters and detractors, and the tools and resources by which it moves from abstract to material. Outputs entail implementation (including outputs and outcomes), evaluation, and adaption prior to commencing the next policy cycle. Using this structure, the majority of moving parts can be addressed, including: background history, key players, ranked preferences, and results, as well as key criteria including success vs. failure, and intended vs. unintended outcomes. Finally, the use of simulation games. As various colleagues at CCCU have demonstrated (e.g. Politics/IR, and Law), the impact and enjoyment of a simulated, high-intensity setup in which students 'adopt' a range of stances, from theories, to big ideas and policies, to institutions, states or politicians is a compelling pedagogic tool. The instant transference in student mindsets from a 'big idea' to 'my big idea' that accompanies the role-play dynamic is a rich source providing first-hand insights and personal understandings of ideas that may at first seem tough, abstract, or irrelevant.

TEACHING AND LEARNING - THINK GLOBALLY...THINK CRITICALLY

Dealing with big issues and ‘wicked problems’, especially those at world regional and global scales - the realm of ‘geopolitics’ - is difficult. Geopolitics is essentially the study of international political policy and decision making in relation to key geographical variables, both human and physical, such as terrain, natural resources, demographics, and spatial identity. As well as a term used amongst policy elites and academics, geopolitics is becoming an accepted term in the news media and in popular writing on world politics, see for example Tim Marshall’s (2016) *Prisoners of Geography*.

Most academics find it hard enough to grapple with the complexities involved, let alone convert this into effective teaching and learning. One approach is to actively engage students with ‘critical geopolitics’. Critical geopolitics seeks to ‘deconstruct’ the representational practices of elites (O’Tuathail and Dalby, 1994; Dalby and O’Tuathail, 1996) and thereby challenge the ‘naturalised’ images of the political world created by traditional geopolitics - “which holds that the world is self-evident or that the facts simply ‘speak for themselves” (Dodds and Sidaway, 1994, p. 518).

Critical learning requires the student to unpack the representational practices through which ‘policy elites’ shape the way in which individuals understand international relations and discourses of environment and development. The approach acknowledges the importance of sites of popular geopolitical discourse (e.g. news media, school texts, documentaries), as well as official policy documents and materials produced by ‘think-tanks’. Teachers at HE level need to acknowledge that this is difficult and students will need to be introduced to the skills and language relevant to this approach. This involves not just textual analysis, but the ability to understand how graphics, especially maps, can also play an important part in creating and sustaining specific world-views (Vujakovic, 2014).

A fruitful approach which has been used by one of the authors is an adaptation of Burningham’s (1993) approach to discourse analysis, in which language is not regarded as standing for reality, but as active medium through which reality is created. (Note: this can also apply to graphics, where maps, for example, can be drawn to create a ‘reality’ in advance of that reality on the ground - so called ‘cartographic precedent’). Burningham’s work focused on local environmental conflicts, but the approach is equally applicable to geopolitics of the environment. She deconstructs environmental discourses by showing how each protagonist tends to adopt an empiricist repertoire – in which their position is constructed as ‘objective’ and ‘environmental/sustainable’ (taking the moral high ground), while constructing their opponents language as a contingent repertoire – characterised by bias and subjectivity. They will also seek to ‘account for error’, by showing that the opponent’s position is built on erroneous or poor quality information, while averting any such criticism of themselves.

THE GEOPOLITICS OF DESPAIR?

Case studies as teaching and learning aids can reveal the importance of a critical and nuanced understanding of current geopolitics and impact on environment and development. They reveal that what might superficially appear to be ‘realist’ or ‘idealist’ modes actually hide contradictory readings. Even seemingly important internationalist declarations, such as that following the UN Conference on Environment & Development (UNCED) in Rio (1992), can be seen to be underpinned by a realist ‘Westphalian’ world-view.

See for example Principle 2 of the Rio Declaration which states that:

States have, in accordance with the charter of the United Nations and the principle of international law, the sovereign right to *exploit their own resources pursuant to their own environmental development policies...*(emphasis added).

This plays directly to a world-view based on the right to non-interference in the affairs of sovereign states that emerged from the ruins of the Thirty Years' War and the Peace of Westphalia (1648). While this principle is still recognised, it has become less relevant in a world in which the global commons are threatened by individual state actions, and where a single superpower has effectively countered the principle when it believes it has the moral right to intervene in the affairs of another sovereign state.

Case studies can, however, also suggest that some issues may be intractable and this may create a sense of negativity and fatalism in those studying these issues. It is this issue that may be the hardest for academics to deal with, as is difficult to create a sense of potential agency in students confronted by 'wicked problems' generated and/or driven by governments and other significant and powerful players. Stressing the importance of counter-narratives and counter-mappings, that can emerge from democratic systems, especially in a wired-world, must play an important part in this.

CASE STUDY - THE ARCTIC REALM

The Arctic provides a useful case study of the complexities of mapping a host of powers, preferences and policies. Key 'big ideas' here include the global commons, the public good, the role of international law, the imperatives of sovereignty, and the mapping of interests and preferences that pit individual states against emerging forms of governance. International relations theories foreground these tensions in a variety of realist and neoliberal oppositions, attempting to find mid-range solutions by way of sustainable development-driven governance. Students need to take on big ideas including:

Sustainable Development: In a broad sense, these include prescriptions for a vulnerable region of the world, foregrounded in the uneasy balance of hard science and hard power. Climate change has had a prodigious impact on the Arctic, raising issues of both accessibility to new resources (hydrocarbons, shipping lanes, northern tourism, indigenous communities, scientific explorations of Arctic biosphere) and responsibility regarding the consequences of all manner of human activity in the Arctic.

International Law: The use of a specific international regime, the United Nations Convention on the Law of the Sea (UNCLOS), is seen as a means of limiting the involvement of non-Arctic states within the region. By agreeing to abide by the conditions of UNCLOS the coastal states have almost total control of the resources of the ocean, and through the Arctic Council formed in 1996, have agreed to cooperate on environment and related matters.

Sovereignty : The national interests of Arctic, and non-Arctic states however, are key to the composition of, and efficacy of structures of international law and governance. The results of the 2008 US Geological Survey indicating large holdings of oil and natural gas spread across the High Arctic kick-started national interest in the Arctic as an area of new-found material interest and potential political conflict. Russia, the US, and to a lesser extent Norway and

Canada have released foreign policy statements clearly indicating their role as 'Arctic states' with various definitions of 'Arctic sovereignty'.

Periodical geopolitical spats have taken place, though none of any real import. Unsurprisingly, calls from certain non-Arctic states for the ocean to be regarded as 'the common heritage of mankind [sic]' (German Foreign Policy Committee) are regarded by littoral Arctic states as unwarranted interference. High Arctic states have attempted to fight back, using a combination of sovereignty-driven arguments, grounded in intergovernmental institutions (e.g. the Arctic Council). Their determination to limit interference in the Arctic Ocean was first made clear in the Ilulissat declaration of 2008:

This framework provides a solid foundation for responsible management by the five coastal States and other users of this Ocean through national implementation and application of relevant provisions. We therefore see no need to develop a new comprehensive international legal regime to govern the Arctic Ocean.

Governance : International regimes are generally regarded in a positive light, with their ability to generate inter-governmental cooperation and still manage the trans-national challenge of protecting the Arctic environment and its resources. 'Global Governance' however has yet to prove itself as a viable *modus operandi*. Organizations like the Arctic Council, or the EU-based Northern Dimension may have promoted cooperation but their outputs remains arguably lackluster in terms of generating actual changes in the region or in staunchly defending a given Arctic position in more high profile international organizations (e.g the UN). Indeed, despite the fact that many states have observer status at the Arctic Council and indigenous Arctic groups are represented, this has led to a 'closed-shop' in terms of decision making. As a result, we generally know more about the Arctic from state-based policies, or large MNC-based intervention (e.g Shell) rather than Arctic-specific actors.

Climate Diplomacy: e.g. Rio – Paris: the power of summitry, etc. Interesting point to note here: the spectrum of hard-power demands emerging from sovereign states vs periodic, to high profile intergovernmental summits pulling together a host of states, with the output of legislated CO2 reduction targets designed to protect delicate regions like the Arctic, to supranational legislation generated by the EU that has transcended national and intergovernmental structures and produced pioneering outcomes in terms of prodigious commitments to a 'shared problem. In addition, the rise of non-specific terminology such as 'stewardship' relating to both 'soft' responsibility and 'hard' obligation (e.g. EU, Canada, US). It has yet to be seen whether the Arctic Council will prove to be a force for good in environmental terms. To date it appears to be working, but the key issue here is the rhetoric and how students interpret the language used by each side in the debate concerning the future governance of the ocean. Here Burningham's (1993) approach provides a powerful means to introduce students to a critical understanding of rhetoric strategies.

CASE STUDY - THE SOUTH CHINA SEA

Another case study which involves complex rhetorical strategies, both textual and visual, relates to the legal status of much of the South China Sea (SCS) and its natural resources. Here, unlike the Arctic, several of the key coastal states are in dispute with China, which is regarded as making exaggerated claims. In this case UNCLOS, rather than being a useful tool to unite one group of state with a stake in the maritime environment, it has proved to be divisive.

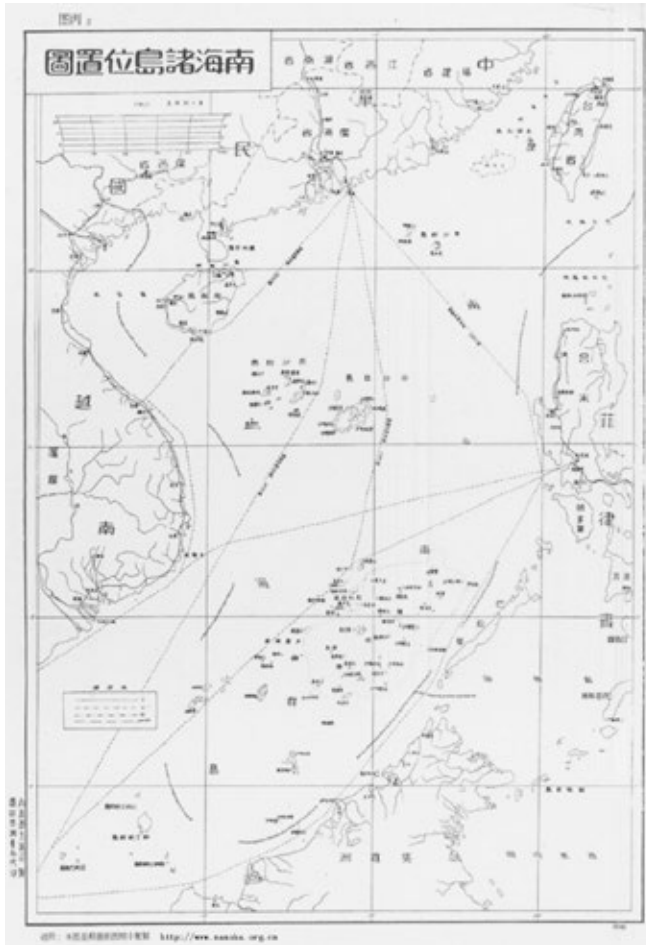


Fig. 1 - Eleven dash line 1947, <http://www.documentcloud.org/documents/1347513-prc-img-eleven-dotted-line-1947.html>

China has used a strategy of ambiguity in its dealings with a stake in the SCS. It has adopted a U-shaped or Dashed Line which appears on a number of Chinese maps and in recent Chinese passports, and has been taken up in the news media. This line has a long a complicated history that goes back to 1947 (originally produced by the Nationalist government, and adopted by The People's Republic from 1949). The line has changed over time, but fundamentally includes the vast majority of the sea as under some form of Chinese jurisdiction (see fig. 1).

This contrasts with the areas that would fall under the control of other states (their 200mn Exclusive Economic Zone (EEZ)) if these are based on their mainland coast lines on the SCS. Much of the dispute between Chin and other states hinges on groups of islands and reefs such as the Spratly Islands, the Paracel Islands and Scarborough Reef and their potential impact on UNCLOS. Part of the problem is that that China has never clarified the meaning of the U-shaped line. As the US has made clear:

China has not clarified through legislation, proclamation or other official statements the legal basis or nature of its claims associated with the dashed-line map - US Dept. of State (2014) Limits in the Seas.

It is unclear to the US and other commentators whether the line is a claim to islands, a national boundary, indicative of sovereignty over 'historic waters' or claim to lesser 'historic rights' to resources, such as fisheries. The dashed-line has also been rejected by an international tribunal, the Permanent Court of Arbitration, which has:

noted that, although Chinese navigators and fishermen, as well as those of other States, had historically made use of the islands in the South China Sea, there was no evidence that China had historically exercised exclusive control over the waters or their resources. The Tribunal concluded that there was no legal basis for China to claim historic rights to resources within the sea areas falling within the 'nine-dash line. (Permanent Court of Arbitration, 2016, p.1-2)

China rejects the ruling and holds fast to the dashed-line. Why is this? One obvious possibility is that China is essentially challenging what it sees UNCLOS as a regime primarily devised for western circumstances, where historic use of the seas is much different, and despite being a signatory and having ratified UNCLOS.

This is another fruitful theme for student critical engagement. A wide range of news media outlets and international think-tanks have produced commentaries on the SCS disputes. These include analyses that range from those who see this primarily as an issue of the control of access to physical resources to more nuanced understanding of China's position in the region. For example, a 'backgrounder' piece by Xu (2014; on the Council for Foreign Relations (US) website) regards this as essentially a competition for natural resources and control of EEZs, citing David Rosenberg (Middlebury College) - 'Behind it all, its essentially the industrial revolution of Asia'. While at the other end of the spectrum others recognise what Curtis (2015) has described as China's determination to overcome its ontological insecurity - to secure its national identity, to overcome the 'century of humiliation' imposed by western powers up until 1949, and as a response to the recent US 'pivot to Asia'. While not using the term ontological security Kuok (2014) amongst others touches on these themes in their analysis:

Nationalism in China extends across society ... historical encounters have left the Chinese with a sense of humiliation and resentment and inflamed their sense of justice and centrality in world affairs. Kuok (2014) Overcoming the Impasse in the South China Sea – East Asia Policy Paper 4, Brookings Institute (US)

Others like Duchatel and Kazakova (2015) in an article for SIPRI (Sweden) see China's motivation more terms of operational freedom for its navy and specifically its submarines in the SCS, and a broader balance of power in the Pacific realm.

If so many interpretations exist, how do students make sense of an arena of simmering conflict that could potentially escalate to a 'hot war'? If it really is a matter of ontological security, what hope for an idealist-integrationist approach to cooperative resource allocation and management? Is this old style geopolitics or can the issues be resolved in ways compatible with the sort of sustainability agenda being promoted in European universities?

CONCLUSION

This paper has attempted to provide an examination of several themes, the nature of ‘grand discourses’, the teaching and learning methods related to these ‘big ideas’ and ‘wicked problems’; and how the concept of ‘political geography’ may pull these themes together. There is clearly the potential to view these issues as insurmountable, and to create a sense of despair and negativity, yet if we wish to find solutions to real world problems, this must start with a realistic understanding of how the world ‘works’...and that is the first step in a journey towards a better future.

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Appendix 3 - Meeting the Sustainable Development Goals: A baseline study of the contribution of UWE, Bristol

Georgina Gough (Senior Lecturer in Education for Sustainable Development, University of the West of England, Bristol)

Jim Longhurst (Assistant Vice Chancellor for Environment and Sustainability, University of the West of England, Bristol)

Contact: Georgina.Gough@uwe.ac.uk

On September 25th 2015 at the General Assembly of the United Nations, 193 nations adopted 17 Sustainable Development Goals (SDGs) to end poverty, protect the planet, and ensure prosperity for all as part of a new sustainable development agenda (1). The Sustainable Development Goals (SDGs) provide an agenda for sustainable development that will stimulate collective action to address areas of critical importance for humanity and the planet.

UWE, Bristol welcomes the clarity and universality of the SDGs and recognises the urgency attached to their implementation. Subsequently, the university has begun a process of deep reflection on how it contributes to the achievement of the SDGs. There are many frameworks and tools available to organisations for identifying their level of engagement with sustainability issues. The Global Reporting Initiative (GRI) et al. (2015a) advise that baseline responsibilities for business include “recognition of the responsibility of all companies – regardless of their size, sector or where they operate – to comply with all relevant legislation, uphold internationally recognized minimum standards and to respect universal rights” (p10). UWE Bristol has been working for over a decade to continue to improve its environmental performance and has successfully achieved institution-wide ISO14001 accreditation for the past three years and won numerous awards for its environmental management. The university has further been successful in achieving certification, accreditation and awards for its commitment to gender and disability equality, to fair trade, to health and well-being and to responsible sourcing. The university has made additional commitments to its employees, including, for example by offering flexible working and through inclusive and consultative processes and decision-making, all promoted within the SDGs.

The GRI et al. (2015a) state that organisations should ensure that the SDGs are reflected in business priorities and goals, are integrated across all functions and inform reporting and communication. UWE’s commitment to sustainability is visible in its institutional Strategy 2020 and is explicitly articulated in its Sustainability Plan 2013-2020. This Plan details UWE’s sustainability objectives and targets under a number of themes. Progress towards achievement of the targets is reported on quarterly. A mid-point review of the Plan is about to be undertaken and the SDGs will inform this review.

Education is key to many of the Sustainable Development Goals and their subordinate targets and as a higher education institution (HEI) education is core to UWE's purpose. The university has a long history of engagement with education for sustainable development (ESD) which aims to enable students to develop the knowledge and understanding, skills and attributes needed to work and live in a way that safeguards environmental, social and economic wellbeing, both in the present and for future generations" (QAA/HEA, 2014, p5). The engagement of UWE's educational provision (both formal and informal) with the SDGs will be critical in determining the extent to which the university is able to meaningfully contribute to the 2030 agenda.

UWE has begun a baseline assessment of its engagement with issues highlighted in the SDGs. Alignment between the Goals and the primary disciplinary focus of each of the university's faculties has already been identified, as has alignment between the core themes of the institution's Sustainability Plan and the SDGs (Longhurst, 2016). The next phase of this process involves an examination of UWE's portfolio of programmes of study, its public and community engagement and its research activities with respect to the extent to which they meet the expectations of the Goals. The university has conducted surveys of its curriculum with regard to opportunities for students to engage with sustainability issues for a number of years and is confident that 100% of programmes include an ESD offer to students. However, mapping the curriculum against the SDGs will enable this offer to be enhanced and made more comprehensively in terms of the scope and level of visibility of sustainability issues embedded in programme design and delivery. The disciplines of midwifery, environmental science and public health have already been comprehensively assessed whilst accounting and finance, geography, and computer science are in the final stages of assessment. All other UWE disciplines will be assessed over the 2016/17 academic year. The same will then be done in relation to public and community engagement and research, with benefits from this extending more widely into the local, national and international community.

One of the indicators identified by the GRI et al. (2015b) as illustrative of activity which supports the SDG agenda, specifically in relation to inclusive and equitable quality education and lifelong learning opportunities for all, is the number, type and impact of sustainability initiatives designed to raise awareness, share knowledge and impact behaviour change, and results achieved. UWE recently achieved the highest ever score for an HEI in its NUS Responsible Futures accreditation audit. This demonstrates the level of ESD and broader sustainability activity which is already being undertaken at UWE. Engagement with the SDGs will enable this work to explicitly contribute to the global sustainability agenda and will enable our staff and students to be aware and feel proud of their personal contribution to meaningful action.

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Appendix 4 - Education for Sustainable Development: Exploring Tensions, Paradoxes and Denial

*Stephen Scoffham (Visiting Reader in Sustainability and Education,
Canterbury Christ Church University)*

Contact: s.scoffham848@canterbury.ac.uk

There are a number of features associated with sustainability and education for sustainable development (ESD) which help to explain why it is proving so slow to gain a foothold in academic life.

1 Sustainability is difficult to characterise

Sustainability is a notion that lacks clear definitions and can be interpreted in many ways. Simplistically, it is associated with specific pro-environment behaviours such as recycling waste, saving water and turning off the lights. A more sophisticated approach sees it as the property of a whole web of relationships (Capra and Luisi 2014). Focussing on connections and associated notions such as balance and harmony has the advantage of shifting attention away from environmental problems towards the relationship between people, other life forms and the planet which supports us. However, it also widens the sustainability agenda and makes it harder to communicate.

2 Sustainability is contradictory

Pro-environmental behaviours are sometimes difficult to reconcile with contemporary living. The social and cultural norms associated with modern capitalism encourage individualism, consumption and the pursuit of money. Such ways of thinking tend to favour the exploitation rather than the conservation of resources and takes little account of pollution and habitat destruction. Nobody wants to feel bad about themselves but reducing our environmental footprint in one part of our lives can be difficult to reconcile with some of the other aspects of everyday living which are environmentally damaging. And alerting students to contradictions which they have little hope of resolving is liable to leave them feeling disillusioned.

3 Sustainability problems do not have easy answers

Many environmental issues do not have a definite answer or solution. Instead they fall into a category which Rittel and Webber (1973) called 'wicked problems'. Problems of this kind have multiple causes, can only be addressed through a range of strategies and often have a moral or professional dimension. Furthermore, they are difficult to understand until a solution emerges but the solution itself changes the nature of the problem. Engaging with wicked problems implies the ability to tolerate uncertainty and a willingness to accept multiple perspectives.

4 Sustainability raises very worrying questions

Learning that the Earth is under serious environmental stress and that we have all contributed to current problems is a devastating message. Recognising that environmental pressures are liable to lead to fundamental changes to our way of life is perhaps even more unwelcome. Some people respond by attempting to discount the evidence, others, as Klein (2015) puts it, simply 'look the other way'. Another common strategy is to hope blindly that some new invention or miracle solution will come to the rescue and to imagine that technology will provide solutions.

5 Sustainability challenges our values

Facing up to environmental destruction forces us to clarify our values and decide on our priorities. What kind of world do we want to live in? It also raises questions about our responsibilities to distant people and to future generations who will be effected by our actions. This a complex area because those who cause pollution (in all its different forms) often do not suffer the consequences. Also there are some very real questions about how higher education institutions engage with moral issues without straying beyond their remit. Students are adept at detecting hidden agendas.

6 New narratives

Making sense of what is happening to world around requires us to invent new stories about our lives. We understand who we are both in relation to the past and our hopes for the future. Inevitably our thinking is positioned, both geographically in space and historically in time. This means our notions are culturally relative and need to be constantly revisited. Sustainability issues challenge the narratives that have served us so well in previous centuries, As Stibbe (2015) points out we do not have a new story yet but each of us is aware of some of its threads. Bringing the different elements together involves a lengthy process of paradigm change.

The fact that sustainability is complex, contradictory and contested helps to explain why it is difficult to communicate. In many ways we are at a transitional moment. We recognise that on a planetary level there are limits to growth and that we are exceeding these in all sorts of ways. We know that our ecological base is threatened and the diversity of wildlife is declining in nearly every part of the world. And we watch anxiously as global temperatures creep inexorably upwards and climate change brings increasingly unpredictable weather. But we only have partial answers to these problems and lack the political will to implement them whole-heartedly.

As far as students are concerned, ESD can be both unsettling and disorientating. All new learning impacts to some extent on our sense of identity and the values that we hold. Engaging with sustainability on anything more than a surface level, however, involves an unusually high degree of disturbance. Students sometimes react to this process in negative ways and are quick to resort to accusations of bias and indoctrination in order to safe-guard their current thinking (Scoffham 2014). Interactive and participatory pedagogies are one way of addressing such problems. Andreotti (2006) goes further and argues that developing knowledge about the world requires us to 'learn to unlearn' by which she means recognising the hidden assumptions which underpin our thinking. She also draws

attention to different learning dispositions which are liable to facilitate this process (Andreotti 2013). A willingness to take on new perspectives and engage with the world in all its messiness are two of the hallmarks of a more open sustainability mind set.

Higher education institutions have been so slow to embrace sustainability for different reasons. A focus on estate management offers an easy option but repositioning academic life and thinking to embrace ESD is a much harder task. Jones et al.(2010) identify three principal inhibitors which they believe serve to limit curriculum change. These are the tendency of academic staff to guard their academic freedom, the lack of knowledge about sustainability amongst academic staff and the structure of academic institutions themselves. The division of knowledge into separate disciplines presents a special challenge as sustainability is an integrative and unifying concept which sits uneasily alongside traditional modes of thought.

There are some interesting tactical questions about how best to implement change and different approaches to leadership. Is it best to adopt an evolutionary approach and opt for gradual change or is adaptive change superficial and unlikely to have any lasting impact? Is the pressure for reform going to be effective when it originates at grass roots level or does it require whole-hearted institutional support? Are there limits to the extent which any individual institution can successfully step outside the norms in which it operates? Orr (2003) used the neat metaphor of 'walking north on a southbound train' to express this dilemma.

Ultimately the success of the sustainability agenda will be measured by its impact on university students and the extent to which they become environmentally literate as a result of their courses and experiences in higher education. The conclusion from this brief analysis is that ESD teaching is liable to be more effective if it recognises the complexities of that permeate ESD and the barriers both overt and covert which lie in its way. Large scale institutional change is difficult to achieve but the stakes are high. We know that environmental stress is mounting at both local and global levels. There can be little doubt about the urgency of reform.

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Appendix 5 - Rethinking aims: The responsible university

Chris Willmore (Professor of Sustainability and Law, University of Bristol)

Contact: chris.willmore@bristol.ac.uk

Much has been written about the purpose of Universities in recent times. In the middle ages, universities were inextricably linked to religious faith and were centres of the development of both knowledge and values. In the enlightenment model, Universities came to articulate their objectives as being about knowledge not values, and over time values came to be juxtaposed to the pursuit of knowledge as the function of University. One example of this is that in the UK, when surveying students, we will gather demographic data, but do not ask students about their values. In contrast, in the USA, SERU conducts a survey across many universities each year and in that survey it is considered perfectly acceptable to ask students about their attitudes and values in the context of evaluating their experience of university study.

Education for sustainability challenges those enlightenment models of the academy in three ways:

- It engages values as well as knowledge – indeed knowledge about the sustainability challenges we face is of little use without the values that will lead a person to do something.
- Education to live responsibly places a premium on linking theory and practice, working out what theoretical understanding means in practice and then learning to do it, through engagement. This is not about work experience, learning to be a better employee, it is about engagement with the public, private and voluntary sectors as part of a process of working out a student's personal approach to life and building the habits and practices that will enable them to live sustainably.
- It engages both qualitative and quantitative research and requires us to explore different modes of narrative. The recent EU Referendum is but one example of a context in which narrative, and belief have been shown to be more influential than argument using expert methodologies. We need to skill our students to be people who place evidence at the centre of their own decision making, have expertise to use evidence reliably, but who can communicate in narrative modes as well.

University strategies are gradually responding to these challenges. Bristol University, in its latest strategy has taken a clear position in seeing its aim as being to produce graduates who have values and are going to be active in seeking to implement them:

“ Our graduates will be informed and active participants in moving society towards sustainability; they should be capable of reflection and of behaving ethically, and should be aware of disadvantage and social justice, and be willing to participate to help create a wiser and better society. “ (Bristol University Bristol Futures Strategy 2016)

That sort of commitment challenges institutions to rethink what they deliver and how. How do we encourage students to remain creative in the face of the structures of education? How do we help students to learn to tread more lightly on the planet in the lifetime ahead of them? How do we skill them to be change agents, resilient, adaptive and ready to make a difference? How do we face up to the limitations of scientific methodologies in terms of public opinion for example the extent to which attitudes to fracking are based on narratives and personal relationships not on scientific methodologies? Or attitudes to the EU not based on evidence about impacts? It is not satisfactory to say people must be educated better to rely upon expert methodologies, we need to skill our students to communicate in ways that are effective to the whole population.

Bristol is seeking to address this through an ambitious programme, called Bristol Futures, a transformative project which explicitly engages all students in sustainability, innovation and global citizenship, and brings together student experience in their formal curriculum, informal curriculum (such as Student Union activities) and subliminal curriculum (the experience of the University estate). It will involve students in working with the community and gaining experience of diverse contexts, building upon the Bristol Green Capital Project we developed jointly with UWE which has seen students putting in 100,000 hours a year into the community on sustainability projects.

In a previous PedRIO paper, I explored the question of experimentalist leadership, and its strength as a means for encouraging innovation for sustainability in and beyond the curriculum. It uses strategic leadership to encourage innovation focussed upon sustainability, and then seeks to make visible and share that innovation, as part of a positive feedback loop. Bristol University has been using that sort of approach with considerable success in encouraging and promoting education for sustainability within disciplinary curricula and in the development of interdisciplinary and extra curricular opportunities.

However with the adoption of the new strategy and the Bristol Futures project, the University has moved from what might have been as a permissive model (however strong the cultural imperative) to a more universalist one. This sort of change raises interesting questions about the role of blockers in mandatory as opposed to permissive systems. Experimentalist models work with the willing, and encourage participation, positively encouraging differential rates of progress. There are plenty of relatively willing people to work with. Blockers, who do not share the agenda, or see what they consider insurmountable resource barriers, simply do not participate, and are seldom in a position to block others doing so. Individuals who do not share the agenda do not need to change, although the spread of cultural change may eventually lead them to choose to change.

But in a mandatory model, where the approach and resources are subject to central approval, blockers are more visible and potentially more powerful. They can spot other blockers, and it can prove harder to continue the momentum of change in the face of those blockers. By articulating a more detailed strategy as opposed to adopting an experimentalist approach and encouraging change, a specific target for blocker activity is developed. Blocking can take many forms, and the nature of the institutional culture will affect both the potential for such activity and its impact. In deciding the point at which to move from a strategic permissive to mandatory approach the question of the role of blockers is a crucial factor. For some the issues are of resource, for some disciplinary space, for some fear about areas with which they are not familiar, and for some a commitment to a particular form of university or

education. Some Universities are highly centralised with change driven from the top, but in devolved institutions, with disciplinary and academic autonomy, change relies on addressing these causes in a highly individuated way. The Bristol approach was the product of an extensive strategic debate across the entire University to develop a shared vision for the future, as the first step in building a platform for change, respecting the disciplinary and academic autonomy which is a core part of the institution's identity. The repositioning of the academy to meet the challenges of tomorrow requires us to address the very function of a university, modes of communication, the relationship between knowledge, evidence and values, and the relationship of theory to practice. If we want to reposition the academy, we need to engage in a broad debate about all of these, and ensure that across the whole academy we embark on a journey that engages with each individual and their personal academic journey.

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Appendix 6 - Do 'Subject Silos' mean that Sustainability will always be a Cinderella subject in Higher Education and education in general?

David Dixon (Freelance Education Leadership Consultant)

Contact: daviddixon649@gmail.com

This paper has aims to explain why 'Education for Sustainable Development (ESD) or Education for Sustainability (Efs) has a relatively low profile in mainstream Higher Education, including teacher training. This is despite the global environmental challenges, economic and social challenges we face and most universities having sustainability departments and ESD/Efs strategies, with many adhering to standard ISO 1400 which ensures that campuses reduce their environmental impact. The author's use of the term ESD/Efs refers to the general model shown below in Fig. 1

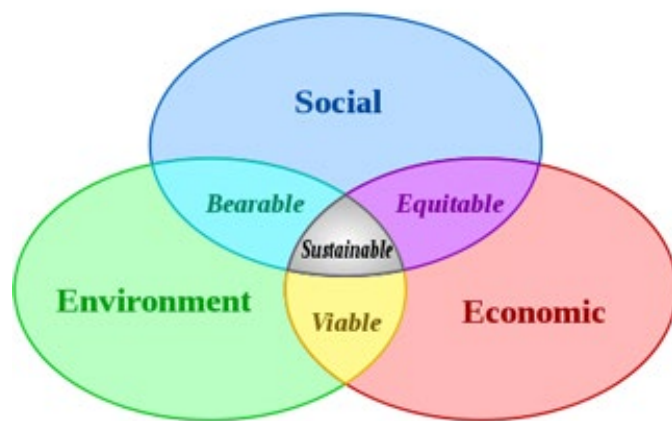


Fig. 1 Model of ESD/Efs

Institute for Sustainability Leadership and others have specialist departments dealing with this area. The Teacher Education for Equity and Sustainability Network (TEESnet), has over 300 members and representation from across the four UK nations, including university and school based teacher education, teachers, NGOs and Development Education Centres (DECs) and organisations such as the Higher Education Academy (HEA), University Council

THE CURRENT SITUATION

Apart from Sustainability Departments, there are also pockets of exceptional practice and expertise within the context of specific disciplines. For example, Geography and Meteorology now feature Climate Change very strongly and Science deals with sustainable energy technologies with its Biology/Ecology arms studying issues pertaining to species and ecosystem depletion (which also links to Geographical studies of landscape and land-use). In the best case scenarios, all these are dealt with under the co-ordination of a 'Sustainability Department'. The Green Gown Awards and other accreditations are also getting a higher profile, with more universities interested in achieving them. Cambridge University has an

for the Education of Teachers (UCET). There are also specialist institutions such as Schumacker College which only deal with sustainability issues and have developed such courses as 'Holistic Science' and 'Ecology and Spirituality'.

The disciplines which do not often reference Education for Sustainability are on the socio/political sides of academia, such as sociology, psychology, philosophy, theology and economics. These seem to be mono-subject and linear in approach, with few links to contributing phenomena which are considered outside their immediate remit. Although this is a generalised statement and there is increasingly joined up, multi-disciplinary and innovative thinking in these fields, it is infinitesimal if one considers the overall production of academic research and resulting publications.

There are hybrid disciplines which break the above mould in terms of joined up, innovative thinking. These include Eco-psychology, Radical Ecology, Systems Theory, Chaos Theory, Complexity Theory, Peace Studies and academics who deal with aspects of post-modernism under the banners of History and History of Arts. There are also branches of economic (Neo-economics) and Anthropology, which have very different perspectives from the dominant Neo-Classical Economic models based upon those first popularised by Adam Smith in the 18th Century. Allied to these are individual authors and academics who publish pieces aimed at the 'General Public' rather than just academia. Examples of these are James Lovelock (1979), George Monbiot (2007), Naomi Klein (2015) and Al Gore (2006). Certain celebrities have also popularised aspects of environmentalism. For example, the pop-music artist Bjork (2014) has taken a radical environmental stance and also instigated education programmes through her 'Biophilia' initiative. They have all made considerable impact with large sales of books, records and associated films, yet even they have not made inroads into the thinking of most academics who deal with quite narrow areas of a discipline. Much of this can be justified because of the need for academics to specialise and develop a deep knowledge and understanding of niche areas. Anyone who has completed a doctorate will say that often the advice given by a tutor is to narrow down the field of study so that a new area of knowledge can be developed which has not been darkened by anyone else. This means that the student can become an 'expert' in his or her field. This is laudable and understandable because otherwise academic standards and strictures cannot be maintained, but once again this is often at the expense of joined up thinking which appreciates dynamic systems as well as static, narrow or linear phenomena.

BARRIERS TO ESD/EFS

From this, several issues can be identified which prevents ESD/EFS being mainstream in Higher Education and can be characterised thus:

- ESD/EFS is not recognised as a 'subject' in the same way most of the 'ologies', 'isms' or long-established subjects are.
- The social scientists and the natural scientists do not often collaborate and can be at odds in terms of methodology and ways of thinking. Indeed, some natural scientists wedded to positivist methods, would consider qualitative approaches deployed by social scientists as 'unscientific'. Social scientists can take issue with positivist methods because of their reductionist nature and because working with numerical data can have interpretive flaws.

- Teacher education is increasingly being siphoned off from universities into school-based training e.g. ‘Teach First’, which means that students may have less opportunity to have philosophical discussions on ‘what education is for’ and merely concentrate on the logistics of delivering a pre-ordained curriculum and lesson plans.
- Sustainability is no longer overtly present in the National Curriculum and teacher training does not need to address it.
- The current political climate is hostile to ESD/EfS in teacher training and sees it as another aspect of what Michael Gove (2013) Secretary of State for English Education described as a ‘blob’ infected with Marxist ideas and Sixties values.

In a paper of this length, there is not space to elaborate further on these issues and they are inserted as objects for discussion, rather than the author being dogmatic. For example, some students on Teach First may well be having discussions and thoughts about the aims of education, but it is unlikely that they will be as in-depth or academically facilitated as they might be in the context of a university campus.

WHY THE NEED FOR CHANGE?

Many scientists think that we are entering another geological epoch due to the detrimental effects of humankind on the biosphere. Steffen, Crutzen & McNeill (2007), recommended starting the ‘Anthropocene’ epoch with the advent of the industrial revolution in the early 1800s or with the atomic age in the 1950s. Either way, it is another strong reminder to the general public that we are now having undeniable impacts on the environment at the scale of the planet as a whole, so much so that a new geological epoch has begun. Another graphic illustration of this is provided by ‘Earth Overshoot Day’ (see Global Footprint Network). On August 8, 2016, we will have used as much from nature as our planet can renew in the whole year. We use more ecological resources and services than nature can regenerate through overfishing, overharvesting forests and emitting more carbon dioxide into the atmosphere than forests can sequester. The consequences of this “overshoot” includes shrinking biodiversity, collapsed fisheries, eroded topsoil and climate change. In 2012 it was August 22nd, which shows the rate of retreat.

The last two examples are physical changes invoked by Humankind’s activities, but these are symptoms and causes of a dysfunctional society at local and global levels as shown by the displacement of millions due to climate change, rising inequality and detrimental effects on health and well-being of industrialisation as highlighted by the United Nations Educational Scientific Cultural Organisation (UNESCO, 2006, authored by Ben-Ari), World Health Organisation (WHO, 2014) and many other Non-Governmental Organisations.

So, what is the underlying barrier to EfS/ESD being part of mainstream thinking, particularly when we are facing global environmental, economic and social threats as never before?

NEOLIBERAL NARRATIVES

The author would contend that there is an audit trail back to Neoliberalism narratives which

- influence the way universities are funded and what their roles should be in society
- and thus influence the way academics think and view their roles.
- view education as being a utilitarian device to grow the economy, being wedded to Neo-Classical Economic models and complemented by traditional 'subjects'.
- prefer positivist perspectives where things that are easily measurable are valued above those that are not.
- Influence mainstream political affiliations (which are also silo-based), which all adhere to Growth Models of economics (with environmentalism often being seen as on the 'far Left' in terms of being interventionist in economic affairs, rather than as a cross-party issue).

Monbiot (2016) recently described Neoliberalism as the 'Zombie Doctrine' and traced its origins back to 1938 and the thinking of Mises and Hayek. This eventually influenced Margaret Thatcher and Ronald Reagan and even Mao Tse Tung in the 1980s and displaced the post-war consensus in the West which had implemented the thinking of John Maynard Keynes. Harvey (2005, p.2) encapsulated it as follows:

Neoliberalism is a theory of political and economic practices that propose that human beings can best be advanced by liberating entrepreneurial freedoms and skills within an institutional framework characterised by strong private property rights, free markets and free trade. The role of the state is to create and preserve an institutional framework appropriate to such practices. The state has to guarantee for example, the quality and integrity of money. It must also set up those military, defence, police and legal structures and functions required to secure private property rights and to guarantee, by force if need be, the proper functioning of markets. Furthermore, if markets do not exist (in areas such as land, water, education, social security or environmental pollution), then they must be created by state action if necessary. But beyond these tasks, the state should not venture. State intervention in markets...must be kept to a bare minimum because...the state cannot possibly possess enough information to second-guess market signals (prices) and because powerful interest groups will inevitably distort and bias state interventions (particularly in democracies) for their own benefit.

This embraces the notion of the 'Invisible Hand of the Market', first popularised by economist Adam Smith (1869-originally written in 1776). However, this always contained moderating influences on human greed and runaway excess, rather than being an advocate for them. This is often overlooked and it is taken as being interchangeable with Darwinian Capitalism i.e. 'Survival of the Fittest'. But this is a gross simplification of Darwinian theory and does not take into account many of the unintended consequences on groups and individuals. Galbraith (cited in Frank, 2011, p. 19) revised Smith's theory and stressed how it was not just the case of consumers having a choice of product, but that large corporations manipulated the market to make sure that they were peddling the products that would be most convenient and profitable for them to produce.

This is increasingly common as governmental influence on the economy shrinks and large corporations can use their lobbying power to consolidate and expand their influence so that conditions are optimal for them.

Commercial lobbyists acting for particular narrow interests bend our system of government to their will to such an extent that it can be said to no longer serve the interests of the wider public (Cave, T. & Rowell, A., 2014).

There has been another shrinkage at large as Neoliberal narratives have come to dominate. This has been in the area of humanistic attitudes to education connected with democracy, critical thinking and the development of the individual. This is being subsumed by education for economic growth where credentialism and vocationalism for a global market are seen as the main drivers. This paper is not arguing that HE as preparation for a future career is a 'Bad Thing', but just that it is becoming the 'Only Thing'. Anecdotally, one hears from tutors and course leaders that students expect to pass degrees as easily as possible, with maximum help through formula essay writing, as a means of ensuring a 'better' job at the end of it and that staff are blamed if this does not happen. The National Student Survey and resulting league tables have served to reinforce the notion of 'student as a consumer' using university as a means to an end, rather than student as learner for its own sake.

Korsgaard illustrated this when describing the situation of two global bodies; UNESCO and the Organisation for Economic Cooperation & Development (OECD). Around 1980, the position of UNESCO was clearly weakened and the OECD had an increasing influence on global educational policies.

The [OECD] philosophy is based upon a neo-liberal way of thinking, regarding education as an investment in 'human capital' and 'human resource development' (Korsgaard, 1997, p.18).

Another example of this concerns the UNESCO 17 Sustainability Goals (2015) which aimed to complement the Paris Summit on Climate Change. They are little known in mainstream education, even though they all link to educational provision and there is very little funding available to promote and embed them.

CONCLUSION

With the Neoliberal doctrine dominating every sector of society and HE, what hope is there to challenge the status quo and to what end? Ultimately, one needs to consider what Economic System, Quality of Life, Social Justice and Biosphere integrity is required for a sustainable human race. If Neoliberalism is not the answer, then we should ask different questions about the nature of society and the education system that it serves. The author would contend that education should not be the subject-based sausage machine that contributes to unsustainable economic growth and perpetuating ever widening gaps in health, wealth and happiness. It is not good enough to have light touch governments who are content to let the Invisible Hand of the Market come up with the solutions, as it is unlikely that this unhuman system will look after most of the humans that work for it.

As described above, there are other models which provide alternatives. The New Economic Foundation's 'Well-being Manifesto' (2004), has a different sort of narrative not predicated on increasing Gross Domestic Product (GDP). Universities such as Roskilde in Denmark are pioneering cross-curricular learning through departmental collaboration, so that their students are knowledge creators themselves, not just passive vessels for 'received wisdom'.

The University of Warwick developed a similar strategy through their ‘Student As Producer’ initiative which aimed to reintegrate teaching and research, be a crucible for critical thinking and for students to embrace the complexities of themselves and the world, rather than adhere to reductionism and positivist outlooks. Manchester and Harvard University economics students have been in open revolt to convince their academics to cover other narratives, rather than adhering to the Neo-Classical models of economics which underpin Neoliberalism.

Increasingly anthropologists are highlighting the origins and ultimate folly of our present system and are willing to challenge the prevailing grand narratives of Neoliberalism. This is different to being ‘anti-modern’, or believing that we have moved from a rural idyll to a present state of urbanised chaos. As Harari says in conclusion to his influential book ‘Sapiens’:

...we are on the threshold of both heaven and hell, moving nervously between the gateway of one and the anteroom of the other. History has still not decided where we will end up... (Harari, 2011, p.375).

Other academics are actively moving out of their traditional areas and are addressing sustainability as part of their work. For example, Professor Mike Bottery, has written on education leadership issues for many years, but is now including leadership for sustainability as an integral part of this (Bottery, 2016).

Perhaps the latest political upheavals in Europe will encourage and enable all academics to reassess their subjects and their silos and develop joined up thinking and new perspectives which can match technological achievements and suitably challenge the Neoliberal narratives and the powers they seek to protect.

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Appendix 7 - ESD, forward planning and food security: some radical ideas

Howard Lee (Lecturer in Sustainable Agriculture, Hadlow College)

Will Hughes (Lecturer in Animal Management, Hadlow College)

Contact: howard.lee@hadlow.ac.uk

Food security has been an ongoing topic of research, and recent policy review papers have been published with various foci (for example, see food security in relation to climate change: FAO, 2016; land use: Mora, 2016; phosphorus: Chowdhury, 2016; soil degradation and land access: Gomiero et al., 2016). Research on food security has tended to focus on production issues and the scenarios which threaten such provision (for recent examples, see Denkenburger & Pearce, 2015; Fisher, 2015; van Dijk & Meijerink, 2014; Garnett et al., 2014).

Much of this research concludes that threats to food security are difficult to predict and thus to plan for. Planning for unpredictability has been investigated by Taleb (2012) who has developed the concept of ‘antifragility.’ This has been described by Taleb as:

- ‘. . . the opposite of fragile . . . something that actually gains from disorder . . . Nature builds things that are antifragile. In the case of evolution, nature uses disorder to grow stronger . . .
- If antifragility is the property of all these natural complex systems that have survived, then depriving them of volatility, randomness and stressors will harm them.
- Trial and error is an antifragile activity.’

(Geddes, 2012: 31)

In a farming case study, this has been interpreted by Archuleta (2014) for the USA as follows: ‘The current fragile [farming] system uses separable, directed research when it comes to science; however the antifragile system uses a holistic approach, with tinkering instead of wholesale actions . . . When mistakes are made in fragile operations, they are large, irreversible mistakes, which can run up a lot of debt . . . [Alternatively, farmers can] embrace antifragile operations [by] making little mistakes through experimentation and a little tinkering. These mistakes are often reversible and easily overcome.’ (web site, no page number).

PRODUCTION V. LOCAL FOOD ACCESS: HETEROGENEITY AND AGROECOLOGY

Whilst research reviewed above is clearly focused on the threats to large scale production, antifragile farming can be seen as pushing towards a paradigm of local projects and holism. Whilst some research on food security has considered local issues (e.g. see local food issues in relation to biofuels and food security in Mozambique - Schut & Florin, 2015), most does not. A recent meta-analysis of published research about European food security (Borch & Kjærnes, 2016) indicates that investigations of local food systems have been quite limited, with most research focused on the larger-scale production of food as reviewed above.

A CASE STUDY – SHOOTER’S HILL

We report here on an example of a local food project at one campus of Hadlow College – at Shooter’s Hill, near Woolwich common, south-east London¹. This site now contains a recently constructed growing tunnel utilising a self-ventilating cover² as shown in Figure 1.



Figure 1. New growing tunnel at Shooter’s Hill campus, Hadlow College.

1 See location map at <http://hadlow.ac.uk/about/our-campuses/greenwich-horticulture/> and Figure 3.

2 For technical details, see Vöen Vohringer GmbH & Co KG <http://www.voen.de/en/tunnel.html>

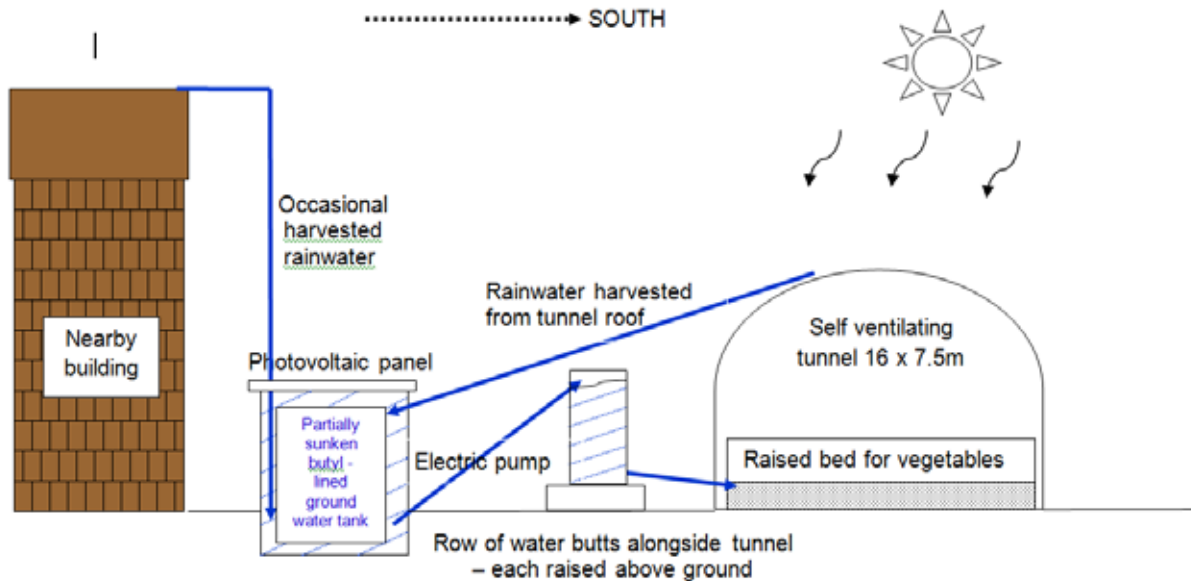


Figure 2. Schematic of the Shooter's Hill project

It is planned that this project will maximise food production with minimal import of external resources. It will support our curriculum delivery to students and also be linked collaboratively to nearby allotment groups. The system will be assessed from an agroecological perspective, by measuring stocks and flows of water, nutrients, and energy, to help quantify inputs v. outputs and act as a bench mark demonstration for possible adaptation elsewhere.

A further ambition will be to consider the surrounding area and attempt to calculate if variants of this project could provide most or even all food needs – see Figure 3. Our vision is of a diverse, heterogeneous array of such projects, managed by multiple stakeholders and developed as described above by Archuleta (2014). It is not intended here to attempt a calculation of metrics for per capita food availability, since many factors need consideration (for a review of human food needs and production options, see Fairlie (2007). However for the Shooter's Hill area – a hypothetical 1km radius zone – Figure 3 indicates substantial land availability. A review by Lee (2012) suggests from other examples that urban production in open (unprotected) plots could yield up to 40 t.ha⁻¹yr⁻¹. Protected production as shown in Figure 2 has been confirmed by expert opinion to be potentially much greater – at least five and up to ten times that, if managed carefully (Harvey, 2016). There is therefore every option for hope that such areas could provide much of the food required. Much more rigorous research is needed to investigate this.

At Hadlow College there is an established community allotment, now in its 8th growing season, situated on College land and managed by local village families³. A detailed assessment of this site as per above would also be useful and is being planned.

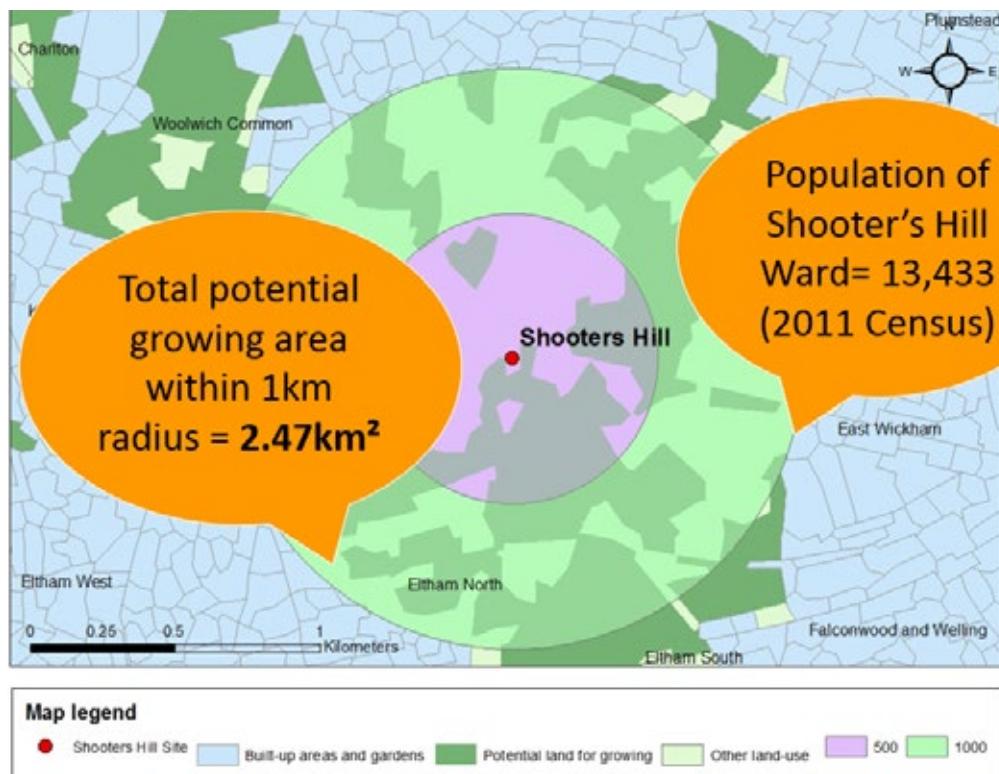


Figure 3. ArcGIS⁴ -generated map to show potential land for growing food within a 1km radius of the Shooter's Hill site. For 2011 census data see Nomis (2016).

³ For a review of this project see Lee & Taylor (2010).

⁴ Maps were produced using ArcMap for Desktop 10.2.2 software published by ESRI. All map data were downloaded from EDINA Digimap and maps were generated using unitary authority data, boundary-line data and 10x10km Ordnance Survey colour rasters. For data query, the Buffer tool was used to project a 1km zone centred on the Shooter's Hill site, which enabled calculations to be subsequently made for this area.

FUTURE IMPLICATIONS – STRATEGIES FOR BRITISH FOOD SECURITY AND ESD

We suggest that there is a gap in knowledge around access to food by local communities as a contributor to food security. The above case study at Shooter's Hill is just one example of a small scale food production project. There are some excellent examples of other successful local food projects in Britain (e.g. Sustain, 2016; Growing Communities, 2016) but much more available land needs to be committed. As reiterated previously by one author, approximately 80% of European citizens, including those in Britain are known to live in or close to towns and cities (Antrop 2004 cited in Lee, 2012). The relative bulk of most food stuffs and especially vegetables suggests that much will have to be produced close to urban and peri-urban sites. Additionally, such production will need to show the heterogeneity and innovation that can prosper in the face of unpredictability (a la Taleb). In other words, when planning for enhanced food security across many nations, homogeneous, large scale production regimes can be considered as vulnerable to unpredictable threats (i.e. fragile), whilst smaller scale, locally adapted, urban-centric, heterogeneous projects would seem much closer to Taleb's concept of antifragility and longer term food security.

What are the implications of these ideas for ESD? The relevance of Cloud based teaching has already been highlighted (Guang et al., 2014) who consider the Cloud as an antifragile educational platform via a process as adapted below in terms of the local food project ideas discussed in this paper:

1. Initialization, where a cloud structure is deployed on each level based around an assessment of suitable urban food production sites ;
2. Evaluation. To decide how to proceed via monitoring and evaluation of urban sites for food production;
3. Adaptation. This step may involve a varying number of players, depending on the intended changes and for urban food production the agreement of all stakeholders;
4. Post-evaluation. Clearly, there is no guarantee that urban food projects will satisfy all stakeholders and careful consultation will be needed to avoid failure;
5. Deployment. If an urban food project is finally evaluated as beneficial (by most stakeholders), a modified version can be deployed to the Cloud where it can be accessed and adapted by others. However all projects will cycle back to 2. above and be continuously re-evaluated and improved. (adapted from Guang, et al., 2014, pp. 859-860).

It is suggested that teaching concepts of local food production systems can be developed as above, utilising blended deliveries (face-to-face and distance) that fit around the needs of learners as a series of accredited stand-alone courses, which can be studied individually or cumulatively to degree level. Students would be expected to critically explore production options and show the ability to innovate and work individually and collaboratively. Some interesting examples are already appearing such as courses run by the Centre for Alternative Technology (2016) and Schumacher College (2016). However, this should be seen as just the beginning of a new approach to educating for food production in Britain, leading towards a more secure supply of food as we move, post-Brexit away from agricultural dependence on imports and towards a more vigorous self-sufficiency combined with trade.

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Appendix 8 - Whole Earth? Meeting the University Challenges

Jim Longhurst (Assistant Vice Chancellor for Environment and Sustainability, University of the West of England, Bristol)

G.K. Gough, V. Harris and L.K. Howells (University of the West of England)

Contact: James.Longhurst@uwe.ac.uk

In October 2015, UWE opened the Whole Earth? Exhibition on its Frenchay Campus. In response to the Whole Earth's powerful call to action the President of the Students' Union challenged the Vice Chancellor to demonstrate how the university was responding to the University Challenges presented in the exhibition. The university's response to that challenge has now been published on the web site (1). The response was developed through a series of conversations with staff and students facilitated by the Students' Union and the Knowledge Exchange for Sustainability Education (KESE) group. The response focuses upon the undergraduate provision of the university.

In order to respond to the President's challenge the AVC Environment and Sustainability convened a small team comprising of SU Officers, the SU Green Team Coordinator, UWE's Sustainability Engagement coordinator and the Senior Lecturer in ESD. The team organised a series of joint staff and student workshops to explore understandings of the current UWE offer and to highlight examples of good practice to illustrate the UWE response. The output from these workshops became the first draft of the text which was discussed and enhanced by the KESE group in a series of meetings. A final draft text emerged from this collaborative, bottom up process of building a UWE response. This text was shared for accuracy with the Associate Dean, Learning and Teaching in each of UWE's 4 faculties and the final text confirmed. A PowerPoint version was created to which numerous images were then added to provide a richly illustrated text. The response was shared with the Sustainability Board for final approval in April 2016 and was formally presented to the SU on May 23rd. On behalf of the Students' Union the President thanked UWE for its unique, detailed and comprehensive response. The response is now a public document available via the Sustainability web site (1). The Whole Earth? Exhibition contains 19 university challenges each addressing the nature and content of subject teaching and UWE has provided a detailed and specific response to each challenge. The following 6 edited examples illustrate the curricula response of UWE to the university challenges.

THE ARTS

UWE Arts disciplines, including English, Linguistics and English Literature provide the opportunity for students to consider the place of sustainability in their discipline and the way in which they can use their disciplinary skills to further a more sustainable future. Co-curricula and informal curricula provide further opportunities to develop skills, knowledge and attributes that will serve them well in their professional and private lives.

In their professional lives UWE, Bristol graduates demonstrate and embody the attributes necessary to thrive in the changing and challenging environment of the 21st Century. The ParkHive project shows how UWE, Bristol Arts students are using their skills, knowledge and enthusiasm to change perceptions and communicate the benefits of sustainable development.

NEW ECONOMICS

Economic problems are an ever-present and inherent part of our lives and essential to understanding the world in which we live and work. Economics at UWE, Bristol is an exciting and cutting-edge applied Economics course which focuses on real and relevant issues using and applying the latest post-crisis economic theory. Economic students analyse numerous real-world issues including irrational behaviour, how firms really operate, economic growth, post-crisis banking, development and sustainability as well as alternative schools of thought that are shaping economics including new-institutional economics, happiness economics, evolutionary economics and behavioural economics. Students critically consider the issues of economic growth and the decoupling of resource inputs and pollution outputs from nation states. This extends to consideration of outsourcing of pollution when considering imported goods. Co curricula and informal curricula provide further opportunities for economics students to develop skills, knowledge and attributes that support sustainable development.

SCIENCE AND TECHNOLOGY

UWE Science and Technology degrees include Computer Science, Environmental Science, Forensic Science, Product Design Technology and Broadcast Audio and Music Technology. Each enables students to explore the issues of sustainability within their discipline, to understand the contribution their discipline makes to environmental problems and to develop their ideas for how the discipline can contribute to a more sustainable society. Many of the degrees are accredited by professional bodies that require sustainability to be present in the curricula. UWE, Bristol science and technology graduates have the knowledge skills and attributes to create solutions to intractable problems because the planet and people really do matter. The Community Action and Knowledge Exchange CAKE Student Consultancy scheme illustrates how Computer Science students are using their skills and knowledge to help community groups, voluntary and social enterprises to become more sustainable.

HISTORY

History is not about facts. It is about interpreting human experience in all its diversity. In UWE, Bristol's BA (Hons) History students discover new ways of interrogating the past. History students have imagination, creativity and a fascination with the social, economic and political forces that have shaped history across centuries and continents. Using primary sources from the start, UWE, Bristol students build their understanding of past events in their historical contexts creating unique insight into the important global issues of today. UWE History Community blog is a fantastic forum for student talent and creativity showing how a deep understanding of the past informs and supports action for change today.

ARCHITECTURE/COMMUNITY PLANNING

UWE, Bristol provides a wide range of Architecture and the Built Environment degrees including Architecture, Architecture and Environmental Engineering, Architecture and Planning, Architectural Technology and Design. Students are part of a community of practice committed to an inter-disciplinary approach to the creation and management of sustainable buildings, whether they are in urban or rural environments, residential or commercial, new or refurbished. Sustainability and the environment are common themes across all of the provision, and research in these subjects underpins all of the teaching. Students engage with and come to understand why it is that the places, spaces, buildings and communities of the future must be designed with sustainability in mind. The Hands On Bristol project illustrates how UWE, Bristol architecture students are using their skills, knowledge and enthusiasm to build a more sustainable city.

Engineering Addressing the complex challenges of the 21st century requires engineers who can use a range of engineering technologies, mathematical skills and design methods to define, develop and deliver solutions that meet user requirements, offer value for money and are environmentally effective. UWE, Bristol provides a range of exciting and challenging professionally accredited undergraduate degree courses that cover a wide range of Engineering disciplines including Civil, Building Services, Mechanical, Aeronautical, Automotive, Electronic and Robotics. Accreditation by the engineering professional bodies ensures that UWE, Bristol engineering graduates are equipped with the skills and knowledge required to engineer a sustainable future. Student societies such as Engineers Without Borders extend and enrich the learning opportunities by exploring practical activities of real world benefit.

CONCLUSION

UWE continues to host the Whole Earth? Exhibition on its Frenchay site and has published its response to the University Challenges on its website. Further work will be undertaken to examine the contribution of UWE's research, knowledge exchange and partnership activities in meeting the university challenges. UWE will use the response document as an engagement and communication tool with its current students and in 2016/17 will examine how elements of the university portfolio not represented in the Whole Earth University Challenges such as health disciplines may be incorporated into the challenges.

Mark Edwards the founder of the Hard Rain Project and the inspirational driving force behind the Whole Earth Exhibition has described the initiative of UWE in creating this response in very generous terms "It is really wonderful – this is the kind of result I dreamed of. ...I am very, very impressed and moved by this. It's everything and more that Lloyd and I had hoped for. It's clear UWE has managed to break through the barriers that seem to obscure the issues around sustainability".

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Appendix 9 - Business and Sustainability: A shared experience

Tan Yoke Eng (Senior Lecturer, Business School, Canterbury Christ Church University)

Contact: yoke-eng.tan@canterbury.ac.uk

Together with my students I have been exploring the concepts of business and sustainability and their implications for management and organisations on a second year option module: Developing Sustainable Enterprises. The range of challenges posed by sustainability (climate change, resource constraints, social and environmental issues) confronting business and society are broad and complex; there are no easy solutions. Having the capacity to address the unstructured challenges would be critical for the future, but the challenge for a business educator is how best to engage students with these issues. This is one of the most vexing question in my experience as there appears to be no 'one best way'.

My review of the literature on teaching sustainability has revealed a number of pedagogic options. These range from developing factual knowledge, sustainability literacy (Stibbe 2011) to paradigm shift (Sterling 2012). Writers such as Banerjee (2004) advocates teaching sustainability from a critical perspective. Dee Fink (2003), on the other hand, suggests creating significant learning experiences that are meaningful and of values to the learners. There are also suggestions as to whether sustainability should be integrated into the main stream curriculum (Painter-Morland et al 2016).

My approach to teaching draws on ideas from the above writers, but with some adaptation to suit the student profiles. In the process of implementation, I encounter many practical challenges, such as issues relating to capacity building, participant engagement, policies and processes.

Despite the challenges, I was interested in finding out the impact of studying the module had on students thinking and behaviour. I conducted a pre-module survey to gauge student preconceptions of sustainability. Regular dialogue and the end of module reflection indicated changes in their responses, but I am mindful of the fact that some impacts may not be immediate and may take time to realise.

DESCRIPTION OF THE PRESENTATION DIALOGUE

I am very privileged to have three students here to share their experiences of the learning with us. Outline below is a description of the presentation dialogue.

SADIE BARTON

This is only the second time I have actually given a presentation. I have just finished my second year in Sustainable Business with Eng. When I first started I thought a bit like well this is pointless, it's not going to make a difference. You just get a bit angry with everything she is telling you. You just have no power to change anything. So you just sit there and say anything with this face on you. And then she said right, go and have a look at Whole Earth? So we got up and we walked around and I thought my God! You know there are so many things you can change because I have a job I am a cleaner. While I may not save the world, I might change my little community.

So with this, I went from the Whole Earth? exhibition and I went to India where I met Mark and he kind of connected everything and I felt my brain was going crazy. I thought yeah I can do this. So I went green. Eco friendly products. Low juice and anything that's not harmful. Going from that. I don't eat meat any more. My last meat dinner, that was Christmas and that was it. My waste has just gone to nothing. Things like J cloths, I just don't use J cloths there use E cloths that you can get. I thought they were not very hygienic but put them in a washing machine they're fine.

Personally my changes have been huge from realising the things I can change and being in house share as well with four students they join in as and when they can. 'Come and eat this. It's got no meat in it and they love it.' Turning the lights off.

What are their issues? So me I was really I was really angry. And the next module is business ethics which I don't think covers everything we've done in sustainability. But I think if |I didn't study this I still be cleaning in the same way with the same products same attitudes. And I come from Thanet as well, so it's all very well to have fancy ideas(laughter)... yeah. This module has really been amazing. Its changed my life and everything I do.

(Sadie shows website)

(Eng: But you do more than just cleaning you also help your clients as well)

In 2009 I was made redundant from two jobs and I was thinking right what am I going to do and I kept on applying and applying and being knocked down. You know I said I am just going to do it myself and everything will be fine. Get insurance. This is Bernard. I've been visiting him three times a week since 2009. He's like my adopted granddad right now. I don't just do the cleaning. I have other girls who go out with me and I kind of take the care side. I make sure that all the customers eat OK, they are paying the bills, their home is clean. I kind of take the green approach to them as well. I do their shopping and kind of change things. They prefer it. They say, buy this buy that, but I just sneak it in. The people that I go to, they will have other carers as well. And they say, Oh where does this come from? and they phone me up and What are you doing now?. I am not very good with words but I go and show them.

And my best example. I go to the gym three times a week – I do sports studies as well so I am physically fit. I went to the doctor and I was really struggling to breathe. And he said what do you do for a job? And I said I was a cleaner and he said you're going to have to turn an ??? please wear a mask when you're cleaning and I thought oh my god!

Now I am lot more happier in what I am doing. And hopefully I have an impact on everyone else around me.

SUSAN BRAGA

I am a second year business studies student and just finished the sustainability course. As you can imagine, Eng is really passionate about what she teaches and it just trickles down to everybody. And about the males. I think they thought they would just have an easy ride. But it wasn't. Because in conversations with them they said its changed the way I am thinking. Although they won't talk about it in class this is the impression I get. I think that's brilliant

I am a mature student and my cultural background is different. I was brought up in India. The whole module took me back to my culture, to my roots and my way of thinking. That was:

- 1) First of all be grateful that you have a life, that you are living.
- 2) The Earth is a goddess. Look after her because if you don't you'll feel the impact.
- 3) You have social responsibility. make sure you give back to your community.

And we have to because when we did our GCSEs and A levels we had to do charity work. We had to go out into the community. We had to entertain old people, we had to mend fences. We had to volunteer for an orphanage for example and things like that. This was all forgotten and then I came to the UK ten years ago. And then I did this and it all sort of came back to me. And then I realised the importance of what you have inside you which is your natural intelligence and that's so, so very important. And who you are because we do a lot of the traditional stuff in a business course and profit making and that's important.

And on the other hand what's more important is because business is so dynamic and that is exactly what sustainability is its always changing, and you need to get out of the traditional route and think of something different. And that's very, very hard in today's world as well so when you go out there you've got people there who are struggling with their narrow mindset and that's the biggest challenge. They'll give are a hundred arguments why you're wrong and they're right. And that's not the way forward. For me it's that life is changing, sustainability is out there it is the basis of what we are and what we do. Sustainability is what we are and what we are. Because we are part of the outside and the outside is part of the inside.

So this is what's its done for me and I blame Eng for it! That's just the way I am and the way I am and the way forward for me to more and more in tune with who I am and to get my inspiration from the inside and not to be conditioned by what the outside world is like at the moment and just go through with it. and not to give up. And that's my own personal journey and that's what I've learnt.

BRIAN MASINDO

My name is Brian Masindo. I am a resident of Zimbabwe. I did this module last year and I am currently on a placement as an information analyst in social enterprise I am an intern there.

When I did this module it prompted me to think – or to rethink - the whole meaning of value, especially in a

business context. Is value the function of the balance sheet or its effect of environment and community. Or maybe it's a combination of all three. And if it is a combination of all three in what proportions and what do we then have to focus on?

But fortunately mother nature has a blue print for this model. There is a story of tree that sprung into a forest by having to reproduce itself. Some of the branches grow towards the sky and some them grow towards the ground to create a new trunk – a continuous process - and wherever it rooted itself in the ground it created a new axis with all the bugs and birds but it never really sacrificed the other trees that had been created and it sprang into whole forest. And this probably is the next business model we need to implement. However, having been an interim in a social enterprise there are lot of big challenges.

The first challenge we encountered expertise. The kind of expertise which is required for this kind of business model are being attracted by other industries. Because of the price tag or the remuneration tag on this expertise is very huge. Most of the social enterprises won't have this kind of expertise to help them facilitate this kind of model. So one of the biggest challenges I believe is the kind of expertise that we have.

The second challenge I believe is around the whole economy around the social and economic and environmental part of the business. If you think of the triple bottom line – profit, people and planet. The people and planet, the economics around that a planned economy. Its moved away from typical supply and demand mechanisms that take place. Because it is so flat it is unsustainable. So basically, those two areas of the triple bottom line usually get all their money from funding and funding usually fluctuates in how much you get and sometimes it dries up. So having businesses which follow through the triple bottom line is very difficult. We need individuals to find ways to bring all three aspects together and put them in a classical supply and demand model. Does that make sense?

The other challenge is also about the current business environment that we have and what it focuses on. Where monetary value itself is how business is valued. The size of the balance sheet. We have to re-think, do we equate value to price or do we equate value to something else?

And lastly because businesses are essentially constituted of individuals, individuals that have concepts that build business model. It's not going to take one individual to actually change the landscape, it will take a whole generation with new concepts to change whole landscapes.

Move out to the work place and business world with concepts and new models. And this generation I believe has to come from universities where you guys are going to have to instil those values into those individuals. As they move off to the business world with new concepts that is really going to make a difference.

SUMMARY OF THE KEY POINTS:

1. Wide range of variables (cultural backgrounds, values, engagement) influence student responses to the learning experiences
2. Use of exhibition to engage and to empower learners to construct personal meaning of sustainability
3. Students recognise the importance of learning about sustainability-related issues as part of their general education
4. The value orientation of the facilitator in teaching sustainability
5. The capacity of the participants to reflect on their own values and experiences, and to make links with the learning
6. The question of Value in a business context
7. The challenge of embedding sustainability based on conventional business assumptions and practices

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Appendix 10 - Student Capital: The role of students in city transformation

*William Clayton, Georgina Gough, James Longhurst (University of West of England)
Ash Tierney, Hannah Tweddell, Amy Walsh and Chris Willmore (University of Bristol)*

Contact: chris.willmore@bristol.ac.uk

Bristol has a university student population of approximately 50,000 – comprising over 10% of the population of the entire city! This paper reports on a project to transform the engagement of students with the city, supported by a HEFCE Strategic Catalyst Fund Grant. The aim of the project was to mobilise the student community to tackle the challenging sustainability issues facing the city, using an action research approach to develop methodologies for doing so which could inform development elsewhere. The aim was to use Green Capital status to develop and catalyse the project, but then to maintain a legacy by continuing the work in future years.

The biggest sustainability impact of any University is its graduates. The project started by posing two questions: *How do we support students to tread more lightly in the lifetime ahead of them? How can we mobilise the creativity of students to transform us, and our city?* The project had a dual-aim. First, we wanted to enable our students to experience the transformative power of being engaged citizens: to realise that sustainability is not just about theory, it is about how we live our lives, how we engage with others and how we create new opportunities for ourselves and others. Second, we wanted to demonstrate that students are a huge resource for cities and regions. We adopted the four step approach developed by Walsh et al. “Learn, Act, Engage, Create”.

Bristol has a record of being innovative and radical, with a vision of an inclusive, sustainable city. Green Capital status was seen not as a reward, but as an opportunity to take the city forward. Students can often be problematized, in terms of economic distortions to house prices and the night time economy, and in terms of their role as generators of nuisance. Councils and others external to universities seldom seek to engage them strategically, as they are seen as transient residents. However, a core part of this work is a recognition that whilst the individual students do change, there is always about 10% of the population who are students, with energy and time available; Universities and Students’ Unions have access to those residents in a manner that is in contrast to access to other citizens. Far from being a problem, they are a unique asset.

The two public Universities in Bristol – University of Bristol (UOB) and the University of the West of England, Bristol (UWE) joined forces with their two Students’ Unions to develop a project to deliver 100,000 hours of student engagement across the public, private, civic, and voluntary sectors in Green Capital year – and every year thereafter. The partnership was large-scale, involving the whole of both institutions at the strategic level, and their Unions. It worked with the City Council and Mayor, and Bristol Green Capital partnership (BGCP). The BGCP is a network grouping of over 850 organisations across the city: public, private, civic, and community.

They are large and small, linked by a commitment to trying to make the city more sustainable. That partnership provided the project with unrivalled access to a group of organisations that had already identified themselves as committed to improving the sustainability of the city in some way.

Through this pledge to deliver 100,000 hours of student action for sustainability in 2015, the project sought to change attitudes in students and the city. Delivery involved a range of volunteering, internships, placements, and projects. It worked with over 220 organisations, on large and small-scale projects; some were collective, some individual. Having built the networks to deliver these, the project also pledged to sustain that level not just in 2015 but every year, through the development of sustainable networks, and in particular through the creation of Skills Bridge⁵, a digital platform for sharing opportunities and presenting case studies of achievement to inspire others to volunteer or to ask for student involvement.

The project was open, inclusive, and exploratory. It deliberately did not set out to dictate central control. It was developed as an umbrella, so that a host of initiatives could flourish independently, but see themselves as part of a greater whole. Students are often faced with conflicting calls to volunteer – should they join Amnesty, work at the night shelter, or do conservation work? Which is more important? The project sought to establish in student minds that they are equally important, in that they each contribute in their own way to the whole – the 100,000 hours. We saw that as an important feature of encouraging students to live sustainable lives – seeing how their chosen activities contribute to the collegiate good, and work through synergy not competition.

The projects ranged across the whole of sustainability, for example: raising money, assisting community groups, helping in work days, designing and delivering workshops, greening businesses, working sustainable farmland, managing wildlife corridors, and working with NGOs to develop new business plans.

An important feature of the approach is its emphasis upon overall impact. Previous University efforts to engage students in community activity have tended to be based on individual projects, which can be resource intensive to sustain, and when they naturally run their course and peter out this can be perceived as failure. But of course this isn't the case, all projects have a particular life cycle: some might persist for years or decades, whilst some might blossom and fade in a single year or even a matter of months, and yet most will have had a measure of positive impact. By focussing on the big picture, it has proven possible to empower and support activities through their life cycle – the identification of opportunities, the development of relationships, growth, sustaining them and them ultimately their natural end – without this being seen as failure. The aim is to ensure at any one time many different engagements leading to 100,000 hours a year are in place, celebrating the changing role of individual projects within that whole. The strength of this approach was seen when a taught programme was identified where students were doing hypothetical business plans for NGOs. The Project was able to work with BGCP and within days had over 40 local organisations asking if the students could work with them developing and revising real business plans – with benefits to the students and community.

5 See: www.skillsbridge.ac.uk

To enable the community and students to celebrate their achievements, the two Universities have developed a new award, the Change Maker Award. This award has two levels, Change Maker, and Change Maker gold. Three public award ceremonies have been held to date, attended by many of the organisations students have worked with, and by civic leaders. Over 700 awards have been made to date. They award holders have to have carried out sufficient hours of community engagement, but also need to have promoted the benefits of engagement to others in line with the four step approach, learn, act, engage and create, in which a crucial part of living a more sustainable life is spreading the word so others have similar opportunities. The project has proven transformational for individuals, 96% of students felt their involvement had a positive impact, enjoyed it, felt it was worthwhile, and felt useful. Over 2,500 students have taken part in the first year, providing over 135,000 hours of work, worth over £1.3 million to local economy. It is changing student understandings of what it means to live in a city, and also changing our city itself, by, for example, influencing a business's decision to come to Bristol or helping a local NGO develop a new business plan. Furthermore, it has affected attitudes – creating transformation both for the individual and for the group, as one participant organisation commented: “It has been fantastic to work with the University as well: lots of people in this area don't go to University or have any connections. It has really changed our perceptions”.

Both Universities have been sufficiently impressed by the outcomes that they have committed to sustaining the project. Central to long term resourcing of it, in particular brokering new opportunities, is the Skills Bridge platform. It provides a single “front of house” for local organisations to engage with universities. People do not necessarily know what universities or their students might do, or how to navigate through the labyrinthine institutional structures. Skills Bridge provides a point of access to students at both Universities. It includes case studies, to both help students identify what they might like to do, and most importantly to encourage local groups to spot the sorts of things students might do for them.

CONCLUSION

The project has demonstrated the benefits of large-scale engagement, and has identified key factors in building such a successful approach. Whilst the particular approach was city based, and used Bristol's status as first (and probably last) European Green Capital as a catalyst for the transformation, the work has implications for the potential to engage students on a large scale in other cities and regions, and potentially in any area which has a suitable identity and university community.

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Appendix 11 - Mind the Gaps: Delivering and Receiving Sustainability Education

Alison Greig (Director of Education for Sustainability, Global Sustainability Institute, Anglia Ruskin University)

Grace Phillip (Coordinator, Global Sustainability Institute, Anglia Ruskin University)

Contact: alison.greig@anglia.ac.uk

It is 24 years since the term Education for Sustainable Development (ESD) was coined at the First Earth Summit in Rio de Janeiro in 1992. Since then, the role of education has been recognised as essential and necessary in achieving sustainable development and, as a result, it has become part of the development agenda, as a driver of education policy and as a subject of academic research, reflection and debate (Breenan, King and Lebeau, 2004). However, despite 24 years of ESD activity, including the UN's Decade of Education for Sustainable Development (DESD), "sustainability has become a diminishing prospect" (Corcoran, cited in Jones, Selby and Sterling, 2010, p.xiii). This presents significant challenges for the sustainability community and, particularly, for Higher Education Institutions (HEI) as their role has changed in recent decades from one of observation, criticism and evaluation to one where they help shape the world through knowledge production and where they have direct impact on economic growth (Blewitt and Cullingford, 2013). With this shift comes additional responsibility to deliver the kind of educational experience that is able to "prepare people to cope with, manage and shape social, economic and ecological conditions characterised by change, uncertainty, risk and complexity" (Stirling, 2012, p.9)

MIND THE GAPS

An increasing number of HEIs are responding to this responsibility by increasing their delivery of ESD throughout their courses. There is also a growing body of research and scholarly activity related to ESD, much of it looking into how to determine what content should be delivered, i.e. the curricular, and how it should be taught. Unfortunately, although these interventions may be an important pre-cursor to sustainable behaviour change, raising awareness and increasing understanding of sustainability, there is little evidence to suggest that this is leading to meaningful action for sustainability; that is, students may become more aware of sustainability issues and even feel they are important but evidence demonstrates that they tend to continue consuming and living in a way that does not reflect these concerns.

The inability of information-based approaches to bring about behaviour change is well documented - Owens (2000) provides a useful review. Psychologists and sociologists in particular identify knowledge-action gaps and value-action gaps in individuals and communities respectively. For example, Kollmuss and Agyeman (2010) focus on the gap between the possession of environmental knowledge and environmental awareness, and pro-environmental behaviour. Like other authors they are not able to find a single theoretical framework which adequately addresses the multiple factors, including demographic, external (institutional, economic, social, and cultural) and internal (motivation, awareness, values, attitudes) factors that influence behaviour.

In higher education, these types of ‘gaps’ can be found between the delivery of ESD and its receipt by students – the input/output gap – and between its receipt and action - output/outcome gap (Figure 1).

Once ESD has become an accepted part of a university’s corporate strategy, it is relatively straightforward to enforce and monitor its delivery in the curriculum. One such method is to embed ESD within existing quality assurance systems, which is made clear by the UK’s Quality Assurance Agency (QAA) who in 2014 published a guidance document intended to assist staff in UK HEI’s seeking to incorporate ESD within their curricula (QAA, 2014). The document, which is a supplement to its Quality Code to which all UK HEIs must comply, uses language and learning outcomes that are familiar to education professionals to present a framework for what a successful delivery of ESD looks like and how it can be measured. Critically, it is the delivery of these outcomes by academics, rather than its receipt by students, which is measured, and it is found that this is to the detriment of sustainable development.

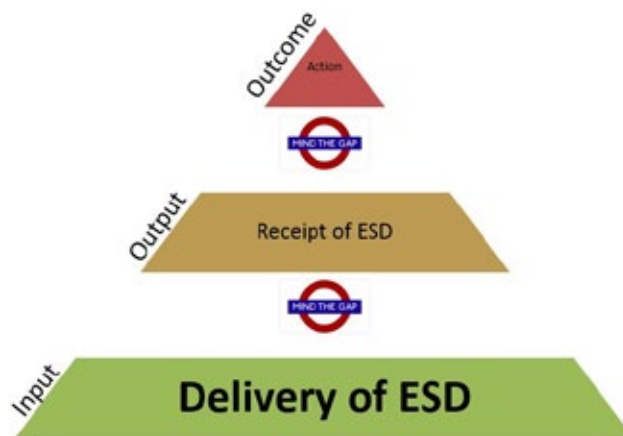


Figure 1: Mind the gaps

CASE STUDY: ANGLIA RUSKIN UNIVERSITY

At Anglia Ruskin University (ARU), we have an academic regulation in place requiring that sustainability is covered in every degree at both undergraduate and postgraduate levels since 2013, predating the QAA guidance. The regulation, which relates to the delivery of specific sustainability-related learning outcomes, is a key part of our University’s Corporate Goals to embed sustainability into every students’ university experience. Through this goal, there is an acknowledgement of the input/output gap for, in order to measure progress in this area, there must be a focus on what students say about their courses, i.e. what they say they received.

This was done during the spring term in 2016 when the Education for Sustainability (Efs) team surveyed 431 students on their experiences, attitudes and expectations relating to ESD while at ARU and it was found that only 42% of those surveyed were able to recognise that sustainability was part of their course. This is despite a university-wide audit of degree courses in 2015 that showed that 92% of courses were compliant with our ESD regulations and delivering ESD learning outcomes. The survey's findings show a clear gap between what staff believe is being delivered and what students are capable of recognising as received. There are likely to be a number of reasons for this difference, such as the nebulous nature of the term 'sustainability' itself. To overcome this, we avoided using the term in the survey altogether, instead breaking the concept down into four of its key components, which we based on the UN's (2006) characterisation of it – these were: conflict and peace, environmental challenges including climate change, the rights of future generations, and social justice.

Interestingly though, even then, a gap was exposed. Students were asked how relevant they thought each of the components were to their lives in the next 5-10 years and, on average per component, 79% responded positively, indicating that they were concerned about sustainability and the impact these issues will have on their lives. However, the survey also gave a list of the UN's Global Goals, which feature things like ending poverty, using renewable energy and reducing pollution, and only an average of 4% per goal said that they already undertake some kind of activity in relation to them. That means, while there is a clear concern for sustainability among students, this is not necessarily met by action for sustainability.

The survey also asked students what they want their university to prepare them for. Interestingly, more students (84%) felt that a university should 'prepare them to act as a responsible global citizen' than for 'a highly paid job' (75%). This demonstrates that there is a clear demand for universities to be working in ESD, justifying further action in this area to explore ways through which teaching at ARU can mind the gaps. This is corroborated by another survey that is conducted annually across the UK by the HEA and the NUS (Drayson, 2015) which consistently finds that students want to understand more about sustainable development so that they are better prepared for the future, and that they recognise the role that their education plays in helping to achieve this.

CONCLUSION

ESD is valued for its ability to bring about sustainable development but, as can be demonstrated by the ARU case study, universities perceive the delivery of ESD as a goal rather than a precursor for action. While delivery of ESD is relatively straightforward to monitor using established quality assurance systems, its receipt by students as well as action by students – or lack of – is not currently being addressed. At ARU we are cognizant of the gaps and are making an effort to identify and close these, particularly the delivery/receipt deficit, by focusing our attention and goals on what the students say they experience. Evidence collected from students suggests they will be receptive to this as they value their university education being able to prepare them as responsible global citizens. We still have a long way to go, however, before we can claim that ESD is 'an indispensable element for achieving sustainable development' (UN 2002), particularly in terms of it achieving and influencing students to undertake sustainable actions.

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Appendix 12 - Education for Sustainable Development in the formal and informal curriculum: A Case Study

Aldilla Dharmasmita (Academic Associate for the Green Academy, Nottingham Trent University)

Lina Erlandsson (ESD officer for Green Academy of NTU)

Petra Molthan-Hill (Team Leader for Green Academy at NTU)

Contact: aldilla.dharmasmita@ntu.ac.uk

Puntha et al (2015:33) contend that NTU has made major achievements in the area of sustainability in recent years with clear related strategy and activity in the areas of estates, procurement, waste, volunteering and catering'. The current aim is to further embed ESD into the curriculum in line with NTU's strategic goals (NTU, 2015). In order to achieve this, NTU has access to a unique resource in the Green Academy, which started as a Higher Education Academy Change Programme at NTU and is now a permanent department at NTU, working to engage students with sustainability. From a primary solo project of an online module on Sustainability, the Green Academy now plays a dedicative role in embedding ESD in the curriculum across NTU. This paper will highlight two of the projects that are currently active at NTU; The SiP Certificate Challenge Days and the ESD–Future Thinking Learning Room .

The Green Academy's initial project was the Sustainability in Practice (SiP) Certificate, an online module launched in 2013/14. As highlighted by Dharmasmita et al (2016:1), the objective of the SiP Certificate is to enlighten participants, with a focus on student participants, to sustainability in four ways:

1. Introduce the basic concept of sustainability to participants who are new to the subject area;
2. For participants who are already aware of the sustainability concept, to enhance this through application of multi and supra-disciplinary and systems thinking;
3. Enable students to be co-creators in crowdsourcing sustainable solutions;
4. Enable students to gain skills needed to solve sustainability problems.

The Certificate was automatically made available to all students across NTU via their digital learning room, regardless of level and mode of study. Students were encouraged to participate during their spare time, and completion of the Certificate would enable students to gain an 'additional qualification' on top of their degree (Puntha et al, 2015).

Moving forward from the original online model, in the third year of running the SiP Certificate the Sustainability in Practice (SiP) Challenge Day was piloted in 2015/16. It was introduced as a result of students' feedback who requested practical sustainability work, putting the 'Practice' into 'Sustainability in Practice' (Dharmasmita et al, 2016).

These are one-day events consisting of individual certificate completion integrating group discussion in the morning, and a hands-on gardening experience campus-based allotment in the afternoon, experimenting with permaculture techniques. A total of 4 Challenge Days were organised in 2015/16, all with very positive feedback from students.

Table 1 illustrates the breakdown of students who participated in the Challenge Days based on their course of study. Table 2 demonstrates student perception of sustainability resulting from attending these events. A prominent piece of feedback was the suggestion that the Challenge Day could be undertaken over 2 days instead of one, so that more challenging and more in-depth discussions and activities could take place. Currently, there are no such plans for a 2-day Challenge. However, for 2016/17, two new certificate themes will be introduced along with the existing theme of food: Clothing and Energy. Hence, planning for Challenge Days to accompany these themes are also in progress.

Table 1:

Schools	Number of student participants
School of Architecture, Design and the Built Environment	5
School of Animal, Rural and Environmental Science	4
School of Arts and Humanities	1
School of Education	2
Nottingham Business School	16
Nottingham Law School	1
School of Science and Technology	1
School of Social Sciences	2

'The Education for Sustainable Development – Future Thinking Learning Room' has been developed by the Green Academy as a resource to guide members of staff going through Curriculum Refresh, where ESD is one of 6 key areas. This is a staff-facing online learning room, launched in March 2016 available to all members of staff at the university on the NTU Online Workspace (NOW). The learning room currently holds close to 1000 hand-picked resources, categorised by the 8 academic schools, with subcategories relating to the different departments in each of the schools. There is also a subsection on the Sustainable Development Goal, with resources linked to each of the 17 global goals to increase awareness of the goals and the UN Sustainable Development Agenda as well as supporting one of the Curriculum Refresh references focusing on how the courses contribute to the SDGs.

All academic staff are automatically enrolled to the learning room and hence the possible impact of the sustainability resources is comprehensive. The goal is to create a dialogue with the academic staff about how to best embed sustainable development in the curriculum. This is not a one-way communication channel and the idea is that members of staff can affect the content of the learning room by submitting ideas and resources, share good practice and collaborate across disciplines.

One of the most innovative and well received aspects of the learning room is the Community and Estate case studies. These are case studies focusing on innovative projects happening on the NTU estate and in the local community that can be utilised as a learning resource for all courses. The case studies were created in collaboration with the NTU Environment Team, the Volunteering and SCCO (Schools, Colleges and Community Outreach) teams as well as NTSU as an outcome of the Education for Sustainable Futures TILT (Trent Institute for Learning and Teaching) group. The case studies provide an opportunity to link the formal curriculum to the subliminal one and use the surrounding

environment to teach sustainable development. They also showcase the role of the university in the local community and advertise opportunities for students to contribute to projects happening both on campus and beyond. The case studies connect the surrounding environment to course content and ensure that the values expressed by the academic staff show that the university practices what they preach. The students will also get a wider view of the role of the institution in the local community and see that the university is not a freestanding unit.

The time at university plays a major role in shaping student's futures and their commitments to sustainability in both their personal and professional life. Willmore & Tweddell (2014) argue that habits started at university can often be kept life. By taking a holistic approach of embedding sustainable development in all aspects of university life, from the formal to the informal and the subliminal curriculum, NTU hopes it can have a good chance of making a difference through ESD projects such as those described above.

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Appendix 13 - Environmental Stewardship as Past, Present and Future Thinking: A decade of biodiversity on campus

Mat Baldwin, Alex Metcalfe, Paul Sims, Rob Thrower and Peter Vujakovic, (Canterbury Christ Church University)

Contact: peter.vujakovic@canterbury.ac.uk

The stewardship of ‘nature’ and biodiversity are increasingly important aspects of the sustainable management of university and college estates. The importance of biodiversity on campus has been promoted by key organisations such as the Environmental Association of Universities and Colleges in the UK, through both practical guidance (EAUC, 2016) and cross-institutional themed workshops.

This paper explores the key themes that underpin initiatives undertaken at Canterbury Christ Church University (CCCU) during the last decade, and examines the roles played by a wide range of staff, both professional services and academic, as well as students. The paper focuses on the enhancement of biodiversity through a distinctive narrative linked to the position of the university’s main campus within the Canterbury UNESCO World Heritage Site (WHS).

CHRIST CHURCH BIOVERSITY - A DISTINCTIVE ‘SENSE OF PLACE’

The CCCU Grounds and Gardens team had long been instrumental in developing a range of management approaches to protect and enhance biodiversity across the university’s estate - including such initiatives as the provision of dead-wood as invertebrate micro-habitats and placement of bird-boxes on site. While this activity led to high quality habitats across the main campus, there was no formal or strategic approach to biodiversity management until recently.

The university first presented a key concept paper for biodiversity on its main campus in 2006. This focused on the main campus site as an integral part of St Augustine’s Abbey, itself part of the Canterbury UNESCO WHS, which includes Canterbury Cathedral and St Martin’s church - in continuous use as a place of worship since the 6th century (UNESCO, undated). The concept paper, entitled ‘Biodiversity, Curriculum and Community’, was originally presented at the EAUC conference on ‘Biodiversity on Campus’, focused on the opportunities to enhance and to use for educational purposes a range of pocket habitats in a city centre setting (Vujakovic, 2006). The paper outlined an approach to biodiversity that linked it to the university’s cultural heritage and that eventually resulted in the Christ Church Bioversity initiative, which now provides the main focus of environmental stewardship on the site. The initiative was effectively launched during 2011-12, when a member of staff was seconded to lead on this and to direct the related Futures initiative, a scheme to embed sustainability within the formal curriculum (see below).

The initiative is very much in line with the ideas presented by Kermath (2007), who notes the importance of sympathetic landscaping on HE campuses for ‘biodiversity conservation, perceptions of natural heritage, sense-of-place, ecological literacy and the[ir] role ... in the larger community’, as well as the ways in which the campus landscapes can express institutional values and be used as a ‘teaching, research and outreach resource’

BIOVERSIY AND THE FUTURES INITIATIVE

The Bioversity initiative has never sought to recreate the monastic past, but uses the WHS location to explore contemporary issues, for example, the importance of medicinal herbs to modern society through the creation of a physic garden, or the scientific conservation of rare varieties of apples as part of the Jubilee Orchard project, while at the same time making reference to the past. The initiative is about creating an overarching narrative for the site, and a ‘sense of place’ that is in keeping with the fact that it has been a site of learning and community for around fifteen centuries. The development of this narrative is not without its problems including the fact that planting without supervision by an archaeologist is not allowed as the site is within the Area of Archaeological Importance.

The initiative is devoted to the concept of life-long-learning, with future ‘thinking’ at its very heart. The Bioversity and Futures Initiative have worked in tandem, with the latter providing funding for educational based developments, for example, the extension of the physic garden and the placement of ‘insect hotels’ across the site. Bioblitz events, one-day surveys of the ecology of a site, involving students and academics with expertise in plant and animal identification, have also been held on campus and on other local sites which are regarded as part of the wider ‘green infrastructure’ of Canterbury, of which CCCU is a significant ‘green hub’.

THE EDIBLE CAMPUS: BREAD, BEER AND HONEY

The initiative has also led to the development of the ‘Edible Campus’ and ‘Bread, Beer and Honey’ projects, which engage both staff and students from across the university. The flourishing ‘Edible Campus’ project, encourages students and staff grow their own fruit, vegetables and herbs in on-campus allotments, practise bee-keeping and hop-growing and take part in annual honey and hop harvests from which we produce our own Christ Church beer and honey. Our very first brew, in collaboration with a local microbrewery The Canterbury Brewers, produced the incredibly well-received ‘Green Chapel Ale ‘ which was launched at the Canterbury Food and Drink Festival in the Autumn of 2015.

TRADESCANT 400 - A WORK IN PROGRESS

The most recent development on site is ‘Tradescant 400’, which is set to run from 2016 for nine years. This initiative celebrates the fact that John Tradescant the elder - renowned gardener, explorer and plant collector - worked for just under a decade for Lord Wootten on the St Augustine’s Abbey site from 1615. The initiative was launched with the planting and blessing of a larch in 2016, a species originally believed to have been introduced to England by Tradescant, within the outer precinct of St Augustine’s Abbey. The fact that both Tradescant and his son travelled widely to collect plants provides opportunities to explore curriculum issues such as the globalisation of food crops and alien invasive species, as well as more playful aspects, such as the fact that Tradescant is supposed to have introduced the horse chestnut, hence ‘conkers’ to England.

CONCLUSION

The decade since the Bioversity concept was first mooted has seen major changes in CCCU's approach to its estate. The hard work undertaken by the Grounds and Garden's team has now been integrated with developments in the formal, informal and campus curriculum model adopted as part of the the Futures Initiative. More importantly, the development of a Biodiversity Action Plan (BAP), as well as a Biodiversity Policy (2014-20), has provided the framework for a series on min-BAPs for each pocket habitat development and for the effective guidance of external agents (architects, etc.) involved in the delivery of Estate Master Plan for the next ten to fifteen years.

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Appendix 14 - Re enchanting Space Through Language – The Kingsmead field Story

Antonia Linehan-Fox (Senior Lecturer, School of Language Studies and Applied Linguistics Canterbury Christ Church University)

Contact: antonia.linehan@canterbury.ac.uk

This presentation/ workshop tells a story of a battle to preserve Kingsmead Field, a small but valued green space in an urban area of Canterbury. During the workshop, participants had the opportunity to engage with the story of Kingsmead Field as it unfolded. The participants tried out and critically evaluated a number of activities. These activities emerged from my Exploring Language Modules as a result of the interaction of people with the landscape.

Over a period of five years, local people living in the vicinity of Kingsmead Field, including students at Canterbury Christ Church University, were engaged in an effort to stop Canterbury City Council from building on this riverside field. This engagement became an inspiration for embedding aspects of sustainability into the curriculum for two of the undergraduate programmes I work on.

The presentation focused on three main strands:

- Bringing the outside in in terms of curriculum enrichment
- Language as a catalyst for environmental change
- Student engagement with the wider community

BRINGING THE OUTSIDE IN IN TERMS OF CURRICULUM ENRICHMENT

The University Strategic Framework 2015-20, ‘ensures that our commitment to social and environmental sustainability is embedded throughout our teaching and research.’

This project provided an excellent example of how students and the local community interacted in a shared venture to preserve a green space. Crucially, it enabled students to meet with the locals, interact, share a common goal and brought the University to the Field and the Field to the University.

LANGUAGE AS A CATALYST FOR ENVIRONMENTAL CHANGE

The emerging language from the battle over the field was significant. In order to fight for the land, the local inhabitants and users of the field had to show that it had value beyond the monetary value as a site for building houses. The writer and naturalist Robert Macfarlane talks of the importance of language in renewing and revitalising Place. He maintains that the power of words and language itself can turn what outsiders see as a ‘blandscape’ (Macfarlane, 2015) into a landscape.

(Below is a view of Kingsmead Field five years ago).



One of the activities in the workshop involved the participants glancing at this picture of the field five years ago and this interaction produced some of the following words and phrases.

'bushes, trees, dried up grass, metal fence, flags, a willow, remains of a cricket pitch, some children playing football, flanked by a road, surrounded by houses, willow trees,'

However, when this apparently unremarkable landscape was threatened the language employed by field users changed to a more emotive and environmental lexical set. The space becomes 'a green lung in an urban environment'; the Council's actions become a 'land grab'. Kingsmead Field, which lies between two branches of the river Stour, becomes a watermeadow and a 'green corridor for wildlife'. The discovery of protected species meant increased attention paid to the documentation of flora and fauna. This enriched language helped to protect the natural world. The many field residents including the water vole below share the field with the human visitors. The language began to change from spotting the unusual to one of co-existence.

Water vole Kingsmead Field



Neologisms emerged with the concept of ‘Hedge Art’ as a banner form of verbal and visual protest. The Field’s status as a watermeadow morphed dramatically into ‘a flood sponge’ following localised flooding in the surrounding area. Collocations extracted from legal documentation, namely Kingsmead Field as a designated ‘kick around site’ for students in University accommodation were tweeted and re-tweeted across social media. Local papers began to use some of the emerging language and discourse when updating readers on the status of Kingsmead Field.

In terms of data, the field provided a rich source of language use and change with helpful ideas to embed sustainability in a language based curriculum using the guidance of the University’s Strategic Framework and Learning and Teaching Strategy. In a module, focussing on linguistics this gave rise to the discovery of an old print of Kingsmead Field with a clear view of Canterbury Cathedral. This prompted an analysis of the historical value of Kingsmead Field for the local community. Mead, the Old English word for meadow cited in Chaucer’s General Prologue to the Canterbury Tales, one of the students’ core texts for study. These meaningful links bring the historical text to life as part of the students’ engagement with the community.

In terms of module enrichment, this triggered more specific focus work on maps and topographical vocabulary and etymological examination of place names and activities involving using a map of the district to analyse place names and their etymological links to Old English, Celtic, Roman Latin and Old Norse.

During the workshop, the participants had the opportunity to try out some of the activities and discuss their perceptions.

STUDENT ENGAGEMENT WITH THE WIDER COMMUNITY

A key trigger for the students' involvement in the campaign was the proximity of the University's Parham Road student accommodation to Kingsmead Field. The Field is a designated area for leisure or 'kick around site' for the students who became involved with the community to protect the field from developers. Through engagement with social media and locals over 60 students signed an online petition detailing their use of the field to help achieve Village Green Status.

Other evidence of involvement was the making of banners or Hedge Art to encourage the local community to support the drive to preserve green spaces for recreation in Canterbury.

This example of Hedge Art shows a collaboration between a local teenager, right hand banner, and a banner created by a number of students from the Malaysian B. Ed Programme. This collaboration had a number of positive outcomes. It gave our overseas students the opportunity to meet with the local community. Students from other programmes such as the Bilingual Spanish Teachers' interacted meaningfully with native speakers outside the university.

In terms of refining communicative and cultural competences, oral and listening skills, vocabulary enrichment and general motivation this was a positive feature. The fund raising efforts held by the local community including cricket matches, litter picks, wild flower plantings, plastic duck races and a mini world cup. These activities and the tea and cake included offered ample opportunities for interaction.





The picture left was taken during the mini world cup.

This shows representatives of the Spanish team made up of local people and Spanish teachers from one of the programmes at Canterbury Christ Church University.

This proved a useful means of integration for these bilingual teachers attending a month's in service course.

Wild flower meadow (below) Kingsmead Field July 2016: Planted by local residents with support and cooperation of Canterbury City Council

The objectives of this initiative was to engage students more

actively through the theme of sustainability and environmental stewardship to create a real awareness of issues related language and its powerful connection to the environment.

The 'Re Enchantment of the Field' is now more evident as the picture above suggests, its position more secure and collaboration between the council's newly appointed environmental officer and the community has been positive. It remains a source for future inspiration.



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Thanks to Friends of Kingsmead field and photographer Ranald Mackechnie for images used in the original workshop

Appendix 15 - I would have been/ could be amazing: a social justice oriented visual art rejoinder to Whole Earth?

Toni Wright (England Centre for Practice Development, Faculty of Health and Wellbeing, Canterbury Christ Church University)

Contact: toni.wright@canterbury.ac.uk

Art psychotherapists:

Lucy Bruty (Kent Art Therapy, UK)

Marybeth Haas (Private practitioner, UK)

Ezme Le Feuvre (Kent and Medway NHS and Social Care Partnership Trust, UK)

Tracie Peisley (Private practitioner, UK)

Lisa Royal (Action for Children, UK)

Karen Wright (Sussex Partnership NHS Foundation Trust & Kent Art Therapy, UK)

The art pieces shown at the conference were informed by current and significant local, national and international contexts, including the continuing so called ‘migrant crisis’ and the effects of on-going financial cuts to mental health services (Foley, 2013; Mind, 2014); issues that the art psychotherapists see as points of struggle but that might otherwise be imagined and realised as opportunities, through radical praxis, for sustainable socially just futures.

Summary of participatory content

Each artist provided a reflective piece of writing to accompany their art work included in the exhibition that briefly explained to viewers the thinking and rationale behind the work. Below is a sample of each artist’s contribution with title, media and reflective description of work. Art psychotherapists were available at the exhibition to discuss the art work and motivations behind it with conference participants, which enhanced the contributions of both parties.

LUCY BRUTY:

Ecotones, 2016, Pen Drawing: This piece was initially about the ‘refugee crisis’ – ‘the jungle’, an image of trees, cellular connections and empty space. Then the term ecotones emerged to represent a transition area where communities meet and integrate and how this is comparable to the creative space provided in art therapy. There’s a link to the experience of culture, threads and veins of social history and the current climate. There is potential for growth and change.

Wishing Stars, 2016, Mixed Media, On-going Project: This is an on-going project for girls and women thinking about their hopes, dreams and aspirations. This piece originated from my participation in the social justice in art therapy research project at Christ Church University.

Table 2:

How Informative was the Challenge Day (5: Very Informative & 1: Not Informative at all)	Number of students
1	0
2	0
3	1
4	10
5	19
How Inspired do you feel after participating? (5: Very Informative & 1: Not Informative at all)	
1	0
2	0
3	1
4	10
5	19

SUPPORT IN THE FORMAL CURRICULUM – THE ESD – FUTURE THINKING LEARNING ROOM

Extra-curricular activities tend to be the primary approach to ESD at UK universities (Lipscombe et al. 2008, pp. 224). However, NTU has taken a ground-breaking step in the ESD sector by including sustainability in a university wide course audit, 'Curriculum Refresh', assessing all 420 taught courses to ensure their alignment with the new strategic plan. As a part of this initiative the Green Academy have developed an online resource library where academics can find inspiration and support for embedding sustainability in their teaching. The goal of this project is to increase the sustainability content in the formal curriculum, meeting student demand for a greater sustainable development focus (Drayson et al. 2014, pp. 3) and fulfilling the institutions commitment expressed in the strategic plan (Nottingham Trent University, 2015).

As a result of integrating sustainability in the university wide course audit at NTUESD no longer needs to be an afterthought when it comes to curriculum content and instead allows it to be an easily achievable priority for course leaders across all academic departments.

I have been giving clay stars to participants to decorate and return to create a group collection of stars to exhibit. Participants are my friends, family, colleagues and anyone I meet who would like to create a wishing star. The stars represent collective hopes and aspirations of girls and women in the community, giving space for a female perspective on opportunities to learn and achieve social and economic equality.

MARYBETH HAAS:

Ravished Earth, 2015, Mixed Media (Reused & Found Materials): This piece is one of a series of figurative and abstract sculptures made partly using layers of old paper. I started experimenting with papier mâché techniques when I began supporting young people who had experienced some kind of abuse; one of my clients was interested in this process and I found the method of layering the paper with glue a soothing activity, which helped me to process the stories I heard and the pain I was helping to transform. *Ravished Earth* feels both admonitory and hopeful to me, containing awareness of the urgent need to redress the destruction our abuse of Earth is causing, and also of the potential for healing, as humanity grows more aware and able to take responsibility for changing our attitudes and our actions.

Return from the Depths, 2016, Ceramic and Mixed Media; *Dragon Priestess*, 2016, Part-glazed Ceramic; *Rebalancing*, 2016, Ceramic and Mixed Media: These works are all about the strengthening, empowerment and rebalancing in our world of the Feminine principles of soul, intuitive instinctual wisdom and re-harmonising human activity with Nature. I believe that all injustices are borne from unconsciousness or ignorance of our inherent connectedness with each other and all of Life as part of Nature. If people can be challenged or stimulated to question their current beliefs and ways of relating to themselves, others and Earth, they can become aware of their own motivations, which makes change possible. My work is speaking to people through archetypal symbolism and may touch the viewer at any level of their being. The process of making this work is not an intellectual process at all: it's expression comes from my own 'unconscious' and soul depths and when I am fully engrossed in the creative process, I feel I am working collaboratively with Life itself.

EZME LE FEUVRE:

Repetition of Lost Memories, 2016, Mixed Media: Being with the Tragedy of Dementia: the piece was made by drawing on a Buddha Board and photographing the images as they quickly faded away, poignantly mirroring an aspect of the process of dementia.

TRACIE PEISLEY:

Sludge Baby, 2015, Mixed Media: This piece was made with the refugee crisis held very much in mind. I have a home in Lesbos and have a strong connection with the sea, which can be seen from almost every part of the island. The island itself was somehow defenceless as hundreds and thousands of people fled to its shores for sanctuary. Many families and children did not make the forty-five-minute crossing, and their bodies either sunk to the seabed or were washed ashore. The world looked on aghast and as a mother I clung ever more ardently to my own daughter.

The coastline and the depths of the Aegean Sea were so magical to me previously, now I could only fear discovering the bodies of children unable to escape the terrors of war and persecution in neighbouring countries on the shores. I wanted to somehow gather up these children, hold them as treasures. As they came in such numbers they were 'tarred' with the same brush, no longer seen as individuals. These shocking realities of the wars and refugee crisis are combined in this piece. It is not an easy piece, not an easy reality.

I Would Have Been Amazing, 2015, Mixed Media: This piece is about the lost potential of the children caught in conflict. So many schools have been targeted or caught in conflict. The dress is embellished with applique; there is a sense of wanting to attend to the child but then the realisation that this piece is a memorial. In terms of sustainability, when the world neglects its children it neglects its present and future. If we cannot protect our most vulnerable populations, we can only become more impoverished on every level. I wanted to make a piece that mourned the lost potential of children killed and wounded through conflict. While making, there was a sense of trying to repair and to make attractive the irreparable and abhorrent truth with a suturing stitch and a bright fragment.

LISA ROYAL:

Witness, 2016, Triptych, Mixed Media on Canvas: Representing the therapist's witnessing as a form of validation, an essential component in practice; a witness to the impact of trauma told and untold, known or unknown, to transformation, growth and change. The two organic and vibrant images either side appear to float on the surface, they have roots and tendrils that reach out for connection, like antennae searching and expanding out into the environment that surrounds them; seeking, connection, and grounding. Here is a natural process of extension and unfolding which benefits from being observed, from being 'held in mind', reflected upon and related with. One of the key healing factors in response to trauma and in recovery is social connection.

KAREN WRIGHT:

Misshapes, 2016, Clay and Mixed Media: Karen's art work is concerned with women's and girls' struggle for social justice, in particular the impact of violence against women and girls and how they attempt to survive that; as well as the importance of women's histories and stories and the recognition of those for future generations.

CONCLUSION

The art works offered conference participants, as educators and practitioners committed to transformation of individuals, communities and society, opportunities to reflect on their levels of engagement in radical praxis and the raising of critical consciousness in support of sustainable social justice transformations of minds and deeds.

EXHIBITION IMAGES AND VIDEO LINK

Below are photos of the exhibition to provide readers with a better sense of the art works exhibited. A 90 second video viewable via the following link is also available:

www.youtube.com/watch?v=9cShbuYgYel

A social justice in art therapy resource that has been archived by the authors can be found via the following links

<https://uk.pinterest.com/Canterburybaat1>



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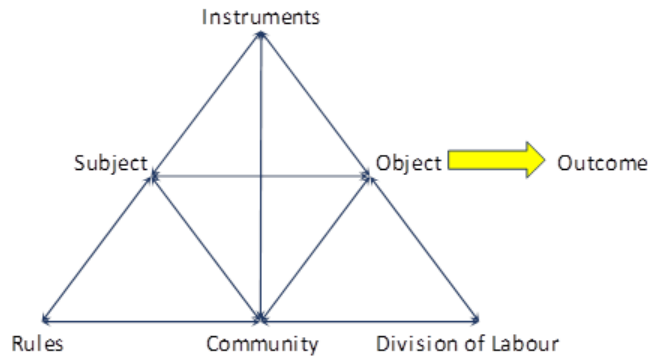
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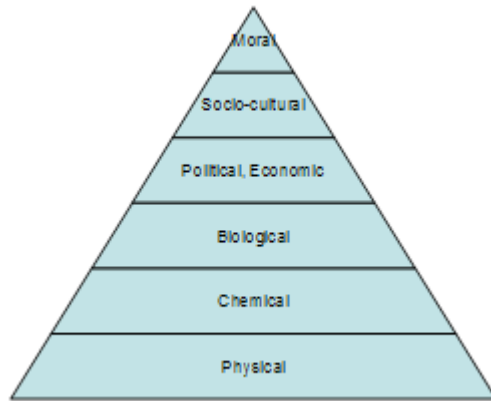
Based on an Unconditional Pass PhD at the Institute of Education, London University, and a subsequent Routledge publication of 'The Critical Global Educator: Global Citizenship Education as Sustainable Development', my poster presented the pictures, semiotic components, symbolic exchange crucial to my thesis.

A Jungian mandala synthesises i. Critical Realism (CR) and Linguistic Philosophy, ii. critical theory; and iii. neuro-, psycho-, socio- and cognitive-linguistic research, foundations which justify critical global praxis, Global Citizenship which addresses Social Justice, Human Rights, Conflict Resolution, and Diversity.



Yrjo Engestrom's Cultural Historical Activity Theory (CHAT) served both as methodology and method, underlying my 15-question Interview Schedule for self- or negotiated evaluation of critical global educators. CHAT supplements Marxian dialectical materialism and Vygotsky's cultural instruments with Bakhtin's multi-tongue heteroglossia, resisting idealist/empiricist, qualitative/quantitative dichotomies. CHAT's subject can be individual, institution, or society. CHAT focuses on Rules (regulation, assessment structures, resources); Objects (objectives, goals, dreams, beliefs); Instruments (Texts, tools, toys, technologies); Community (institution, society, field); and Division of Labour (academics/practitioners; policy/practice; structure/agency; tradition/innovation). CHAT allows for flexible frames, each historically-complex node dynamically related to the spatio-temporal heritage within which intelligence or consciousness operates. MA and PhD students expressing personal philosophy, methodology beyond mere methods, pragmatism beyond pragmatism, will welcome CHAT's natural framework which relates individual to community, ontogeny to phylogeny, chronos to kairos.

SYSTEMIC VISION



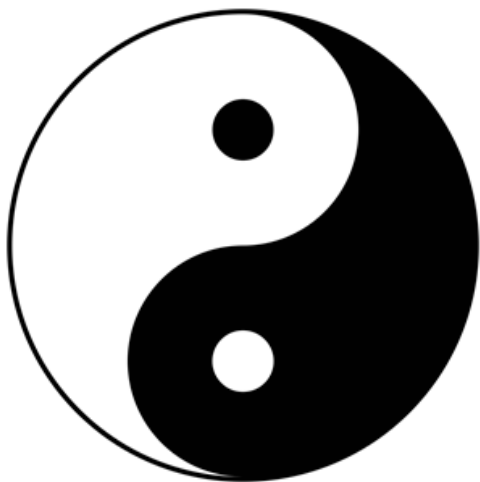
CR's stratified, differentiated ontology expresses a systemic world view, sometimes conveyed as Chaos or Systems theory. Like Maslow's hierarchy, or Jacob's Ladder, the evolving strata demonstrate that sophisticated ethical, ether-real consciousness, trans-disciplinary consilience (E.O. Wilson), collective con-science (Jung) depend on socio-cultural, socio-economic, socio-political practices which themselves emerge (Polanyi) from material structures and/or resources.

Critical theorists are frequently criticised for a preoccupation with power. Tower of Babel limitations force multiple intelligences to choose from the philosopher's 'love', the engineer's 'power', the scientist's 'energy', the sociologist's 'beliefs', the artist's 'beauty', the poet's 'truth' and religious 'faith'. However, an enlarged vision classifies, categorises, prioritises, and focuses consciousness across diverse domains.

Systemic understanding makes sense of the many disciplinary, professional, cultural expressions of power in 'glocal' genre and sub-genre. History, culture, memory, medium and media demands memetics understanding, Dennet-Dawkins' cultural equivalent of genetics as crucial to mental and physical health. Systemic vision accelerates mission, converts transformative to transformational goals, enables frank statements of educational purpose, empowers professional mission, and gives an edge to a career trajectory. Best of all, (w)holistic rationale relates micro-politics, politeness, political correctness, and policy to macro- global politics offering professional coherence and cohesion.

Discourse, language in action, accesses the triple-layered reality of thought, word and deed through theory, analysis and application. Beginning with surface styles, events, performances, Mikhail Bakhtin's depth hermeneutics seeks to interpret texts in context, interpreting 'word made flesh that dwells amongst us'. Political literate citizens reads the wor(l)d beyond the word, tracing cause/effect across disciplines, time and space, seeing where the political-economy or cultural politics of their labour contributes to global power or capital. Halliday's Systemic Functional Linguistics provides practical tools for detailed textual investigation and analysis: abstract, common, proper or collective nouns, 'real-ise' absolute, absolution, go(o)d in daily drama/ dharma.

AXIS TO PRAXIS



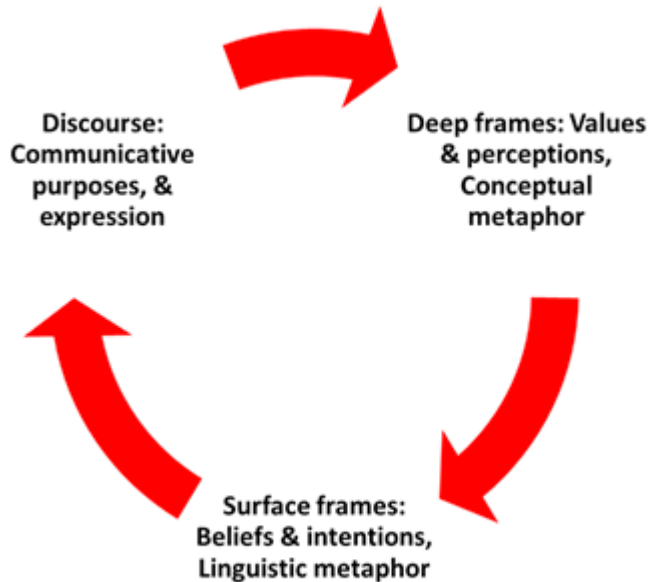
Beyond dualism, dialogue and division, dialectical materialism explores dark matter, epistemology yet unexplored. Taoism's yin/yang subtly nuances semantic triangles ingrained in daily discourses of body, mind, spirit; head, heart, hands; past, present, future; father, son and holy spirit ... Nirvana spells no mere centrifugal/centripetal venting, no simplistic diagnoses of karmic causality, but deeper exploration of borders, bridges or barriers. Traced back to earlier triumvirates - the Greek moirai Clotho, Lachesis and Atropos, or Vedic Brahma, Vishnu, Shiva, creator, preserver, destroyer - theological anthropology offers confidence, competence, conviction.

Seeing philosophy indissolubly linked to psychology, Jung directs attention to internalised, implicit values, confirming St John 10:34, 'Ye are Gods'. As Philosophy departments close, Applied Linguists take up Wittgenstein's 'linguistic turn', challenging the archaeology, genealogy and architecture of contemporary knowledge. C.S.

Peirce's post-structuralist semiotic trinity rejects simplistic oppositions and extremes: theory/practice, academic/NGO, tradition/innovation, sciences/humanities. Basil Bernstein (1996: 24) warned, 'Every time a discourse moves, there is space for ideology to play'. Educators with daily power to generate epiphany, to baptise and confirm go(o)dness, to name and sanction, confront contrast, contradiction, controversy, conflict. Defining and redefining genre, critical consumers determining crucial criteria are able to become prod-users.

Absences, silences, the hidden, unstated, neglected, or marginalised voices highlight gradable antonyms disclosing the rich cline of alternatives in every domain. Revealing axiology, exposing values, interpreting intention beneath global dialectics demands perpetual, essential decoding. Halliday's Systemic Functional Linguistics (SFL) treats every domain, Wittgenstein's vocabularies and grammars, as transitivity strategically 'real'ised. SFL analysts read the word, making values explicit from Kindergarten to Universe-cities, transporting critical educators across disciplinary, geographic, cultural and Other borders. Distinguishing, discriminating, de/refining genre, sub-genre, and hybridity, students determine worth.

POLITICAL (W)HOLISM



Erving Goffman's constructivist theory relates individual schema, frames, perspectives to ethos, public discourse, cosmology, collective consciousness. The arrows indicate values transmitted by immediate intuition, osmosis, or mediated tuition. Metaphor, fundamental to thought and language, relates physical to metaphysical beliefs, token to vehicle, word to image. Educators who seek to alter consciousness need to understand deep frames and to acknowledge metaphor. Discourse, language in action rests on essential, shared metaphor, cultural osmosis, discretions absorbed in infancy. The political economy of disciplines and domains emerge from foundational assumptions, dominant presuppositions, cosmology and ethos, a culture's virgin assumptions, usages, generalities or linguistic particularities; for instance, the use of definite articles in English. Despite 'string' theory, Maxwell's Demon, waves and fields, scientists accepting

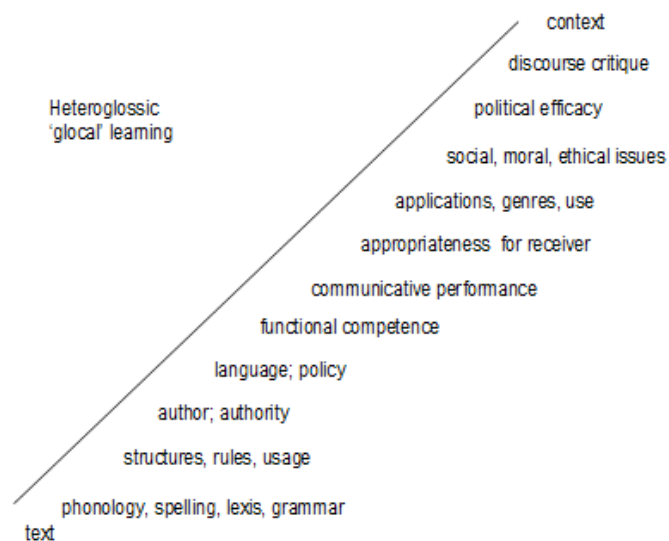
luminescence, fluorescence, phosphorescence, or economists referring to 'rising' prices may yet need convincing of ubiquitous enlightening metaphor, to acknowledge their own metareality!

Subjects	Individual	Cultural Mediation	Collective
Deep frames	Values and perceptions	Immediate	Ethos and worldview
Surface frames	Beliefs and intentions	Multi-modally mediated	Cosmology and ideology
Evidenced in / Accessed by	Language, modes, activity	Multi-media and the media	Dominant discourses: community products

Critico-creative, higher-order reasoning involves complex problem-solving and imagination. Neuro-linguists and behavioural psychologists indicate that emotion and empathy precede classification, cognition, evaluation. Emotion, altruism, self-interest and political belief interact intricately, systemically synthesising professional assessment. Daring to resist ‘domestication’, teachers risk cognitive and emotional dissonance. Educators reluctant to mention politics, narrowing Politics down to an optional specialism late in secondary education, activism beyond academe or, party politics, fracture and confuse mission. Unable to align professional transactions with curriculum, regulation and official assessment, untheorized passion frequently ended in professed frustration, isolation, disillusionment. Jungian psychotherapy analyses talk, word associations, to unravel trapped psychic energy, to dissolve neuroses.

Treating the lives of critical theorists - Foucault, Bourdieu, Bernstein, even Habermas - as part of the students’ inheritance, working through selections together, contributed remarkably to students’ confidence and self-esteem. Theory bolstered theos, en-theos-iasm, knowledge sustained faith. Holistic educators helped students identify personally significant texts, voices, voice. Diary, biography and narrative intertwined individual history with inspiring collective heritage. Précised personal preferences, academic justification made values explicit; precipitated stance literally exposed ‘understanding. Naming purposes frankly yet strategically, fearlessly embedding, embodying and justifying beliefs, critical texts and voices theorised praxis. Creative writing related autobiography to theoretical references, placing ontogeny within phylogeny, con-science within disciplinary frames. Irrespective of discipline, science or economics, metaphors identified metaphysical self.

MEDIATED MULTIMODALITY



Compressed globalisation creates a mediated cacophony; transmedia relate film, website, gaming, merchandise, expert and lay stories. ‘Foreign languages’ of colour, photography, image, sound, gestures, equations, graphs, multiple hybrid domains, cellular biology, theology, fashion, video games or ‘veiled’ advertisements, all symbolic modalities demand decoding.

Debate, discussion, dilemma, ensure that multimodal voices do not degenerate into moral relativism. Material, sensorial, spatio-temporal and symbolic modes once theorised allows genre classification, comparison, and critical evaluation. Reading metaphor enables cross-cultural translation, transformation and transduction.

Halliday's Systemic Functional Linguistics offers practical analytical tools which can be progressively used from kindergarten to university, moving students from consumption to production. Transitivity analysis, for instance, traces mental, material, verbal and relational movement.

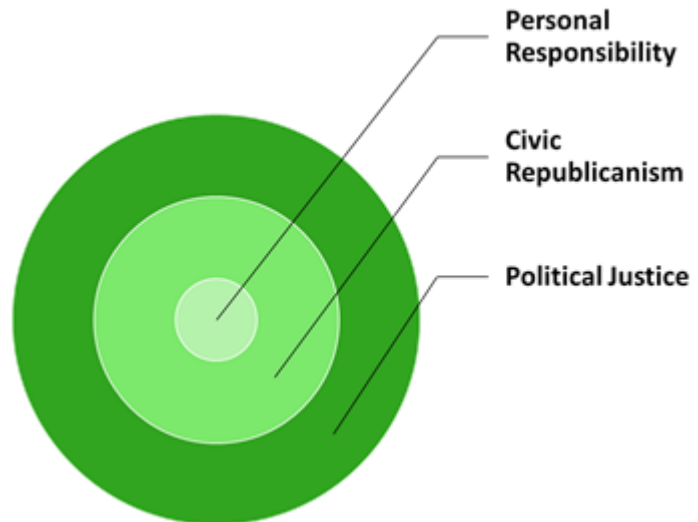
Linking student mood to medium, mode, modality and media as starting point activated a 'be-you-to-full' critical pedagogy, sustained and expanded through digital activism. Service learning, placements which drew on professional activist networks encouraged community products, validating audience, satisfaction, evaluation beyond the confines of formal education. Multimodal performativity - internships, participation in NGO projects, crowd-sourcing, digital citizenship, communication with/in community - expanded consilience, consciousness, conscience.

TRANSCENDANCE

Legitimacy and representation are concepts crucial to democracy; stereotypically negative portrayals of 'union' in the media meant teachers who, personalising problems, frequently reporting a sense of isolation, only turned to unions in times of distress. The treatment of unions as spare rather than steering wheels stultifies community and denies communion.

Communities of praxis, whether universities, NGO online teacher communities of up to 600 practitioners, or professional unions, extend power from campus to community, transforming individual transaction to societal transformation. Communities structured rhizomatically rather than hierarchically drew on periphery for vitality and innovation. Public engaged research, adapting aims in partnership with BRIC countries, created thematic networks. Multi-stakeholder collaborations spanned schools, universities and civil society in projects involving Islamic scholars, trade unionists and Greek academics.

The data revealed critical ethnographers who challenge the status quo, extending transdisciplinary critique to sociology and anthropology of their disciplines. Theorised passion enabled 'pracademics' to direct mission towards institutional change, government policy, global sustainability monitoring, international finance, World Bank and IMF structural reform, and corporate multinational tax evasion.



CONCLUSION

Eight recommendations for urgent conceptual deconstruction, redefinition, reassessment:

1. Teacher educators and regulatory bodies in every discipline should implement and assess critical discourse studies – theory, analysis and application – as methodology that coherently embodies GCESD in teacher education.
2. Curriculum developers and teacher educators should unequivocally direct personal passions and professional understanding to the political economy and cultural politics of their disciplines.
3. Policymakers, at all levels, should infuse policy discourse with explicit references that generate politically-oriented GCESD.
4. Theorising modality, distinguishing material, sensorial, spatio-temporal and symbolic modes and applying SFL analysis to multimEDIATED genre, educators should integrate critical action research.
5. HEI assessment frameworks should implement and evaluate critical GCESD, coordinating interdisciplinary school–community–university partnerships.
6. HEIs should establish long-term, stable, mutually beneficial teacher–education–research alliances that draw on INGDO political-economic and legal expertise.
7. University academics assessing systemic risk in global discourses should speak truth to power, building research capacity through transnational partnerships.
8. Funding criteria should stipulate transdisciplinary, international, multi-stakeholderresearch that supports thematic global networks.

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Christ Church
University