



EDUCATION FOR SUSTAINABILITY IN HIGHER EDUCATION:

Achievements and Prospects Conference

8th January 2015

Plymouth University

Hosted by the **CENTRE FOR SUSTAINABLE FUTURES** and **PedRIO**

**Education for Sustainability in Higher Education:
Achievements and Prospects Conference**

Book of Abstracts

**CENTRE FOR
SUSTAINABLE
FUTURES
WITH
PLYMOUTH
UNIVERSITY**

**PedRIO
WITH
PLYMOUTH
UNIVERSITY**

Contents:

Page	Content
3	Introduction and Abstract Types
4 - 6	Keynote and Guest Presenters
7	Paper Presentations Index
8 - 29	Paper Presentation Abstracts
30 - 31	Roundtable Presentations Index
32 - 69	Roundtable Presentation Abstracts
70	Poster Presentations Index
71 - 86	Poster Presentation Abstracts

Introduction:

January is named after Janus, the Roman god of gateways, endings and beginnings, so this is a timely opportunity to look back at what has been achieved in sustainability education and to explore and consider its future prospects and potential in higher education.

This coming January also sees the end of the UN Decade of Education for Sustainable Development (ESD) and the ten-year anniversary of HEFCE's influential policy document Sustainable Development in Higher Education, and marks ten years since the Centre for Sustainable Futures (CSF) was established here at Plymouth University, with the ambitious goal to embed sustainability across university policy and practice, particularly in teaching and learning.

This conference (hosted by the Pedagogic Research Institute and Observatory (PedRIO) and the CSF) will bring together, showcase and celebrate achievements in sustainability-related teaching and learning, Continuing Professional Development (CPD), pedagogic research, resource development, hybrid learning space design, and whole institutional change.

Abstracts:

Welcome to the Book of Abstracts for the Education for Sustainability in Higher Education : Achievements and Prospects Conference.

Please note that the abstracts for this conference are broken down into 4 sections:

Keynote/Guest Presentations

Plenary sessions taking place in Roland Levinsky Building Lecture Theatre 2

Paper Presentations

Workshop breakout sessions taking place on the 2nd floor of Roland Levinsky Building

Roundtable Presentations

Roundtable Presentations enable you to visit several presentations throughout the 1 hour session in an informal manner. You are welcome to move around the room, listen to and interact with as many or as few presentations as you wish. Tea and Coffee will be served during the sessions which will take place in Roland Levinsky Building Ground Floor Crosspoint Foyer area

Poster Presentations

Posters will be displayed throughout the conference on the Ground Floor Crosspoint Foyer of the Roland Levinsky Building

Keynote Presentation 1:



Dr Jane Davidson

Director, Institute for Sustainable Practice, Innovation and Resource Effectiveness (INSPIRE)
University of Wales, Trinity St. David

Dr Jane Davidson is Associate Pro Vice Chancellor for External Stakeholder Development and Engagement and Director of INSPIRE at the University of Wales: Trinity Saint David. Jane is also a member of Senior Directorate and the Senior Management Team of the University.

Formerly, she was Minister for Environment and Sustainability in Wales from 2007 to 2011 where she was responsible for the Welsh Government agreeing to make sustainable development its central organising principle, the development of the 870 mile Wales coast path and the introduction of a charge on single use carrier bags.

Prior to that she was Minister for Education and Lifelong Learning where she introduced a new Foundation Phase for 3-7 year olds, the Welsh Baccalaureate and Education for Sustainable Development and Global Citizenship (ESDGC) into the Welsh curriculum.

Jane is passionate about the environment and resource effectiveness and has been given a number of accolades for her work. She was the third most influential environmentalist in the UK for the Independent on Sunday in 2009 and has been Resource magazine's no 1 and 2 in 2009 and 2010 for her work on waste which has seen Wales come from behind the rest of the UK to be the lead recycling country in Britain.

She holds honorary fellowships from CIW (Chartered Institute of Waste) and CIWEM (Chartered Institute of Water and Environmental Management) and is Patron of CIEEM (Chartered Institute of Ecology and Environmental Management) and TFSR (Tools for Self Reliance Cymru). She is a member of WWF's UK Council of Ambassadors, Vice-President of Ramblers' Cymru and has been awarded an honorary doctorate from the University of Glamorgan for her work.

Jane says:

"Sustainability needs to be at the heart of how we do business. We cannot continue to use more resources than our one planet can support."

Abstract:

'Life, the University and Everything'

Dr Jane Davidson will explore the challenges and opportunities in embedding sustainability throughout a university in relation to the institution's culture, campus, curriculum and relationship with the wider community. This session will explore how to win hearts and minds to a new way of working by building an appropriate evidence base – but not forgetting the need for a bit of passion along the way.

Keynote Presentation 2:



Professor Stephen Sterling

Head of Education for Sustainable Development, Centre for Sustainable Futures (CSF)
Plymouth University

Stephen Sterling is Professor of Sustainability Education, Centre for Sustainable Futures (CSF) at Plymouth University, and a former advisor to the UK Higher Education Academy on Education for Sustainable Development (ESD), and has worked as a consultant in environmental and sustainability education in the academic and NGO fields nationally and internationally for many years. He has been widely recognized for many years as one of the leading voices in sustainability education, and is in demand as an international keynote speaker. His first book (co-edited with John Huckle) was *Education for Sustainability* (Earthscan, 1996), and this was followed by the influential *Schumacher Briefing Sustainable*

Education – Re-visioning learning and change (Green Books 2001), which remains a best seller. He also co-founded the first masters course in the UK on sustainability education (at London South Bank University), and led the WWF project on systems thinking *Linking Thinking – new perspectives on thinking and learning for sustainability*.

His research interests lie in the interrelationships between ecological thinking, systemic change, and learning at individual and institutional scales to help meet the challenge of accelerating the educational response to the sustainability agenda. His work at CSF involves leading the research team on sustainability education, and developing strategies to support curriculum change across the institution. His book (with David Selby and Paula Jones, 2010) *Sustainability Education: Perspectives and Practice Across Higher Education* was acclaimed by the University of Cambridge Programme for Sustainability Leadership (CPSL) as one of the 'Top 40 books of 2010'. His new book, published by Routledge in 2013 is *The Sustainable University - Process and Prospects*. He was commissioned by UNESCO to write one of the three papers informing the UN high-level World Conference on Education for Sustainable Development, November 2014.

Stephen is an HEA National Teaching Fellow, and winner of the VC Enterprise Awards for 'Outstanding Contribution' to the university, with regard to the sustainability agenda.

Abstract:

'So far, so good.... and so what? ESD and the next decade'

This presentation will give a brief overview of the recent history of sustainability education - looking at trends at local (Plymouth), national and international scales, assesses the difference that it has made, and reflects on continuing challenges against the context of rapid economic, social and environmental change and the 'post-2015' agenda.

Guest Presentation:



Jamie Agombar

Head of Sustainability
National Union of Students (NUS)

Over his ten year tenure at NUS, Jamie has created strong student voice on sustainability, and a compelling vision for the tertiary education sector. He has grown NUS' sustainability function from a single role to 25 full-time dedicated sustainability staff, and over 50 in students' unions. NUS now delivers successful individual and institutional sustainability change projects into over 100 universities and colleges, reaching more than 300,000 students each year. NUS is now seen as a strong agent for change on sustainability, and Jamie sits on many key UK higher education sector committees, including the Higher Education Funding Council for England Leadership, Governance and Management Strategic Advisory Committee, and the Higher Education Academy Education for Sustainable Development Advisory Group. In February 2014 Jamie won the Guardian University Award for Inspiring Leadership for his decade of service at NUS.

Abstract:

'Students, skills and sustainability'

This presentation will outline the latest results in the influential research conducted by NUS and the HEA into student attitudes towards, and skills for sustainable development over the past four years. The session will explore student perceptions and experiences of sustainability in higher education, along with providing an insight into how these experiences translate to students' expectations as they begin their careers beyond education.

Paper Presentations Index:

	Name	Title
A	Roger Cutting	Inclusion and Sustainability: Similar discourse, dissimilar outcomes
B	Joe Allison	Critical thinking in HE: achievements and prospects
C	Mandy Singer-Brodowski	Self-organized and Project-oriented Learning in the Context of Higher Education for Sustainable Development
D	Christine Boomsma	Through Others' Eyes: A survey of visitor values at the NMA
E	James Longhurst	Embedding the Expectations of the QAA - HEA Guidance on ESD in the Institutional Quality Management and Enhancement Framework of UWE, Bristol
F	Marco Rieckmann	Higher Education for Sustainable Development in Germany – Achievements, Good Practice and Next Practices
G	Neil Gordon	Team Projects, Inquiry and Sustainable Development: an example in the Computing Curriculum
H	Chris Blackmore	Embedding sustainability through systems thinking and practice – some experiences from the Open University
I	Verena Holz	Who's afraid of the Cultural Turn? How the application of cultural studies concepts can improve learning processes for Sustainable Development
J	Robert Cook	Consumerism: The Elephant in the Sustainability Classroom
K	Debby Cotton	Informal learning on campus: A comparative study of students' energy literacy in UK universities
L	Diana Pritchard	Sustainability growth in institutional boxes
M	Sophie Bessant	The Marketization of English Higher Education and the Sustainability Agenda: contradictions, synergies and the future of Education for Sustainability (EFS)
N	Zoe Robinson	'A degree in sustainability? What's the point?' The past, present, and future of named sustainability degrees
O	Chris Willmore	De-problematising decentralization: pluralism and the governance of ESD
P	Senan Gardiner	Higher education for sustainability and the future. How do we foster graduates' anticipatory competence?
Q	John Siraj-Blatchford	How do we mainstream ESD in early childhood and in early childhood teacher education?
R	Hartley Banack	Sustainability through outdoor education teacher reform
S	Daniel Fischer	Toward the Sustainable University: A Comparative Analysis of Conceptual Understandings of the Sustainable University in Contemporary Assessment Tools
T	Adriana Consorte-McCrea	Mapping the Future: the search for alignment between curriculum and the university's Education for Sustainable Futures objectives (Dr Adriana Consorte-McCrea and Peter Rands)

Ref: A

Abstract Type: Paper

Authors: Dr Roger Cutting & Dr Cath Gristy, Institute of Education, Plymouth University

Title: Inclusion and Sustainability: Similar discourse, dissimilar outcomes

The discourse surrounding education for sustainability has produced a multiplicity of definitions, producing a significant body of discursive literature centred on definitions and a multiplicity of disparate aspirations (Redclift, 2005; Reid and Scott, 2009; Scott, 2009). The result has at times been close to what Shallcross and Robinson (2007) have called 'definition dementia'. Such debates and divides of course are far from unique, but a particularly interesting parallel in education may be found in the dialogue surrounding the subject of 'inclusion'.

Both the areas of sustainability and inclusion have developed over the last few decades thereby experiencing the same economic and political contexts relative to their development and implementation. However, both share not only landmark international declarations and governmental affirmation, but have also have been engaged in salient debates surrounding definitions, implementation strategies and pedagogical approaches. The apparent similarity of these discourses is perhaps therefore worthy of discussion.

This paper will explore the debates within each of the two areas of sustainability education and inclusion in education, initially presenting an exposition of key similarities and contrasts. The presentation will however, go on to explore the recent evident divergence in their achieved outcomes. Whereas inclusion in both a curriculum and operational sense now forms key aspects to the ethos and operation of educational institutions, sustainability on the other hand, has recently been dropped from the National Curriculum for England (2013) and still remains as something of an option for implementation in the FE/HE sector.

This paper explores the seemingly more effectual promotion protocols and persuasive strategies adopted by those allied to the inclusion debate and provides a discursive evaluation around ways in which they in turn may be of value in the active promotion and furtherance of education for sustainability.

References

Department for Education (2013) The national curriculum in England Framework document. DFE-00177-2013 Reid, A. D. and Scott, W. A. H., (2009).

Researching Education and the Environment: retrospect and prospect. London: Routledge. Scott, W. A. H., (2009). Environmental education research: 30 years on from Tbilisi.

Environmental Education Research, 15 (2), pp. 155-164. Shallcross T. and Robinson J., (eds) (2007).

Teacher Education for Sustainable Development. Special issue of the Journal for the Education of Teachers on Teacher Education and the UN Decade of Education for Sustainable Development, 33(2). London: Routledge.

Ref: B

Abstract Type: Paper

Authors: Joe Allison

Title: Critical thinking in HE: achievements and prospects

Higher Education is in danger of 'trivialising critique' (Masschelein, 2004) and fostering 'shallow instrumentalised reasoning' (Brookfield, 2012), not the 'critical beings' (Barnett, 1997) our future so desperately needs.

So what can be done to reverse this dangerous trend, and give students a greater sense of themselves and their roles within wider society?

Drawing upon several years' experience working with thousands of students from a range of disciplines and levels, this workshop will introduce some of the successful techniques and tools that have been utilised by Plymouth University's Learning Development team for developing this elusive 'skill' that higher education deems so critical. Outlining the narrow arguments that have unhelpfully dominated this concept for decades, yet highlighting how recent research is refreshingly challenging and liberating the notion of critical thinking, making it a more accessible conceptual prospect for all academic staff.

This workshop will go on to look to the future, exploring participants understanding of critical thinking, what implications this might have on their practice, as well as discussing where research attention now needs to focus in order to begin the journey back towards more critical pedagogies.

Ref: C

Abstract Type: Paper

Authors: Mandy Singer-Brodowski

Title: Self-organized and Project-oriented Learning in the Context of Higher Education for Sustainable Development

Universities play a key role in developing the capacity of future decision makers to deal with complex and wicked sustainability problems and in leading students to “learning for change” (Barth and Michelsen, 2013). Previous research has stressed the importance of problem- and project-oriented learning through “real-world-problems” (Brundiers and Wiek, 2013). Students are encouraged to solve these wicked sustainability problems, if they get the opportunities to learn in a self-organized way (Wheeler et al., 2010), which enhances their self-determination and their feeling of self-efficacy (Bandura, 1986). Although these aspects are highly important in the context of learning for sustainability, the original learning process of the students in the sense of their individual and subjective engagement with the issue of sustainability is a relatively new topic in the international ESD research agenda (Lundholm et al., 2013, S. 243, Rickinson, 2001).

The research project presented in this paper therefore will emphasize the learning process from the perspective of the students in a self-organized and problem-oriented sustainability course: How do they learn in these kinds of settings? What roles do their subjective theories about sustainability play in their learning processes?

This research project employs the methodological paradigm of constructivist grounded theory (Charmaz, 2011). The design represents a mixture of qualitative methods (18 problem-centred interviews) (Witzel, 2000), observation of planning meetings (video recorded), and 2 focus groups with students. The setting for the research project was a self-organized, project-oriented course given by students for students, in which the learners realized various sustainability projects with partners from outside the university.

The results of this study demonstrate the relevance to the students of their different subjective theories about the topic of sustainability before the course. Students who showed a low affinity towards sustainability (sustainability beginners) initially explored a variety of daily action opportunities: they were inspired to change their daily routines (i.e. energy efficiency, consumption) as a result of the informal discussions in the project teams. But at the same time they felt paralysed by the complexity and ambiguity of sustainability problems. Another group of students with a high affinity towards sustainability before joining the course (sustainability advancers) were much more experienced in dealing with sustainability matters. Their sustainability learning included both a critique of current societal developments and an emancipation from unsustainable practices and structures (both individual and societal) which led to the building of new initiatives and structures on the regional and supra-regional level. They understand themselves as multipliers and networkers.

For both groups the self-organized and project-orientated learning for sustainability has led to an opening up of sustainability opportunities and to a higher degree of reflexivity in their daily actions. This resulted less from the lectures during the seminar than from their group discussions around questions of how to implement sustainability aspects in their own projects. Because of the responsibility they took for their projects and their freedom to decide key elements regarding the fulfilment of their project, they experienced a transformative learning.

Sources:

Bandura, Albert. (1986) *Social foundations of thought and action: A social cognitive theory*. Englewood Cliffs, NJ: Prentice-Hall.

Barth, M., Michelsen, G. (2013) *Learning for change: an educational contribution to sustainability science*. In: *Sustainability Science*, 8 (1), 103-119, doi: 10.1007/s11625-012-0181-5.

Boekarts, M 1999. 'Self-regulated learning: where we are today', *International Journal of Educational Research*, vol. 31, no. 6, pp. 445-457.

Brundiers, K. and Wiek, A. (2013): *Do we teach what we preach? An International Comparison of Problem- and Project-Based Learning Courses in Sustainability*. In: *Sustainability*, 5, 1725-1746, doi:10.3390/su5041725.

Charmaz, K. (2011): *Constructing grounded theory: a practical guide through qualitative analysis*. California: Sage.

Lundholm, C., Hopwood, N., and Rickinson, M. (2013) Environmental Learning. Insights From Research Into the Students' Experiences. In: Stevenson, R. B., Brody, M., Dillon, J., and Wals, A. J. (Eds.): International Handbook of Research on Environmental Education. New York and London: Routledge, S. 243-252.

Rickinson, M. (2001) Learners and learning in environmental education: A critical review of the evidence. In: Environmental Education Research 7(3), 207-320.

Wheeler, G, Bergsman, K, Thumlert, C and Kelly, B. (2010) Sustainable Design Project Teacher Manual. Olympia, WA: Office of Superintendent of Public Instruction, Available from:

<<http://www.k12.wa.us/environmentsustainability/pubdocs/sdpmanual2010.doc>>.

Witzel, A. (2000) Das problemzentrierte Interview [25 Absätze]. Forum Qualitative Sozialforschung/ Forum: Qualitative Social Research 1 (1), Art. 22,: <http://nbn-resolving.de/urn:nbn:de:0114-fqs0001228> (last accessed on 31.07.14).

Ref: D

Abstract Type: Paper

Authors: Dr Christine Boomsma and Michelle Virgo, School of Psychology, Plymouth University

Title: Through Others' Eyes: A survey of visitor values at the NMA

Sustainability education is one of the core functions of visitor attractions such as the National Marine Aquarium (NMA) in Plymouth. The focus of conservation-oriented attractions such as zoos, aquariums and gardens has shifted from an information-giving approach to behaviour change campaigns which have their theoretical basis in psychology and social marketing. Such campaigns focus on encouraging a specific sustainability behaviour and often use audience segmentation techniques in order to communicate a single message to a diverse audience. This study seeks to augment this approach by incorporating theoretical perspectives from the literature on human values (psychology) and sustainability education. It has been demonstrated that individual values influence sustainability-related behaviour (De Groot & Steg, 2008). Moreover, research suggests that values affect pro-environmental behaviour by directing attention towards value-congruent information (Nordlund & Garvill, 2002, 2003; Stern & Dietz, 1994). Without a connection to underlying values approaches trying to promote behaviour change may not be successful (Nicholson-Cole, 2005). Thus, for the NMA it is highly important to have an insight into visitor values to ensure they connect to these values when designing exhibitions.

A visitor survey was implemented at the NMA over a three month period, presented as a light-hearted personality quiz to encourage visitors to engage. An up-to-date version of a commonly used value questionnaire (Steg, Perlaviciute, Werff, & Lurvink, 2014), designed to measure altruistic, biospheric, egoistic and hedonic value orientations, was adapted for use in this context. Initial findings provide an insight into the relationship between values and motivations for visiting the NMA, sustainability goals and intentions. Based on these findings, we present recommendations for sustainability communication at the NMA with particular reference to a values-based approach to audience segmentation. We also consider the implications of this work for education for sustainability in Higher Education.

De Groot, J. I. M., & Steg, L. (2008). Value Orientations to Explain Beliefs Related to Environmental Significant Behavior: How to Measure Egoistic, Altruistic, and Biospheric Value Orientations. *Environment and Behavior*, 40(3), 330–354. doi:10.1177/0013916506297831

Steg, L., Perlaviciute, G., Werff, E. Van Der, & Lurvink, J. (2014). The Significance of Hedonic Values for Environmentally Relevant Attitudes, Preferences, and Actions. *Environment and Behavior*, 46(2), 163–192. doi:10.1177/0013916512454730

Nordlund, A. M., & Garvill, J. (2002). Value structures behind proenvironmental behavior. *Environment and Behavior*, 34(6), 740-756.

Nordlund, A. M., & Garvill, J. (2003). Effects of values, problem awareness, and personal norm on willingness to reduce personal care use. *Journal of Environmental Psychology*, 23, 339-347

Stern, P. C., & Dietz, T. (1994). The value basis of environmental concern. *Journal of Social Issues*, 50(3), 65-84.

Nicholson – Cole, S.A. (2005). Representing climate change futures: A critique on the use of images for visual communications. *Computers, Environment and Urban Systems*, 29, 225-273.

1. Process development: four levels with (1) self-organization/own experience, (2) team organizations, (3) interface organizations, and (4) learning organizations.

2. Mindset development: Team experience of mindfulness on-the-job by behavioral model and anchor events in addition to off-the-job activities such as workshops, retreats, or outdoor experiences.

1 Wissenschaftlicher Beirat der Bundesregierung für Globale Umweltveränderungen

Ref: E

Abstract Type: Paper

Authors: J.W.S. Longhurst¹, G.K. Gough² and S. Hills³
¹ Assistant Vice Chancellor, Environment and Sustainability and Chair of QAA-HEA ESD Guidance Development Group
² Senior Lecturer in Education for Sustainable Development
³ Programme Leader, MSc Sustainable Development in Practice University of the West of England (UWE), Bristol, UK

Title: Embedding the Expectations of the QAA - HEA Guidance on ESD in the Institutional Quality Management and Enhancement Framework of UWE, Bristol

In June 2014 the Quality Assurance Agency (QAA) and the Higher Education Academy (HEA) published their guidance on Education for Sustainable Development (ESD) which had been prepared by an expert group of UK academics. The guidance is presented as an outcomes-based framework and although not a formal part of the UK Quality Code for Higher Education, it is intended to provide further context and direction for the section of the code which refers to ESD as an academic quality theme that crosses subject boundaries. The QAA - HEA guidance identifies four key components of ESD: global citizenship; environmental stewardship; social justice and equity; and a future-facing outlook. It is expected that a graduate will be able to articulate their knowledge and understanding and demonstrate skills in relation to these components. In responding to the opportunity provided by the guidance the University of the West of England (UWE) has ensured that its Sustainability Plan and ESD Action Plan are aligned with the expectations and intentions of the guidance. These plans provide the institutional policy context in which the ESD is promoted and delivered through the university's programmes of study. However, in order to make explicit the engagement of Departments, programmes and modules with the guidance and to encourage its widespread utilisation ESD has been embedded into the institutional Quality Management and Enhancement Framework (QMEF).

ESD is now an explicit feature of UWE's module and programme development, annual review and periodic reporting processes. Supplementary guidance on addressing ESD in the curricula has been provided for staff engaged in these processes. For developers of provision and those charged with annual or periodic reporting the university has produced question prompts to guide and assist completion of the new requirements. Staff engaged in the approval processes for new curriculum developments, or receiving annual reports of modules, programmes and departments for approval, are provided with a suite of question prompts to assist in determining their approval of the report or new curriculum.

The UWE approach now provides a suite of policy drivers promoting engagement with ESD and the new guidance as well as providing formal reporting mechanisms. These reporting mechanisms will allow a further degree of rigour to be achieved in our annual reporting of our progress against the targets in the ESD Action Plan.

Ref: F

Abstract Type: Paper

Authors: Professor Marco Rieckmann

Title: Higher Education for Sustainable Development in Germany – Achievements, Good Practice and Next Practices

Universities play an important role in shaping the future of the world society in terms of sustainable development. By implementing Education for Sustainable Development in Higher Education, universities can contribute to developing skills that enable individuals to participate in socio-political processes and hence to move their society towards sustainable development. They educate future decision-makers for coping with the challenges of the necessary global transformation.

During the last years, many universities in Germany have already initiated activities in terms of Higher Education for Sustainable Development (HESD). Some universities – e.g. Leuphana University of Lüneburg – have re-oriented their whole educational approach and have implemented HESD as a key principle. Other universities have at least further developed their educational practice by using problem-oriented, project-based, inquiry-based and inter- and transdisciplinary teaching and learning approaches.

Hopwood et al. (2005) criticise that the current global sustainability discourse “is dominated by the managerial outlook“ (p. 48), although fundamental transformation would be needed. If this is the case, it can be asked if HESD also is part of this dominant managerial discourse. Does HESD really contribute to the expected and necessary change or does it only enable people to better adapt to the existing (unsustainable) world? How has HESD to be designed in order to be transformative and to facilitate fundamental change?

This paper gives an overview of the existing HESD practice at German universities. It describes general achievements and some cases of good practice at different German universities. Examples of whole-institution approaches, transdisciplinary, project-based, and inquiry-based courses as well as student-led activities will be given. Based on this description of good practice, the paper discusses the following issues:

- 1.) On which understanding of sustainability is HESD based at German universities? It will be shown that HESD is reproducing the dominant sustainability discourse and therefore may contribute to the development of a Green Economy, but not to fundamental change as it is discussed, for instance, in the degrowth or post-growth discourse.
- 2.) Does HESD enable students to cross the Eurocentric boundaries? Which Non-Western perspectives could and should be integrated in the HESD practice at (German) universities? Students learn in particular about sustainability theories and concepts from Germany or other Western countries. Concepts as, for example, the Andean “Buen Vivir” (Good Living) are not taken into account, but might enrich HESD and its contributions to students’ learning experiences.
- 3.) Does HESD enable students to critically reflect structural issues and to contribute to societal transformation? HESD often focus on the development of individual skills and the responsibility of individuals, e.g. in their role as consumers. However, for a sustainable transformation of the world society also structural change will be needed. Therefore, HESD should give students opportunities to reflect on structural issues and possibilities to influence societal change.

On the whole, the paper aims at providing ideas for the further development of HESD theory and practice and hence contributing to “next practices” (Wals 2010) of HESD.

Ref: G

Abstract Type: Paper

Authors: Dr Neil Gordon

Title: Team Projects, Inquiry and Sustainable Development: an example in the Computing Curriculum

This paper will consider an approach to integrating Sustainable Development within discipline based teaching, utilising inquiry based team projects to motivate and develop the students. We will illustrate the approach with a case study from Computer Science. Furthermore, we will consider how Sustainable Development can be utilised as a framework to unify and motivate the development of graduate attributes and transferrable skills – with appreciation of the social and ethical context of their work, of the legal and professional considerations that graduate computer scientists are expected to exhibit. We will also consider some of the different pedagogic approaches to teach and engage students with Sustainable Development, in particular showing the effectiveness of utilising problem based / inquiry based learning, where setting authentic tasks can assist students in appreciating the need for them to understand the broader context of their discipline and to give them the opportunity to apply their subject specialisms in a real-world (like) context. The final element of the approach described is the use of team work – that is the problem based approach is done in teams, with a range of sub-problems to allow the team to subdivide tasks and also learn about project management and the issues that arise in coordinating across tasks and individuals. The effective use of teamwork in teaching, and in particular in assessment, will be explored, with a description of the need for effective expectation management, and of mechanisms to audit and track team work issues. Appropriate tasks can encourage and / or require that students demonstrate critical evaluation – with consequential benefit to the skills development of the students. We will describe how the use of peer-assessment can assist in motivating students – both those who may typically sit back and let others work, as well as letting those who fear being the workhorse being exploited by the rest of the group. Such mini-social frameworks can provide a microcosm of a sustainable society, thus reinforcing the intended learning outcomes.

Whilst primarily focussing on ESD pedagogy, this paper will also describe the use of teamware software that enables and encourages students to collaborate virtually, thus offering the opportunity for pure online, or blended, approaches to this problem based activity. Such approaches offer opportunities for including broader groups of students, from different disciplines and potentially institutions.

Ref: H

Abstract Type: Paper

Authors: Dr Chris Blackmore, Martin Reynolds and Ray Ison

Title: Embedding sustainability through systems thinking and practice – some experiences from the Open University

One initiative that has emerged during the UN Decade of Education for Sustainable Development (ESD) through the work of the Open University Systems group has been its postgraduate programme in Systems Thinking and Practice (STiP). Built on some forty years' experience of systems teaching and research at the Open University (OU), this open learning, distance taught programme is designed to develop students' abilities to tackle complex messy situations, to provide skills to think more holistically and to work more collaboratively to avoid systemic failures. This paper critically reviews the trajectory of this programme – its past, present and future. It discusses the STiP programme's many boundaries with other programmes and across sectors. Challenges of epistemology, ethics and purpose are explored, in relation to education for sustainability. The programme's many and varied teaching and learning processes are explicated. The pedagogy of the STiP programme is grounded in a diverse range of students' experiences and needs that by no means all focus explicitly, or primarily, on sustainability or sustainable development. Many OU students study part-time alongside their other commitments, both work and community-based. STiP students are all interested in systems and learning. But what STiP is a part of for them varies considerably. Students come mainly from the UK and rest of Europe. Many of their interactions are online through several different fora. A diverse, active and critical OU STiP alumni community has developed, initiated by the early graduates of the programme. Academics responsible for the programme also participate in this community's deliberations, at the invitation of student alumni.

In this paper, the authors build on their various experiences of the STiP programme and re-explore its contexts and boundaries from an ESD point of view. They use some of the systems heuristics that they teach, to critically reflect on both what is being achieved through this programme in relation to education for sustainability and what they and some of their past students and associate lecturers think ought to be occurring in this respect as they go forward.

Ref: 1

Abstract Type: Paper

Authors: Verena Holz

Title: Who's afraid of the Cultural Turn? How the application of cultural studies concepts can improve learning processes for Sustainable Development

Several ESD articles in handbooks (Wals, 2011, Stibbe 2009, Tilbury/Wortmann 2004) and other learning materials indicate that culture is a fundamental category in learning processes for Sustainability. Culture does not only represent a social scientific term against the background of theoretical concepts but also a concept of everyday life with several non-scientific connotations. That is a fact that hampers the pedagogical work within this important context, especially on the learner's level.

In my presentation I will outline concepts of culture based on semiotic and praxeological approaches within the framework of Cultural Studies that can be applied to questions of sustainable development in daily life (Reckwitz 2012, Hall 1980). It helps as I will show, on one hand, to sharpen learner's analytical perspective and competencies and on the other hand to develop practices for a sustainable life within specific cultural contexts. I will present how particular issues of Sustainable Development, as the perception of climate change and global change, the relationship between man and nature and the relationship among each other will be reflected with the above named methods contributed by Cultural Studies.

Ref: J
Abstract Type: Paper
Authors: Dr Robert Cook
Title: Consumerism: The Elephant in the Sustainability Classroom

Education for Sustainability, in all its permutations, has utilised a range of pedagogic responses - from the promotion of cognitive understanding of environmental decline, to reviewing possible technological and societal remedies, to the development of personal, behavioural responses. However, it has tended to focus less attention on the motivations underlying those personal responses, and, where it has, it has relied upon critical analysis in order to do so. This paper considers the development of the concept of “consumerism” as an ethic underlying unsustainable personal and social behaviour and discusses the usefulness of concepts and practices such as “mindfulness” and “frugality” as not only potentially transformative experiential pedagogic responses, but also the bases for cultural shifts in the broader educational environment.

Ref: K

Abstract Type: Paper

Authors: Cotton, D., Winter, J., & Miller, W

Title: Informal learning on campus: A comparative study of students' energy literacy in UK universities

Higher Education (HE) has a key role to play in educating 'leaders for the future' (Martin and Jucker, 2005), and there is an increasing expectation that HE should equip graduates with the knowledge, skills and attitudes to enable them to respond appropriately to sustainability challenges. Whilst many students are exposed to opportunities in learning for sustainability through formal university curricula, there is significant variation depending upon the course studied. Nonetheless, there are some signs that universities are seeking to integrate sustainability concerns not just into curricula, but also research, campus operations and community relations – freeing up opportunities for informal, experiential learning across the disciplines (Sterling et al., 2013). At least in the UK, there is also some evidence of a correlation between young people's participation in HE and subsequent commitment to environmental sustainability when other factors are held constant (Cotton & Alcock, 2012).

Energy-saving forms an important part of efforts to enhance sustainability on campus, yet little is known about levels of energy literacy amongst HE students. The development of students' energy literacy has received relatively little attention in the research literature, and the European context is under-explored, with most previous research in the US. Findings suggest that students' understanding of energy is often patchy, with high concern but lower knowledge and skills (DeWaters & Powers, 2011). Moreover, where energy issues do appear in HE, this is mainly in the context of campus greening or energy-reduction schemes, particularly in student residences. The focus of many of these schemes is predominantly behaviour change rather than wider energy literacy, an emphasis that may have important implications for the longer-term impact of any such changes. According to DeWaters & Powers (2011), energy literacy should empower 'students to make informed energy-related choices as they go about their daily life' (p.10), and should include:

- Knowledge and understanding about energy, its use and impact on environment and society (cognitive);
- Appropriate attitudes and values, for example, on existence of global issues and the significance of personal decisions and actions (affective); and
- Appropriate intentions/behaviours, for example to promote energy conservation, make thoughtful decisions, advocate change (conative).

This paper reports on research which explored energy literacy in the student population at five UK universities, using an online questionnaire to explore similarities and differences between the results from each institution to draw out implications for informal learning around sustainability.

Early findings suggest that there are a number of similarities in student responses between the different institutions, including widespread enthusiasm for education in sustainability and energy issues, but patchy experience of energy in the curriculum. Gaps in knowledge mean that behavioural choices are not always the most effective, and energy-saving initiatives on campus are often unseen by students or undermined by 'mixed messages'. However, the differences between institutions suggest that targeted approaches and whole institutional change around sustainability can impact on students' informal learning about energy and wider sustainability issues.

Ref: L

Abstract Type: Paper

Authors: Dr Diana Pritchard

Title: Sustainability growth in institutional boxes

A characteristic of many communities committed to education for sustainability within higher education is that they promote "democratic ... processes of change" (Tilbury 2011) where they adopt radical approaches to pedagogy. Such communities offer the promise to deliver the more profound learning experiences that are required if universities are to deliver deeper and transformative types of education for sustainability which can equip graduates to make "decisions in their home, community

and working lives” that prepare for future challenges and be effective in the face of both predicted and unknown changes (Orr 1994). The creation of spaces and opportunities which provide the environment for these processes in teaching and learning is important if advances in the sustainability agenda in universities are to go beyond those made to date in the UK and elsewhere. These have largely been confined to curriculum content changes (Tilbury 2011) which are more akin to the delivery of education about sustainability (Sterling 2004).

At the same time, scholars of the field observe from comparative experiences across institutions, that the sustainability agenda can only ever be adopted beyond the limited initiatives of groups of self-motivated individuals if it becomes institutionalised. Such institutionalisation imposes, by definition, obligations on the part of departments and academics regarding changes to curriculum, teaching and learning. This can stymie academic autonomy and professional identity which academics themselves typically report as having been undermined over recent decades in UK universities (Henkel 2005).

In this context, this paper sets out to explore the nature of this tension and the resultant dilemmas for groups or units moving the sustainability agenda forward. It draws primarily from experiences involving engaged academics and students at the University of Bedfordshire, where early indications would suggest that they have appeared as a powerful “force for change” (Tilbury 2011) within the institution. The paper also refers to the experiences of other institutions with a view to identify productive alternatives which both institutionalise education for sustainability while ensuring adequate room and flexibility for innovation.

Ref: M

Abstract Type: Paper

Authors: Sophie Bessant

Title: The Marketization of English Higher Education and the Sustainability Agenda: contradictions, synergies and the future of Education for Sustainability (EfS)

The 'sustainability agenda' and Education for Sustainability (EfS) have become a ubiquitous area of research and practise across universities in England. The backdrop to this challenge is a higher education sector which is increasingly being positioned at the service of the country's economic and business engine; students who are increasingly conceptualized as consumers and encouraged to interpret their identity in employability terms; and academic systems which face mounting pressure to quantify and demonstrate value for money and the merits of their student experience. Indeed, the forces currently shaping higher education globally are multiple and complex. Processes of globalisation, internationalisation, dynamic technological and social media interactions, commercialisation and corporatization, have fundamentally changed our lives, and the HE landscape. The underlying political-economic ideologies which shape our higher education system in the UK and England are the intertwined effects of Neoliberalism and New Public Management (NPM), i.e. marketization and managerialism, and it is within this complex neoliberal system that sustainability educators have advanced and grown their work.

This paper will explore the ideological and the practical relationship between neoliberalism and new public management and the growing higher education sustainability agenda in English HE. This paper will illustrate using examples how neoliberal and managerialist control mechanisms, which govern institutional, departmental and individual academic, as well as student behaviour, provide both challenges and contradictions, as well as synergies and opportunities in respect of advancing sustainability education in universities, with many sustainability advocates continuing to exploit the neoliberal and managerialist characteristics of universities to advance their work. This paper is based on doctoral-level empirical research which has been carried out through 56 semi-structured interviews via multiple case study analysis of 8 English universities, 5 key sector bodies (HEFCE, HEA, QAA, NUS and EAUC) as well as notable experts in the field of EfS.

Some key questions which will be explored include:

- Is education for the public, socio-democratic, sustainability good within the neoliberal university a paradox or a possibility?
- Do we need to re-think universities as radically democratic, social and political institutions, finding alternative frameworks to counter neoliberalism?
- Should we be seeking a paradigm shift towards sustainability?
- Is whole institutional change towards sustainability an achievable reality?
- What about all of the positive and innovative sustainability and EfS progress being made within the neoliberal system?
- How do marketizing and managerial instruments, such as educational quality assurance and quality-related research funding influence the progression of sustainability and EfS agendas?
- Do we need to raise the profile and legitimacy of sustainability education and EfS research within the market system? E.g. through academic reward systems, research quality assessment and promotion, improving reputation and status, funding and resource flows, educational quality standards and benchmarks, league tables and student surveys?

Ref: N

Abstract Type: Paper

Authors: Dr Zoe Robinson

Title: 'A degree in sustainability? What's the point?' The past, present, and future of named Sustainability degrees

There are a growing number of interdisciplinary, named sustainability undergraduate degree courses in UK universities. This paper explores the development of such degrees in the UK, and their place in the 'sustainable university'. The research draws on interviews from nine programme directors from named sustainability degrees across the UK, and the experiences of developing and running such a degree at a tenth university.

The findings of this research show this growth in sustainability degrees is not in direct response to school leaver demand, with sustainability degrees consistently recruiting small numbers of students, often below ten. However, the demographics of students on these degrees can be notably different from other programme cohorts, with a greater proportion of mature students and international students. Recruitment onto sustainability programmes appears more successful in the Scottish education system, where students might become exposed to a sustainability programme through a more general first and second year, and 'opt-in' later in their higher education journey. The history of the development of named sustainability programmes is varied between institutions, from rebranding of struggling environmental management courses, to a widening portfolio from within a geography-discipline base. The structure of named sustainability degrees also varies in terms of structure. Some degrees are structured around a 'wrapper' bringing together any sustainability-related module in the University, while others provide more core sustainability-based modules with the opportunity to take options from different programmes. These different approaches have their own challenges. These include modules taught as part of other programmes not being approached through a sustainability lens, meaning some students struggle to link relevant topics, such as transport to their sustainability interest; students being reluctant to choose options associated with other programmes; 'sustainability' staff teaching outside their area of expertise in order to cover key areas relevant to sustainability; and logistical issues of running an interdisciplinary programme which cross-cuts university disciplinary structures.

In addition to these challenges, many people have questioned the worth of named-sustainability degrees as an effective mode of Education for Sustainability, claiming they only address those students already interested in sustainability, and affect too few students. Yet despite these challenges it has been found that named sustainability degrees can play an important part in driving student engagement with sustainability initiatives in the University. The small size of cohorts, the shared motivation and interest, and the topics covered through the programme can provide a catalyst for student activism for sustainability, and through their student-led initiatives engage a much wider part of the student cohort.

Named-sustainability degrees are therefore an important part of the portfolio of sustainability education provision of a 'sustainable university.' However, in the face of low student numbers in order for such programmes to continue to exist, a coordinated effort from the sector and professional bodies is needed to address issues of recruitment. This includes working with schools to increase awareness of these courses and sustainability-related career opportunities, and greater acknowledgement of the place in society for the generalist rather than specialist.

Ref: O

Abstract Type: Paper

Authors: Chris Willmore

Title: De-problematizing decentralization: pluralism and the governance of ESD

This paper explores the trend towards standardisation of 'success' measures in ESD and towards models of centralised institutional direction of ESD, and argues that both practically, and theoretically there are risks associated with such models, and that models of governance of ESD located in lessons from ecological and organisational theory may offer more sustainable and deep transformations.

The paper will explore questions such as:

How do avoid regulatory box ticking?

How do we manage the counter cultural alongside institutional culture shift?

Are there different models for ESD governance?

How do we avoid a governance monoculture?

Ref: P

Abstract Type: Paper

Authors: Senan Gardiner

Title: Higher education for sustainability and the future. How do we foster graduates' anticipatory competence?

Anticipatory Competence is seen as a key competence in sustainability research and problem solving (Wiek 2011, Rieckmann 2011) and many researchers posit that aspects of anticipatory competence, e.g. scenario analysis and backcasting (Swart et al 2004) are vital in understanding sustainability among future decision makers and developing the sustainability science research agenda. However while much has been written about the benefits of futures research and its origins has been published on how to get higher education graduates to competently engage with the future. Indeed "future" is often seen as the missing dimension in education (Hicks 2002).

Through undertaking a practitioner role in the teaching of a course in "Sustainability and the future" in the University of Vechta, Niedersachsen, Germany, the researcher has begun an action research inquiry cycle into the role of anticipatory competence as a key sustainability competence and its operationalisation in higher education. The question being, how do students through the running of the above course develop their anticipatory competence?

In this paper the results of the pilot and second Sustainability and the Future courses will be presented and discussed. This paper will analyse results from expert interviews, learning journals and focus groups on students and expert concepts of anticipatory competence and how they have developed. In this paper the groundwork for a critical view of our relationship to the future and how this can be fostered is laid out.

Rieckmann M. (2012): Future-oriented higher education: which key competencies should be fostered through university education and learning. *Futures* (44) 127-135

Swart R, Raskin P, Robinson J. (2004) The problem of the future: Sustainability science and scenario analysis, *Global Environmental Change* 14 137-146.

Wiek A, Withycombe L & Redman C. (2011) Key competencies in sustainability: a reference framework for academic program development. *Sustain Sci*. Springer

Ref: Q

Abstract Type: Paper

Authors: Professor John Siraj-Blatchford

Title: How do we mainstream ESD in early childhood and in early childhood teacher education?

The most fundamental principle informing the pedagogy of ESD in Early Childhood Education is that Young Children have the right to be consulted 'in all matters that affect' them (Article 12 United Nations Convention on the Rights of the Child). Sustainable Development is essentially concerned with the future, and it is young children who have the greatest stake as citizens in that future. As Hart (1997) suggested, and Davies (2005) and others have shown, Young children are already competent, active agents in their own lives and they are affected by, and both capable and often required by circumstance, to engage with complex environmental and social issues.

In recent years much work has been done around the world to develop early childhood ESD and young children in our preschools are increasingly encouraged to develop an emergent awareness of the nature and value of sustainable development. Strong foundations are being laid and positive disposition are being developed towards the subject. In many of the most celebrated and successful pre-primary settings the transition from this early years play-based education to the more formal educational model of the school is supported through the development of small group project and topic work. Some of the most sophisticated of these approaches involve the children working together with the teacher in ESD collaborative enquiries. But this remains marginal to mainstream practice.

This presentation will review the pedagogies that have been celebrated in a range of publications reporting on early childhood educational practices around the world it will also report on relevant findings from the UN Decade of ESD (DESD) final report, and upon early childhood ESD discussions at the DESD conference in Nagoya in November 2014.

A key question addressed in the presentation will be; How do we mainstream ESD in teacher education? It will be argued that Teacher education institutions are constructed in the ferment of government policies, social and economic pressures, as well as the conflicting ideological contexts of the academics, administrators and students. There are competing micro political agendas. Adopting a Gramscian perspective, we need to identify the discourse's that provide symbolic capital resources that may be applied by individuals and groups in promoting ESD. It will be suggested that one of these may be found in a critique of 'reflective' thinking and practice. It will be argued that it is the encouragement of 'refraction' in modern higher education that is needed; our students must learn to see the world through different lenses, from different critical perspectives.

Note: Professor Siraj-Blatchford will chair the early childhood workshop at the UN Decade of ESD Conference in Nagoya in November 2014.

Ref: R

Abstract Type: Paper

Authors: Dr Hartley Banack

Title: Sustainability through outdoor education teacher reform

The Faculty of Education at UBC has partnered with the Park Board of Vancouver (a municipal board of governance for the parks and community facilities of Vancouver, BC) to explore how Park Board infrastructure, particularly field houses located in city parks around Vancouver, might be re-purposed to encourage public school teachers to take their students to these sites as a means to tie curriculum with Park Board spaces, get children outdoors more often, and re-invigorate urban wild spaces for the citizens of the city.

UBC's course in Outdoor Education provides teacher education students an opportunity to help the Park Board develop this project by providing meaningful student research projects that will be implemented by the City of Vancouver.

This project is sustainable in terms of having the human resources met by UBC students, having the facility infrastructure offered by the City of Vancouver, and having long-term programs available for teachers and students of Vancouver.

The paper shall discuss the project and partnership towards increasing sustainability efforts at the post-secondary and in partnership with a school district (Vancouver School Board) and municipality (City of Vancouver).

Ref: S

Abstract Type: Paper

Authors: Dr Daniel Fischer

The paper is co-authored by Silke Jenssen (RHTW Aachen) and Valentin Tappeser (rootAbility / Maastricht University Green Office).

Title: Toward the Sustainable University: A Comparative Analysis of Conceptual Understandings of the Sustainable University in Contemporary Assessment Tools

About 25 years ago in the Taillores declaration, university leaders made a first commitment to what actions Higher Education Institutions (HEIs) should take to meet the challenges of sustainable development. Since then, the notion of a sustainable university has been controversially debated. In recent years Sustainability Assessment Tools (SATs) have begun to play a prominent role in strategies and approaches to reorient HEIs systematically and holistically toward sustainability. The starting point of this paper is that with their advancements in terms of more sophisticated technical measures and their increasing dissemination, SATs have not only become instrumental facilitators of change processes towards sustainability, but also established implicit normative standards by framing the overall understanding of what a sustainable university should comprise. So far, however, critical comparative analyses of what understandings of a sustainable university are informing and underpinning SATs are rare. This paper seems to fill this gap. Based on a comparative multi-method analysis comprising of a quantitative analysis of more than 550 indicators and criteria extracted from 18 SATs as well as a qualitative content analysis of introductory passages in the documentations of these SATs, the authors sketch the dominance and marginalization of different aspects of a sustainable university in contemporary SATs and discuss their critical implications. By encouraging scholars and practitioners to revisit the question of what a sustainable university should comprise of, the paper contributes to building the capacity for a more sophisticated and more reflexive engagement with approaches to assess and evaluate sustainability in HEIs.

Ref: T

Abstract Type: Paper

Authors: Dr Adriana Consorte-McCrea & Peter Rands

Title: Mapping the Future: the search for alignment between curriculum and the university's Education for Sustainable Futures objectives

Canterbury Christ Church University Strategic Plan (2011-2015) is committed to developing students' understanding of the challenges to our common future and the need for sustainable development of communities, economies, and our environment. As stated by the QAA's guidance "there are many ways in which this may be achieved" and delivery should not be prescriptive. Amongst its outcomes our Strategic Plan proposes that "significant enhancement of the curriculum to support the principles of Education for Sustainable Futures (ESF) will prepare students for their future by introducing them to new mind sets and strategies, and will prepare them for a participatory democracy." The reference to curriculum constitutes not only education through the formal credit bearing programmes and certificates, but also the 'informal curriculum' (involving a wide range of extra-curricular activities) and the 'campus curriculum'. The strategic plan also recognises that students should be partners in the development of their sustainability literacy and it recognises the need to ensure our academic and professional services staffs are well informed and able to facilitate the embedding of sustainability as appropriate into the formal, informal and campus curricula.

One of the targets defined by the university's Education for Sustainable Futures Policy to help the university meet its aims has been to build a baseline audit of ESF. During this presentation I will explore the key points that emerged from a review carried out on mapping exercises by several HE and FE institutions and present the developmental process of our mapping strategy to date, in line with our new Framework (2015-2020). In doing so I will discuss issues encountered when seeking to tailor the exercise to our own needs, navigating through top/down and bottom up strategies, interdisciplinary methodological barriers, and an underlying concern to avoid a focus on accountability in favour of a positive, support driven, and inspirational approach. Audits and mapping exercises have been used to address a wide range of ESF issues, such as staff familiarity with sustainability in university's strategic plan; understanding of ESF concepts; knowledge of Global Issues; student experience and sustainable development literacy; use of ESF pedagogies; personal choices in effecting change; partnership working; barriers to change; familiarity with sustainability centres/support available at University; willingness to attend ESF staff development/training. Such exercises have met with varied opportunities, and with difficulties concerning the great diversity in the way in which sustainability is understood by individuals; narrow understanding of ESF amongst curriculum leaders; inaccurate data regarding student engagement; lack of clear description or visibility of ESF content within modules; and inconsistency in addressing ESF in curriculum due to a lack of clarity regarding strategic objectives, as well as organisational obstacles, including time and staffing constraints.

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

Roundtable Presentations Index:

Plymouth Plaza - Roundtable Presentations - (9.55 - 10.55)

Ref	Name	Title
1	Paul Murray	Self-leadership: Self-leadership and sustainability: a marriage made in heaven?
2	Valerie Huggins & John Siraj-Blatchford	Effective Pedagogy in early Childhood and Early Childhood Education
3	Paul Warwick	Towards a pedagogy of love – lessons learnt from a participatory education for sustainable development initiative
4	Hugh Conway	Are we walking the talk? Researching students' experiences of an undergraduate sustainability module
5	Lynne Wyness	Different Languages, Shared Goals? Exploring the Potential for Merged Pedagogies in Enterprise Education and Sustainability Education
6	Helen Bowstead	Developing a critical stance through assessed group work.
7	Penny Price	How can ESD influence Public Sociology and the learning experience of Social Science students as global citizens? An evaluation of an ideological shift in learning paradigms.
8	Anne Bentley	Sustaining the self through healing the social. Community initiatives to increase compassion for self and others through everyday encounters
9	Michelle Virgo	The Role of Group Facilitation in Collaborative Social Pedagogy for Deliberate Social Transformations Toward Global Sustainability
10	Christie Pritchard	It looks like my gran's house - an exploration of 'thing power'
11	Denise Summers	Education for Sustainable Development in Initial Teacher Education: From Compliance to Commitment - Sowing the Seeds of Change
12	Jane Grose	Education for Sustainability in Higher Education Conference - Achievements and prospects
13	Janet Richardson	Designing for sustainability in Nursing Curricula
14	Stacey DeAmicis	The Art of Science Communication
15	Rory Shand	Opportunities and barriers in innovating Education for Sustainable Development: An early career academic's view
16	Andy Whiteford	Moving towards transformation in teaching and learning – a case study
17	Caroline Mikhail	Plymouth Growing Futures - ESD in motion
18	Simon Bradbury	Making transformative learning spaces happen, a case study of student participation
19	Glen Crust/Helen Hicks	Healthy graduates, healthy communities, healthy society, healthy planet...

ESD in Practice - Plaza Roundtable Presentations - (13.50 - 14.50)

Ref	Name	Title
20	Alison Greig	Sustainability Skills - Where can I find them? How do I know?
21	Stephen Scoffham	The Futures Initiative at Canterbury Christ Church University
22	Peter Vujakovic	Out and about and upside down: A 'green infrastructure' approach to creative critical learning beyond the classroom
23		
24		
25	Zoe Robinson	Student experiences and learning from involvement in the 'Sustainable Student Bungalow': Implications for supporting the development of future change agents
26		
27	Valeria Vargas	Towards "Responsible Futures": A participatory and collaborative approach
28	Quinn Runkle	Embedding sustainability in healthcare through ESD in the curriculum
29	Helen Puntha	From superfood to supra-food: a whole-institution approach to enabling sustainability literacy
30	Aikaterini Kosta	Exploring the response of postgraduates to university sustainability
31	James Norman	Storytelling and the importance of creative communication in discussing sustainability...a presentation through the medium of children's picture books
32	Antony Johnston	Curriculum development towards a sustainable university
33	Georgina Gough	Collaborative Approaches to Embedding Sustainability across the Curriculum
34	Chris Willmore	Reflective action: forging links between student informal activity and curriculum learning for sustainability
35	John Hudson	Evolving Visual Communication Curriculum
36	Anne Zimmerman/Karl Herweg	Integrative Training in Inter- and Transdisciplinary Research Settings
37	Paul Ofei-Manu	Quality Education for Sustainable Development: Framing Perspectives on post-DESD/post-2015 Education by Integrating Education for Sustainable Development and Quality Education
38	Kim Croasdale	Dissertations for Good

Ref: 1

Abstract Type: Roundtable (Plymouth Plaza)

Authors: Paul Murray

Title: Self-leadership: Self-leadership and sustainability: a marriage made in heaven?

Self leadership is typically defined as a process of self-development that equips us to orientate our own thoughts, intentions and behaviours towards positive or desired change. Given that sustainability is ultimately an agenda for change, the possible potential for self leadership to help individuals promote a better future cannot be overlooked. This paper examines research and development work undertaken at Plymouth University that has been exposing academics, students and business professionals to aspects of self-leadership. The paper analyses core self-leadership theory and its application to education for sustainability through the lens of 'Self-leadership for Sustainability' training sessions delivered within and outside Plymouth University. The training activities are analysed in the context of their historical development, the impact of training participants and the trajectory of the training initiative, particularly towards the promotional of personal and professional resilience in times of challenge and change.

Ref: 2

Abstract Type: Roundtable (Plymouth Plaza)

Authors: Valerie Huggins & Professor John Siraj-Blatchford

Title: Effective Pedagogy in early Childhood and Early Childhood Education

All children have the right to education, and research from longitudinal studies and from neuroscience has shown that it is in the early years that children have the greatest capacity to learn. It is also in early childhood that the foundations of many of our fundamental attitudes and values are first put into place. Of even more fundamental significance it should be recognised that ESD is all about the securing the future, and it is young children who have the greatest stake as citizens in that future. Research has shown that young children have the capacity to be active promoters of sustainability in their communities when they have relevant taught experiences in their educational settings.

This project has been primarily concerned to develop the ESD curricula and pedagogic practices of teacher's in initial training. We will report here on the teacher education pedagogy applied to improve student learning, and in our development and evaluation of a research-based, practical model of early professional learning (EPL). The paper reports on an inquiry-based intervention project involving a cohort of students who commenced a Primary and Early Years PGCE course in the South West of England in September 2014.

The study applies two new OMEP instruments developed for international collaborative research:

1. A survey instrument identifying the perceptions and attitudes of early childhood educators towards education for sustainable development.
2. Environment Rating Scale for Education for Sustainable Development (ERS-SDEC). This is an ESD curriculum evaluation tool: <http://www.worldomep.org/en/esd-scale-for-teachers/>

The student's knowledge and understanding of ESD was self-audited at the start of the course, they undertook self-study and they were provided with support to develop this knowledge. They then evaluated the ESD provision in their placement settings and interviewed the teachers to identify their perceptions and attitudes towards ESD, and their findings were collated for collaborative seminar analysis. Lectures and online materials are supported them in planning and leading activities to promote ESD with young children on their subsequent placements. Their perceptions, attitudes and practices will be audited again at the end of their course to gain comparative data. This presentation will analyse and discuss the key issues that have arisen during the first part of the project and suggest ideas for developing approaches to ESD in teacher education courses.

Notes: The project has been developed within the framework of UNESCO Global Action Programme (GAP): Priority Action Area: PAA3. Building capacities of educators and trainers for the effective delivery of ESD (in Early Childhood)

Professor Siraj-Blatchford will chair the early childhood workshop at the UN Decade of ESD Conference in Nagoya in November 2014.

Ref: 3

Abstract Type: Roundtable (Plymouth Plaza)

Authors: Dr Paul Warwick

Title: Towards a pedagogy of love – lessons learnt from a participatory education for sustainable development initiative

This paper explores the development of pre-figurative educational practice whereby university students learn sustainability education through leading positive change in their communities. The Future Leaders programme explores the interface between Education for Sustainable Development, Active Citizenship Education and Leadership Education and consists of the following three inter-connected elements:

1. Students voicing their community living concerns
2. Open space for dialogue and enquiry – critically considering issues from different perspectives.
3. Collaborative leadership action

Adopting a participatory and dialogic pedagogy this innovation has encountered students as being interested not only in encountering narratives of hope but in collaboratively creating their own through direct action as sustainable citizens.

Ref: 4

Abstract Type: Roundtable (Plymouth Plaza)

Authors: Hugh Conway, Paul Warwick & Lynne Wyness

Title: Are we walking the talk? Researching students' experiences of an undergraduate sustainability module

Increasingly it is being recognised that the objectives of Education for Sustainable Development (ESD) require a constructively aligned pedagogy that is interdisciplinary, deliberative, and active (UNESCO 2012, QAA 2014). This is in order for Higher Education to effectively contribute to the development of graduates equipped with the critical and creative competencies to be resilient and innovative in the face of pressing issues of global crisis, the extent of which transcend international boundaries and stretch across generational periods of time.

Within Plymouth Business School (PBS), we are responding to this call for innovation and reform through a variety of teaching initiatives, but what is currently lacking is a deeper understanding of how this is working from the students' perspectives. This paper reflects upon research conducted in partnership with the Centre for Sustainable Futures into a new Year 2 optional module in PBS using an action research /lesson study approach. The research sought to understand students' experiences of learning through this module more deeply and to identify where improvements needed to be made.

The results demonstrate that students responded positively to this form of cross-curricular, multi-disciplinary teaching in which a range of teaching methods was used, and we will share the significant insight gained from the students' voices. General points of interest will be raised for colleagues seeking to effectively provide a more participatory approach to ESD, and we anticipate that the lessons learnt will inform a teaching practice that fully engages the students in their own learning, with applications in a broad scope of business studies.

Ref: 5

Abstract Type: Roundtable (Plymouth Plaza)

Authors: Dr Lynne Wyness

Title: Different Languages, Shared Goals? Exploring the Potential for Merged Pedagogies in Enterprise Education and Sustainability Education

The development of innovative and creative pedagogies that push the boundaries of current educational practice in Higher Education (HE) will be imperative in the transition to a more sustainable future. It is vital both to engage future business leaders and entrepreneurs in tackling the most pressing environmental and social challenges in the 21st century, and to equip sustainability leaders with the entrepreneurial mind-set and skills necessary to bring about rapid step change. Tentative conversations in the sector are emerging around the opportunities that the two fields of EE and ESD present each other (HEA seminar, Bristol, January 2014) but to date, minimal academic research has been produced that examines the pedagogical nexus and potential between both fields.

The research project aims to identify and examine the synergies between Enterprise Education (EE) and Sustainability Education (ESD) and to evaluate the potential for a merged pedagogical approach at Plymouth University, critically informed by best practice in both fields. The intentional conflation of these two distinct pedagogies aims to strengthen students' acquisition of the skills, knowledge, and attitudes (including values and dispositions) that will be essential for the creation of a more sustainable and socially just future. The project employs a range of qualitative research methods and emphasises shared learning and co-construction within the research team.

This paper will present an overview of the interim findings from the literature mapping and Higher Education Institute survey to both Enterprise Educators and Sustainability Educators from around the country. Highlights will include the synergies between the two disciplines of EE and ESD and the potential for best practice from Enterprise Education to inform ESD, particularly from the perspective of creativity, identity formation, and the innovation process.

Ref: 6

Abstract Type: Roundtable (Plymouth Plaza)

Authors: Helen Bowstead

Title: Developing a critical stance through assessed group work

Group work has the potential measurably to improve student engagement, performance, marks and retention and usually succeeds in achieving this potential' (Gibbs 2010:1). However, successfully implementing and assessing a piece of group work is fraught with challenges, particularly when the students do not share a common language and/or cultural background. Drawing on the work of Ian Cook (followthethings.com) and the Centre for Sustainable Futures, this presentation will demonstrate how, through an assessed group presentation, second year international students studying an elective module in English for Academic Purposes have been encouraged to engage with sustainability issues relating to the products they use every day. Giving students the opportunity to share their (often first hand) experiences of the social, environmental and economic impacts of the products they use has succeeded in developing critical thinking skills and in raising awareness of the importance of understanding global perspectives on issues relating to sustainability. The presentation will also explore the potential for this kind of assessed work to 'rebalance' the sometimes unequal power relations that may be played out in cohorts which include non-native English speakers and students from diverse educational and cultural backgrounds.

Ref: 7

Abstract Type: Roundtable (Plymouth Plaza)

Authors: Penny Price and Roger Higman, with Alison Anderson and Sheena Asthana, Sociology, School of Government, Plymouth University

Title: How can ESD influence Public Sociology and the learning experience of Social Science students as global citizens? An evaluation of an ideological shift in learning paradigms.

The development of ESD in HE teaching is pivotal to the current debates surrounding the public value of Sociology and Social Science as a whole, given the relevance of these disciplines to the intractable problems facing humanity in the twenty-first century. This paper focuses on how a change in learning paradigm has influenced student critical understanding of sustainability and globality, and through reflexivity, question their own everyday lives and the lived experiences of others; how global concerns impact at the local community level; and their own value-base and engagement as global citizens.

Teaching about sustainable development has been embedded in the Sociology undergraduate degree programme at Plymouth University for over a decade, taught in the 'traditional' way. With the introduction of a new first year course, 'One Planet: Society and Sustainability', we sought to involve the student in a new learning experience, from one that is learning about society and sustainability to one that actively engages them in sustainable education itself.

The course initially pursues a critical interpretive approach with an issues based prescribed curriculum – centred on the interplay between the 3 pillars of sustainability (social, economic and environmental) with discussion of competing perspectives; the development of global inequities and their future alternatives; the role of knowledge and power in science, media and citizenship; and in terms of policy coherence and implications. Given this student knowledge-base, the course then shifts to a more participatory approach of problem-solving based on situated learning drawing upon real-world case study evidence. Student groups independently identify their own topics to investigate as action research, focussing on a local issue at community level or how a global concern is experienced in a specific place or by a community. The student groups each produce a report that engages the pillars of sustainability, is futures-oriented with the inclusion of alternative pathways to pursue along with realistic policy recommendations, and one that reflects on the ethical values involved, including their own. In this task over 6 weeks, the students are facilitated and supported by academics working in collaboration with professionals and local communities as appropriate.

An evaluation of this pedagogic change in student learning experience and the use of ESD has sought to investigate not only the actual student perception of this process but also the 'deeper learning' involved in such action research and experiential learning, and the longer term ramifications for potential behavioural change, given increased levels of awareness of and engagement in matters of sustainability, in their own everyday lives, present and future, as university students, public social scientists and global citizens.

Ref: 8

Abstract Type: Roundtable (Plymouth Plaza)

Authors: Anne Bentley

Title: Sustaining the self through healing the social. Community initiatives to increase compassion for self and others through everyday encounters

Student mental health is a growing cause for national concern. Reports indicate a growing rise in mental health problems in students in a context of declining community and institutional mental health services (Huffington Post, 2013; The Guardian, 2014).

Plymouth University Student Counselling and Personal Development Service experienced a rise in the number of students seeking help. In 2011-12, 840 students were seen. In 2013-14 the number rose to 1048. At peak points of the last academic year, students waited up to eight weeks for an initial appointment.

The impact of mental health issues and academic attainment is under-researched. A report published by the University of Cambridge (2000) found that social and psychological factors had a negative effect on academic outcome. Eisenberg, Goldberstein and Hunt's (2009) research with American students concluded that, 'depression, anxiety, and eating disorders are significantly associated with academic outcomes among college students.' Their conclusions suggest that interventions to address student mental health have the potential to retain students and the enhance the financial sustainability of a university.

Sustainable development entails 'ensuring a better quality of life for everyone' (The UK Government, 2005) and there is evidence to link mental wellbeing with environmentally responsible behaviour (Mental Health Foundation, 2011).

This paper looks at the innovations created by Plymouth University Student Counselling Service to refocus healing and therapy as a community concern.

Environmental responsibility should incorporate a 'psycho- social' dimension entailing a responsibility to enhance psychological wellbeing. 'Psycho-social' environmental awareness can help create a social climate that promotes individual resilience and compassion for self and others. Brown and Kasser (2005) found a link between positive mental health and environmentally responsible behaviour which supports the notion that sustainable community behaviours involve the interconnectedness of internal qualities and external behaviours.

Wyness (2013) argues that, 'the sustainable community will necessarily entail the participation of active citizens, working together to initiate and maintain community projects'. By engaging students and other communities, to become 'active' in the enhancement, creation and promotion of wellbeing through innovative projects, a climate of increased compassion can be developed to enhance sustainability-focused citizenship. Wals (cited in Wyness, 2013) argues that, 'learning in the context of sustainability requires "hybridity" and synergy between multiple actors in society and the blurring of formal, non-formal and informal education.' Through projects involving both intergenerational encounters and the empowering of students as 'agents of compassion', the Student Counselling and Personal Development Service seeks to trouble fixed notions of 'therapist' and 'client' and posit an understanding that therapy can be embedded within 'compassionate encounters' in the wider university community. This offers additional opportunities for healing outside of the traditional, formal therapy setting and situates healing within the wider community as well as the consulting room.

These innovations have the potential to increase students' resilience, encourage 'active' citizenship and develop critical 'pro-sustainability' skills of empathy, compassion and communication. The intergenerational aspect provides opportunities for mutual learning and cultural enrichment. These initiatives may create new social capital, maximize our human potential and create a more sustainable university.

Ref: 9

Abstract Type: Roundtable (Plymouth Plaza)

Authors: Michelle Virgo ⁽¹⁾, Enrico Wensing ⁽²⁾ and Victoria Hurth ⁽¹⁾

¹Plymouth University, UK

²George Mason University, USA

³US NSF grant #1355914

Title: The Role of Group Facilitation in Collaborative Social Pedagogy for Deliberate Social Transformations Toward Global Sustainability

We report here on the course Collaborative Leadership for Sustainability that is in its second year of development at Plymouth University. Variations of the course are being run concurrently this year with young Inuit students in Arviat, Nunavut and Rigolet, Nunatsiavut and community members affected by the incinerator development in North Plymouth (subject to funding being confirmed). It is our contention that the behavioural, social and political changes that are required for sustainability necessitate the development of a specific set of interpersonal and intrapersonal competences that are currently neglected in traditional higher education and in mainstream leadership development programmes. This course explores a facilitated, social learning and experiential approach to the assessment and development of those competences. It also seeks to use communication technology to link students from diverse backgrounds that face different, but connected sustainability challenges, in a collaborative social network. It connects youth and adult learners across different cultures. The Collaborative Leadership for Sustainability programme sits within, and both contributes to and draws from a larger project funded by the US National Science Foundation ⁽³⁾ called the Sustainable Futures Protocol (SFP), which is a global action research and knowledge integration project that seeks to define and develop the social competences most equitable with generating sustainable futures across cultures and communities worldwide. A key finding emerging from the SFP research that the course at Plymouth is contributing to is the role of identity (personal, social, and collective) in collaboration between diverse groups taking part in sustainability initiatives. In this paper we describe the learning processes that appear to best promote the development of personal and social identities most equitable with generating sustainable communities. We also detail one key finding emergent from our research at Plymouth University, in particular, that is contributing to the implementation and investigation of the SFP globally, which is the key role of group facilitation in the collaborative learning process. Facilitation is proving to have a key role in the development of the competences best suited for participation in initiatives that will elicit and guide the necessary social transformations toward sustainable communities.

Ref: 10

Abstract Type: Roundtable (Plymouth Plaza)

Authors: Christie Pritchard and Helen Bowstead

Title: It looks like my gran's house - an exploration of 'thing power'

“How would political responses to public problems change were we able to take seriously the vitality of (nonhuman) bodies?” (Bennett, 2010:viii)

Drawing on Bennett’s notion of ‘thing power’ this session explores the potential for physical spaces, furniture and artefacts to engender dialogue around the way we interact with the world.

As an alternative learning space, the Writing Café offers the potential to open up dialogues around sustainability as visitors interact with the space itself. The Writing Café encourages a critique of public, political and institutional practices by recognising and exploring our connectivity to the material and its impact on the ethical.

During the session we will provide examples of the impact the space has already had on those who use it, and we will also invite participants to reflect on other ways the space can be used to further staff and student engagement with the sustainability agenda. We will look at the evolution of the space and the artefacts that have found their way there: from the reclaimed furnishings to our collection of ‘curious’ objects, many of which would be considered obsolete in the current HE context. We will also consider the power of nostalgia to connect visitors to the space and how interacting with artefacts, commodities and cultural products might “augment the motivational energy needed to move selves from the endorsement of ethical principles to the actual practice of ethical behaviours” (Bennett, 2010:xi).

Bennett, J. (2010) *Vibrant Matter: A Political Ecology of Things*, Duke University Press, London.

Ref: 11

Abstract Type: Roundtable (Plymouth Plaza)

Authors: Dr Denise Summers

Title: Education for Sustainable Development in Initial Teacher Education: From Compliance to Commitment - Sowing the Seeds of Change

Despite increasing awareness of the importance of sustainability and national and international policies suggesting education is the key, there has been limited progress so far in the UK education system. Although there are areas of good practice, there is little evidence of the higher orders of learning and change required for the transformative approach necessary for a sustainable future.

As part of an initial teacher education team for teachers in the Further Education & Skills Sector, we have embedded Education for Sustainable Development (ESD) in our PGCE/Cert Ed programmes, which we provide in partnership with 5 Further Education Colleges in the South West of England. Using co-operative inquiry, a democratic and participative form of action research (Heron and Reason, 2001), we were able to develop critical knowledge and understanding of sustainability in order to support our colleagues and trainee teachers in introducing it to their students.

This presentation will report on research carried out to investigate the influence of this professional and curriculum development. The way in which the students and initial teacher educators are conceptualising ESD is explored, as well as the way in which the introduction to ESD has influenced their professional and personal lives. Their responses are analysed in relation to Sterling's (2011) levels of learning and change to consider the levels achieved by the students and tutors and the implications of this on future curriculum development.

Sterling, S. 2011. 'Transformative Learning and Sustainability: sketching the conceptual ground.' Learning and Teaching in Higher Education, Issue 5, www2.glos.ac.uk/offload/tli/lets/lathe/issue5/Lathe_5_S%20Sterling.pdf (accessed 24.4.13)

Ref: 12

Abstract Type: Roundtable (Plymouth Plaza)

Authors: Dr Jane Grose, Research Fellow Sustainability and Health, School of Nursing and Midwifery, Plymouth University

Title: Education for Sustainability in Higher Education Conference - Achievements and prospects

An exploratory study by Plymouth University's Sustainability Society and Health Research group (SSHRG) identified items which could be vulnerable to the effects of climate change or geopolitical unrest, and significantly impact patient experience and service delivery. We developed a range of scenarios based on these vulnerable materials, the aim of which was to raise awareness about scarce raw materials and encourage discussion amongst nursing students about use, reuse and disposal. The scenario sessions have been extensively and well evaluated and have been embedded in the nursing and midwifery curricula.

The response to climate change and the development of sustainable approaches to mitigate against its effects requires collaboration and a multidisciplinary approach. Educating students to be aware of the need to manage resources responsibly and understand why this is essential will create a workforce fit for future challenges. This will require innovative approaches to curriculum development at undergraduate or graduate level across the university. Funding for an exploratory study was provided by Plymouth University's Centre for Sustainable Futures (CSF). The aim of the study was to explore how the existing collaboration could be extended to include a further school. We identified the School of Architecture (a heavy user of a range of materials) as a potential partner. We then interviewed senior staff across three schools; 3D Design and Nursing their Midwifery (to share their experiences of the strengths and limitations of the existing collaboration), and interested parties from the School of Architecture to explore how and where using our scenario based training fits in their curricula.

The interviews took place between June and July 2014. The interviews were digitally recorded and the responses to ideas about how the collaboration could be developed were transcribed. A qualitative framework based on the questions and responses was created and the data coded. Two independent reviewers read a selection of the transcripts and the results were discussed with the researcher.

Three potential avenues for collaboration were identified. [1] all three schools are interested in wellbeing [2] Design and Architecture already work in the community focussing on space and place [3] Nursing students consider the health impact of place as part of their public health course.

The interviewees were keen to meet to consider how bringing three disciplines together in small groups in a community setting might enhance the learning of all the students involved. Sharing ideas from their own disciplines and understanding each other's points of view, it was suggested, would broaden and deepen understanding of the nature of wellbeing and how it is understood in each of the disciplines. These data suggest there is both the motivation and the interest in developing new ways of working across disciplines not only to both embed sustainability in the curricula but also to share ideas about how this can be done in ways that enhance learning and reduce disciplinary barriers.

Ref: 13

Abstract Type: Roundtable (Plymouth Plaza)

Authors: Prof Janet Richardson, Dr Jane Grose, Dr Maggie Doman, Janet Kelsey (School of Nursing and Midwifery, Faculty of Health and Human Sciences), Mike Wood 3D Design

Title: Designing for sustainability in Nursing Curricula

Purpose

A major driver for interdisciplinary approaches to teaching and learning is the sustainability agenda. Our paper describes a novel interdisciplinary approach to education for sustainability in healthcare intended to raise awareness about issues, and provide opportunities for nursing and design students to collectively develop solutions.

Design

A scenario was constructed based on our research on sustainable healthcare and waste management and formed one of four skills stations during a nursing clinical skills day. Learning outcomes were specified and students engaged in discussion, fact-finding and practical work. Design students observed the skills stations and participated in the sustainability scenario session, they then produced a range of design solutions which were tested by the nursing students. The process was evaluated using a brief survey to determine if the session had made students more aware of sustainability issues and to gain feedback about the teaching methods.

Findings

Forty one students took part and completed evaluations forms; all thought the scenarios were realistic and saw the relevance to practice: 28/41 reported being more aware of peak oil; 40/41 were more aware of the risk to patient experience and service delivery if resources become unavailable; 41/41 reported greater awareness of the management of waste in healthcare.

Conclusion

There are significant benefits in bringing together different professional groups to consider the very real challenges healthcare faces due to climate change and resource depletion. This initiative suggests a scenario-based interprofessional approach to sustainability can be effective in the undergraduate curricula. Working with our 3 D Design students we have developed the basis of a prototype e-version of the health and sustainability scenario training pack that can be used either on an interactive white board or an iPad

Ref: 14

Abstract Type: Roundtable (Plymouth Plaza)

Authors: Dr Stacey DeAmicis

Title: The Art of Science Communication

The ability to communicate effectively is fundamental in today's society and is one of the top five desired skills that employers seek in graduates, regardless of discipline. As an academic, it has become apparent that deficiencies in written communication skills are an on-going concern in STEM disciplines. Although many students develop discipline-specific writing skills at university, very few have the opportunity to undertake and develop a wide range of writing styles and/or other modes of communication during their academic studies in the UK. However, within the U.S. there is a movement to reverse this trend by turning STEM into STREAM by adding the arts to science education [A] and critical thinking skills embodied in reading and writing [R].

In 2014, a new partnership that embraced the STREAM movement formed between Stacey DeAmicis, Peter Smithers (retired Senior Technician and Entomologist), and Peter Bray (Marine Biology & Coastal Ecology student and Writing Mentor). Utilising the Writing Café and the Physic Garden, Level 4 marine biology students had opportunities to spend time observing the natural world and to write about their observations in a more creative, engaging manner in a six-week series of Nature Writing workshops.

Each session began with 2-3 readings from selected natural historians. These were followed by a discussion about the language and imagery used to create a 'sense of place'. Students were then taken outdoors to spend time honing their observational skills in 'experiential learning spaces' on the Plymouth University campus. Here, students had an opportunity to overturn flagging stones, smell the herbs growing in the garden, and scrutinise the micro-world within the garden walls. Although a small cohort attended (6-19 students/week), this enabled us to concentrate our efforts more efficiently.

The Benefits (Peter Bray)

The best scientists are pioneers, discoverers of new landscapes. They walk through microscopic jungles, crawl at insect-height to imagine an organism's ecology, and draw maps of their new concepts and ideas. Documenting this mental journey through reports, essays and notebooks is fundamental, yet creativity in scientific writing is all but absent at undergraduate level. Through these workshops we have facilitated students' discovery of creativity in science. Students have come to sessions and seen that a garden weed is a solar power station, a wall is a great desert plain for a slug, a rockpool a harsh and dangerous ocean for a crab. Science is about much more than facts and figures; it's about seeing the beauty and awe of nature, and learning to communicate that. At first this may sound 'wooly', a watering down of a subject based on precision. However, we live in an age of increasing concern over the security of our natural world, increasing stakeholder engagement in conservation, and a greater need for the general public to understand the implications of science. Being able to communicate facts clearly and inspire those who don't have a scientific background is of increasing demand. These workshops have begun to address this, but the possibilities for expansion are vast.

Ref: 15

Abstract Type: Roundtable (Plymouth Plaza)

Authors: Dr Rory Shand

Title: Opportunities and barriers in innovating Education for Sustainable Development: An early career academic's view

Integrating Education for Sustainable Development (ESD) into teaching represents several opportunities and challenges for the early career academic. Firstly, the opportunities of drawing together live or action research or other forms of impactful work, with the applied end of several disciplines. There are also a number of challenges to overcome in delivering ESD in social science teaching, such as linking different types of literature within the pedagogical delivery, or in opposition from others to innovative or more experiential forms of pedagogic delivery. This paper examines these conceptual and practical challenges and opportunities, and discusses these in terms of pedagogic realities inside and outside of the classroom, assessment and campus and applying the ESD approach to issues such as inclusivity and research-led teaching for the early career academic.

Ref: 16

Abstract Type: Roundtable (Plymouth Plaza)

Authors: Andy Whiteford

Title: Moving towards transformation in teaching and learning – a case study

It is social questions rather than technological questions that are the key leverage points in securing a more sustainable future (Cook 2004). For those individuals and organisations concerned with humanitarian issues, including social work it has become clear how issues of environmental sustainability both constrain and promote social relationships, individual opportunity and personal well-being.

Mitigation strategies aimed at preventing, limiting or managing further loss of eco-services need to be balanced against adaptive strategies aimed at protecting individuals and communities from the consequences of continued decline in and degradation of these services. Professional social work offers a unique combination of values, knowledge and skills that makes it well placed to account for and work with the connections between actions taken to reduce human vulnerability and actions that may protect the environment.

Social work at Plymouth University values reflection, critical analysis and action in its approach to learning aiming to create a "transformed educational paradigm" advocated by (Stirling 2001:22) as essential for learning about sustainability. Working to link and integrate learning from a range of experiences available and most critically, embed practice at its core (Bellinger and Kagawa 2012) social work education at Plymouth University is well placed to advocate for sustainable thinking and action through a 'social learning' process that Tilbury (2007) argues is the context for sustainability itself.

This workshop aims to share and discuss the contribution our teaching and learning strategy has made in promoting student learning in relation to sustainability within social work and to identify how aspects of our approach might transfer in supporting other disciplines. The workshop will be interactive and itself reflect a transformative approach to teaching and learning concerning itself less with what to teach and more with how we learn.

Ref: 17

Abstract Type: Roundtable (Plymouth Plaza)

Authors: Caroline Mikhail

Title: Plymouth Growing Futures - ESD in motion

During my time as a student at Plymouth University it became apparent the closely developed urban context within a small space could provide a setting for some form of environmental learning. By serendipity and taking up every opportunity that came my way I was able to formulate and come to realize an outdoor learning for sustainability concept in Higher Education. One that would help to enhance the culture of the campus, increase the planting on campus and bring people together. Plymouth Growing Futures therefore is a quest for a more integral and holistic, transformative learning opportunity steeped in hope for a sustainable, peaceful and happy future. It focuses on the now and how we present ourselves to each other and relate to the natural environment. The group welcomes students, staff and the wider community.

In addition the tangibility and nature of the project has meant that Plymouth Growing Futures is developing as a hub, a catalyst, and as a generator of ideas. Drawing diverse people together, helping people to realise what might be meant by sustainability and creating new opportunities based around the ideals of the project.

Ref: 18

Abstract Type: Roundtable (Plymouth Plaza)

Authors: Simon Bradbury

Title: Making transformative learning spaces happen, a case study of student participation

The use of live projects is gaining interest in the UK due to both the pedagogic benefits for students but also as a way of developing project ideas for organisations and communities who have limited resources or for less well defined projects. The relationship that is set up between the external organisations and students assumes all will benefit from this collaboration either pedagogically or through services provided.

In the UK, literature that evaluates the pedagogic benefits have primarily focused on the students' experience and learning and although effective have not interrogated the wider impact of projects on communities and practitioners or been able to interrogate the nature of the boundary between the two. Additionally the projects evaluated tend to be smaller in scale when it is at the larger scale, where there are many more actors, that benefits and learning become harder to interrogate.

This paper is interested in understanding the pedagogic benefits and the value of the service being provided as a way of understanding the boundary between student and professional contexts and how they both learn. Conceptualizing the groups as different communities of practice and drawing on the concept of legitimate peripheral participation the paper studies what students and practitioners learn and how they benefit from this type of collaboration and to what degree the experience is transformative.

Using the Plymouth Master of Architecture as a case study where live urban scale projects have been part of the course for the last 5 years, this paper evaluates the effectiveness of this pedagogic model and how the different communities of practice work together. The paper draws on student work, focus groups and interviews with both students and practitioners that engaged with the projects.

The paper outlines the differing realities of live projects highlighting the challenges and difficulties of live projects in architectural education and raises considerations about the facilitation of the live projects as well as the desirable and expected objectives for both sides. In doing so the paper argues for the need to establish a common ground among academics, students and practitioners on the objectives, aspirations and timeframe of the live projects in order to achieve the right balance between pedagogic benefits for students and providing a service to participants. By drawing primarily on data gathered from interviews with students and practitioners, the paper provides suggestions for bridging the gap between the differing live project realities.

Finally the paper questions the notion of 'legitimate peripheral participation' as being overly simplistic when considering pedagogic models for live projects and draws on the work of 'activity theory' as a way of conceptualizing the relationship between the communities of practice and the relationship between student and practitioner learning.

Romice Ombretta and David Uzzell, 'Community Design Studio: A Collaboration of Architects and Psychologists', *CEBE Transactions* 2, no. 1 (April 2005): 73–88; Kathleen Watt and Derek Cottrell, 'Grounding the Curriculum: Learning from Live Projects in Architectural Education', *International Journal of Learning*, 2006, <http://eprints.lincoln.ac.uk/878/>; R. Sara and R. Sara, 'Learning from Life: Exploring the Potential of Live Projects in Higher Education', Article, *Journal for Education in the Built Environment*, (December 2011), [http://www.cebe.heacademy.ac.uk/jebe/pdf/RachelSara6\(2\).pdf](http://www.cebe.heacademy.ac.uk/jebe/pdf/RachelSara6(2).pdf); Rachael Luck, 'Learning to Talk to Users in Participatory Design Situations', *Design Studies* 28, no. 3 (May 2007): 217–42, doi:10.1016/j.destud.2007.02.002.

Etienne Wenger, *Communities of Practice: Learning, Meaning, and Identity* (Cambridge: Cambridge University Press, 1998).

Jean Lave and Etienne Wenger, *Situated Learning: Legitimate Peripheral Participation* (Cambridge University Press, 1991).

Ibid.

Yrjo Engestrom, *Learning by Expanding: An Activity-Theoretical Approach to Developmental Research* (Oriente-Konsultit Oy, 1987).

Ref: 19

Abstract Type: Roundtable (Plymouth Plaza)

Authors: Dr Glen Crust, Helen Hicks

Title: Healthy graduates, healthy communities, healthy society, healthy planet...

By reporting graduate outcomes in terms of salary and graduate-level employment, the higher education industry frames the student experience as training for economics service. Fortunately the UK Office of National Statistics has developed a robust well-being metric which promotes the expectation that people have a right to a life that feels satisfying, worthwhile, happy, socially connected and no more anxious than we choose. Perhaps sensitivity to their own well-being can enable graduates to prioritise the well-being of the planet. This roundtable workshop will explore ways to work with students' well-being and review graduate well-being data. A draft video exploring How University Works is available at <http://youtu.be/pebv88GXjpA>

Ref: 20

Abstract Type: Roundtable (ESD in Practice)

Authors: Alison Greig

Title: Sustainability Skills - Where can I find them? How do I know?

Evidence from a variety of studies in the UK indicates that students in HE value sustainability skills and expect them to be included within the curriculum alongside other transferable skills. However, in practice they may be unaware where these skills are being delivered and are likely to expect to acquire them outside the curriculum. The design and delivery of an MSc in sustainability, with an emphasis on equipping graduates from a broad range of academic disciplines to drive change, provided the stimulus to design skills delivery and development into the fabric of the course. In this paper, we describe how the course is structured around a set of 'skills for change' which emphasise criticality, creativity and futures thinking and which sit alongside the formal learning outcomes. We discuss how students are supported in acquiring these skills and preparing evidence of this. We have taken note of the common issues around embedding skills in the curriculum, in particular making links to the curriculum explicit and supporting students' reflection and evidence gathering.

Because of the nature of both the subject and the course, the course was conceived at the beginning in an holistic fashion. This needed to be underpinned by a structure that presents clearly to students the interrelationships between different modules and how the course learning outcomes and the 'skills for change' map onto both modules and individual assignments. A graphical course map summarises the course structure and these interrelationships and helps guide their progress in gaining these skills.

Students receive the course map at induction, and are guided through an initial personal audit as part of their personal tutorial. This audit forms part of a portfolio that is updated through the course at later tutorials, and forms the core of assessment in a later, work-based module.

Within modules, the relevant skills for change appear in assignment descriptions, again alongside learning outcomes. Students are encouraged to update their portfolios, moving these towards a state where they can be used as the evidence for employment and other roles.

Ref: 21

Abstract Type: Roundtable (ESD in Practice)

Authors: Dr Stephen Scoffham

Title: The Futures Initiative at Canterbury Christ Church University

Since the appointment of a new Vice Chancellor in 2010, Canterbury Christ Church University has been moving strongly towards developing sustainability in both the management of its estate and the delivery of its academic courses. This paper will explore how the University has sought to bring about changes in its academic portfolio and related activities.

One of the key drivers has been the Green Academy programme which is run by the HEA and which has provided an intellectually supportive environment for debate and discussion. Canterbury Christ Church was one of eight universities that were accepted in the first round of this programme. Whilst it was unclear at the beginning whether participating in the programme would have much impact, the kudos and networking that it has provided has done much to raise the status of ESF within the University.

Understanding the complexities surrounding the ESD agenda has proved a lengthy and challenging process. Some of the challenges concern the vagueness of the terminology, the absence of a set body of knowledge and the need to build staff capacity. What has emerged is a University-wide programme known as the Futures Initiative. This programme has provided pump-priming funding for staff wishing to embark on curriculum development projects relating to ESF. It has consciously sought to build on existing interests and enthusiasms in order to extend ESF awareness amongst the wider staff community. A few years ago ESF at Christ Church occupied a fragile position and was actively supported by only a handful of staff. Three years later some 50 projects have been initiated involving all Faculties and a wide range of disciplines. This has created an increasingly large group of informed and committed colleagues with the potential for a critical mass beyond which the ESF agenda will gather its own momentum.

One of the reasons for the success of the Futures Initiative is that it is based on clearly articulated principles and understandings. These can be considered under four headings (a) values (b) organisation (c) scope and scale and (d) areas of activity. By adopting an enabling approach based on ethical principles and with a clear focus on developing students' capacity for an uncertain future, the Futures Initiative has appealed to colleagues wanting to re-invigorate their courses. Long term staff development which respects the challenges and contradictions of the learning process appears to be yielding increasingly positive outcomes. This paper will offer a critical appraisal of the Christ Church approach and will highlight a number of case studies as exemplars of the wider practice. Future plans will also be outlined. The paper does not intend to present the Christ Church example as a template for others to follow. Rather it presents the experience which has been gleaned in a specific context as a prompt for discussion and the chance to develop deeper understanding through collaborative learning and networking.

Ref: 22

Abstract Type: Roundtable (ESD in Practice)

Authors: Professor Peter Vujakovic

Title: Out and about and upside down: A 'green infrastructure' approach to creative critical learning beyond the classroom

Students' understanding of key environmental and ecological issues is limited by class-based enquiry alone. This paper presents recent developments in both formal and informal curricula approaches to learning which explicitly link the 'pocket habitats' of an urban university to its wider region and the global context. The approaches discussed tie Canterbury Christ Church University's 'Bioveristy' initiative (which involves the stewardship of the biodiversity of its estate), to the cultural landscape and green infrastructure of the Canterbury UNESCO World Heritage Site, in which it sits, and wider cityscape, and then, via green corridors, to the surrounding landscape, including the regionally important 'Blean complex' of woodlands and the Great Stour river catchment. The learning approaches discussed are concerned with counter-intuitive understandings of environment and ecology that are often generated by simplistic text book narratives and lack of direct experiential learning. All of the approaches, whether formal taught modules, internships, or volunteering activities (e.g. Bioblitz days) emphasise the issue of connectivity, both in spatial and temporal terms.

At the local level, students are introduced to the value of small urban habitats as biodiversity nodes within the green infrastructure of the city. The approach focuses on contested issues surrounding definitions of 'native', 'naturalised' and 'alien' species with reference to the cultural and historic development of a World Heritage Site and the conflicts between nature and stewardship of the built/heritage environment, for example, contested views on the value and environmental impacts of plants that grow on or into ancient buildings. At the regional scale, students are challenged to understand issue of environmental and ecological change in the managed and semi-natural environments (woodlands, wetlands) that are part of and surround the city, with specific reference to 'disturbance ecology' and storm damage in woodlands. And, finally, their experience of field work and critical observation is used to question wider established 'truths' about global ecology back in the 'classroom'.

The approaches used are inquiry-based, active, participatory, interdisciplinary (involving input from human and physical geographers, ecologists and environmental scientists), and experiential. The work on woodlands and on the World Heritage Site emphasises the time-dimension 'long-life learning' (as opposed to 'life-long learning'); for example, by understanding the time-scales in which individual trees (which predate the birth of most of the students, and will surely outlive them and probably their children) adapt to sometimes catastrophic environmental change such as the Great Storm of 1987.

Ref: 25

Abstract Type: Roundtable (ESD in Practice)

Authors: Dr Zoe Robinson

Title: Student experiences and learning from involvement in the ‘Sustainable Student Bungalow’: Implications for supporting the development of future change agents

In 2010 four students from the BSc in Environment & Sustainability course at Keele University, decided they wanted to be able to live more sustainably on campus. With the help of academic staff they lobbied the university to be allowed to develop a property on campus as a ‘sustainable student house’. The students wanted to develop an exemplar of sustainable student living, to explore ways of living more sustainably effectively ‘living what they were learning’, and to use the house and their wider dissemination to help and encourage the wider student body to live more sustainably. Each year has seen a different set of four ‘housemates’ living in the house, from an increasingly wide range of different subject areas. The students are encouraged to develop new sustainability projects in the house, and to treat the house as a ‘sandpit’ to explore more sustainable ways of living. The students have designed and built their own vegetable beds, built a polytunnel, installed rainwater harvesting, managed their garden space for biodiversity, monitored their energy use and waste, kept a blog, and hosted regular vegan dinners with different student societies, along with becoming a hub for student sustainability activism. The project itself and the students involved have been faced with many challenges, from the practical ‘how do we build a raised bed’, to managing a communal space, finding funding, and negotiating with different university stakeholders to be able to make changes to the property. Staff have had to ask themselves questions about the degree of oversight and management required, and considered sensitivities around where academic interest meets students’ private lives.

Four years on, this paper explores the experiences of the students involved in the sustainable student bungalow project, and what they have learnt from the experience through interviews with a number of students involved in the project at different stages. This paper addresses a range of questions posed by this project. How do we help students develop the potential to become change agents? What is the role of student-led projects in developing these attributes? What did the students learn? What longer term impact has the project had on the students involved? What are the challenges for academic staff in supporting student projects?

This project represents an example of the curriculum, through bringing together and inspiring a group of like-minded students, driving long lasting, student-led sustainability activism in the co-curriculum. Projects such as these give students the opportunity to experiment, and to fail, and to learn from their failing in a way that the curriculum does not allow. Through such projects students develop a wider range of skills than normally gained within a degree programme, skills such as understanding of organisational structure, negotiation and persuasion, which are key to our students to become effective change agents.

Ref: 27

Abstract Type: Roundtable (ESD in Practice)

Authors: Valeria Vargas

Title: Towards “Responsible Futures”: A participatory and collaborative approach

Many universities in the UK are facing the demands of ‘competing’ strategic initiatives for curriculum development. For instance, initiatives to embed, variously, employability, internationalisation, enterprise, global citizenship or education for sustainable development. The challenge for curriculum developers and academic staff is to work out how to develop curricula in line with these sometimes apparently competing agendas. One way of looking at this perhaps, is to see these not as separate agendas but as part of one vision of what curricula are designed to do. This could be through encouraging students and staff to work across-disciplines, explicitly recognising and working with different perspectives, or providing experiential learning to give context for the students’ developing sense of identity and agency. We can think of the curriculum in its widest sense as something that is made up not only of ‘content’ but as an entity comprised of the beings and doings of the people involved in creating and consuming it, so our definition includes the teachers and the learners as well as the ‘content’ that narrower definitions might focus on. As students experience our curricula we would expect that they will develop both an identity from their experience and a sense of agency in the wider world. Since 2012 MMU has been embedding ESD into the curriculum through a participatory and reflective approach, which aims to place students and staff at the centre of curriculum development in this area. As the latest step towards creating a curriculum for a capable future, we have begun a process where student and staff fora in each faculty at MMU are beginning to work to envisage curricula for a sustainable future and to join staff in seeing how curriculum change can happen. Currently, MMU in partnership with its students’ union is taking this and other initiatives further working towards the NUS “Responsible Futures” accreditation mark pilot.

This paper will report on progress in the framework of the NUS Responsible Futures accreditation kite mark in three specific areas:

- The continuous improvement space created by initiatives related to the NUS accreditation through student and staff inter-disciplinary fora.
- The impact of sustainability-related initiatives on a global and local ‘community feeling’.
- The interaction between MMU and the other 15 institutions involved in the NUS “Responsible Futures” pilot.

MMU interdisciplinary co-creation of curricula underpinned by ESD concepts, potentially affects large numbers of students and staff providing capacity to move from a perspective of information through to knowledge and eventually perhaps to wisdom and impact.

Ref: 28

Abstract Type: Roundtable (ESD in Practice)

Authors: Quinn Runkle

Title: Embedding sustainability in healthcare through ESD in the curriculum

On healthcare and sustainability, McCoy et al. (2014) stated: “Those who profess to care for the health of people perhaps have the greatest responsibility to act.”

In 2012 the NHS emitted approximately 20 million tonnes of carbon dioxide per year(1). This is similar to the amount of carbon dioxide released by all flights leaving Heathrow for the past 10 years, and figures suggest that it accounts for approximately 25% of all public sector carbon emissions and 4% of the UK’s total carbon emissions that year(2, 3). That’s double the carbon footprint of Sudan with 42 million people(3). The NHS is also the organisation that will have to deal with illnesses arising as a direct result of carbon emissions, as well as disease arising from an increasingly sedentary lifestyle. On a larger scale, climate change has been identified as the biggest threat to global health in the 21st Century.

There are over 8,000 general practices in England. Not only are they responsible for the medical care of their patients, they also increasingly have a role in health promotion and primary prevention.

Therefore, the National Union of Students (NUS) and the University of Bristol are developing a new module for medical students called ‘Sustainable Healthcare’. It will teach the students about sustainability, and its relevance to healthcare. Students will be encouraged to use the resources provided during sessions to research topics further and write an essay on one aspect of healthcare that is currently particularly unsustainable. For example, they could look at possible alternatives to the current high disposal rate of consumables in the healthcare industry as this encompasses 65% of the NHS CO2 emissions. They will also be given training in environmental auditing and will carry out audits of GP surgeries, in order to inform the new Green Impact programme for GPs that will be launched early in 2015. These audits will be carried out in pairs and they will present their findings as well as suggestions of how the practices could perform better.

By giving students the tools to research the topic themselves and conduct their own audits, we hope to help them develop awareness of environmental issues in healthcare. This will mean that in the future they are more aware of their impact on social, economic and environmental sustainability as well as directly on their patients. Their research in practices will be used to encourage the surgeries to adopt more sustainable practices, ranging from actions as simple as switching off lights and computers to new ideas such as ‘green prescriptions’, connecting patients with nature. This will directly benefit the surgeries by saving money and helping them to function more efficiently. Importantly, it will act as flagship model for sustainability in general practice, encouraging others involved in the delivery of primary care, and their patients to think about ways of improving local and global health through sustainability.

1. <http://www.healthyplanetuk.org/students--nhs-sustainability.html>
2. DECC’s report on 2012 UK Greenhouse Gas Emissions:
https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/295968/20140327_2013_UK_Greenhouse_Gas_Emissions_Provisional_Figures.pdf
3. <http://blogs.bmj.com/bmj/2011/02/03/richard-smith-can-the-nhs-become-environmentally-sustainable/>
4. The Lancet May 2009 Volume 373, Issue 9676, Page 1659

Ref: 29

Abstract Type: Roundtable (ESD in Practice)

Authors: Helen Puntha

Title: From superfood to supra-food: a whole-institution approach to enabling sustainability literacy

In order to support students to develop effective sustainability literacy it can be helpful to present challenges which may be best understood through the adoption of multiple perspectives and the exercising and development of various skills in order to fully understand the complexities involved – ‘real world’ concerns rarely arrive in discrete disciplinary packages. The

Sustainability in Practice Certificate at Nottingham Trent University attempts to facilitate sustainability literacy in this manner. The certificate is a flexible online course open to all staff and students. Centred on the theme of food as part of the institution's 'Food for Thought' Green Academy Project (a Higher Education Academy Change Academy), the certificate attempts to facilitate knowledge and understanding of sustainability using the topic of food. The certificate and wider Green Academy project selected food as a unifying theme given that it is a complex, critical global challenge (Foresight 2011) of relevance to all disciplines.

Based on a problem-based learning model the certificate leads participants through an exploration of personal, disciplinary and inter-disciplinary perspectives on food sustainability challenges and encourages them to consider solutions to some of the most urgent challenges facing planet earth. The certificate which comprises four sessions and a video assessment piece incorporates various digital pedagogies such as prezi presentations, quizzes and online research as well as utilising various mechanisms to facilitate online collaboration such as discussion forums and collaborative mapping.

Constructivists such as Novak (1998) have stated that learning should encompass thinking (cognition), feeling (affect) and acting (motor or psychomotor) for it to be meaningful. The certificate was designed to encompass all three aspects through personal reflection, knowledge acquisition, skills development and practical action with the aim of providing a meaningful and transformative learning experience. The content being taught increases in complexity as the certificate progresses with a view to encouraging a supra-disciplinary perspective by the end of the certificate.

There is an emphasis on skills development over and above knowledge acquisition. All sessions provide opportunities for participants to develop their communication skills, particularly online communication through the certificate discussion forum – in some cases posting and commenting on other participants' posts is the mechanism for releasing the next session. Certain session activities encourage critical thinking such as an activity where participants consider the connections between their own and other disciplines and the various stages of the food life cycle as exemplified through the life cycle of a strawberry yoghurt. The emphasis on skills development supports the certificate's pedagogical aims and ensures that certificate is accessible to staff and students from all levels of study and academic disciplines.

The paper will describe the pedagogical approach of the certificate, the various activities the participants complete and the tools used to encourage collaboration and skills development. Demonstration of the online certificate will be included to exemplify the approaches taken.

References Foresight (2011). The Future of Food and Farming: Final Project Report. The Government Office for Science, London. Available at: <http://www.bis.gov.uk/assets/foresight/docs/food-and-farming/11-546-future-of-food-and-farming-report.pdf>. [Accessed 11 September 2014].

Novak, J. (1998). Learning, Creating and using knowledge: Concept maps as tools to understand and facilitate the process in schools and corporations. New Jersey: Lawrence Erlbaum Assoc.

Ref: 30

Abstract Type: Roundtable (ESD in Practice)

Authors: Aikaterini Kosta

Title: Exploring the response of postgraduates to university sustainability

Purpose:

Research on student views of sustainability issues abounds in the literature. Student responses to university sustainability however, as a phenomenon taking place within the time and space of higher education, seem to be under-researched. This study explores how university sustainability is perceived by postgraduate students of the Educational Research and Sustainable Development programmes at the University of Exeter. The aim is to explore whether programme of study influences student response to university sustainability. **Design/Methodology/Approach:** An on-line questionnaire containing Likert type items was administered to the students of the two programmes. As university sustainability is a still evolving concept which lacks a well-established definition, the content of the questionnaire items was based on descriptions of university sustainability by major higher education stakeholders. Replies were coded and the resulting data were analysed statistically to explore the differences between the two groups.

Findings:

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

Research Limitations:

Exploring how programme of study impacts students' sustainability attitudes needs to be further researched as correlation does not necessarily indicate causality and factors other than academic experience might have influenced student performance. The convenience sample used for data collection and the relatively low response rate do not allow transferability or generalizability of the results. **Practical Implications:** As student voice is gradually becoming a crucial component for universities' development with the increase of tuition fees, the demand for a comprehensive understanding of student sustainability needs emerges. The study attempts to address this necessity through an investigation of postgraduate views on university sustainability. Moreover, a suggestion put forward by this paper is that assessment of the impact sustainability initiatives have on student experience might be more efficient if audits focus on university rather than universal sustainability issues.

Originality/Value:

The present study employs for the first time the term 'university sustainability' to denote sustainability practices taking place within the time and space of higher education. While past research has examined mainly undergraduates' opinions of sustainability, this study focuses exclusively on postgraduates as they have greater experience of higher education settings. Finally, by examining both attitudes and knowledge a holistic exploration of student response is attempted with the majority of the previous research focusing on either attitudes or knowledge.

Keywords: higher education, sustainability, postgraduate, attitudes, assessment

Ref: 31

Abstract Type: Roundtable (ESD in Practice)

Authors: Dr James Norman

Title: Storytelling and the importance of creative communication in discussing sustainability...a presentation through the medium of children's picture books

I am a practicing engineer who teaches design at the University of Bristol a day a week. This paper will draw on my ongoing experience as an engineer who has been involved in a number of novel projects (including the façade of the new Tate modern extension, the design of buildings in rammed earth and the use of straw bale in construction) and how this has shaped and informed my teaching to create new ways to talk about both creativity and uncertainty alongside the necessity of understanding engineering principals.

For civil engineering to succeed in addressing the real issues of sustainability it is essential that engineers do not continue to do things as they are but engage in changing their approach to better achieve the sustainable agenda. Whether in terms of material use and reuse, lean design or efficiency. However a modern engineering course is typically concerned with passing on the tools of how to repeat what is already being done without giving students the tools to innovate.

For innovation to occur engineers are required to be creative. Creativity is not something that just happens, neither is it something people are born with but instead, like all aspects of life, it is something that requires practice and confidence.

However in Civil Engineering creativity and the novel ideas it generates cannot be treated in isolation but instead the risks associated must be carefully considered to ensure the final engineering structure or system is safe. The use of design codes, assumptions and factors of safety are necessary to enable designers to design however they also disconnect the designer from understanding the risks and uncertainty involved in the process. This becomes a genuine concern when engineers are trying to understand the risks associated with novel ideas. Conceptualising the probability and risks involved when making the probability of failure so small that it is considered a certainty is very difficult.

This paper will discuss the different methods that are used to help students exercise creativity and conceptualise uncertainty so that they can help shape a sustainable future in civil engineering.

Ref: 32
Abstract Type: Roundtable (ESD in Practice)
Authors: Antony Johnston
Title: Curriculum development towards a sustainable university

This paper represents an opportunity to reflect upon an institutional initiative to embed sustainability within the curriculum; which is one strategy to move towards a more sustainable university. The University of the Arts London allocated £150,000 over 5 years to fund curriculum development projects in order to provide opportunities for academic, support and administrative staff to propose and instigate curriculum change in relation to environmental sustainability. The scheme which is now in its 4th year provides an excellent opportunity to reflect upon the impact and effectiveness of such strategies.

This paper draws upon an evaluation of the scheme and will reflect upon its impact in terms of fostering curriculum change and impacting the student experience. The paper considers the aims, engagement methods and outcomes of the scheme and critiques it in relation to articulations of Education for Sustainability and the disciplinary focused Design for Sustainability. Such a critique aims to problematize constructions of knowledge and to be thoughtful about the relationship between the two. This paper will of interest to peers in terms of reflecting upon the role of institutions and change strategies, learning from curriculum interventions in art and design aiming to be more 'sustainable' and to consider differing articulations of sustainability.

Ref: 33

Abstract Type: Roundtable (ESD in Practice)

Authors: Dr Georgina Gough (G.K. Gough¹, J.W.S. Longhurst² and S. Hills³)
¹ Senior Lecturer in Education for Sustainable Development
² Assistant Vice Chancellor, Environment and Sustainability
³ Programme Leader, MSc Sustainable Development in Practice
University of the West of England (UWE), Bristol, UK

Title: Collaborative Approaches to Embedding Sustainability across the Curriculum

This paper will describe the efforts of one HE institution to normalise education about and for sustainable development into all its programmes of study. The University of the West of England (UWE), Bristol has been engaged in aspects of ESD for many years and has had a formal ESD action plan since 2007. Natural progression of the University's ESD activities has led to the existence of a strong institutional requirement for curricula to be underpinned by the principles of sustainable development. Recent external drivers are also part of the current context for further development of ESD activity at UWE.

The current challenge is to embed ESD in areas across the University's provision of programmes. A need has been identified to inject new impetus into our ESD activity in order to reach beyond the circle of the committed and to engage the whole institutional community. This paper will concentrate on the curriculum related elements of recent activities, particularly the ways in which new approaches to collaborative working have been employed to draw on expertise from across the University to inform discussions about how curricula can be refreshed to better incorporate the principles of sustainable development.

This paper presents examples from across UWE's portfolio of disciplines of sustainability-embedded curricula. These examples are drawn from recent curriculum changes which have been undertaken with sustainability as a guiding principle. The process which has been undertaken to achieve these developments will be discussed and evaluated. This includes engagement of senior managers within faculties, professional services and academic departments, consultation of students and targeted support for academics. Dedicated staff and a collaborative approach have been critical to the success of these efforts.

This paper will be useful for academics and managers from any discipline who are interested in ensuring that students develop an awareness of sustainability principles regardless of their programme of study.

Ref: 34

Abstract Type: Roundtable (ESD in Practice)

Authors: Chris Willmore

Title: Reflective action: forging links between student informal activity and curriculum learning for sustainability

This paper uses research carried out at Bristol and other evidence to explore how higher education institutions are seeking to build relationships between formal curricular structures and informal activity by students to enable sustainability education to engage both theoretical understanding and practical experience. It explores the synergies available when activity can move between the formal curriculum and student activity outside of their formal studies and looks at the benefits and challenges for institutions who have sought to bring engaged student activity focussed upon real world problems into formal learning to provide active learning for sustainability. It reflects on the impacts students perceive this to have on the wider community in which the University is situated and the university: community relationship. It maps out four key areas of challenge for institutions moving from isolated areas of good practice to institution wide adoption of reflective engaged learning.

Ref: 35
Abstract Type: Roundtable (ESD in Practice)
Authors: John Hudson
Title: Evolving Visual Communication Curriculum

Evolving the visual communication curriculum to consider the issues surrounding sustainability, ethics and Corporate Social Responsibility (CSR) will enable the next generation of Industry communicators to be more responsible within their working practices. The better-informed students are, the greater their understanding of the issues surrounding responsible design, so the better their decision making will be in relation to projects.

My session will discuss teaching innovations I have implemented and present examples of best practice from visual communication students. This work will demonstrate the links between how undergraduates have been influenced by the curriculum to engage in more socially responsible projects and themes. I will also discuss why including ethics CSR and sustainability within the context of visual communication education is important to future-proofing student skills and can enhance employability.

My aim is to engage students with these complex issues by facilitating a greater understanding of sustainability, ethics, inclusivity, materiality, recyclability, and CSR. And for students to then apply that understanding to a design brief or project.

As most of my students are engaged in collaborative, problem based learning my examples are creative self negotiated visual communication projects. Ranging from poster design to surface pattern design which all including a sustainable or social message. I would look to bring a number of these projects to the session in order to generate debate and discussion.

Ref: 36

Abstract Type: Roundtable (ESD in Practice)

Authors: Anne Zimmerman/Karl Herweg

Title: Integrative Training in Inter- and Transdisciplinary Research Settings

Research on global change and sustainable development issues requires a special approach to ensure close cooperation between different scientific disciplines on the one hand, and between scientists and other societal actors on the other hand. This, in turn, calls for an appropriate training approach that supports this type of research. We refer to this kind of training as “integrative training”, i.e. training that integrates students from different scientific disciplines, researchers and practitioners, and different cultures in academic training. The core of this training is a case-study-based learning approach where doctoral students design a common transdisciplinary research strategy. This group work is based on initial conceptual, thematic, and methodological inputs. It is completed by a 2-3-day fieldwork module simulating an exploratory survey that provides the interdisciplinary teams of participants an opportunity to interact with several non-academic actors. This setting and corresponding didactic approach provides a space for learning in which participants must cross epistemological and other borders.

Ref: 37

Abstract Type: Roundtable (ESD in Practice)

Authors: Paul Ofei-Manu

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

Since the launch of several education programmes a decade and a half ago (e.g. Education for All (EFA) and Millennium Development Goals), significant increases have been reported on the number of enrolment of children in schools. However, the focus on educational access and attainments and also on rote learning has led to inadequate learning outcomes. This has also overshadowed other important aspects of education. They include competency in teaching methods and content, improvements to the curriculum and the appropriateness of the learning environment, etc. The result is poor student performance in spite of an increase in enrolment rates. Additionally, current education systems are failing to provide students with the appropriate skills and knowledge they need in order to adapt to a future of uncertainty and sustainability challenges. Over the past decade, there has been successful implementation of education for sustainable development (ESD) initiatives, programmes and strategies. These have covered the environmental, economic and socio-cultural aspects of sustainable development at local, national, regional and international levels, and in all educational settings (formal, non-formal and informal). However, bringing ESD to the mainstream of education has been rather slow due to several implementation barriers at both policy and practice levels. Furthermore, this was exacerbated by putting no specific blueprint in place at the onset of the Decade of ESD to assess the progress of ESD implementation so these results are only anecdotal. Recently, the Open Working Group (OWG) final document on sustainable development goals (SDGs) expresses quality education in the educational goal and the word “quality” is mentioned several times in the educational targets. However, more than half of the targets are on educational access and attainment, a trend not different from what the MDG Goal 2 and EFA goals (particularly Goal 6) set out to do and consequently failed to promote “quality education” even though it was enshrined in them.

The paper discusses some of the aspects of ESD and quality education including concepts, components, policy approaches, practical methods and tools that could serve as the foundation of quality education for sustainable development (QESD). It also proposes that these perspectives of ESD and quality education should be integrated to become QESD and that should be the cornerstone to achieving sustainable human development. This is because QESD will take a more holistic and comprehensive approach to education with respect to: 1) What people learn, 2) How people learn, 3) Where and with whom people learn and 4) In what context people learn. QESD will result in higher order learning and hence provide the related competencies like the ability to analyse, synthesise and evaluate complex information for decision-making, planning and problem solving. With the launch of new educational programmes such as Global Action Programme (GAP) on ESD and Ten Year Framework Programme on Sustainable Lifestyles and Education (10YFP SLE) in the horizon and the ongoing shaping of the SDGs education goal and the post-2015 development agenda, framing these programmes in the context of QESD and hence as a pathway for global education reform and improvement is crucial.

Ref: 38
Abstract Type: Roundtable (ESD in Practice)
Authors: Kim Croasdale
Title: Dissertations for Good

Dissertations for Good, a new pilot programme from NUS, offers a completely new way of conducting research. It connects students to organisations external to their further/higher education institution, for them to complete research projects into sustainability together.

Our ultimate vision is to have a national online match-making platform bringing together students, organisations and FHEIs to research sustainability. It will boost the skills, experience and employability of students, and will provide the capacity for organisations to become more sustainable and positively contribute to the wider community.

The benefits of Dissertations for Good are impressive, including lowering resource and development costs for the organisation, fostering new and productive partnerships and developing students' employability skills. The pilot for 2014-15 is going even better than hoped and we're looking forward to growing our work in the future.

Poster Presentations Index:

Ref	Name	Title
1	Vincent Caruana	Fair Trade Education, ESD and Civic Action for Sustainable Futures
2	Ozgul Keles	Developing An Instrument For Identifying University Students' Beliefs About Sustainable Living
3	Romas Malevicius	GoGreen Pilot'12: Enhancing Employability, Leadership and Sustainability through Cross-sectoral Partnerships
4	Adriana Consorte-McCrea/ Helen Newing	Away spaces for interdisciplinary, reflective, transformative exchange in HE: a case study
5	Carolina Menna Goncalves	The role of school in mitigating climate change
6	Zoe Robinson	Sustainability through the backdoor: using skills-orientated sessions to show sustainability-discipline linkages
7	Zoe Robinson	Teaching and learning on interdisciplinary sustainability degree programmes: student experiences and strategies for support
8	Rebecca Laycock	University Community Gardens for Sustainability and Urban Community Gardens: Reviewing, comparing and directing research
9	Jason Lowther/Joanne Sellick	Sustainability and Enforcement of EU Law
10	Valerie Huggins	Promoting Early Childhood Education for Sustainable Development in an Ethiopian context
11	Michael Pretious	Mapping Sustainability in the Curriculum
12	Hannah Lloyd-Jones	Grand Challenges: Tackling global sustainability issues at the University of Exeter
13	Louise Naylor	Campus as Classroom for ESD
14	Chris Willmore	#sustprise: sustainability enterprise and new challenges
15	Mithil Shah	Embedding Sustainable Development at the Core of Higher Education through Collaboration
16	Will Page/James McMahon	The Students' Green Unit – Enabling Student Led Sustainability

Ref: 1
Abstract Type: Poster
Authors: Dr Vincent Caruana
Title: Fair Trade Education, ESD and Civic Action for Sustainable Futures

The paper is based on field research which the author conducted in Egypt, during 2010, where he looked into the impact, if any, in terms of labour conditions and social development, of Fair Trade on small scale producer organizations in Cairo and El Bayou, affiliated with Fair Trade Egypt.

The research was twofold:

- a) To understand to what extent we can claim that fair trade, as implemented in Egypt, can be said to have accomplished its goal of improving the returns to small producers and positively affecting their quality of life. The impact study adopted a “case study” methodology, which allowed for a holistic investigation and the use of multiple sources for evidence, while ensuring that the relevant details from the viewpoint of the participants were brought out. The impact study indicated that all producers considered fair trade to be an important aspect towards improving their quality of life, however to a different extent depending on various factors. Among the main factors identified was the entrepreneurship spirit of the producer organization, their commitment to product development, and the point in time in which they entered the FT network. The research concluded that to understand impact of fair trade it is necessary to understand FT as a process, seeking constantly to adapt to the challenge of applying FT principles to the reality on the ground with a particular group with a particular craft.
- b) Based on the results of this research, the author set out to identify salient situations that create barriers to as well as enable participatory action in the transition towards sustainability, and to identify salient key conditions for adult Environmental Education/ESD that would sensitise and mobilise sustained civic action for sustainable development.

ESD stands at an important time as every choice made is done in the context of the challenges, mishaps and chaos of our current reality. The vulnerability of local processes was evident through this research, and the quality of the links created amongst stakeholders needs to be given more attention, both in research and in the work of adult educators. Adult Environmental Educators and Education for Sustainable Development practitioners need to re-define their roles – in particular their mentorship role and leadership training in addressing the sustainability transition. In the face of social, environmental, cultural and economic challenges presented by an ever-changing glocal world, investing in leadership, social learning and in the enhancement of the capacity of both institutions and CSOs, to be and become innovative co-creators of a new emerging paradigm, is a challenge for educators to embrace with passion and urgency.

Ref: 2
Abstract Type: Poster
Authors: Dr Ozgul Keles
Title: Developing An Instrument For Identifying University Students' Beliefs About Sustainable Living

Learning sustainable development is currently being highlighted at all levels of education to inculcate the awareness of sustainability for maintaining and improving the quality of life in the present and future generation. Therefore, university as a higher education provider is the place to reform and develop students' belief towards sustainability. Beliefs shape attitudes and behaviors of individuals. Students' beliefs about sustainable development are also needed to identify since environmental attitudes and behaviors are coming from the beliefs and background knowledge of people. Even though the research studies on beliefs have been extensively explored, there are limited studies pertinent to the university students' beliefs in the context of ESD. In line with this perspective, due to not existing belief scale about the sustainable living in the literature, the aim of the study is to construct a valid and reliable belief scale on sustainable living beliefs scale. The present study is based on the survey model. The research presented here was undertaken at the University of Plymouth, in the programs of pre-session English language (international) students. The instruments were administered to 96 pre-session English language students. Certain stages need to be undertaken in the preparation of developing the belief scale in a research. These stages are generally as follows; constructing belief items; consulting expert opinion; pilot study; factor analysis and calculation of reliability. The scale was graded in the 5-point Likert Scale with "strongly agree to strongly disagree" and consisted of 42 items. The data were transferred to the SPSS 15.0. Afterwards, an exploratory factor analysis was conducted on the data. Sustainable living beliefs (SLB) survey consists of three dimensions: relevance to daily life; students' need in the future; and integrated teaching. With these validated instruments, future research and potential problems will be less strenuous.

Key Words: education for sustainable development, belief, sustainable living, university students

Ref: 3

Abstract Type: Poster

Authors: Romas Malevicius, Beatriz Acevedo, Charlotte Taylor and Krista Länkelä

Title: GoGreen Pilot'12: Enhancing Employability, Leadership and Sustainability through Cross-sectoral Partnerships

This paper concerns a case study of a project funded by the Higher Education Academy titled the GoGreen Pilot'12. This project involved 12 students from the Lord Ashcroft International Business School (LAIBS) at Anglia Ruskin University (UK) working with non-profit organisations to develop their environmental management practices. The project aimed to develop the employability skills of the students through action research as an education for sustainable development (ESD) initiative. The students facilitated the application of the Green Impact, a pro- environmental behavioural programme developed by the National Union of Students (NUS), in the 12 third-sector organisations involved.

The project benefitted the main collaborators: the organisations, the university and the students. By implementing the Green Impact the organisations improved their environmental practices, reduced their carbon footprint and achieved a total of £4,700 in potential cost savings per year. The students were the point of contact with the organisations in the project, and they developed their leadership skills tremendously to the benefit of their professional and personal lives.

The pilot demonstrated the practical application of ESD in a university context. It produced a number of implications for policy-makers and business schools who are adopting, implementing and delivering ESD principles and programmes.

Ref: 4

Abstract Type: Poster

Authors: Dr Adriana Consorte-McCrea/Dr Helen Newing

Title: Away spaces for interdisciplinary, reflective, transformative exchange in HE: a case study

In spite of ground-breaking initiatives in Education for Sustainable Futures (ESF) at Higher Education (HE) across the globe and in the UK, much of the formal learning in HE today is still centred in function and information within individual disciplines and as such cannot meet the challenges of a changing world, proposed by sustainability thinking. Transformative learning calls for a whole systems thinking, while the interrelationships of sustainability call for interdisciplinary approaches. Like other challenges faced by ESF, the complexities of biodiversity issues can benefit from a pedagogy that fosters investigation of diverse viewpoints and critical thinking. Furthermore, the sometimes controversial nature of biodiversity issues is well suited for innovative pedagogies that favour interaction and discussion.

Our poster will discuss a case study in innovative learning through creating spaces for interdisciplinary exchange in higher education. Within the context of ESF, the conference “Wildlife and Society: challenges for a shared future” brought together experiences in formal and informal curriculum development and the use of diverse pedagogies to explore biodiversity issues. Presentations by speakers from the arts and media, literature and film, ecology and wildlife conservation, environmental education, primary education, anthropology, geography and religious studies were followed by an extended plenary discussion on embedding biodiversity values into teaching practice. Although interdisciplinary cooperation may be notoriously challenging, due to different disciplinary approaches and paradigms, it is essential in addressing real-world problems that don't fit comfortably within the confines of any single discipline. The biodiversity crisis is one such set of problems. The conference evidenced the high potential of one-off cross-disciplinary events to inform teaching on conservation and sustainability issues. In this poster we will provide qualitative data from discussions at the conference itself and also data from a subsequent survey of participants to explore the interdisciplinary conference as an effective tool for promoting ESF by fostering new connections and blurring disciplinary boundaries around one common theme, by promoting holistic thinking and consideration for the multifaceted nature of biodiversity issues.

Ref: 5
Abstract Type: Poster
Authors: Carolina Menna Goncalves
Title: The role of school in mitigating climate change

The acceleration of climate change is one of the most discussed topics in the world nowadays. On their fifth and last report, Intergovernmental Panel on Climate Change (IPCC) warns that there is no longer room for doubt that climate change is occurring. Many scientists agree that these changes have been triggered by human action in releasing greenhouse gases into the atmosphere.

The consequences of change in climate dynamics are differentiated regionally, but generally imply in heatwaves, sea level rise, changes in rainfall patterns and more frequent extreme weather events. We must rethink our attitudes towards the environment and prioritize minimizing this problem. Education, especially in schools, is an excellent tool for reducing energy consumption in the world and encouraging children to have a sustainable lifestyle, therefore, is an ally in mitigating climate change. It is necessary to involve children and adolescents in the agenda of mitigation, rather than treating them as victims or mere observers.

Through literature review, questionnaires answered by teachers of a private school in São Paulo (Brazil), also by specialists in this field and with participatory action research; it was found that the school where the teachers answered the questionnaires does not seem to encourage reflection on energy consumption and therefore does not contribute to climate change mitigation.

Morin (1999) in his book *Seven complex lessons in education for the future*, believes that educators when getting their qualifications need to learn how to break down the traditional barriers between disciplines and develop the means of bringing back together what has until now been separate. We need to learn with nature where everything is connected, to redesign a new system with a reformulated education, policies and programs.

Children and adolescents must be empowered to be able to defend themselves from the irrationalism of the current system. We must create in schools an environment to facilitate an emotional bond with nature, so students can observe the reality and perhaps be motivated to apply their knowledge to the redesign new technologies and a new system; decreasing the gap between our current lifestyle and a sustainable society.

If sustainability is to be applied in the school's curriculum, teachers need to be supported to do so.

Ref: 6

Abstract Type: Poster

Authors: Dr Zoe Robinson

Title: Sustainability through the backdoor: using skills-orientated sessions to show sustainability-discipline linkages

Many institutions are struggling with the challenge of embedding sustainability within all their degree programmes, irrespective of the discipline. As part of a wider strategy, this paper describes an approach at Keele University which uses sustainability-discipline linkages as the context within centrally-delivered skills-focussed training for undergraduate programmes. A University 'Curriculum Support and Development' unit delivers one off sessions for individual degree programmes in order to address particular skills that the programme team request. The skills that may be covered are wide ranging from giving presentations, to dealing with stress, time management, to negotiation and many more. Each workshop is tailored for that individual programme. During the first running of this scheme in 2013/14, as a pilot the Education for Sustainability team worked with the Curriculum Support and Development unit to use sustainability linkages relating to the discipline as the context for delivering training in the skills that had been requested by the programme teams, in three different programmes, Politics, Chemistry, and Physiotherapy. The success of this pilot has meant that a further 11 programmes, including history, music, physics, will also use sustainability-discipline links as the context for skills development sessions in 2014/15. This poster describes the activities and sustainability-discipline linkages developed for the programmes with which we have worked so far, and an evaluation of their effectiveness as a method of Education for Sustainability.

Ref: 7

Abstract Type: Poster

Authors: Dr Zoe Robinson

Title: Teaching and learning on interdisciplinary sustainability degree programmes: student experiences and strategies for support

Experience of running a highly interdisciplinary named sustainability undergraduate degree programme suggests that students starting such courses can struggle to make connections between different disciplinary areas, and to see the relevance of all the material covered in their first year. This is hardly surprising when the majority of students are coming from a very narrow, discipline-focussed A-level system. While students may start to understand the relevance of different subjects as they progress through a course, optimum learning opportunities tend to be lost in the early stages. This paper presents research aimed at better understanding the transition experiences of students from studying at secondary school to studying a named sustainability degree, and explores effective strategies for supporting students to making this transition. This research draws on interviews with programme directors of named sustainability courses at nine universities in the UK, questionnaires and interviews with students at a number of universities, and a mixed method approach from one university including student focus groups, questionnaires, reflective diaries, observations and ongoing review and evaluation.

There was some differences in the perceptions of programme directors as to the degree to which students struggled with the transition to an interdisciplinary degree programme. Many felt that overwhelming any specific challenges around interdisciplinarity were the generic challenges of transition, for example time management, writing, research, and referencing skills. However, additional challenges faced by students were also recognised, including the need for students to adapt to different disciplinary practices, the range of skills that needed to be acquired, and difficulty in making links between modules. Students from the Scottish education system, who take a greater number of subjects at higher level, or students who had completed the International Baccalaureate were felt to be better prepared for interdisciplinary study with a wider academic skills base, and more experience of studying a range of subjects at one time, than students from the A-level system, with narrow choice and greater compartmentalisation of subjects.

In order to help students to see the sustainability linkages and links between different areas, programmes commonly include bespoke sustainability modules. Assessments are also designed to ensure interdisciplinary connections are being made, for example assessments addressing interdisciplinary problems, and reflective portfolios. Reflective portfolios were found to be an effective mechanism for many students in helping them to engage with the interdisciplinary connections of what they were studying. However, the roles of reflective journals were much greater, including a useful mechanism of feedback on the whole course, and the opportunity to provide pastoral support through feedback, particularly for students who may be lacking the confidence to seek face-to-face support. One output of this project, drawing on the experiences of students and teaching staff, was the development of an online resource, developed by students on a sustainability degree, aimed at supporting students who are starting out on sustainability degrees: www.keele.ac.uk/iris/

Ref: 8

Abstract Type: Poster

Authors: Rebecca Laycock

Title: University Community Gardens for Sustainability and Urban Community Gardens: Reviewing, comparing and directing research

The global food system is facing widespread sustainability challenges and problems connected to achieving equitable distribution of food. Community gardens are one of the many puzzle-pieces making up an 'alternative' food system and have been linked to building community, accessing fresh foods, improving health, and providing economic benefits, while marking a cross-over point between the private and the public sphere. Given the rapidly expanding movement of university community gardening, there is a need for further research and critical perspectives on the topic. This poster provides systematic critical review of University Community Gardens for Sustainability (UCGS) and compares its findings with that of urban community gardens. The literature about urban community gardens and UCGS share biases towards the USA in their geographical scope and author affiliations. Methodologies used in articles about urban community gardens and UCGS are largely qualitative, however literature on urban community gardens covers a broad disciplinary scope, and those about UCGS are biased towards horticulture and, to a lesser degree education. Access to fresh food, social and economic benefits are most commonly reported among urban community gardens, however, the main benefits of UCGS were fulfilling university missions, education, social development, environmental sustainability, provision of food, and benefits to the participants. Future research needs to increase its geographical scope in different social and political contexts. It should also explore community gardens in the contexts of political ecology, failure, inequalities in power as a barrier to catalysing change, as well as staff, participants, and transience.

Ref: 9

Abstract Type: Poster

Authors: Jason Lowther/Joanne Sellick

Title: Sustainability and Enforcement of EU Law

Plymouth Law School embraced the embedding of sustainability into the curriculum early, and it features across all three stages of the LLB (Hons) programme, appreciating the relationship between values, policy and the law (Varnava, Lowther, Payne 2010) In Stage 2 (Level 5) this is embedded in European Union (EU) Law, a 20 credit year-long compulsory module. The EU has integrated sustainability into all its policies and it is a Treaty-based obligation to ground secondary legislation in sustainability (TEU, art. 3; TFEU art. 11).

The module syllabus begins with an 8 week exploration of the various means of enforcing EU law. In 2010 the module team decided to introduce sustainability at the end of this part of the syllabus to provide a means of ensuring both the cementing of sustainability literacy; and a practical vehicle for comprehending the often arcane EU enforcement processes. There is clear synergy here: students of EU law gain a deeper understanding of how the law is enforced; and in doing so their competences are augmented through the contextual linkage of a critical EU policy imperative. Thus the methods by which laws are enforced against member states for failure to fulfil their EU law obligations is an intrinsic part of the design for learning from this resource. By fusing it with the notion of sustainability, the workbook permits the user to appreciate in a practical way how failures in implementation are dealt with; potential outcomes, including consequences/ sanctions for the member state; and, permit the potential for an evaluative application of the extent to which member states' practices are aligned with the sustainability imperative.

The approach adopted is an 'e-workbook', collating and hyper-linking a variety of sources and directing students through a series of tasks. The material is studied autonomously over a three week period and assessed in the end of module examination through the use of objective and short answer questions representing 25% of the overall total. Students are supported in their learning throughout the module with formative assessment opportunities and a tutor 'open door' query and feedback policy.

In the four years of its use, the e-workbook has evolved into a valuable resource, and, anecdotally promoted a wider appreciation and application of sustainability. It is now themed on the approachable, yet contentious area of water quality – and specifically bathing water quality – the directed study tasks in the workbook provide the students with a series of exercises enabling them to locate issues of obligation, liability, and apply their understanding of sustainability to this issue. The exercises are particularly designed to improve research skills, working as a bridge between Stages 1 and 3 where higher autonomous research skills, particularly at the law/policy interface, are required.

The module team are currently planning follow-up work to assess the degree to which sustainability concepts are retained and the extent to which it is a literacy that could be identified as a characteristic of Plymouth law graduates.

Ref: 10

Abstract Type: Poster

Authors: Valerie Huggins

Title: Promoting Early Childhood Education for Sustainable Development in an Ethiopian context

Teacher educators in Minority World Higher Education institutions are increasingly linking up with those in the Majority World to work collaboratively on the development of pedagogic practices and curricula. As the MDGs are replaced post 2015 by the Sustainable Development Goals the focus for this work will need to be on Education for Sustainable Development, particularly so for Early Childhood Education and Care (ECEC). The danger is that approaches common in the Global North will be imposed upon settings in the Global South as there is a lack of expertise in this sector of education, especially in Sub-Saharan Africa where the focus for the past decade has been on providing Education for All (EFA) children of primary age.

There is an urgent need for improvement in Early Years education in Ethiopia created by the Government's decision to open schooling to 4-6 year olds with a desperate lack of qualified teachers and very limited expertise in teacher education, which has led to an opening for support from Minority World Early Education specialists. With only 4.2% of the 9 million children of this age group currently receiving such education this is clearly a huge challenge.

This presentation reports on an ongoing project in which a Lecturer in Early Childhood Studies in the Plymouth Institute of Education is supporting the professional development of teacher educators in Nek'emte Teacher Education College, Ethiopia to enable them to provide appropriate training to local Early Years teachers. If this is going to result in a better quality of education for 4-6 year olds and is going to be sustainable in the long term, it has to be a collaborative approach starting with the establishment of local needs, and promoting curricula and pedagogical approaches that are relevant and appropriate to the local cultural, economic and social context. This is only possible with a collaborative approach to knowledge exchange, empowering the Ethiopian Teacher Educators to continue the training without the constant involvement of the support from the Minority World academic. In the project a postcolonial theoretical perspective was adopted to create a community of practice where the perspectives, views and beliefs of all the participants were valued and included in developing the training programme. The benefits of this approach are discussed and the potential challenges set out.

Ref: 11

Abstract Type: Poster

Authors: Michael Pretious

Title: Mapping Sustainability in the Curriculum

Queen Margaret University Edinburgh (QMU) has used sustainability as one of its key developmental pillars in its relationship with the local community. It also currently has a research theme looking at 'Sustainable Business'.

However, little effort had previously been made to examine the use of Sustainability* as a teaching theme. This paper will detail research funded internally that investigates the extent to which sustainability permeates the taught curriculum in undergraduate and postgraduate programmes in the School of Arts, Social Science and Management.

The methodology comprises a thorough analysis of programme and module documentation across the School, targeted interviews with key informants involved with teaching delivery, plus consultation with students who have been / will be the 'consumers' of these materials. Discussion will focus on the relevance of sustainability as a teaching in terms of graduate attributes and to perceived employability.

Conclusions will be drawn that illustrate best practice within QMU. In addition, suggestions will be made as to how to facilitate institutional change within the university and to encourage programme teams to further embed sustainability into the curriculum. The findings may also signpost ways in which the Higher Education sector more broadly can foster change in order to better integrate sustainability into pedagogical practice.

*'Sustainability' is broadly defined according to the 'Triple Bottom Line' model developed in the United Nations / Brundtland Report (1987), thus examples of curricular interventions that relate to the environment, society and the economy are adduced.

Ref: 12

Abstract Type: Poster

Authors: Hannah Lloyd-Jones (Project Manager), Jessie Becker-Rock (Project Officer)

Title: Grand Challenges: Tackling global sustainability issues at the University of Exeter

The University of Exeter is committed to promoting environmental sustainability through education and research. One of innovative ways it does so is through Grand Challenges, a week-long summer programme for undergraduate students.

The programme addresses some of the biggest sustainability challenges faced by society in the 21st century, such as sustainable food production, fashion and building, as well as conservation and climate change.

Students work together and share knowledge in small interdisciplinary research groups. Over 600 undergraduate students from our six academic colleges participated in Grand Challenges 2014, alongside post-graduate research students and academic staff with differing areas of expertise. This mixed environment allows students from different backgrounds to understand how their particular knowledge fits into the bigger picture, and helps them make links with different areas to find multidisciplinary solutions to issues of sustainability.

The programme takes place after exams in the summer term –in spaces both familiar and unfamiliar to students. One Challenge took over an empty shop in a local shopping centre and worked with the public throughout the week to raise awareness of the ethics around fashion. Another Challenge saw students working at a community centre to design and plant a sensory garden, teaching students about issues around mental health and connecting them to the local community. Taking students out of their comfort zone physically by undertaking learning in non-academic spaces helped students to think outside the box and about the real world impact of their work, connecting their academic work with real people, places and projects.

One student said “Grand Challenges helps you engage with the real world, doing something meaningful you can be proud of. Yes, I was part of that and it was amazing!”. The Challenges are designed to be highly motivating for students by giving them the opportunity to be the active architects of their group learning. Groups set their own goals, take initiative in planning group activities and are responsible for delivering high quality outputs at the end of the Challenges. Groups in 2013 and 2014 were led by post-graduate facilitators and in 2015, Challenges will be co-designed by small group of undergraduate student leaders. By creating real world outputs such as videos, apps, social media campaigns and policy documents in one week, students apply their knowledge to a format that can have more impact than the traditional essay. In many cases, students have been able to use these outputs to inform the wider community about sustainability issues.

The skills sessions that Grand Challenges students attend prior to the June week prepare them for working in an innovative learning space as well as for applying their learning – for example sessions include understanding team dynamics, project planning and presentation skills. By using different learning techniques and spaces, the Grand Challenges programme incentivises student involvement in and understanding of sustainability issues. The programme helps students form and become part of communities that want to make a difference beyond the lifetime of Grand Challenges.

Ref: 13

Abstract Type: Poster

Authors: Dr Louise Naylor, Dr Ian Bride

Title: Campus as Classroom for ESD

At Kent, we have explored the possibilities of using the 'Campus as Classroom' to initiate new approaches to developing the curriculum and providing novel teaching and social spaces that can support ESD. The University mission emphasises the need to 'use natural resources creatively, responsibly and sustainably'. Over the past few years, we have engaged staff, students and members of the local community in several projects aimed at promoting Education for Sustainable Development. With >300 acres of parkland overlooking the City of Canterbury, including areas of open green space, courtyards, ponds, gardens and woodland, we have provided novel learning opportunities that have significantly increased awareness of the natural environment and issues of sustainability.

With an emphasis on student participation, acquisition of practical skills and experiential learning, students have conducted research that contributes to their curriculum (eg Guiding and Interpretation module) plus created novel learning & teaching and social spaces on campus (Anthropology & Conservation). For example, the development of the Nature Trail and Campus Kitchen Garden have not only provided both practical opportunities for students to apply their conservation knowledge, but also training as guides who have to produce resource materials (Bride et al., 2013).

Informal learning for sustainability at Kent involves volunteering, internships and society memberships. For example, student interns (Architecture) have worked with the Estates department to develop new ideas for recycling and reduce energy consumption, as well as engaged on building refurbishment projects using sustainable design principles. Likewise, student and staff volunteers from the Conservation Society working with the British Trust for Conservation Volunteers, have refurbished the University's Nature Trail and created novel, outdoor learning and teaching spaces using natural, sustainable materials. This includes an outdoor classroom (Quercus Genius) constructed from a fallen oak tree, plus totemic benches – a social space created from the trees felled for the Library extension project.

Our aim is to broaden the experience and skills of students to meet the demands of the 21st century as global citizens. 'Students are environmental champions, and expect the University to demonstrate corporate and social responsibility in the use of natural resources...which can only become more important in the future.' (University Plan, 2012-15). Using case studies such as these for integrating sustainability in the formal and informal curriculum (QAA), both on campus and in the wider community, we are developing framework to promote values, ideals and practical aspects of living, studying and working in a sustainable way that will inform future policies and practice at Kent (Green Academy 2013).

1. Bride, I.G., Naylor, L. and Tunåker, C (2013) The Creative Campus: empowering the University community to change spaces. In E. Dunne and D. Owen (eds.) The Student Engagement Handbook: Practice in Higher Education, Emerald Books. (Chapter 15) pp255-269
2. QAA Education for Sustainable Development: Guidance for UK higher education providers (June 2014) <http://www.qaa.ac.uk/en/Publications/Documents/Education-sustainable-development-Guidance-June-14.pdf>
GreenAcademyreport:http://www.heacademy.ac.uk/resources/detail/change/12_13_case_study_forms/GA2_U_of_Kent

Ref: 14
Abstract Type: Poster
Authors: Chris Willmore
Title: #sustprise: sustainability enterprise and new challenges

This paper will explore the next steps in forging links between sustainability and enterprise education, through consideration of change agent skills and their role in the curriculum. Too often the sustainability/enterprise education relationship can be seen as being about developing 'green entrepreneurs' still embedded in consumerist models of economics, even if within the social entrepreneur economy. This paper looks at more radical conceptualisation of enterprise education and its role in helping students develop the delivery skills needed to turn sustainability values and aspirations into practice: it explores how change agent values can become explicit parts of our education: and maps different perceptions of change agent skills.

Ref: 15
Abstract Type: Poster
Authors: Mithil Shah
Title: Embedding Sustainable Development at the Core of Higher Education through Collaboration

Embedding environmental sustainability into education is a massive challenge and reforming education systems for it is not possible. However, with depleting natural resources and increasing inflation, it is imperative to embed awareness at all education/ work institutions for individuals to experiment solutions to reduce environmental impact. This paper aims at finding the gap in the education system and suggesting an add on programme which will change the way young adults view sustainability.

Ref: 16

Abstract Type: Poster

Authors: Will Page/James McMahon

Title: The Students' Green Unit – Enabling Student Led Sustainability

The Students' Green Unit (SGU) is a team funded by the NUS Green Fund, made possible by HEFCE, which empowers students to lead sustainability projects. The team offers training, mentoring, and funding for projects designed to drive behaviour change for sustainability. The Students' Green Unit has been in operation since October 2013 and won the International Sustainable Campus Network 2014 Award for Excellence in Student Leadership. SGU projects have covered a wide range of sustainability issues, ranging from 'Face2Face', a project that humanised the science behind climate change; to 'Going Wildwards', a project in which students engaged with the University of Exeter's award winning grounds and biodiversity. Since launch, the Students' Green Unit has reached over 4,000 students through lecture talks, pop up promotions and campaigning and social events. The Unit has ambitious plans for development and refinement in 2014/15.