Educationally ‘Green’: Environmental Research, University Teaching and Campus Greening

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The Knowledge Transfer Network
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Deputy Vice Chancellor

University of Liberal Arts, Dhaka, Bangladesh
Borsetshire’s longstanding interest

- 1997, Forum for the Future identified Borsetshire University as a ‘Trailblazer’
- 2006 onwards, Winner, ‘Highly Commended’ and regularly shortlisted in ‘Green Gown’ awards
- 2006, Times Higher Education award for ‘Outstanding Contribution to Sustainable Development’
- 2006, Fairtrade University status
Borsetshire University Vision, circa 2006

‘Is to be a high quality university with global reach which is passionate about:

• The creation and transmission of knowledge
• Its students and staff working in partnership for mutual benefit
• Providing accessible opportunities for learning at all ages and levels
• Diversity, sustainability and social justice
• Building on its foundation’
Borsetshire’s Mission, *circa* 2006

‘is to create a dynamic and sustainable portfolio of learning opportunities for the communities it serves. Within this overarching mission, the University will contribute fully to the economic, social and cultural life of Borsetshire and its region, while fostering national and international links. It will also develop an approach to social responsibility which reflects its commitment to sustainability and social justice.’
What did Borsetshire University do?

- 1991, High level cross-institutional Environmental Management Committee developed policies
- 1993, First ‘State of the Environment Report’ by staff and students
- Many initiatives such as recycling drives, energy and paper awareness, ecological art exhibitions, mass bicycle rally, ‘environment week’, bus service, staff development for teachers, publications, investment in environmental research, water and energy audits, newbuild at BREAM excellence standard
I MUST CONFESSION THAT SOME OF THE ACTIVITIES OF THE MEMBERS OF STAFF LEFT ME FEELING SLIGHTLY UNEASY....
A risk and an opportunity?

• Borsetshire was the first English university to apply for and gain British Standard ISO14001 Environmental Management System for the whole institution, including the curriculum, in 2005

• ISO14001 provided a framework for targets, responsibility and accountability, plus a driver for continuous improvement

• In top 5 of ‘Green League’ ever since
Taking risks and dealing with the unexpected?
A Mission ‘in the DNA’?

• ‘underpins each of the University’s strategic priorities and informs all elements of University life. The University promotes sustainable development, locally and globally, through teaching, research, knowledge transfer and the general conduct of its business.’
Modelling Institutional Change – Simple model

1. Initiation
   Structure, clarity, advocacy, champions, understanding

2. Implementation
   Responsibility, empowerment, pressure, Faculty development

3. Institutionalisation
   Embedding, organisational, strength, spread, facilitation

in Hopkins, 2002
Modelling Institutional Change – Simple model

- Staff
- Style
- Systems
- Strategy
- Structure
- Skills
- Super-ordinate goals

McKinsey, 2002
Another simple model
Modelling Institutional Change – Simple model

Appreciative Enquiry Approach
1. Appreciating and valuing the best of ‘what is’
2. Envisioning ‘what might be’
3. Dialoguing ‘what should be’
4. Innovating ‘what will be’

Hammond, 1998
Models of change in Higher Education

- Technical-rational
- Resource allocation
- Diffusionist: epidemiological
- Kai Zen or continuous quality improvement
- Models using complexity

Trowler et al, 2003
Kotter’s Eight Stages of Change

1. Establishing a sense of urgency
2. Creating a guiding coalition
3. Developing a vision and strategy
4. Communicating the change vision
5. Empowering broad-based action
6. Generating short term wins
7. Consolidating gains and producing more change
8. Anchoring new approaches in the culture

Kotter, 1995
1. Establishing a sense of urgency
2. Creating a guiding coalition
3. Developing a vision and strategy
4. Communicating the change vision
5. Empowering broad-based action
6. Generating short term wins
7. Consolidating gains and producing more change
8. Anchoring new approaches in the culture
Empowering broad-based action

- Challenged obstacles, including maverick ideas (“well, of course this doesn’t apply to me/our course/my research/my area of responsibility”)
- Pushed the boundaries on University regulations, and questioned received wisdom
- Circumvented immovable objects
- Drew in student activity e.g. in community programmes and in reviewing the University’s operations
Consolidating gains and producing more change

- Identified ISO14001 as the vehicle for maintaining progress
- Highlighted areas for improvement, including limited progress on estates, water management, some areas of the curriculum
- Involved the Students ‘Union
- Attempted more high profile initiatives - School of Environment was identified as a national ‘Centre of Excellence in Teaching and Learning, and won £5M, in 2005. New ‘Centre for Active Learning in Geography and Environment’ established
- Sustainability Institute started up
In 2002, Cardiff University negotiated with the local public transport providers to lay on more trains and buses for a growing student population, and reduced on site car parking (by building over spaces). Car use fell, and the strategy reduced complaints by local residents.
Green history of a ‘reluctant’ HEI (Loughborough)

• Intense lobbying from students about green credentials – postcard campaigns, meetings with the Vice Chancellor
• In 2013 switched to 100% green energy sources, cutting out 13000 tonnes CO$_2$ pa, equivalent to 7,600 houses
• Not yet tackled energy consumption..... attempting a 1.5% cut per year....
1. Establishing a sense of urgency
2. Creating a guiding coalition
3. Developing a vision and strategy
4. Communicating the change vision
5. Empowering broad-based action
6. Generating short term wins
7. Consolidating gains and producing more change
8. Anchoring new approaches in the culture
Jamie Agombar

Head of Sustainability

National Union of Students
The National Union of Students Survey, 2014

Figure 16: To what extent, if at all, do you agree that universities should be obliged to develop students' social and environmental skills as part of their courses?

<table>
<thead>
<tr>
<th>Year</th>
<th>Strongly Agree</th>
<th>Agree</th>
</tr>
</thead>
<tbody>
<tr>
<td>2010</td>
<td>50.4%</td>
<td>20.4%</td>
</tr>
<tr>
<td>2011</td>
<td>46.9%</td>
<td>19.7%</td>
</tr>
<tr>
<td>2012</td>
<td>49.9%</td>
<td>20.2%</td>
</tr>
<tr>
<td>2013</td>
<td>47.6%</td>
<td>22.1%</td>
</tr>
</tbody>
</table>
The National Union of Students Survey, 2014

Figure 19: To what extent, if at all, would you say that you personally agree with the following statements: Sustainable development is something I would like to learn more about

<table>
<thead>
<tr>
<th></th>
<th>2012 1st years (n = 3942)</th>
<th>2013 2nd years (n = 1680)</th>
</tr>
</thead>
<tbody>
<tr>
<td>61.1%</td>
<td></td>
<td>61.5%</td>
</tr>
</tbody>
</table>

2012 cohort
People & Planet Green League 2007
http://peopleandplanet.org/gogreen/greenleague2007/

The Green League for Environmental Performance
the following universities are awarded:

Student action on world poverty and the environment
## 2007 ‘First Class’ performance...

<table>
<thead>
<tr>
<th>Rank</th>
<th>University</th>
<th>Publicly available environmental policy</th>
<th>Full time environmental staff</th>
<th>Comprehensive environmental audit</th>
<th>Green travel plan</th>
<th>Fairtrade University status</th>
<th>% total energy from renewables</th>
<th>% waste recycled</th>
<th>Carbon emissions per head (Kg CO2e)</th>
<th>Final Score (max. 50)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Leeds Metropolitan</td>
<td>★</td>
<td>★</td>
<td>★</td>
<td>★</td>
<td>★</td>
<td>★</td>
<td>☆</td>
<td>636</td>
<td>48</td>
</tr>
<tr>
<td>2</td>
<td>Plymouth</td>
<td>★</td>
<td>★</td>
<td>★</td>
<td>☆</td>
<td>7%</td>
<td>40%</td>
<td>★</td>
<td>501</td>
<td>46</td>
</tr>
<tr>
<td>3</td>
<td>Hertfordshire</td>
<td>★</td>
<td>★</td>
<td>☆</td>
<td>★</td>
<td>16%</td>
<td>31%</td>
<td>★</td>
<td>553</td>
<td>44</td>
</tr>
<tr>
<td>4</td>
<td>Glamorgan</td>
<td>★</td>
<td>★</td>
<td>★</td>
<td>☆</td>
<td>64%</td>
<td>32%</td>
<td>★</td>
<td>579</td>
<td>43</td>
</tr>
<tr>
<td>5</td>
<td>Gloucestershire</td>
<td>★</td>
<td>★</td>
<td>★</td>
<td>★</td>
<td>36%</td>
<td>6%</td>
<td>★</td>
<td>242</td>
<td>42</td>
</tr>
<tr>
<td>5</td>
<td>Oxford Brookes</td>
<td>★</td>
<td>★</td>
<td>★</td>
<td>★</td>
<td>34%</td>
<td>—</td>
<td>★</td>
<td>376</td>
<td>42</td>
</tr>
<tr>
<td>5</td>
<td>Queen’s, Belfast</td>
<td>★</td>
<td>★</td>
<td>★</td>
<td>★</td>
<td>17%</td>
<td>17%</td>
<td>★</td>
<td>1,091</td>
<td>42</td>
</tr>
<tr>
<td>8</td>
<td>Anglia Ruskin</td>
<td>★</td>
<td>★</td>
<td>★</td>
<td>☆</td>
<td>6%</td>
<td>14%</td>
<td>★</td>
<td>460</td>
<td>40</td>
</tr>
<tr>
<td>8</td>
<td>Cambridge</td>
<td>★</td>
<td>★</td>
<td>★</td>
<td>★</td>
<td>22%</td>
<td>29%</td>
<td>★</td>
<td>2,349</td>
<td>40</td>
</tr>
<tr>
<td>8</td>
<td>Edinburgh</td>
<td>★</td>
<td>★</td>
<td>★</td>
<td>★</td>
<td>25%</td>
<td>26%</td>
<td>★</td>
<td>1,868</td>
<td>40</td>
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<tr>
<td>8</td>
<td>Leeds</td>
<td>★</td>
<td>★</td>
<td>★</td>
<td>★</td>
<td>0%</td>
<td>33%</td>
<td>★</td>
<td>1,252</td>
<td>40</td>
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<tr>
<td>8</td>
<td>Portsmouth</td>
<td>★</td>
<td>★</td>
<td>★</td>
<td>★</td>
<td>0%</td>
<td>27%</td>
<td>★</td>
<td>722</td>
<td>40</td>
</tr>
<tr>
<td>8</td>
<td>Sheffield Hallam</td>
<td>★</td>
<td>★</td>
<td>★</td>
<td>☆</td>
<td>2%</td>
<td>10%</td>
<td>★</td>
<td>476</td>
<td>40</td>
</tr>
<tr>
<td>8</td>
<td>St Andrews</td>
<td>★</td>
<td>★</td>
<td>★</td>
<td>★</td>
<td>30%</td>
<td>22%</td>
<td>★</td>
<td>1,896</td>
<td>40</td>
</tr>
<tr>
<td>8</td>
<td>University of the West of England, Bristol</td>
<td>★</td>
<td>★</td>
<td>★</td>
<td>★</td>
<td>29%</td>
<td>—</td>
<td>★</td>
<td>522</td>
<td>40</td>
</tr>
</tbody>
</table>
# People & Planet Green League 2013

First Class award

<table>
<thead>
<tr>
<th>Rank</th>
<th>University</th>
<th>Policy Score</th>
<th>Performance Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Manchester Metropolitan University</td>
<td>✭✭✭✭✭✭</td>
<td>✭✭✭✭✭✭</td>
</tr>
<tr>
<td>2</td>
<td>University of Plymouth</td>
<td>✭✭✭✭✭✭</td>
<td>✭✭✭✭✭✭</td>
</tr>
<tr>
<td>3</td>
<td>University of Gloucestershire</td>
<td>✭✭✭✭✭✭</td>
<td>✭✭✭✭✭✭</td>
</tr>
<tr>
<td>4</td>
<td>University of Worcester</td>
<td>✭✭✭✭✭✭</td>
<td>✭✭✭✭✭✭</td>
</tr>
<tr>
<td>5</td>
<td>University of Brighton</td>
<td>✭✭✭✭✭✭</td>
<td>✭✭✭✭✭✭</td>
</tr>
<tr>
<td>6</td>
<td>University of Greenwich</td>
<td>✭✭✭✭✭✭</td>
<td>✭✭✭✭✭✭</td>
</tr>
<tr>
<td>7</td>
<td>Nottingham Trent University</td>
<td>✭✭✭✭✭✭</td>
<td>✭✭✭✭✭✭</td>
</tr>
<tr>
<td>8</td>
<td>Oxford Brookes University</td>
<td>✭✭✭✭✭✭</td>
<td>✭✭✭✭✭✭</td>
</tr>
<tr>
<td>9</td>
<td>University of Bradford</td>
<td>✭✭✭✭✭✭</td>
<td>✭✭✭✭✭✭</td>
</tr>
<tr>
<td>10</td>
<td>University of Central Lancashire</td>
<td>✭✭✭✭✭✭</td>
<td>✭✭✭✭✭✭</td>
</tr>
<tr>
<td>11</td>
<td>Bournemouth University</td>
<td>✭✭✭✭✭✭</td>
<td>✭✭✭✭✭✭</td>
</tr>
<tr>
<td>12</td>
<td>Aston University</td>
<td>✭✭✭✭✭✭</td>
<td>✭✭✭✭✭✭</td>
</tr>
<tr>
<td>13</td>
<td>University of Exeter</td>
<td>✭✭✭✭✭✭</td>
<td>✭✭✭✭✭✭</td>
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<tr>
<td>14</td>
<td>Sheffield Hallam University</td>
<td>✭✭✭✭✭✭</td>
<td>✭✭✭✭✭✭</td>
</tr>
</tbody>
</table>
What’s the purpose of education?

‘The aim must be the training of independently acting and thinking individuals, who, however, see in the service of the community their highest life problem.’

Albert Einstein (quoted in Lindberg, 2007)
Professor Pauline Kneale

Pro Vice Chancellor Teaching and Learning

Plymouth University
Dr Tom Arnott

Water Innovation Centre

University of Bath
Ian Patton

Chief Executive

Environmental Association of Universities and Colleges
Professor Stephen Sterling

Head of Education for Sustainable Development, Centre for Sustainable Futures

Plymouth University
Dr Elizabeth Wilson

Reader in Environmental Planning

Oxford Brookes University
The role(s) of universities

• Teaching (and learning)
• Research
• Teaching and research together
• Teaching, research and community or business engagement – sustainability
• Teaching, research, community engagement and innovation
• Teaching, research, community engagement, innovation and leadership?
Dr Chris Willmore
Reader in Sustainability and Law
University of Bristol
World-leading UK research examples

Meteorological Office weather and climate modeling, and potential societal responses resting on the science, such as the Stern Report on the economics of global transition.
World-leading UK research
Identifying, measuring and monitoring of change in the quasi-natural environment
Professor Susan Page

Head of Department of Geography

University of Leicester
Application of environmental research

Azotic Technologies – University of Nottingham spinout, following 20 years of research by Professor Edward Cocking FRS

Nitrogen fixing bacteria provide every cell in a plant with the ability to fix nitrogen, which replaces around 60% of plant’s nitrogen needs, reducing the need for nitrogen-based fertiliser. Plants are ‘innoculated’, through seed coatings. The technology is Is environmentally friendly and contains no toxins, and is non GM.
Ian Walker
Head of Innovation
WRc plc
Dr Graham Leeks

Head of Science Co-ordination

Centre for Ecology and Hydrology
Sir Ron Cooke

Formerly, Vice Chancellor

University of York
REF 2014 rankings for Earth and Environmental Sciences

People and Planet 2013 Green League ranking (1 is best)
REF 2014 Research Power for Earth Science and Environmental Science
Wicked problems

• Are not usually characterised by lack of data, but by excessive amounts of contradictory evidence held by stakeholders with different world views (Professor Steve Rayner)
• Are not usually resolvable through total consensus, or with an optimal answer, but just need a feasible solution
• It may be a clumsy solution for a complex world (Steve Rayner, again)
Chris Woods

Chartered Architect and Chief Executive
Value Co-Creation Ltd
And Visiting Professor, University of Salford
Different World Views

Hierarchical

Collaborate and occupy the middle ground

Egalitarian

Competitive