

## Embedding experiential learning into the curriculum and linking to extra-curricular activities

A public seminar for the University of Hong Kong

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## Content

- Definitions of employability, experiential learning and Education for Sustainable Development in Universities
- Curriculum embedded employability & experiential learning: EMS; constructionarium
- Extra-curricular employability & experiential learning: waste audit; community outreach
- Curriculum innovation
- Barriers to embedding employability & experiential learning
- Outcomes for 'stakeholders': graduates; HEIs; employers; society

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## Definitions of employability

- Employability is a broad and complex construct ranging from academic discipline skills to emotional intelligence in the workplace.
- Employability can be broadly defined as the skills, understandings and personal attributes that make graduates more likely to develop their chosen careers (Yorke & Knight, 2004)

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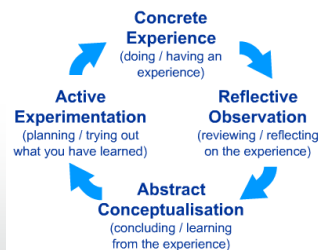
## Employer graduate expectations

1. The ability to work well in a team (98%)
2. The ability to adapt to new situations (97%)
3. Communication skills (96%)
4. Work Experience (87%)
5. Knowledge of foreign languages (67%)

Eurobarometer (2010)

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## Definitions and models of experiential learning



Kolb (1984) 'The Experiential Learning Cycle'

(image from Davies, n.d.)

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## Definitions and models of experiential learning

1. The learner must be willing to be actively involved in the experience
2. The learner must be able to reflect on the experience
3. The learner must possess and use analytical skills to conceptualize the experience
4. The learner must possess decision making and problem solving skills in order to use the new ideas gained from the experience.

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## Definitions and models of experiential learning

- Key and possibly most challenging component of experiential learning is reflection
- Students can find reflective thinking and writing to be difficult as it is a different form of academic study (Kember et al, 2001)
- Active experimentation can be a problem if there is insufficient theoretical underpinning and can pose difficulties for students with low self-confidence
- The experiential learning cycle should focus on confidence building at each stage of the cycle

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## Education for Sustainable Development

- Sustainable Development:  
“Development that meets the needs of present generations without compromising the ability of future generations to meet their own needs” (World Commission on Environment and Development 1987 )
- UN Decade for Education for Sustainable Development aims to:  
“integrate the principles, values, and practices of sustainable development into all aspects of education and learning” (UNESCO, 2008)

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## Sustainability literate graduates

- Sustainability literate graduates are those that have an understanding of sustainability in the context of their academic discipline, chosen profession, and their decision making processes in every-day life.
- Students can gain sustainability literacy through their chosen curriculum, wider university taught provision, and extra-curricular activities – not restricted to traditional earth science or politics courses.

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## Contributing to the ‘Green Economy’

- Sustainability literate graduates are critical in the transition to a ‘green economy’.
- The UK government amongst other global leaders states the “whole economy needs to be green”.
- “A green economy will maximise value and growth across the whole economy, while managing natural assets sustainably” (HM Government, 2011)

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## Environmental Management Systems

- Postgraduate module available on the MSc (optional) and MEnvSci (compulsory) programmes
- Running in various formats since 1997
- Entire module content structured around ISO14001
- Previous version involved a fictional case-study company
- Academic year 2007-2008 first use of a local company to provide the module case study to embed employability skills

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## Pedagogic strategy

- Mixed strategy with a focus on active student participation
- Range of 30-40 students of mixed expertise and a range of nationalities – British, European, Asian, African, American
- No students with previous experience or training in the subject area
- Emphasis on embedding experiential learning and ESD throughout the module by providing a consultancy service for the case-study organisation

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## Pedagogic approach

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- Embedding experiential learning and ESD was achieved through the following methods:
  - Lectures
  - Formation of six consultancy teams of ~ six students
  - Company site visits
  - Fortnightly email correspondence with the company (through a filter)
  - Weekly progress and feedback sessions
  - Team blogs and wiki sites
  - ISO14001 certification audit
  - EMS manual presentation to the board of directors

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## Curriculum embedded experiential learning & ESD

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- Direct professional experience
- Enhanced presentation skills
- Professional report writing skills
- Improved time management
- Practical application of theory
- Improved commercial understanding
- Practical experience of a growing area of employment
- Enhanced CV for all students



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## Meeting employer graduate expectations

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- 1. The ability to work well in a team:** each student works as part of a consultancy team throughout the module whilst dealing with the client
- 2. The ability to adapt to new situations:** the data updates, site visits and weekly feedback sessions provide a constant stream of new situations to respond to
- 3. Communication skills:** the students deliver weekly professional progress presentations along with consultancy questionnaires and emails
- 4. Work Experience:** all students work in a consultancy team managing a real-life client project

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## Experiential learning outcomes

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- 1. The learner is actively involved in the experience:** all students are actively involved in the development of the EMS
- 2. The learner must reflect on the experience:** each student receives verbal feedback on their progress with a stated need for reflection
- 3. The learner must conceptualize the experience:** each consultancy group conceptualizes the experience through the application of the theory combined with feedback
- 4. The learner must use new ideas gained from the experience:** each consultancy group develops their own EMS manual based on their ideas rather than simple application of theory

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## Curriculum embedded case study company outcomes

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- EMS manual to requirements of ISO14001
- WestQuay achieved ISO14001 certification – rolled out to rest of the portfolio
- Reduced environmental risk
- Reduced utility costs
- Compliance with legislation
- Regional publicity in newspapers and sector publications
- Winning (and being nominated for) business awards
- Competitive advantage



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## University & personal outcomes

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- Curriculum innovation
- Evidence of industrial engagement and reducing the environmental impact of regional organisations
- Further participation in consultancy module spin-offs
- Continuing professional development to inform teaching
- Ongoing relationships for future student research projects
- Industrial partnerships in EU Framework 7 project, Knowledge Transfer Project
- National Teaching Award - HEA NTF

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## Constructionarium

- First year BEng and MEng compulsory module
- Week long field course planning construction of, and building, scale versions of famous structures such as the Millau Viaduct and the London 'Gherkin'
- Partnership module with Laing O'Rourke, AECOM, Cemex, PHD Scaffolding

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## Constructionarium

- Experiential learning module involving planning, surveying, teamwork, project management, time management, and construction
- Direct experience of working with consultant engineers and subcontractors
- <http://youtu.be/ziZkXgPbdDg>

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## Meeting employer graduate expectations

1. The students work in two large construction teams with defined roles
2. The planning, surveying, subcontractor and construction work require constant adaptation
3. The students have to be able to communicate effectively within their teams and with the subcontractors for delivery of materials to site
4. All students gain a weeks' experience of a working construction site

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## Experiential learning outcomes

1. All students are actively involved in the construction project
2. Each construction team receives on-going site feedback which they reflect on at the end of each day
3. Each construction team conceptualizes the experience through working with resident engineers
4. Each consultancy team develops their own solutions to complete the construction project

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## University waste audits

- Ongoing annual event initiated in 2007
- Institution wide audits of material content in waste bags from each building on the same average University day each year
- Aims: to reduce the amount of University waste sent for disposal to landfill and move up the waste hierarchy; reduce the environmental footprint of the University
- Involves approximately 75 student volunteers from across the university each year



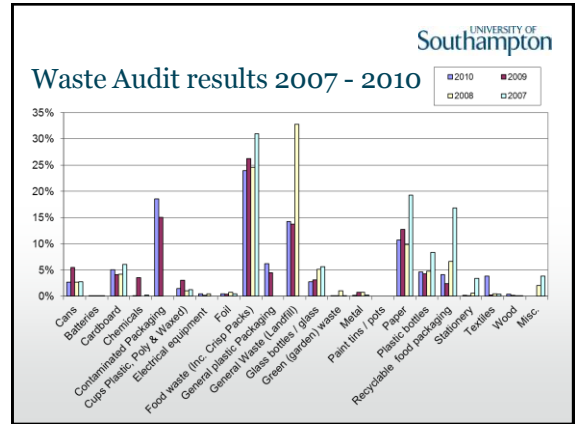
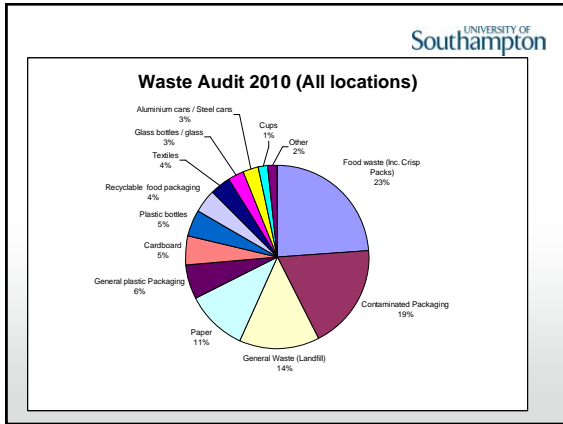
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## University waste audit outcomes

- Student sustainability professional development
- Enhanced employability profiles with certificated evidence
- Reduced waste expenditure
- Reduced scope 3 Carbon emissions
- Reduced waste to landfill
- Increased recycling & composting
- Improved waste management infrastructure



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### Meeting employer graduate expectations

1. The students work in teams of 4 to 6 with defined roles
2. The different waste types found require adaptation of the waste forms
3. The students have to be able to communicate effectively within their teams and with the audit managers
4. All students gain work experience of a waste audit

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### Experiential learning outcomes

1. All students are actively involved in the planning and execution of the audit
2. Students reflect on the experience in the students' union after the event
3. An average of 10% conceptualize the experience through developing their own final year research project
4. Those students then enhance their decision making and problem solving skills to adapt and apply their own methodology

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### Student community outreach

- Student environmental education classes in local schools
- Southampton City Council Eco-Volunteers programme
- SUSU Conservation Volunteers
- Community gardens tree-planting
- Local festivals and fund-raising events

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### Student community outreach outcomes

- Increased environmental understanding in local schoolchildren
- Improved local urban environment
- Improved local woodlands and community gardens
- Increased student skills and experience
- Enhanced employability profiles
- University engagement with the local community

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## Employability & experiential learning outcomes

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- Informal team work
- Adaptation depends upon the complexity of the task
- Unmanaged communication
- Additional work experience
- Uncontrolled experiential learning cycle can lead to lack of reflection, and broken final link if confidence is not developed

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## Curriculum Innovation Project (CIP)

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- A range of new, innovative interdisciplinary modules to be available to students across the University
- Transformative education bringing together the research and teaching strengths of the University
- Developing intellectually flexible critical thinkers as well as discipline skilled graduates
- ESD and employability are key themes of the CIP
- Beginning in February 2012

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Optional module

### Sustainability in the local and global environment

The environment is in a constant state of change, whether by natural or human-led processes. Sustainability is about trying to manage this change through balancing social, economic and environmental needs, both local and globally for present and future generations.

This innovative new module will address sustainability in the context of different academic disciplines to enable relevant to your studies and possible career routes. The delivery will take the form of a series of lectures from across the faculty to ensure balanced coverage of sustainability from all academic approaches. It will encourage you to assess the world class research across the university, and take advantage of the complete range of perspectives on the latest of our world class research through interdisciplinary study. As well as lectures, we will offer new employability through discussion sessions, seminars and debates, and the development of your own sustainability brief. Through completing this module you will develop products and evidence of global citizenship and critical thinking helping you to become one of the increasingly sought after 'sustainability literate graduates'.



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Optional module

### Global Challenges: Transdisciplinary Responses

The Earth's population has reached 7 billion. By 2050, 8 billion. This will create a perfect storm of demographic and energy needs, increased migration and conflict. How will you and the other 8 billion people in the world cope with the pressures of growth? This is arguably the greatest challenge that we face, one that will require transdisciplinary responses to meet that connect disciplinary boundaries and is conducted in groups that could look like scientists, economists, politicians, publicists and poets.

This unique module, open to students from all 14 faculties, will give students access to transdisciplinary issues. Lectures will be delivered by staff from the top departments and external leaders. Assessments could include short videos prepared by policy formulation, pieces of short stories, or innovative engineering activities.

This transdisciplinary experience gives students the opportunity to work with a range of people and disciplines with practical skills that will prove useful in the future.



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Optional module

### The Management of Risk and Uncertainty

Effective risk management practice begins with uncertainty management. Through this module we will explore this idea, and consider how current risk management practice can be critiqued and improved. We will study the political, ethical and conceptual underpinning for effective risk management practice across a wide variety of organisational contexts, and we will look at how risk management can integrate with other organisational practices. There is currently a strong demand for graduates with risk management skills, and through this module we will cover ideas that can be applied to thereby give students confidence activity where risk and uncertainty are factors. The delivery rights through this module could apply that across a wide spectrum of appropriate risk uncertainty to meet specific requirements from local and global clients to project management.



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Optional module

### Pathological Mechanisms of Disease

As the link between basic science and clinical medicine, pathology, the study of disease processes, can be viewed from a range of perspectives. In this module, we will consider the global impact of disease, as well as looking at specific questions.

How do we ensure that people from the perspective of pathology? How do we ensure that people from the perspective of pathology? How do we ensure that people from the perspective of pathology?

We will explore the pathological processes underlying a range of disease states, and we will look at how pathology can be used to inform clinical practice.



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## Barriers

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- Institutional infrastructure
- Academic dogma
- Curriculum requirements
- Professional accreditation
- Risk of failure ruining well established contacts
- Reputational risk
- Lack of resources

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## Key outcomes (graduates)

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- Increased professional skills and experience
- Evidence of practical application of theory
- Improved commercial understanding
- Enhanced CVs
- Enhanced employability profiles
- Student sustainability professional development to create sustainability literate graduates



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## Key outcomes (HEIs)

- Experiential learning and employability skills embedded into the curriculum
- Continuing professional development to inform teaching
- Evidence of industrial engagement to satisfy professional body accreditation requirements
- Improved environmental management infrastructure and reduced environmental footprint
- Industrial partnerships and increased funding opportunities (e.g. EU Framework 7 projects)
- University engagement with the local community

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## Key outcomes (employers)

- Graduate recruits with enhanced employability profiles – meeting the top 4 expectations
- New recruits quicker to settle into the professional environment
- Free, but professional standard consultancy work – e.g. a route to ISO14001 certification
- Reduced environmental risk and utility costs
- Compliance with legislation
- Positive publicity opportunities
- Competitive advantage from engaging with University

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## Key outcomes (society)

- Graduates more are effective at contributing to the local economy
- Increased environmental understanding in local schoolchildren
- Improved local urban environment
- Improved local woodlands and community gardens
- Improved relationships with the local University
- Skilled graduates to contribute to the transition towards a green economy.....

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## Key conclusions

- Curriculum embedded experiential learning focused courses can meet models of best practice
- These modules can also meet employer expectations for graduates
- Sustainability focused tasks can deliver benefits to the environment, economy and society – meeting the requirements of sustainable development
- Merging all three through curriculum and extra-curricular activities can create sustainability literate graduates to contribute to the development of a 'green economy'

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## Future work

- Longitudinal study of the impact of experiential learning and ESD on graduates – career and personal behaviour
- Evaluation of the student outcomes of the CIP
- Energy consumption and University switch-off audit in February 2012

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Thank you for listening

Any questions?

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