‘One-pot’ solution for enhancing employ-ability and life-long learning: Bringing the ‘real world’ experience to the classroom through truly inter-disciplinary enterprise education

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and

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HEA Annual STEM Conference
Inspire to succeed: Transforming teaching and learning in STEM
28th-29th January 2016
Setting the scene:  
Manchester Enterprise Centre (MEC)  

www.mbs.ac.uk/enterprise

• **Student-focused teaching centre** offering students across the University a range of teaching programmes and extra-curricular activities in the area of enterprise and entrepreneurship.

• **Extra-curricular activities** for students and recent graduates which attract more than 3,000 students; supporting the development of business opportunities including:
  - Venture Out – ideas competition; Venture Further – business start-up competition
  - Harari Graphene Enterprise Award
  - Summer School
  - Enterprise Futures Conference
  - Ideas Factory – weekly speaker/networking series
  - Entrepreneurs@Manchester – leading entrepreneurs sharing their stories
  - Mentoring support for students with ideas.

• **MEC staff generally from a science rather than business background**

Enhancing student employability and encouraging business start-up

Setting the scene:
Employ-ability and Enterprise Education

**Employ-ability:**
“Not just about getting a job [...] less on the ‘employ’ and more in the ‘ability’. In essence, the emphasis is on developing critical, reflective abilities, with a view to empowering and enhancing the learner” ¹

**Enterprise Education:**
“Development of the enterprising person and the enterprising mind-set [...] opportunity spotting, networking, strategic thinking, creative problem solving, self-efficacy…” ²

“Learning by doing” ²

¹Source: Pedagogy for employability, HEA 2012
²Source: A Compendium of Pedagogies for Teaching Entrepreneurship, NCEE 2014
Setting the scene: The ‘real world’

• How does the ‘real world’ look like?
  – Uncertainty
  – Complex environmental, economic and societal issues
  – Inter-disciplinary teams
  – Not all problems have a ‘right’ solution

• What are employers looking for?
  – Graduates with commercial awareness, flexibility, critical thinking, appreciation of diverse perspectives, EI…

• How does the job market landscape of the future look like?
  – Jobs of the future, who do these look like?
  – Hired vs self-employed?
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Education to prepare students for the ‘real world’: The ‘one pot solution’

- Education that promotes:
  - learning in context; not isolated from the real world
  - Inter-disciplinary thinking and collaborative team work
  - Creative problem-solving for not ‘right solution’ problems
  - Learning from failure
  - Active learning
  - Focus on growing *skills* and *confidence*, not just superficial knowledge

- Lecturers as enablers of learning rather than as knowledge-givers

- Methodology applicable from Y1 to Y3 and a variety of subjects
The ‘one pot solution’ in practice:
Two Enterprise UG units

• Optional units opened to any student at the UoM regardless the discipline of study
• Exploring Enterprise (EE):
  – Year 1, semester 1
• Interdisciplinary Sustainable Development (ISD)
  – Year 3, semester 2
• Key aspects of both units:
  – Inter-disciplinary group work (STEM and other disciplines)
  – ‘Real world’ scenarios and, when possible, ‘real world’ clients
  – Student-centred learning (EBL, PBL)
  – Reflection (personal journal) as a means for personal development
  – No exams!
• Course structure, delivery and deliverables adjusted to the year of study
The ‘real world’ brought to the classroom: ‘Real world’ problems

**Year 1: Exploring Enterprise**
- Suggest recommendations for a chosen ‘real company’ based on analysis of the business environment and market plus basic finance

**Year 3: Interdisciplinary Sustainable Development**
- ‘Real world’ projects, when possible, with ‘real clients’
- Consultancy project to recommend a credible proposal ranging from the commercialisation of cutting-edge technology to ‘future-proofing’ the UK food supply chain.
- Recommendations are focussed on balancing inter-linked environmental, economic, social and ethical aspects of the project
The ‘real world’ brought to the classroom: Inter-disciplinary teams

**Y3: Interdisciplinary Sustainable Development (ISD)**

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**Y1: Exploring Enterprise – similar variety of disciplines**
The ‘real world’ brought to the classroom:
‘Learning by doing, reviewing and reflecting’

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<tr>
<th>Delivery methodology (over 12 weeks)</th>
<th>Y1: EE</th>
<th>Y3: ISD</th>
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<tr>
<td>Lectures</td>
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<td>7 hrs</td>
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<td>- Team work</td>
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<tr>
<td>- Focussed on application of theory</td>
<td>6 hrs</td>
<td>3 hrs (project 1)</td>
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<tr>
<td>Workshops B:</td>
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<tr>
<td>- Team work</td>
<td></td>
<td>8 hrs</td>
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<tr>
<td>- Focussed on team process</td>
<td>6 hrs</td>
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<tr>
<td>- Individual report: 60%</td>
<td></td>
<td></td>
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<td>- Team presentation: 25%</td>
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<td></td>
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<tr>
<td>- Reflective diary: 15%</td>
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<tr>
<td>- Team project 1 report: 20%*</td>
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<tr>
<td>- Team project 2 (report &amp; team ppt): 40%*</td>
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<td>- Reflective diary: 40%</td>
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<td>*moderated by peer-assessment</td>
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Reflective journals

The Reflective Loop: the process of reflection as a professional self-development tool involves:

1. describing an event you have experienced,
2. critically analysing the experience or situation,
3. devising action points for implementation with the aim of achieving a desired or improved outcome in future
4. describing the consequences of those action(s), positive or negative to start the next cycle of analysis and action planning

The purpose of reflection for students:

1. Practice self-evaluation skills,
2. Learn how to pro-actively tackle problems and reinforce positive processes and behaviours,
3. Demonstrate continuing (professional) development/improvement

Lecturers observations, reflective journals and student feedback:

Lessons learnt from our ‘one pot’ solution for enhancing employ-ability
UG Year 1, Semester 1: Lessons learnt from Enterprise Education unit

- Some did not always see relevance of the course before this.
- Lack of awareness of how their discipline fits in the ‘real world’
- Students have no previous experience of group work within a HE context and no experience with personal journal
- Time management, organisational skills, etc poorly developed
- Many find this way of learning a new experience.

- Evidence that they are able to reflect and relate enterprise to their subject area
- Useful comments about what they have found useful and enjoyed (unofficial feedback!)
- Mechanism to ensure that all students contribute to the project
- Journal encourages attendance so they have something to write about.
- Inter-disciplinarity doesn’t appear to have a negative impact on the student experience
- Unit grade is similar to grades from home school units

UG Year 3, Semester 2: Lessons learnt from ISD

• What did students struggle with?
  – Time management particularly with different timetables
  – Differences in academic standards among group members from different disciplines
  – What is the ‘right answer’??????
  – Unit “two radical” from what they are used to in most home schools

• What did students like the most?
  – ‘real life’ case studies and ‘consultancy-like work’ emulating the ‘real world’
  – Opportunity to work with people from other disciplines
  – Opportunity to research, analyse information from a very wide range of resources and use it in a report rather than memorising to pass an exam
  – Not being ‘spoon-fed’
  – Opportunity for team discussions, to be challenged and challenge
  – Opportunity to think about their strengths/weaknesses, how they work in a team and to work on these in a relax environment

Ref: O. B. Otanocha et al., Proceedings to the 10th World Congress on Engineering Education for Sustainable Development, 2015, pg.10
Are these units enhancing students employ-ability?

- ISD Y3 students with ‘real world’ experience (e.g., gap year placements) were looking for ‘missing’ real world skills not gained through their education to date

  - Civil Engineer with 1 year placement experience (cohort 2013-2014):
    - “100% coursework group work based on ‘real life’ case studies better emulates real life learning rather than memorising to pass exams”
    - “After my placement, I realised the imbalance in the current education system for engineers, as the vast majority of my year was spent organising, writing reports and negotiating various aspects of projects and not using equations”

  - Maths with Finance Student, 6 months placement at KPMG (cohort 2013-2014):
    - Looking for team work & public speaking experience. “I only wish I had taken more modules like this as part of my university education”
Challenges

• ‘Enterprise Education’:
  – misunderstood by colleagues and students
  – It is about skills and confidence and not simply about ‘making entrepreneurs’
  – Unit title is key, challenging to appeal to an inter-disciplinary cohort

• Inter-disciplinary education
  – Visibility of open elective units is not standardised across the university
  – Timetables
  – Students expectations driven by home school teaching styles
  – Syllabus influenced by Schools

• Metrics for ‘soft skills’ to evidence impact
“Dear Veronica,

I hope you are well and that the next batch of eager Sustainable Development students is just as enthusiastic as our group was last year.

I am currently in Brazil working for Renault on vehicle emissions and the creation of start-stop systems for automatic and CVT transmissions. In parallel, I am taking courses at a local university (PUCPR) in Environmental Engineering in order to continue pursuing my sustainable future! Next week, I will be starting volunteering in opportunities within this country that is so diverse and full of opportunities for development.

I am unsure if you are aware of the impact that the Sustainable Development course has had on my future but, now, at every crossroad, I like for the sustainable path. Ideas constantly spring into my mind for new social innovations, for green businesses or for possible sustainable alternatives. I attended conferences on this very topic and can now only imagine my future career to take this path as well...”

E-mail 04-12-2014, Mechanical Engineer student, ISD cohort 2013-2014
In Sep 2017 will start a Master in Sustainability and Innovation in a top French Business School to pursue his dreams: change the transport industry!
Any Questions?

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www.mbs.ac.uk/enterprise
Setting the scene: Manchester Enterprise Centre (MEC)

www.mec.portals.mbs.ac.uk

• Recognised as a leader in enterprise education
• Focal point for student enterprise and entrepreneurship learning at The University of Manchester
• **Aim** to inspire, educate and develop enterprising individuals and enable them to positively impact the growth of dynamic organisations.
• **Objective:** transferring knowledge from the classrooms and laboratories to market opportunities
• **How?** Through enterprise teaching & learning (curricular and extra-curricular), ideas competitions, business start-up support, …
