Evaluation of employer engagement in curriculum design:
A wise man seeks wise counsel

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Overview

- Employer engagement and curriculum development
- Biosciences WSL ecology pathway
- Three stage approach and results
- Student and Employer Steering group evaluation
- Our evaluation
Questionable underlying assumption:

1. The knowledge and skills we provide are what employers need
   - How do academics know what employers need?
   - Is there a cultural divide between research-led academic programmes, traditionally focusing on pure theoretical concepts, diverging significantly from the applied nature of the ecological sector jobs?
   - How is this effectively incorporated into pedagogic practice and curriculum designs?
Practice-driven curriculums

• Engaging employers with curriculum development has the potential to:
  
  - Create effective, well-balanced curriculums that provide the relevant knowledge, technical and transferable skills
  
  - Prevent curriculum/subject drift
  
  - Enhance employability
  
  - Refine resource use and allocation
  
  - Bridge the gap between HE provisions and employment
  
  - Encapsulate a curriculum that supports a diversifying range of student abilities
Work-simulated learning (WSL)
Case study: Field Ecology Pathway

- Developed a work-simulated learning programme
- We assessed the skills employers within the environmental sector require
- Used results to develop a new ecology learning pathway that utilised WSL
- Deliver knowledge and skills that employers seek and value therefore reduce the gaps
- Aimed to create a relevant, up-to-date and evidence based curriculum
- Three stage approach
Stage 1: Data gathering (2014/15)
- Employer questionnaire and job post analysis
  - Consult subject benchmarks
  - Establish prior knowledge
  - Identify institutional resources

Stage 2: Curriculum design and implementation (2015/16)
- Identify L&T activities within the institutional resources
- Create LOs, activities & assessments that address employer requirements
  - Include aspects that give credit for WSL outcomes

Stage 3: Reflection and evaluation (2018)
- Personal, group, students, colleague, examiners, employers
- Review Accreditation and QAA benchmarks
  - Survey employment success
Figure 1. Employer ranking of graduate competencies for (a) transferable skills, (b) ICT (c) knowledge (d) professional technical skills (N = 24), 1 = least valued.
<table>
<thead>
<tr>
<th>Technical skills</th>
<th>Freq</th>
<th>Technical knowledge</th>
<th>Freq</th>
<th>Transferable skills</th>
<th>Freq</th>
</tr>
</thead>
<tbody>
<tr>
<td>Data (handling, analysis, interp.)</td>
<td>30</td>
<td>Policy and legislation</td>
<td>27</td>
<td>Communication</td>
<td>60</td>
</tr>
<tr>
<td>Field surveys</td>
<td>27</td>
<td>Conservation issues</td>
<td>24</td>
<td>Driving licence</td>
<td>30</td>
</tr>
<tr>
<td>GIS</td>
<td>27</td>
<td>Habitats</td>
<td>13</td>
<td>IT (Excel, Word)</td>
<td>23</td>
</tr>
<tr>
<td>Project design, mgmt., delivery</td>
<td>26</td>
<td>Protected species</td>
<td>13</td>
<td>Stakeholder engagement</td>
<td>16</td>
</tr>
<tr>
<td>Ecological reports</td>
<td>23</td>
<td>Habitat (management, creation, restoration)</td>
<td>12</td>
<td>Budgeting</td>
<td>15</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Project design, mgmt., delivery</td>
<td></td>
<td>Community</td>
<td></td>
</tr>
<tr>
<td>CIEEM membership</td>
<td>15</td>
<td>delivery</td>
<td>9</td>
<td>engagement</td>
<td>10</td>
</tr>
<tr>
<td>Identification</td>
<td>13</td>
<td>Natural history</td>
<td>8</td>
<td>Volunteer engagement</td>
<td>7</td>
</tr>
<tr>
<td>Protected species licence</td>
<td>12</td>
<td>Health and safety</td>
<td>4</td>
<td>First aid</td>
<td>6</td>
</tr>
<tr>
<td>Protected species surveys</td>
<td>10</td>
<td>Invasive species</td>
<td>3</td>
<td>Social media</td>
<td>5</td>
</tr>
<tr>
<td>Risk assessment</td>
<td>10</td>
<td>Protected habitats</td>
<td>3</td>
<td>Working inclusively</td>
<td>5</td>
</tr>
<tr>
<td>Habitat</td>
<td>10</td>
<td>Countryside</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>management/conservation</td>
<td>8</td>
<td>management</td>
<td>2</td>
<td>Event management</td>
<td>4</td>
</tr>
</tbody>
</table>
What we did

Used the information to create two new field course modules:

- 15 credit residential Year 2 course: Introduction to field ecology
- 20 credit work-simulated learning Year 3 course: Professional skills in conservation
Year 2 Residential Ecology Field Courses

Degree-specific general ecology skills developed during Y2
Year 3 Professional Skills in Conservation

Five work related learning activities incorporating subject knowledge, technical and transferable skills desired by employers
<table>
<thead>
<tr>
<th>Technical knowledge</th>
<th>FHEQ Level 5: Introduction to field ecology</th>
<th>FHEQ Level 6: Professional skills in conservation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Technical knowledge</td>
<td>General pure ecology, habitat and species identification, taxonomy, natural history</td>
<td>General ecology, indicator species identification, community analysis, environmental policy and legislation, protected habitat and species surveying, habitat management and conservation species recording</td>
</tr>
</tbody>
</table>

| Technical skills     | Ecological surveying techniques: quadrat and transect sampling, sweep and dip netting, moth and bat recording, abiotic sampling, map reading/navigation, dichotomous keys and guides | Phase 1 habitat survey, GIS and habitat mapping, Common Standards Monitoring, Phase II habitat surveys, Protected species surveys, River Habitat Surveys, biological quality indicator surveys, dichotomous keys, Preliminary Ecological Appraisals |

| Transferable skills  | Ecological report writing, data handling, analysis and presentation, oral presentations, problem solving, group work, ICT, time management, organisation | Professional ecological report writing, data handling, analysis and presentation, oral presentations, problem solving, group work, ICT, time management, organisation, cover letter writing, self-evaluation, risk assessment, critical thinking and evaluation |
Evaluation and review

- Student questionnaire on their experience and skills development
- Established a Steering group of industrial partners
- Validated the new curriculum in workshop held in Dec 2018
Figure 3. Student evaluation of the technical and transferable knowledge and skills developed during the ecological field course curriculum pathway ($n = 41$).

- **Enjoyed the field course**: 100%
- **Improved engagement with my degree**: 94%
- **Skills will enhance my CV**: 89%
- **Helped to develop employability skills**: 100%
- **Introduced to key practical elements associated with a career in this field**: 89%
- **Have a better understanding of the employment available**: 78%
What did employers think of our new curriculum?

- We established a steering group including employers and course leaders to review and quality assure the process.
- Provided course material and a questionnaire.
- Arranged a workshop to review and discuss.
Employer review
The positives:

Employer responses

**Confirmation of the skills delivered, esp. Phase 1 habitat surveying and PEA**

**Appraised the overall quality of the courses**

**Relevant and good range of skills in both levels and programmes**

**Generally suitable for employment within the sector**

The Preliminary Ecological Appraisal exercise is particularly relevant – may be worth making the focus of this relevant to the local area (CIEEM)

Skills learnt on both streams are relevant to ecological work in the public sector (BBCC)

Contents, technical and transferable skills are relevant, and the course provides a reasonably detailed overview of key survey methods and is a good foundation for a graduate position in the nature conservation sector (NRW)
So, did we do well?
The challenges:

<table>
<thead>
<tr>
<th>Employer responses</th>
<th>Faculty Response</th>
<th>Outcome</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Identified gaps in the knowledge:</strong></td>
<td>- Integrated new legislation</td>
<td>Fine-tuned the knowledge and delivery</td>
</tr>
<tr>
<td>- Key legislation and policy change</td>
<td>- Some gaps already covered in other modules so made links to these during the course</td>
<td></td>
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<tr>
<td>- Advances in technology (e.g. GPS, camera traps)</td>
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<tr>
<td><strong>Industry focus bias:</strong></td>
<td>Aim was to deliver a range of suitable skills for a broad range of industries. Pedagogically constrained so cannot focus</td>
<td>Feed-forward to employers on the constraints within HE and promote management of expectations</td>
</tr>
<tr>
<td>- Not enough fluvial geomorphology (NRW)</td>
<td></td>
<td></td>
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<tr>
<td>- Not enough ID (consultancy)</td>
<td></td>
<td></td>
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<tr>
<td>- Not enough Zoology (NRW)</td>
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<td></td>
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<tr>
<td>- Not enough biology (NRW)</td>
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<tr>
<td>- Good assemblage of well-rounded skills that would be applicable to the council</td>
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</tr>
<tr>
<td><strong>Site visits not ‘real-world’ examples</strong></td>
<td>Constrained to deliver a quality student experience. Reluctant to visit sites that are not appealing</td>
<td>Reiterate pedagogic constrains to employers</td>
</tr>
<tr>
<td><strong>Some skills not relevant, e.g. River Habitat Surveys</strong></td>
<td>Pedagogic strategy to promote learning, reflection, understanding and soft skills development.</td>
<td>No action to change teaching strategy</td>
</tr>
</tbody>
</table>
Added value

• Identified future challenges within the sector
• Advice and guidance on dealing with these challenges
• Highly motivated to continue with the relationship
• Offered work experience opportunities
• Ideas and support for student projects
• Secure joint research and funding opportunities
• Contribute to employability events and training
• Also head-hunt our graduates
Our evaluation

• Engaging employers is essential to allow **constructive alignment** of course material and apportion the correct amount of time and effort into **delivering relevant competencies**

• **Fine-tuned** the **skills** and **knowledge** to **employer requirements** and **reduce skills gaps**

• **Still require** **pedagogic knowledge of learning and teaching activities to develop effective simulations that promote higher learning**

• **Need to consider staffing (training/WLM)**

• Two-way learning process with numerous added benefits
Conclusions

- Engaging employers in curriculum development reduces the skills gap, can enhance recruitment, accreditation, low cost and administrative burden.
- Particularly relevant in the current HE climate.
- Recommend developing clear and transferable strategies for engaging with employers.
- But exercise academic judgement as there is still some mismatch between what employers want and what we can deliver (pedagogic constraints).
Any questions?