Learning Outcomes

The

UCD

Experience

Tim McMahon
• Undergraduate programmes modular and outcomes-based from September 2005

• As a pilot, the Faculty of Agriculture, changed all its undergraduate programmes in September 2004.
Findings 1

Outcomes model improved **teaching** by:

- Prompting revision of teaching methods at the planning and evaluation stages
- Enabling focused feedback and guidance
Findings 2

Improved student learning by:

• Prompting focused study.

• Illuminating feedback and guidance.
Findings 2 continued

_in some cases_, outcomes helped prompt:

- Autonomous learning
- Critical thinking
Where curriculum was thoughtfully aligned:

(constructive alignment – Biggs 2003)

e.g. …
<table>
<thead>
<tr>
<th>Outcomes</th>
<th>Assessment</th>
<th>Teaching Method</th>
</tr>
</thead>
<tbody>
<tr>
<td>Explain the functions of selected ingredients in food products</td>
<td>4 short answer of multiple choice exams (during the semester) 20%</td>
<td>Lectures and discussion groups – 30 hours</td>
</tr>
<tr>
<td>Evaluate the impact of processing and end-product environment on the functionality of selected ingredients</td>
<td>2 hour written exam with compulsory problem solving exercises and essay-style questions – examined at end of semester– 50%</td>
<td>Guided Practicals – 2 hours.</td>
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<tr>
<td>Formulate end products using selected ingredients</td>
<td>Laboratory based project – interim oral reports and a written report to be submitted at the end of the semester – 30 %.</td>
<td>Laboratory based problem-solving project – 28 hours</td>
</tr>
</tbody>
</table>
Findings 3

Improved management by:

- Increasing the amount of effective information for monitoring and evaluation

But it also…
Enabled *teachers* to manage more effectively

Thus

- Increasing professionalism

- Restoring some of the influence of teachers under the new managerial structure.
Findings 4

Using outcomes:

• Made comparison of courses easier

• Make student mobility easier
  - (within and between programmes)
BUT

Benefits are not automatic

They result from deliberate action by teachers (and students) to take advantage of the opportunities presented by the new curriculum structure.
Some Process Findings:

• Teachers familiar with a content-based curriculum found it difficult, at first, to write outcomes → need development

• Educational Development Programme significantly improved curriculum design (compared to university-wide scheme).
Process Findings Continued

• Involving students helps make the documentation student-friendly.

• It is very important to limit the number and scope of outcomes.
Process Findings:

1. Teachers needed support in writing outcomes
2. The Associated Educational Development Programme had a very positive effect.
3. Involving students makes better documents
4. It is best to limit the number and scope of outcomes.
4 most important findings:

1. Align the curriculum

2. Limit the number of outcomes used in any given module
At the end of this module you should be able to:

- Recognize visual noise in clinical images.
- Describe the general relationship of image noise to image detail.
- Describe the two major sources of visual noise in radiographic images.
- Explain how the random distribution of x-ray photons produces image noise.
- Describe the relationship of quantum noise to x-ray receptor exposure.
- Discuss the concept of the quantum sink.
- Discuss the disadvantages of using radiographic receptors with very high sensitivity or speeds.
- Explain why quantum noise might be more of a problem with digital radiography than with film screen radiography.
- Explain how blurring reduces image noise.
- Describe the relationship between digital image pixel size and noise.
- Describe how digital image processing can be used to reduce image noise.
- Describe how the process of averaging a series of images can be used to reduce noise.
- Explain why image display contrast has an effect on the visibility of noise.

minimize the effects of visual noise in clinical images.
3. Avoid over-prescription

4. Regard outcomes as general performance indicators
Outcomes should be regarded as general performance indicators that guide the professional judgement of teachers rather than as definitive threshold statements.
The higher the order of cognition demanded…

…the less precise the wording of the outcomes.
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