Managing change: the use of mixed delivery modes to increase learning opportunities

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Higher Education Perspective

- Changes in higher education in last decade with respect to teaching have emphasised:
  - Quality of teaching
  - The need for quality assurance processes to be in place
  - The importance to the institution on student progression
  - The requirement for processes to be in place to help students develop transferable skills (life long learning skills)

Recent trends in the West

- A move from a behavioural view of teaching & learning to a more Constructivist & Developmental view of teaching and learning
- A move from a strongly teacher-centred approach to teaching & learning to a much more student-centred approach to teaching & learning
- Recognition of the idea that students must be more active participants in the learning process wherever possible in order to promote deep level processing of knowledge

Research background

Research argues for more student-centred learning opportunities & an emphasis on developing life long learning skills

How do we do this in a “traditional” teaching and learning framework?

- Mix of on campus & online strategies
- Group activities in lab classes
- Provision of online resources catering for different learning styles
- Provision of chat/email communications

Ideas from the research literature about how to do this

- Concept mapping
- Problem solving
- Problem-based learning
- Case studies (historical & contemporary)
- Socially based issues
- Interdisciplinary approaches (team teaching)
- Computer modelling (virtual solutions)
- Inquiry-based teaching
- Peer teaching
- Library base tasks
- Story telling
- Student presentations

Case Study – University of Sydney - incoming first year science students

- Mostly full-time on campus
- Broad heterogeneity
  - academic background
  - entry level
  - degree program
  - motivation
  - cultural/ethical issues
- Large student numbers
- Changing Life Style
  - increasingly in paid casual employment – this is an issue
Time-on task - big picture

<table>
<thead>
<tr>
<th>Year</th>
<th>% in casual work</th>
<th>Hours worked for most students</th>
</tr>
</thead>
<tbody>
<tr>
<td>1998</td>
<td>48</td>
<td>5-10</td>
</tr>
<tr>
<td>2000</td>
<td>67</td>
<td>5-15</td>
</tr>
<tr>
<td>2002</td>
<td>63</td>
<td>10-20</td>
</tr>
</tbody>
</table>

Time-on task – type of work

<table>
<thead>
<tr>
<th>Year</th>
<th>1998</th>
<th>2000</th>
<th>2002</th>
</tr>
</thead>
<tbody>
<tr>
<td>Retail and hospitality</td>
<td>0%</td>
<td>20%</td>
<td>40%</td>
</tr>
<tr>
<td>Teaching</td>
<td>80%</td>
<td>60%</td>
<td>40%</td>
</tr>
<tr>
<td>More than one type of work</td>
<td>0%</td>
<td>0%</td>
<td>0%</td>
</tr>
<tr>
<td>Other</td>
<td>0%</td>
<td>0%</td>
<td>0%</td>
</tr>
</tbody>
</table>

National comment?
International comment?

First Year Biology courses

- Have online and offline resources
  - teaching materials
  - revision materials
  - Communications
- Have same assessment format
  - formative and summative
  - online and offline
- Have a variety of teaching formats to encourage student-centred learning

Teaching strategies - to encourage student-centred learning

- Small groups in the lab class
  - collaborative activities (experiments; dissections)
- Provision of a Virtual Learning Environment - a flexible gateway to resources
  - own pace; own time; multiple revisits
  - Communications
  - learning and self-assessment resources
- Quality communications
  - student-student; teacher-student
  - during lab classes; flexible online
- Provision of CD ROM

First Year Biology Web site


Provision of formative assessment resources to support learning

- Range of resources
  - Learning modules online
  - Self-assessment modules online
  - Mock exam
  - Self-test quizzes
  - Crosswords
  - Lecture notes
  - Links to useful sites
Drivers of student-centred learning e.g. provision of formative assessment resources

Our research shows that resources are heavily used by students
- Learning modules online - 75%
- Self-assessment modules online - 82%
- Self-test quizzes - 84%
- Crosswords - 77%

What are the materials used for?

Student use and perceptions of usefulness

Can we link use to performance?
- Can we investigate if use of the resources has an impact on performance?

If they do, then we have not only provided student-centred learning opportunities but the students are demonstrating that independent student-directed learning is taking place.

Investigations with use of SAMs

Compared performance of students who used SAMs with those not using them and controlled for ability
- For data from semester 2, we have a positive significant effect
- Users versus non-users of the same ability, scored on average 3.96 marks more
- Incidentally, just Science students (who also show a higher level of interest in biology), then the effect is 4.6 marks difference

Future curriculum design…..
- Make curriculum flexible where appropriate
- Offer opportunities for students to develop academic and social networks (preferably in labs)
- Maintain a range of teaching strategies for different learning approaches
- Offer significant self-assessment opportunities