Engaging nursing and midwifery students in life sciences.

Dr. Katherine M.A. Rogers
Queen’s University Belfast
School of Nursing and Midwifery
k.rogers@qub.ac.uk
Outline of presentation

• Nursing and Midwifery at Queen’s
  – Life Sciences within the School of Nursing and Midwifery

• Diversity among nursing students: the challenges

• Development of new first year programme
  – New teaching/learning strategy for lectures and tutorials
  – Changes to assessment
  – Impact on results to date

• Maintaining student interest and engagement in science
Nursing and Midwifery at Queen’s: the course

- 3 year BSc (Hons.) Midwifery Sciences
- 3 year BSc (Hons.) Nursing Sciences
- Shortlisted applicants are interviewed individually
  - Required by Department of Health and Nursing and Midwifery Council (NMC)
- Students receive a non-means tested, tax-free bursary
  - Annual course fees paid by Department of Health (NI)
- Undergraduate Nursing Sciences
  - 50% theory and 50% clinical practice (also applies to midwifery)
  - 2 intakes per year: September and February
  - All four fields are taught
Life Sciences in the undergraduate curriculum

- Life sciences (biomedical sciences) is taught throughout the undergraduate course from year 1 through to year 3

- In year 1, all students are taught the same module and undertake the same assessment process

- Module begins in phase 2 (semester 2)
  - Continues to the end of year 1
New teaching and learning strategy influenced by student feedback

Student feedback comments

• I find it difficult to differentiate anatomy and physiology
• I don’t see the relevance of many of the science practicals to nursing
• Tutorials are not really enhancing lectures
• Lectures are very intense, I often find I am drifting off
• It’s a long time since I did science ... the content is very difficult to grasp

Teaching development response

• No longer teaching the topics separately; using range of books
• No science practicals; instead linking theory with practice and skills development
• Directed learning questions; encouraging self-testing and independent/peer learning
• Teaching in short bursts; more, shorter breaks during lectures
• Back-to-basics approach
### Diversity of students’ science background

<table>
<thead>
<tr>
<th>Background</th>
<th>February 2011 intake</th>
<th>September 2010 intake</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>% of class</td>
<td>% of class</td>
</tr>
<tr>
<td>Previous relevant Science degree</td>
<td>0</td>
<td>2</td>
</tr>
<tr>
<td>A-level / AS / Access /RoI</td>
<td>45*</td>
<td>46*</td>
</tr>
<tr>
<td>Leaving Cert. Science</td>
<td></td>
<td></td>
</tr>
<tr>
<td>GCSE / O-level science</td>
<td>51</td>
<td>44</td>
</tr>
<tr>
<td>Little / No science</td>
<td>4</td>
<td>2</td>
</tr>
<tr>
<td>No information</td>
<td>0</td>
<td>6</td>
</tr>
</tbody>
</table>

* N.B. Many have Access level course qualifications

- Very diverse student population with varying levels of knowledge
- Need to engage students with life sciences, inspire them to want to learn and make them responsible for their own learning
Dilemmas of teaching a large group with diverse experiences

• To stimulate and inspire students to learn, they must engage with the subject

• Problematic in a large group with very diverse science backgrounds
  – risk “boring” students with a relatively high subject knowledge
  – risk “losing” students who lack confidence in their ability to study science

• Aim to improve overall student satisfaction in the module
  – encouraging deeper learning in stronger students
  – calm anxieties in less confident students
Engaging students in large groups

- Help students to see the relevance of the life sciences in their clinical placements
  - Clinical examples and scenarios
  - Relate to nursing practice module
  - Encourage students to share their clinical experiences in class

- Note taking
  - Keeps students engaged in a large lecture
  - Helps development of literacy skills
  - Encourages revision

- Lecture outline available on QOL before class
  - encourages students to follow material
Engaging students in large groups (cont.)

- Short revision quizzes to focus the class
  - MCQs, labelling exercises, etc.
  - At start and after a break
- Refer to supplementary resources available online
  - Reminding students it can be useful in exam and even for other modules
- Familiarise students with assessment criteria
  - Discuss past-paper answers
- Online / home-work exercises for next class or tutorial
  - Encourages students to read around topic prior to class
Year 1 Human Life Sciences for Health Care

- Module is divided into 3 units:
  - Unit 1 – “back-to-basics” introduction
  - Units 2 and 3 – body systems

- Main change is the level of material being taught
  - “Back-to-basics” approach
  - No prior knowledge is assumed when teaching the year 1 programme
  - Many students admit to having very little science background
  - Encouraging integration of life science theory with other modules
  - New modes of teaching and assessment
Life Sciences: Lectures

- 330+ students
- Main themes taught in lectures
- Material kept basic – not discussing finer details
- Full notes are not supplied in advance
  - Lecture outline available prior to class
  - Brief notes are made available after class
- Initially many found it difficult but have adjusted very well to note-taking
- Despite the large numbers there is good interaction in lectures
  - Linking theory with clinical practice
Life Sciences: Tutorials

• Tutorial exercises announced after lecture
• One week to complete – encouraged to collaborate
• Series of structured questions which directs the student to further investigate aspects of the lecture
  – Lecture notes
  – Textbooks
  – Additional resources posted on QOL
• Answers reviewed in class, forming tutorial discussions
  – Student-led
• Directed Self-Learning (not self-directed learning)
  – At this early stage students need guidance and direction
  – Preparation for future enquiry-based learning strategies
Life Sciences: Assessments

2 formative class tests and 1 summative exam

1st Class test
- 15% module mark
- 30 MCQs
- Unit 1 and 2 material
- 30 minutes to complete
- Peer marked
- Feedback immediately following

2nd Class test
- 25% module mark
- 50 MCQs
- Unit 1, 2 and half 3 unit material
- 1 hour to complete
- Peer marked
- Feedback immediately following

Summative exam
- 60% module mark
- Structured questions
- Answer 4 out of 6 (equal marks)
- Covers all module material from lectures and tutorials
- 2 hours to complete
- Marked by lecturers
### Comparison of results to date

<table>
<thead>
<tr>
<th></th>
<th>Feb. 12</th>
<th>Sep. 11</th>
<th>Feb. 11</th>
<th>Sep. 10</th>
<th>Average since Sep. 08</th>
</tr>
</thead>
<tbody>
<tr>
<td>Class Average</td>
<td>73%</td>
<td>72%</td>
<td>63%</td>
<td>69%</td>
<td>60%</td>
</tr>
<tr>
<td>Highest Mark</td>
<td>95% **</td>
<td>96% *</td>
<td>92% **</td>
<td>89% *</td>
<td>83%</td>
</tr>
<tr>
<td></td>
<td>(1 student)</td>
<td>(2 students)</td>
<td>(1 student)</td>
<td>(2 students)</td>
<td></td>
</tr>
<tr>
<td>≥80%</td>
<td>37% of class</td>
<td>22% of class</td>
<td>3% of class**</td>
<td>8% of class*</td>
<td>1% of class</td>
</tr>
<tr>
<td>≥70%</td>
<td>66% of class</td>
<td>56% of class</td>
<td>31% of class</td>
<td>25% of class</td>
<td>20% of class</td>
</tr>
<tr>
<td>≥60%</td>
<td>83% of class</td>
<td>79% of class</td>
<td>65% of class</td>
<td>48% of class</td>
<td>52% of class</td>
</tr>
<tr>
<td>Failed 1st attempt</td>
<td>7% of class</td>
<td>6% of class</td>
<td>14% of class***</td>
<td>14% of class***</td>
<td>10% of class</td>
</tr>
</tbody>
</table>

* 50% of these students had no science background beyond GCSE/O-level standard.
** 25% of these students had no science background beyond GCSE/O-level standard.
*** A number of these students returned from Sept. 09/Feb. 10 cohorts and sat the new exam as a 1st attempt. No compensation in the new module format.
Further developments planned

• More structured, challenging question format for 2nd class test with anonymous peer feedback
  – Promote cognitive development
  – Develop literacy skills

• Devise interactive activities for tutorials
  – Allow students more time to engage with material and relate to clinical practice
  – Bring aspects of the life science course “to life”

“Many thanks for a great introduction to life sciences. I am finding it very helpful in my surgical placement…” F.D. Feb 2011 (by email)
Encouraging student engagement with science

- Engage students with the material
  - keep students interested and actively learning throughout module
- Embed links between theory and practice
- Encourage students to analyse and critique their performance
- Additional support for students with limited science background
- Teach the essential Life Science theory that nurses *need and use* in practice
Acknowledgements

Mr. Wesley Sterling
Ms. Margaret Bennett
Year 1 students