

Practical teaching for biochemists

Background: *Teaching for Biochemists*

Two years ago a new course was introduced *Teaching for Biochemists*. This course was introduced in response to the lack of pedagogical training of the PhD students in the Department of Biochemistry who were responsible for the bulk of the practical teaching at the BSc and MSc levels in the department. This course was aimed primarily at PhD students in the Department of Biochemistry, though postdoctoral fellows and academic staff were also welcome to attend. As part of this course there were sessions on two separate days on understanding teaching and learning taught by staff from the Teaching Development Unit. The students then used their required practical class teaching (2 x 2 weeks per year) as the practical component of the course, with a final requirement to produce a document on self-reflection of their teaching experience and a session in the spring term chaired by staff from the Teaching Development Unit to share this self-reflection. The basic credits for this course were 20p with an additional 20p per year of practical class teaching up to a maximum of 100p.

Overall this course appears to have been successful with a large number of staff having taken the course over the first two years. There is also now a greater awareness of pedagogical issues amongst junior teaching staff and there have been no problems reported to the Head of Teaching associated with poor supervision in practical classes for the academic year 2007-2008.

The Department of Biochemistry is very keen to continue with this course, but many junior staff have now taken the course and the PhD intake per year is relatively small (4-8 students). While the department views this course as being essential prior to commencement of practical class teaching it is unclear if the teaching resources can be justified with potentially as few as 4 students per year.

Background: *Practical Teaching for Biochemists*

During the staff-student feedback day (held on May 7th) one issue that arose was the large class sizes and poor demonstrator:student ratio on some 1st year classes. This problem arose due to increased teaching loads during the transition period from the old degree system to the new (phased in over 5 years in the Biochemistry department, with the academic years 2006/7 and 2007/8 having the highest dual teaching load). This problem could be sorted out in the academic year 2008/9 as teaching loads come down, but these teaching resources could equally be used effectively elsewhere.

A second issue that arose both on feedback day and prior to this related to *English for Biochemists I* which many students thought failed to meet its objectives (in contrast *English for Biochemists II* has been widely praised). One problem relating to *English for Biochemists I* is the large class sizes which makes supervision of small group aural and oral work very difficult.

A third issue has been raised on several previous occasions, relating to transferable skills. While we now have an extensive and growing programme teaching a range of transferable skills, we do not provide any courses for BSc or MSc level students related to teaching.

A fourth issue raised both on the feedback day and several times over the previous year was the need for biochemistry studies to be more actively promoted in local high schools. Many students have said that they would be willing to take presentations back to former high schools, but that training and support would be needed for this.

During the extensive discussion of teaching issues via the staff and student emailing lists (May 8th-22nd) one possible solution to the first three problems was suggested by the introduction of a new course aimed at 3rd year students. This was subsequently named *Practical Teaching for Biochemists* (see below for more detailed implementation suggestions). This suggestion was unanimously welcomed by current 2nd year students, with no objections raised by 1st or 3rd year students, providing it was linked with pedagogical training and support.

This new course would be linked to, but not inter-dependent on, a new programme to be coordinated by Viivi Majava for student and staff visits to high schools to promote biochemistry (to run for the 1st time November 2008-February 2009)

Implementation of *Practical Teaching for Biochemists*

After analysis of the 1st year courses, combined with available timing in the 3rd year for the course, the following suggestion is made for implementation of this new course:

1. That the course is optional and limited to a maximum of 12 students (larger numbers are both difficult to give good pedagogical training to and to find suitable practical training for that would fit in the other aspects of the timetable).
2. That these students must have completed at least the equivalent of the first 2 years of a biochemistry degree and have a good background in the relevant subject area. In practice this would be ensured by having the following prior course requirements: *Biomolecules for Biochemists*, *Molecular Biology I* and *Protein Chemistry I* or equivalent courses or alternatively a BSc in biochemistry along with *Protein Production and Analysis*.
3. That pedagogical training for *Practical Teaching for Biochemists* is combined with that for the existing *Teaching for Biochemists* course as is organized by the Teaching Development Unit of the university. That these pre-teaching sessions are timetabled for the autumn term prior to the first required practical component on *Practical Teaching for Biochemists*.
4. That the practical component of *Practical Teaching for Biochemists* is to teach one half-day and five one-day practical sessions connected with the first year *Biomolecules* course and 4 sessions connected with the first year *English for Biochemists I* course. The *Biomolecules* course has 50-60 students and the *English for Biochemists I* course around 30 students. In all of these practical sessions the student tutors will be responsible for supervising a small group (e.g. 2 or 3 pairs of students in *Biomolecules*) of first year biochemistry students or equivalent (*Biomolecules* also has 2nd year Biology students and 2nd-4th year Chemistry students, but their biochemistry knowledge is the equivalent of 1st year biochemistry students).

5. That prior to each practical class the students on *Practical Teaching for Biochemists* would undertake a two-hour session with the course convener of *Biomolecules* to go through the material that will be covered and the learning outcomes of that practical class.
6. That there would be three PhD demonstrators and a senior academic present in all four laboratory based practical classes to help supervise the student teachers and to be responsible for Health and Safety issues.
7. That after the practical components are completed students would be required to reflect on their teaching experience. This reflection could be combined with that on the *Teaching for Biochemists* course or held separately.
8. That the sign up requirement for the course would be early September so that an increased number of PhD level demonstrators can be assigned to *Biomolecules* if student numbers on *Practical Teaching for Biochemists* is small.
9. That the course be pass/fail and not graded on the 0-5 scale.
10. Those students on the *Biomolecules* course are requested to provide anonymous feedback on the student demonstrators, both for the individual demonstrator and to be combined in an anonymous manner for use in the self-reflection session at the end of the course.

Suggested opinto-opas description:

Practical teaching for biochemists 4op

3rd year autumn / spring Optional course

This course comprises pedagogical training aimed at teaching science, with an emphasis on practical biochemistry classes. The theoretical component comprises two sessions with staff from the Teaching Development Unit along with a two-hour sessions prior to each practical session to go through the material that will be covered and the learning outcomes of each practical. The practical component includes one half-day and five one-day practical sessions connected with the first year *Biomolecules* course and 4 sessions connected with the first year *English for Biochemists I* course. In all of these practical sessions the student tutors will be responsible for supervising a small group of first year biochemistry students or equivalent. After the practical components are completed students will be required to reflect on their teaching experience. Attendance of some parts of the course is compulsory.

The course is limited to a maximum of 12 participants.

Prerequisite courses: *Biomolecules for Biochemists*, *Molecular Biology I* and *Protein Chemistry I* or equivalent courses or alternatively a BSc in biochemistry along with *Protein Production and Analysis*.

Responsible persons: Asko Karalainen and Lloyd Ruddock