Periodic Review of Biological Sciences

Introduction

1 An internal review of programmes in Biological Sciences was held on 15 and 16 March 2012. The members of the Panel were:
   - Professor Peter Kruschwitz (Professor of Classics, Head of Department, Department of Classics, University of Reading) – Chair
   - Dr Simon Leather (Reader in Applied Ecology, Division of Ecology and Evolution, Imperial College London)
   - Dr Rona Ramsay (Reader, School of Biology, University of St Andrews)
   - Dr Alison Bailey (Lecturer in Agricultural Business Management, School of Agriculture, Policy and Development, University of Reading)
   - Dr Katja Strohfeldt-Venables (Lecturer in Pharmaceutical Chemistry, School of Pharmacy, University of Reading)
   - Ms Steph Johnson (VP Welfare & Representation, Reading University Student Union)
   - Miss Sally Adams (Sub-Dean, Joint Faculty Office for Science and Life Sciences, Reading) – Secretary

2 The Panel met the following:
   - Dr Mark Fellowes, Head, School of Biological Sciences
   - Dr Mike Fry, School Director of Teaching and Learning
   - Dr Demetris Savva, School Senior Tutor
   - Academic staff involved in the delivery of the School’s undergraduate and taught postgraduate programmes, including admissions staff
   - School support staff

3 The Panel met students who represented the following degree programmes:
   - BSc Applied Ecology and Conservation
   - BSc Biochemistry
   - BSc Biological Sciences
   - BSc Biological Sciences with Industrial Experience
   - BSc Biomedical Sciences
   - BSc Environmental Biology (final intake October 2009)
   - BSc Horticulture and Environmental Management (degree suspended following October 2009 intake)
   - BSc Microbiology
   - BSc Zoology
   - MSc Plant Diversity
   - MSc Species Identification and Survey Skills
MSc Wildlife Management and Conservation

General observations

The Panel noted that the School of Biological Sciences had undergone significant restructuring and staff turn-over in its recent past, resulting in the need to regain a certain amount of structural stability. The School of Biological Sciences has embraced this change and actively sought to continue to provide high standards with regards to teaching and learning as well as to the student experience.

The Panel was struck by the students’ positive feel towards their ability to engage with academic staff and the programme design. Personalised admission procedures; personal tutors; staff-student interaction were all highly valued and seemed to be working well.

As an aside, the Panel felt that the time given between the final release of documentation for the Periodic Review visit and the actual visit to the School was unduly short, but recognised that there had been difficulties in fixing a date for the Review visit.

Academic standards of the programmes

Educational aims of the provision and the learning outcomes

The Panel found that the aims of the taught programme specifications and the module descriptions were excellent and clearly articulated. The Panel welcomed the School’s initiative to review and streamline their taught provision, both at Undergraduate and Postgraduate levels, in the process of reshaping and reconfiguration.

The Panel welcomed the School’s specialist degree provision e.g. in the area of Zoology, an aspect of the Reading brand that was clearly noted and welcomed by the undergraduate students.

Accreditation of the Biomedical Sciences degree programme was clearly something that attracted students but would benefit them more if it included work placement provision. The Panel therefore welcomes the School’s plans to extend such provision to this particular degree programme.

Curricula and assessment

The School of Biological Sciences has, in the process of reshaping and restructuring, streamlined its Undergraduate and Postgraduate provisions. The Panel felt that the overall structure was sound. The Panel probed the programmes’ resilience to further changes, and was largely satisfied that, even in the event of further staff turn-over, core areas of the programmes would continue to be covered appropriately. Concerns remain as regards small numbers of staff in certain specialist areas, including Ecology and Zoology. The MSc Wildlife Management and Conservation seems particularly vulnerable.

Recommendation (advisable):

The Panel recommends that the School should give appropriate consideration to staffing levels through the Three-Year Planning process and other mechanisms, to ensure the continued viability of degree programmes across the School and particularly in specialist areas such as Ecology and Zoology.
The Panel welcomes the School’s initiative to resolve the problem that students who wish to undertake a placement as part of their degree currently need to suspend their studies unless they take the BSc Biological Sciences with Industrial Experience. The Panel encourages the introduction of separate three-year and four-year programmes to accommodate such flexibility and suggests liaison with units that have established similar routes.

**Recommendation (desirable):**

The Panel recommends that the School considers introducing placement-year variants of all of its undergraduate degrees, and suggests that the School should liaise with other units that have established similar routes to share best practice.

Comments from external examiners suggested that there was an insufficient amount of data handling and statistical analysis included in final-year papers. The Panel noted, however, that relevant exercises were now part of a number of Undergraduate modules.

An area of concern is the weighting of items of assessment within individual modules. The Panel’s concern was independently raised by the students as well. The Panel suggests a School-wide review of (i) items of assessment per module, (ii) balance of time and credit weighting for items of assessment, (iii) weighting of items of assessment as compared with time and effort put into these, (iv) coverage of learning outcomes through the current assessment regime. The School is encouraged to liaise with the Faculty Director of Teaching and Learning to establish meaningful models for such an exercise. The usefulness of assessments with large formative contributions are not excluded.

**Recommendation (desirable):**

The Panel recommends that the School undertakes a review of (i) items of assessment per module, (ii) balance of time and credit weighting for items of assessment, (iii) weighting of items of assessment as compared with time and effort put into these (while recognising that formative assessments may require considerable time for small credit), and (iv) coverage of learning outcomes through the current assessment regime. The Panel encourages the School to liaise with the Faculty Director of Teaching and Learning (Professor Julian Park) to establish meaningful models for such an exercise.

The Panel felt that there was no obvious way to establish whether or not there were easy routes through degrees with lighter assessment. This should be included in the review, suggested above.

The Panel noted the School’s External Examiners’ ongoing concern about the absence of a ‘paper trail’ in the process of marks agreement in examination scripts. The Panel was dissatisfied with the School’s failure to engage more actively with this matter of quality assurance as well as the School’s sense that this could not be enforced. We expect the School to take this criticism seriously and to ensure that all relevant staff adopt best practice as part of their professionalism as academic teachers.

**Recommendation (advisable):**

The School should ensure robust ‘paper trails’ are kept in relation to the agreement of marks for examination scripts.

With a view on (i) large cohorts of Undergraduates and (ii) the need to provide professional training for doctoral researchers, the Panel recommends that the School makes better use of suitably trained classroom demonstrators and devolves marking of items of assessment to them as appropriate, ensuring sufficient moderation across the
board. This would enable the School to provide more rapid feedback to students, especially for modules taken by large cohorts.

**Recommendation (desirable):**

The School should consider making better use of doctoral researchers as classroom demonstrators, and, after appropriate and documented training, should devolve marking of items of assessment to them as appropriate, ensuring sufficient moderation across the board.

**Use of student management information**

7. It is clear that the School is very aware of student trends and has designed its offerings accordingly.

The Panel was pleased with the School’s policy to take on board, and act on, student feedback through module evaluation forms and Staff-Student Liaison Committees. It was noted that students felt very strongly that their voices were heard and their views were valued and taken seriously, right down to module level.

**Good practice:**

The Panel commends as good practice the School’s approach to considering and acting upon student feedback.

The Panel noted some minor student concerns as regards the School’s current practice to facilitate non-traditional students’ entrance into higher degrees.

**Quality of learning opportunities offered by the programmes**

**Teaching and learning**

8. The Panel felt that the quality of teaching and learning within the Department is excellent. There is, however, a somewhat mixed level of staff engagement with teaching and related activities. There are issues with inequality of student experience as a result of disengagement of a few staff members. While the overall student satisfaction level is very high, School management should act on this, e.g. through the process of Staff Development Review.

**Recommendation (advisable):**

The School should take steps to address the mixed level of staff engagement with teaching and related activities, e.g. through the process of Staff Development Review.

The Panel noted the School’s initiative to combine aspects of the (pastoral) Personal Tutor system with elements of academic tutoring in order to enhance the skill-set of their Undergraduate students, especially in the first year. While this approach was generally found to be received as very positive, the Panel also noted that School staff’s engagement with this system was perceived as varied. If the School wishes to continue to deliver personalised academic content through the Personal Tutor system, it ought to ensure a certain level of equality for all its students as well as communicate clear report structures for students who otherwise might be disadvantaged.

**Recommendation (desirable):**

The School should take greater steps to ensure a certain level of equality for all students in relation to the delivery of personalised academic content through its revised Personal Tutor system, and should communicate clear report structures for students who otherwise might be disadvantaged.
There is a very good range of teaching styles and methods across the School. The Panel felt that the School would benefit from a more proactive and assertive approach to the dissemination of good practice in teaching, learning, and assessment. This could efficiently be linked to the School's current use of teaching sections, task forces, etc.

In terms of efficiency, the School ought to adopt a more team-based approach to updating existing modules, ensuring that newly appointed members of staff are included during the build-up period.

The Panel appreciates the flexibility of the 10-credit module system, but both staff and students mentioned that this results in overlap of content and over-assessment. The Panel therefore recommends that more of the core material should be taught as 20-credit modules.

Recommendation (desirable):
The School should consider delivering more of its core material as 20-credit modules.

The Panel recommends ongoing improvement in feedback. There are good examples in place and evidence of innovation (e.g. audio feedback and/or peer feedback on some modules), which the Panel would commend as good practice, but a guarantee of at least generic feedback on Blackboard within the University's recommendation of two weeks and paper or personalised feedback within three weeks should be adopted.

Good practice:
The Panel commends the School's innovative use of audio feedback and/or peer feedback on some modules.

Recommendation (advisable):
The School should, where possible, guarantee generic feedback to students on Blackboard within the University's recommendation of two weeks, and paper or personalised feedback within three weeks.

Student admission and progression

The Panel noted the School's successful running of Open and Visit Days – and interviews in the past – with highly engaged staff providing a welcoming atmosphere for prospective students and their parents. The Panel notes the School's success in bringing students to campus during the application process. The School is encouraged to develop this in future strategy and to consider additional ways of attracting international/overseas students.

Good practice:
The Panel commends the School's success in bringing students to campus during the application process, and the welcoming atmosphere provided for prospective students and their parents.

The Panel was impressed with the School's recent turn-around in its student recruitment and noted the School's practice to send out personalised acceptance letters to prospective students. This was clearly very well received by applicants, as was confirmed by current undergraduates.

Good practice:
The Panel commends strongly the personalised acceptance letters sent to applicants with offers of admission.

The Panel also noted the School's successful change of marketing strategy over recent years, including accrediting the BSc Biomedical Sciences, name changes for degrees, and targeted advertising. The Panel felt that the abolition of the Science Foundation
programme potentially disadvantaged returners to higher education with implications for needs of extra support for the School of Biological Sciences.

Good practice:

The Panel commends the School’s successful change of marketing strategy over recent years, including securing accreditation for the BSc Biomedical Sciences, name changes for other degrees and targeted advertising

Recommendation (desirable):

The Panel recommends that the School gives consideration to the additional support requirements of mature students / students returning to higher education, following the closure of the Science Foundation programme

Current students are clearly very enthusiastic about their programmes and praise the warmth and caring atmosphere of most School staff. This is clear not only from the recent peak in applications and acceptances, but also from the affectionate student voices the Panel heard on occasion of their visit to the School.

The Panel acknowledges teething problems in the launch of the School’s new Careers learning module. Appropriate steps need to be taken to amend this module for future cohorts. At the same time, this raises certain concerns as regards the time that was taken in designing a new module of such significance.

Learning resources

10 The Panel visited the School’s teaching and learning resources, lab space, and collections (including the Cole Museum and the Herbarium) and found them impressive and well-maintained. These resources are increasingly rare nationally, and they need to be maintained.

The School of Biological Sciences, in its Self-Evaluation Document, comments on the spread of its staff and lab space over a number of buildings across campus. From the students’ perspective this matter appears to be less of an issue. Nevertheless, the University should consider, whenever feasible, allocating lecturing space within the School’s home buildings (AMS etc.) or close to that.

Recommendation (desirable):

The Panel recommends that the University should consider ways in which to better schedule teaching activities within (or close to) the home buildings of each School

The Panel noted that, especially since a recent and significant increase in the School’s student intake, access to lab space has become a significant problem. The Panel also noted the absence of sufficient study space for students in the School’s own buildings. As a first step, the School is encouraged to communicate to their studentship the availability of bookable dedicated study space across campus, e.g. in the Palmer Building.

Recommendation (desirable):

The School should ensure students are made aware of the availability of centrally-bookable dedicated study space across campus

Employer engagement

11 We already commented on the School’s Career learning module under item 9.
The Panel noted the School’s practice to use RISIS in order to facilitate the Careers learning module and to keep track of placements. The Panel believes that a fair amount of support is being given to students in obtaining placements and while the placements take place. The School should consider building up a database for future reference, in order to keep track of potential employers and/or providers of placements.

**Good practice:**

The Panel commends the School’s use of RISIS to facilitate its Careers learning module and to keep track of placements

**Recommendation (desirable):**

The School should build-up a database of placement providers for future reference, in order to keep track of potential employers and/or providers of placements

The Panel noted the students’ comments that external speakers were largely well received, but varied in their quality; The School therefore needs to continue to monitor individual performance of such speakers and to provide guidance as required.

The Panel noted that the MSc Board of Studies involves external input.

Students flagged up a certain unevenness of employer engagement insofar as students on the BSc Applied Ecology and Conservation appeared to have fewer opportunities for placement learning than their peers on other degree programmes within the same School. The School is encouraged to amend this, unless there is a good pedagogic rationale for such an unevenness.

**Recommendation (advisable):**

The School should take steps to ensure students taking the BSc Applied Ecology and Conservation have similar opportunities for placement learning and employer engagement as students registered for other degree programmes within the School

**Enhancement of quality and academic provision**

The Panel noted that the School, in spite of recent pressures and changes in configuration and staffing, is actively engaging in ways to provide a high-quality provision and student experience. The School does this, e.g. by providing students with the opportunity to develop their skills through an active use of the Personal Tutor system not only for pastoral care, but also for academic forms of personal development. The School thus creates a supportive learning environment and a sense of academic community between teachers and students of all career stages that is conducive to a positive feel throughout the unit.

**Good practice:**

The Panel commends the School for its active engagement in ways to provide a high-quality provision and student experience, e.g. by the revision of its Personal Tutor system to allow for academic forms of personal development, as well as pastoral support

The Panel was particularly impressed with the students’ sense of empowerment as regards their opportunities to make themselves heard and to contribute to positive, constructive change for their mutual benefit.

**Good practice:**

The Panel commends the School for engendering a sense of empowerment amongst students as regards their opportunities to make themselves heard and to contribute to positive, constructive change
The Panel was concerned, however, that not all staff appear to engage in these developments to the same degree, which proves to be an issue when it comes to the delivery of academic content and skills through the personal tutor system. This needs to be rectified. The School therefore is asked to share best practice more effectively and to ensure, through its management, that individual staff underperformance in this sector is not to any student’s disadvantage.

Recommendation (desirable):

The School should take steps to share best practice more effectively and to ensure, through its management, that individual staff underperformance is not to any student’s disadvantage.

The Panel also encourages the School to think about the creation of student common-room space as a place for exchange and peer-assisted learning. This ought to be supported by the University.

Recommendation (desirable):

The School should think about possibilities to create student common-room space as a place for exchange of ideas and peer-assisted learning and approach the University with a plan.

Main characteristics of the programmes under review

The Panel considers that the programmes:

a) have strong, appropriate, and sufficiently stretching content within the modules;

b) offer students sufficient breadth and depth across the board;

c) are delivered in a generally very supportive environment;

d) attract a sufficiently diverse student body (but might need to offer more support to attract students with unusual career paths);

e) provide an excellent, partly in fact unique mixture of ‘traditional’ and cutting-edge subject matters;

f) are delivered in a wide variety of approaches and styles, ensuring the opportunity for students to design their studies in a way that suits them best.

Conclusions on innovation and good practice

The Panel commends the following as areas where the School has particular strengths:

(a) The School’s approach to considering and acting upon student feedback – students felt strongly that their voices were being heard and that their views were valued and taken seriously;

(b) The School’s innovative use of audio feedback and / or peer feedback on some modules;

(c) The School’s success in bringing students to campus during the application process, and the welcoming atmosphere provided for prospective students and their parents;

(d) The sending of personalised acceptance letters to applicants with offers of admission, which was very much appreciated by applicants and had led to a significant improvement in conversion rates;
(e) The School’s successful change of marketing strategy over recent years, including securing accreditation for the BSc Biomedical Sciences, name changes for other degrees and targeted advertising;

(f) The School’s use of RISIS to facilitate its Careers learning module and to keep track of placements;

(g) The School’s active engagement in ways to provide a high-quality provision and student experience, e.g. by the revision of its Personal Tutor system to allow for academic forms of personal development, as well as pastoral support;

(h) The School’s efforts to engender a sense of empowerment amongst students as regards their opportunities to make themselves heard and to contribute to positive, constructive change.

Conclusions on quality and standards

15 The Panel felt that the intended learning outcomes of the programmes are being obtained by students; that the quality and standards are being achieved to a good standard; and that the programme specifications are appropriate.

Conclusions on new degree programme proposals [where appropriate]

16 N/A

Recommendations

17 The Panel recommends to the Joint Faculty Board for Teaching and Learning in Science and Life Sciences that the following degree programmes be re-approved to run for a further six years:

- BSc Applied Ecology and Conservation
- BSc Biochemistry
- BSc Biological Sciences
- BSc Biological Sciences with Industrial Experience
- BSc Biomedical Sciences
- BSc Microbiology
- BSc Zoology
- MSc Plant Diversity
- MSc Species Identification and Survey Skills
- MSc Wildlife Management and Conservation

18 The Panel does not stipulate any recommendations as a condition of re-approval.

The Panel advises that the following recommendations should be considered:

Advisable:

(a) The School should give appropriate consideration to staffing levels through the Three-Year Planning process and other mechanisms, to ensure the continued viability of degree programmes across the School and particularly in certain specialist areas such as Ecology and Zoology;
(b) The School should ensure robust ‘paper trails’ are kept in relation to the agreement of marks for examination scripts;

(c) The School should take steps to address the mixed level of staff engagement with teaching and related activities, *e.g.* through the process of Staff Development Review;

(d) The School should, where possible, guarantee generic feedback to students on Blackboard within the University’s recommendation of two weeks and paper or personalised feedback within three weeks;

(e) The School should take steps to ensure students taking the BSc Applied Ecology and Conservation have similar opportunities for placement learning and employer engagement as students registered for other degree programmes within the School.

Desirable:

(a) The School should consider introducing placement-year variants of all of its undergraduate degrees, and should liaise with other units that have established similar routes to share best practice;

(b) The School should undertake a review of (i) items of assessment per module, (ii) balance of time and credit weighting for items of assessment, (iii) weighting of items of assessment as compared with time and effort put into these and (iv) coverage of learning outcomes through the current assessment regime. The School should liaise with the Faculty Director of Teaching and Learning to establish meaningful models for such an exercise;

(c) The School should consider making better use of doctoral researchers as classroom demonstrators, and should devolve marking of items of assessment to them as appropriate, ensuring sufficient moderation across the board;

(d) The School should take greater steps to ensure a certain level of equality for all students in relation to the delivery of personalised academic content through its revised Personal Tutor system, and should communicate clear report structures for students who otherwise might be disadvantaged;

(e) The School should consider delivering more of its core material as 20-credit modules;

(f) The School should give consideration to additional support requirements for mature students / students returning to higher education, following the closure of the Science Foundation Year;

(g) [University-wide issue]: The University should consider ways in which to better schedule teaching activities within (or close to) the home buildings of each School;

(h) The School should ensure students are made aware of the availability of centrally-bookable dedicated study space across campus;

(i) The School should build-up a database of placement providers for future reference, in order to keep track of potential employers and / or providers of placements;

(j) The School should take steps to share best practice more effectively and to ensure, through its management, that individual staff underperformance is not to any student’s disadvantage;
(k) The School should think about possibilities to create student common-room space as a place for exchange of ideas and peer-assisted learning, and approach the University with a suitable plan.

19 The Panel does not have a recommendation to the Faculty Board of Teaching and Learning as to whether any proposal(s) for new degree programmes should be approved as this is not applicable.