

Editorial

Laboratory Practical Work

We are happy to offer a packed issue of *Bioscience Education e-Journal* **Volume 11** with papers and reviews that should appeal to all those committed to education in the universities. There is a principle – or perhaps an old adage – that says if you can teach and explain something to someone else, then you have to understand it yourself. Those of us who have been teaching for a long time this is almost self-evident, but the principle can be applied to students, and in this *Volume* several papers deal with the issues around peer teaching and assessment. Not only does this put students in the position of having to understand before they teach or assess their peers, but also it can be time- and labour-saving for the academic staff¹, and previous papers have suggested that for example peer assessment is almost as reliable as teacher assessment (Hughes, 2001).

Another issue dealt with in this volume and which is somewhat related is that of laboratory practical work¹ and how it leads on to research work. In the first years of a bioscience course the laboratory work can seem rather trivial to students and they may have a rather jaundiced view of it. Essentially they are carrying out what we usually refer to as “tried and tested laboratory practicals”: in fact this means “they work” – i.e. that they yield a result for students. The student attitude is that they have to do these practicals, but they know that they have been done many times before by previous classes, and that the result is known (for example, to the class demonstrator). It then becomes a game – to get the answer that the demonstrator has. We, the teachers, would say that actually the students are learning about techniques, developing manual dexterity, having things referred to in lectures illustrated, learning about biological variation, controls, the use of statistics, etc, etc, etc. But much of this passes the students by as they play the game of getting the “right answer” and aiming to receive a high mark for their write-up. This has been the situation for many years, and departments get high credit for putting on practicals “that work”. However – at some stage students need to realize that (a) all these things we think they are learning (manual dexterity, etc, referred to above) will be useful later, and (b) that in research no-one knows “the right answer”. In this latter respect, you can only do your utmost to get “the best answer” that your techniques and instrumentation, use of replicates, controls and statistics, etc, that you can. Then in the *Discussion* part of a paper you compare your data critically with those of others and also criticize your own data. There is a lot for students to learn here, and the first-year practical classes are the start of the learning process. We should do all we can to ensure that students get the message about what they are supposed to be learning and that the “right answer game” is only a trivial part of their activity. So in a bioscience course, which inevitably² must contain some practical work, it should be transparent that while the first year deals with techniques and the handling of biological materials, more complicated experiments will be done in the second year, and the culmination is the research project in the third year. (In Scotland read years two, three and four.)

Volume 11 also contains papers on the use of computers, suggestions for quizzes, how to deal with feedback and with formative and summative assessments, all of which we hope will be of interest to our readers and give them ideas for improving the quality and effectiveness of the education they offer to students. In addition, we offer a number of reviews of books and software which may prove useful.

Finally, a glance at the list of Editorial Board members will now reveal that we are trying to make the *Bioscience Education e-Journal* more international in aspect, and we have expanded our

list of International Board Members accordingly. *Bioscience Education* started as a UK-based e-journal because its origin and source of funding was (and still is) the Centre for Bioscience of the Higher Education Academy – a UK-based organization. Nevertheless, from the survey of visitors to the website, we know that we now have many international readers, and we believe that we should try to make the journal more accessible to individuals around the world who wish to publish with us. (Bio)-science is international – and so the education and training of the next generation of bioscientists should also be international in its aspect. Consequently we are very pleased to be able to publish two papers from Australia in this volume and we look forward to receiving more submissions from around the world.

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¹In the light of our wish to internationalize, we note that in North America “academic staff” are referred to as “faculty”, which latter word in the UK and many other countries in contrast means a collection of departments or similar unit (e.g. “Faculty of Science”), and also that in North America they use the word “lab” (short for laboratory), rather than “practical”, for laboratory practical class.

²I say “inevitably” here because I believe that to take a science course requires that students have some practical experience of how science is done. The QAA Benchmark statements for Bioscience and Agriculture etc, would support this, and they also state that some sort of research project, giving experience of actual research, is almost mandatory in the final year of a Bioscience degree course [URL: **New QAA Benchmark website**]

References

Hughes, I. E. (2001) But isn't this what you're paid for? The pros and cons of peer and self assessment. *Planet* (2), available online at <http://www.gees.ac.uk/pubs/planet/p3/ih.pdf> (accessed 10 June 2008)