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The Learning and Teaching Support Network (LTSN) Centre for Bioscience is one of 24 Subject Centres, funded by the four UK higher education funding bodies, to promote and support high quality learning, teaching and assessment in UK higher education.

CONTENTS

A CHANGE OF COLOUR: A CHANGE OF DIRECTION?

READERS MAY NOTICE THAT the colour of this edition of the *Bulletin* is different from that of all previous issues. A reason for this is to make it stand out on your bookshelf or coffee table — and read it! Another reason is that formally, we are now in the Higher Education Academy, so the colour change perhaps signifies something of a change of direction (although at this stage that direction still has to be clarified). Furthermore, at this stage we cannot show you the new Academy logo — that too has still to be agreed.

The present *Bulletin* reports on a number of issues with which teachers in HE are concerned. Thus, although the LTSN Ethics project (*http://www.prs-ltsn.ac.uk/ethics/*) has now formally ended, it is clear that the topic itself, and how to teach it, will continue to be debated. We also have articles on undergraduate e-journals, on language and communication in science, on assessment, and on computer-based tutorials.

The issue of the Bologna Process is also highlighted, with respect to how it impacts on agriculture courses, in an article by our Agricultural Subject Specialist, Julian Park. The Bologna Process aims to harmonize degree courses within Europe, and it would seem that we are still a long way off achieving its aims. It may benefit the movement of students in Europe, and be helpful to potential employers, but anyone actually working in a university department will appreciate the problems involved in harmonization. Those difficulties will certainly increase with the recent accession of ten new countries to the European Community. On the one hand modularisation ought to make the process easier, but for many of us modularisation has brought its own problems. For formerly "single subject" degrees such as biochemistry, physiology and pharmacology for example, it is increasingly difficult to know what a good graduate has done on the degree programme, and what his/her level of knowledge and skills is. A IIi degree in Biology tells an employer or a potential PhD supervisor very little. But perhaps this is an argument for degree transcripts rather than against modularisation. Our electronic journal, the *BEE-j,* recently published an article on the Bologna Process (*http://bio.ltsn.ac.uk/journal/vol2/beej-2-7.htm*).

This issue of the *Bulletin* also features an article on plagiarism. Plagiarism, intentional or otherwise, is an issue which plagues us more and more. Often it is a technique for passing assessments that students who are keen to pass the exam with minimal effort learn in school and perfect when they come to university. Like some other aspects of IT (e.g. web spam, viruses) it seems to consume more and more of our time just when we have less and less of this precious commodity. I wonder how we can get over to students how important it is to do their own work? They do not seem to get the message despite increasingly severe penalties imposed by universities for getting caught. In some ways it is an ethical issue, but some students do not see it that way: if you do not get caught, it is OK. Of course we have increasingly sophisticated methods for detecting plagiarism, but like computer viruses and antivirus software, it is difficult to keep ahead. Perhaps we should just sigh and admit that it is part of our job to try to make students understand things such as why it is bad to copy, why maths is fun, and why chemistry is important in the biological sciences — as well as trying to make them understand our subject disciplines.

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ETHICS TEACHING IN THE BIOSCIENCES – WHERE ARE WE NOW?

A NUMBER OF RECENT articles have argued the need for the inclusion of ethics in Bioscience curricula; increasingly, bioscience graduates need to be equipped to contribute to discussion and public debate about the moral dilemmas raised by scientific developments (e.g. Bryant, 2002; Cook, 2002 and Willmott, cited in Crace, 2003). Repeated explicit references to ethics in the relevant QAA subject benchmark statements (QAA, 2002) add further weight to the calls. Against this background, a survey into the provision of undergraduate ethics teaching provision in UK Bioscience departments, carried out by the Special Interest Group in 'Teaching Ethics to Bioscience Students', has revealed that ethics teaching itself raises concerns and poses dilemmas. For example, one respondent commented "we do not have access to appropriate personnel from other departments and there is a mixed feeling amongst Biology staff as to whether this is 'our job'".

The LTSN ETHICS project (*http://www.prs-ltsn.ac.uk/ethics/*) was therefore very timely. Led by the Subject Centre for Philosophical and Religious Studies, and involving Bioscience and five other Subject Centres this project set out to:

- examine the current provision of ethics teaching across a number of cognate subject disciplines;
- identify key concerns and problems;
- identify and share good practice by creating an online collection of ethics teaching case studies; and
- initiate small-scale research on ethics teaching.

RESOURCES FOR ETHICS TEACHING

A hardcopy guide produced as a result of the project and entitled, *Approaches to Ethics in Higher Education: Teaching Ethics across the Curriculum,* provides a snapshot of current ethics teaching and learning priorities across the project disciplines. Further details and the online version of the guide are available from the ETHICS website (*http://www.prs-ltsn.ac.uk/ethics/*). Also included in the website are a number of case studies, an overview of assessment and links to other case studies collections.

Findings of the survey into UK undergraduate bioethics teaching provision carried out by the 'Teaching Ethics to Bioscience Students' Special Interest Group co-ordinators, John Bryant, Andy Bond and Chris Willmott were presented recently at a one-day meeting on ethics teaching in Biosciences held at the University of Bristol (This and other presentations from the event are available at *http://bio.ltsn.ac.uk/events/reports/bristolethics2004.htm*). A bioethics resource list distributed at the event is also available at *http://bio.ltsn.ac.uk/ftp/ethics/LTSN_bioethics_resource_list.pdf*.

Amongst other things, the survey revealed a widespread desire for suitable teaching materials. Prompted in part by these findings, Chris Willmott of the University of Leicester is using a grant from LTSN Bioscience's Teaching Development Fund to produce a multi-authored series of four 'bioethics briefings' for use and evaluation by the HE community. Topics chosen for the briefings are: Ethics and bioethics (introducing the series), Xenotransplantation, GM Crops and Euthanasia. It is intended that the concise briefings will contain a balance of scientific and ethical input, plus case studies and up to date examples of ethics news items, and that they will be made available in print and online via the LTSN Bioscience website this summer.

The Bioscience survey and the broader LTSN ETHICS project have revealed that staff from non-bioscience departments and others often contribute to bioethics teaching, and there is also some demand for staff development in relation to ethics teaching. Following on from the Project there are plans to coordinate the development of a Register of Interest — intended to facilitate cross-disciplinary identification of ethics teachers and discussion of ethics teaching, etc. For further details or to sign up for the register, please contact Jackie Wilson, jmw@ltsnbio.leeds.ac.uk

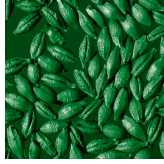
TEACHING DEVELOPMENT

A number of ethics-related mini-projects were funded as part of the broader LTSN ETHICS project. Valerie McKelvey-Martin of the School of Biomedical Sciences at the University of Ulster at Coleraine received support for the development of a pilot web-based module to teach scientific integrity to bioscience students.

The Scientific Integrity module (also reported at the Bristol ethics meeting) was designed with flexibility in mind and composed of a number of discrete components, such that these could be taken separately by different student cohorts. Sixteen PhD students were registered for the initial pilot module delivered via WebCT, and the students and course were supported by two E-tutors. The module incorporated the use of discussion boards to exchange views, and students were assessed on their contribution to these discussions and several written assignments (*http://bio.ltsn.ac.uk/projects/ethics/scientifinteg.htm*).

We are aware that staff at other institutions are also involved in incorporating new/additional elements of bioethics teaching into degree programmes. The Special Interest Group on Teaching Ethics to Bioscience Students has an associated electronic discussion list where individuals can share ideas, problems and queries relating to this area of university teaching.

Although the ETHICS project has come to an end, interest and debate in this area looks set to continue.



REFERENCES

Bryant, J A (2002) Why I believe that all biology degree study should include a module in bioethics, *Times Higher Education Supplement*, May 17 2002.

Cook, D (2002) The basic tenets of teaching ethics to bioscience students, *LTSN Bioscience Bulletin 7.*

Crace, J (2003) Pushing back the frontiers, *Guardian Education,* July 15, 2003.

QAA (2002) *Benchmarking Academic Standards* (online), *http://www.qaa.ac.uk/crntwork/benchmark/honours.htm* (accessed 31/03/04).

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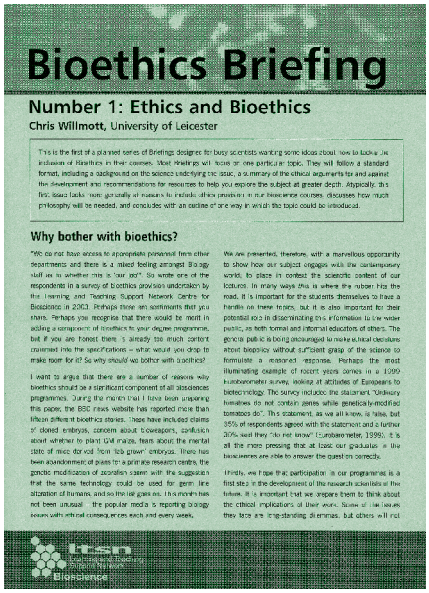
BIOETHICS BRIEFINGS

OVER THE PAST MONTHS, the steering committee of the Special Interest Group on Teaching Ethics to Bioscience Students have been examining the results of an online survey into the provision of bioethics education in UK Universities. A big thank you to the 62 colleagues (representing 59 institutions) that responded. The survey was undertaken, in part, as a response to the inclusion in the QAA's Benchmarking Subject Standards for Biological Sciences (and, indeed, for related disciplines) of several explicit references to the requirement of students to recognise the ethical implications of their subject. As well as looking at current delivery of bioethics teaching, we asked colleagues to identify support and/or resources which they felt would help them to fulfil these requirements in their teaching. Foremost amongst the perceived needs were case studies and background materials on the science and ethical arguments about recent developments in the field.

With this in mind, we have begun the production of a series of Bioethics briefing papers. The initial phase has involved the production of four documents, with the plan to roll out several more if they are felt by colleagues to be a useful resource. Each eight-page briefing generally follows a standard format and includes background on the science of the topic, presentation of arguments for and against the development, a case study with advice on how it might be used, plus an annotated list of relevant reference materials. The first number is actually an exception to the rule, and focuses instead on reasons for including Bioethics as part of our courses, along with one road-tested way to introduce the more philosophical aspects of ethics into the bioscience classroom. Other Bioethics Briefings produced thus far look at GM Crops, Euthanasia and at Xenotransplantation. Paper copies of the documents are



Bioethics Briefing

Number 1: Ethics and Bioethics

Chris Willmott, University of Leicester

Why bother with bioethics?

available on request, or they can be downloaded from the LTSN website (*http://bio.ltsn.ac.uk/resources/ethicsbrief.htm*). Colleagues are invited to make suggestions for future editions of the Briefings, particularly if they can assist in the writing of the relevant paper.

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SUPPORTING CULTURAL AND RELIGIOUS DIVERSITY

LTSN Bioscience is working on a project with other subject centres to explore the implications of cultural and religious issues in higher education, in particular for the curriculum (for example, teaching style, content, assessment and student support). The project was set up in response to interest from the academic community as they find themselves working with an increasingly diverse student population.

The project is now undertaking a survey amongst academics/support staff and we invite you to tell us about your experiences, and any adjustments you have made arising from those situations, which relate to the cultural or religious needs of students or staff. We would also like your views on how we can best support academics to accommodate diversity in today's student population. Please complete our brief on-line questionnaire (*http://www.prs-ltsn.ac.uk/diversity/questionnaire.html*). Responses to the questionnaire will help us to provide the sort of resources that will help the HE sector to respond to their students needs in these area.

FUNDING OPPORTUNITY: FORMATIVE ASSESSMENT IN SCIENCE TEACHING

The FAST project seeks to analyse assessment within a framework that defines the teaching and learning roles of assessment. Resources are available to fund bids of up to £3000 from HE institutions for projects within which they analyse and, if appropriate, redesign their formative assessment processes. Further details and application form (deadline 30th July): *http://www.open.ac.uk/science/fdtl/development.htm*

4 A EUROPEAN PERSPECTIVE ON AGRICULTURAL HIGHER EDUCATION

THE BOLOGNA DECLARATION of 1999 and Prague conference in May 2001 have set important benchmarks for the increased harmonisation of European Higher Education. Despite this there are still considerable differences between the length and content of undergraduate and Masters courses within the EU. This diversity will be increased with the accession of ten more countries this year (taking the total to 25). The UK has always been different from much of Europe in that its BSc and MSc programmes are considerably shorter (i.e. three or four years versus four or five years for BSc, and one year versus two or three years for MSc). In some countries the norm is still for students to study for a Masters, with little opportunity (or demand) for an exit at Bachelor level.

One of the outcomes from Bologna was the commitment to a two-cycle education system, these being an undergraduate (Bachelor level) and a Masters' level. Overall such a model would fit with the broader aims of the European Commission, providing shorter study periods containing more practically (industrially) oriented experience to enhance economic growth, competitiveness and employment. Most countries are still working toward the adoption of these educational structures which should lead to greater flexibility in higher education studies, offer opportunities for reforming and expanding curricula, and permit greater differentiation at the Masters' level. There is a resistance in some European institutions to recognise that a Bachelor qualification is attainable in three years, or that it is a realistic exit point for higher degree students from which they can start to pursue a career. However, the gradual adoption of the common framework should mean that in the future students will be able to move more freely between institutions during their studies and the Bachelor or Masters qualification would be more widely interpretable by employers across Europe. Susanne (2003)[1] provides an overview of teaching systems for biology in different nation states, see Table 1.

Increased commonality between programmes should also allow closer liaison between HEIs across Europe, although few currently offer joint degree programmes. Language may still be a problem for many students who want to study for their degree in

Table 1 Some examples of the teaching system in Biology with respect to the new Bologna system (3 years BSc + 2 years MSc + 3 years)

Country	Duration
Austria	Probably 3 + 2
Belgium	3 + 2 + 3 in September 2004
Czech Republic	3 + 2 + 8
Germany	Probably 4 + 1 + 3
Denmark	3 + 2 + 3
Spain	In some universities 3 + 2 + 3; in others 4 + 1 + 3
France	3 + 2 + 3 in September 2004/2005
Greece	Probably 4 + 1 (or 2) + at least 3
Croatia	4 + 1 + 3 or 3 + 2 + 3
Hungary	Universities are opposed to the changes because they would be linked to a decrease of education finances
Ireland	3 + 2 + 3 or 4 + 1 + 3
Italy	3 + 2 + 3 (already in use)
Poland	3 + 2 + 4
Portugal	4 + 1 + 3
Slovenia	Probably 4 + 1 + 3
UK	Generally 3 + 0 + 3; sometimes 3 + 1 + 3 In Scotland the BSc may be 4 and the PhD moving towards 4

two or more different countries. However, many institutions are now offering core courses in a common language (often English) and this is helping to overcome this issue. The well-established European Credit Transfer System[2] facilitates the recognition of periods of study abroad and is being developed into an accumulation-type system to be implemented at institutional, regional, national and European level.

To further enable European-wide Higher Education the new Erasmus Mundus[3] EU programme provides funding for Masters courses involving the collaboration of three or more HEIs in different countries to construct international programmes. Students would be expected to study in at least two different institutes, often with English as a common language. Such courses, although not common, do already exist, for instance the European Forestry Masters[4].

A recent conference entitled 'Capitalising on Innovation in the Curriculum in European Higher Education'[5] provided a forum in which to discuss innovative practice in harmonising European agricultural higher education. The meeting recognised the need to retain European-wide diversity in the disciplines of Agriculture, Forestry, Aquaculture and Environmental Sciences, although many practitioners felt there was a great opportunity for institutions to further develop a European dimension to their teaching and learning environments. This would have great benefits for students in terms of instilling a greater understanding of agriculture and related industry across the EU and potentially enhance student employability in business organisations that increasingly operate at a European rather than a national level. Overall, the impetus provided by the Bologna agreement, the imminent accession of ten new Countries to the EU and the importance of English as a common language suggests there are great opportunities for institutions and individuals in the UK to become more involved in European agricultural higher education.

Lomine (2004)[6], in a recent briefing for the ILTHE, concludes "it would be a pity for British HEIs to ignore the Bologna process, as it represents wonderful developmental opportunities ...". It should also enable and encourage our students to become better European citizens, aware of the diversity in culture, lifestyles and employment opportunities throughout the EU. The 7th European Congress of Higher Agricultural Education[7] takes place in Copenhagen this August and will provide an opportunity for meeting and liasing with colleagues from across Europe and exploring innovative teaching and learning methods. The theme of the congress is "Rethinking Higher Education in the food chain environment: Profiling graduates of the future".

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1 Susanne, C (2003) Biology Before and After Bologna, *Bioscience Education E-Journal Vol 2: http://bio.ltsn.ac.uk/journal/vol2/beej-2-7.htm*
2 *http://europa.eu.int/comm/education/programmes/socrates/ects_en.html*
3 *http://europa.eu.int/comm/education/programmes/mundus/index_en.html*
4 *http://gis.joensuu.fi/silva/News/Files/News/sep98.htm#mscef*
5 *http://www.clues.abdn.ac.uk:8080/afanet*
6 Lomine, L (2004) *The Bologna Process and its implications for British HEI's,* ILTHE Members brief
7 *http://www.echae.kvl.dk/*

IMAGEBANK *FREE* DIGITIZATION

For a limited time we are offering free digitization for slides and photos submitted to ImageBank. Please contact *imagebank@ltsnbio.leeds.ac.uk* for further information if you have a bioscience collection, large or small, which you would like digitized and shared with the wider educational community. All your images will be catalogued and you will receive a CD ROM of your scanned images as well as full acknowledgement with each image every time it is used.
http://bio.ltsn.ac.uk/imagebank/

BEE-j VOLUME 3

The third volume of *BEE-j* has now been published. The articles are outlined below and available on our website (*http://bio.ltsn.ac.uk/journal/vol3/*). We also invite submissions for Volume 4 of BEE-j. See the BEE-j website for further information, layout and submission guidelines.

ARTICLES

The value of computer based formative assessment in undergraduate biological teaching.
Sarah J Pitt & Alan Gunn,
Liverpool John Moores University

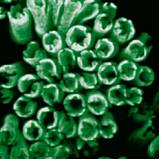
Importance of peer support and tutor involvement in entreprenuership education for overseas Bioscience students.
Peter C Mitchell & Arthur E McKeown,
University of Ulster

Coping strategies for staff involved in assessment of laboratory write-ups.
Ian Hughes, University of Leeds

Problem Based Learning: Exploiting Knowledge of How People Learn to Promote Effective Learning.
Ed Wood, University of Leeds

Evaluation: is an open book examination easier?
Richard Brightwell, Janine-Helen Daniel & Angus Stewart,
Edith Cowan University, Perth

Teaching Ethics to Bioscience Students – A Survey of Undergraduate Provision.
Christopher JR Willmott[1],
Andrew N Bond[2], John A Bryant[3],
Stephen J Maw[4], Heather J Sears[4]
& Jackie M Wilson[4]
[1]University of Leicester
[2]University of Westminster
[3]University of Exeter
[4]LTSN Centre for Bioscience



6 IS GOOGLE SUITABLE FOR DETECTING PLAGIARISM?

PLAGIARISM IS GENERALLY PERCEIVED TO BE ON the increase in UK HE institutions because of the ease with which electronic information can now be widely accessed, copied and shared. There is a resultant increased need for HE institutions to have transparent procedures in place that are effective at deterring and detecting plagiarism in order to maintain the quality of their educational provision and output. Many HE staff in the UK routinely use Google (*http://www.google.com*) to detect plagiarism because it is readily available and often quite accurate in returning the addresses of plagiarised websites. The evidence then presented is deemed suitable to show that a plagiarism offence has been committed. But is using a search engine such as Google a suitable way to detect plagiarism offences and are there better alternatives?

In this article, I briefly compare Google with two other software products and services that can be used to detect plagiarism in the hope that such a comparison will improve current methods of avoiding and detecting plagiarism among HE students. Google is used here as an example of a search engine that is widely used by academics. The application of it for detecting plagiarism applies equally to most of the other popular search engines that are available.

WHAT DOES GOOGLE DO?

Well, depending roughly on how the key words are placed in the search box, Google simply matches a (limited) string of words with those in web pages. Depending on how key words are entered into the search box, the returns are ranked according to whether the whole string, or words present in it, are found in a web page and how many other pages link to it. This method often produces quick positive results, with sections of text in documents being matched to that in websites. But Google does not provide all the answers:

- what is the nature and extent of text matching that occurs in a document? Google only matches strings of words entered in the search box with those found on web pages held in its database. They do not determine the proportion of an assignment that matches pages on the web nor how many sites were used in the whole document. Of course, we could look further in the document for signs of other plagiarised pieces, and key in phrases from it, but that is time consuming and not suitable for routine screening of work for detecting plagiarism;
- is the internet search performed by Google really comprehensive? Although search engines usually search websites quite effectively, they do not search access controlled resources, such as databases with quality resources, or "cheat sites" where students can buy essays;
- is the use of Google for detecting plagiarism consistent and fair? I have heard some staff claim that they "can spot a plagiarised piece of work a mile away and in any case they are often submitted together on the same pile". But is this statement always true when scores of essays are being marked? It may be possible to unconsciously remember sections from a few assignments but is it fair to penalize those that are unlucky enough to be caught almost by accident? Should we not routinely screen all submissions? and
- does it detect collusion? Collusion is a form of plagiarism that occurs when students copy from each other's work and then submit it as their own. The material may not have been plagiarised from the web, so search engines cannot detect it.

A more detailed analysis of some of these points can be found on the Turnitin website (*http://www.turnitin.com/static/products_services/search_engines.html*).

WHAT ARE THE ALTERNATIVES?

Table 1 compares the features available in two alternative software products that are currently freely available to UK HE institutions, namely the JISC Plagiarism Detection Service (JISCPDS) (*http://www.submit.ac.uk*) and CopyCatch Lite from CFL Software (*http://www.copycatchgold.com/copycatchesreview.htm*). JISCPDS, unlike CopyCatch and Google, is a service based on Turnitin software and run, via JISC, by US company, iParadigms. All submissions from UK institutions are held on a database in Reading, UK. Access to the service is controlled through account creation and all submissions require student permission for their work to be submitted. Contractual safeguards have been put in place to ensure iParadigms complies with EU Data protection laws.

JISCPDS is based on Turnitin software (*http://www.turnitin.com*) and primarily used for detecting internet plagiarism, but can be used for limited detection of collusion in a batch of documents via repeated comparison of pairs of documents in a batch. The free CopyCatch 'Lite', on the other hand, is only able to be used for making pair-wise comparisons of text in documents, although CopyCatch 'Gold', can make multiple comparisons. Use of both JISCPDS and CopyCatch enables very comprehensive screening for both internet plagiarism and collusion.

Both these products are easy to use, screen whole documents in seconds (or minutes) and allow bulk upload of files. This enables rapid and accurate screening of large numbers of documents and ensures that the whole process is much less random than the use of Google. Both software products can handle a wide variety of commonly used file formats and provide very comprehensive comparison reports. They can also be made available to students for

Table 1 Comparison of the JISCPDS with CopyCatch 'Lite' and Google*

Feature	JISCPDS (Turnitin)	CopyCatch 'Lite'#	Google
File types handled	MS Word, Text, Acrobat PDF, PostScript, HTML, Rich Text Format (RTF)	MS Word, Text, Rich Text Format (RTF)	Text (cut and paste — maximum 256 characters including spaces, i.e. approximately 45 words)
Web plagiarism search	Websites, database of subscription services via ProQuest, all submissions from UK academic institutions, including essays from 'cheat sites' and other student work	No	Websites
Collusion comparisons	Pairs (repeatable)	Pairs	No
Need for account creation	Yes	No	No
Bulk upload possible	Yes	Yes	No
Instantaneous report	Yes	Yes	Yes
Accuracy of search or comparison	Good	Excellent	Excellent
Comprehensive analysis report	Yes	Yes	No but add-on programmes are available to do this

**None of the software can match graphical material, such as graphs, images and diagrams but can match text names of these*
#Free version. The costed CopyCatch 'Gold' version has more advanced features

screening their own assignments to check that they have not unknowingly plagiarised and for producing reports that could be submitted along with their assignments.

HE staff spend a great deal of time and effort improving their educational provision through innovative methods of delivery and by providing modern equipment and infrastructure. Yet, we often either ignore the problem of plagiarism or rely on inefficient and arbitrary methods of collecting evidence of plagiarism. Gaining improvements in the quality of student work by deterring plagiarism, and enabling students to avoid it, can also be an effective way of improving student learning.

REFERENCES AND FURTHER READING

Bull, J, Collins, C, Coughlin, E and Sharp, D (2001) *Technical review of plagiarism software report* (online), JISC/University of Luton (*http://www.jisc.ac.uk/index.cfm?name=project_plag_luton*).

Carroll, J (2002) *A Handbook for Deterring Plagiarism in Higher Education,* The Oxford Centre for Learning and Development, Oxford.

Chester, G (2001) *Pilot of free-text electronic plagiarism detection software* (online), JISC (http://www.jisc.ac.uk/index.cfm?name=project_plag_pilot).

Joint Information Systems Committee (2003) *The JISC Plagiarism Advisory Service* (online), (*http://www.jiscpas.ac.uk*).

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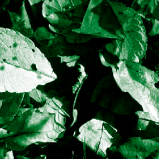

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UNDERGRADUATE E-JOURNALS — UPDATED

http://www.biolog-e.leeds.ac.uk

IN THE AUTUMN 2003 ISSUE OF THE *BULLETIN,* I reported on the launch of a new website *Biolog-e,* the undergraduate e-journal developed in the School of Biology at the University of Leeds. The project was funded by a grant from the LTSN Bioscience Teaching Development Fund. With two issues now live, I can report on its progress, success and future plans.

There are many potential strands to *Biolog-e* and all cannot develop simultaneously, so the journal and the way in which it is being used by our students is still very embryonic. For this article however, I can report on how certain aspects were developed and the underpinning philosophies that I would recommend as good practice. I can also give an indication as to how this teaching development can be disseminated for application elsewhere.

To guarantee sufficient articles for each issue, we decided to publish *Biolog-e* twice each year, timed to go live at the start of each teaching semester (September and January). The first class project reports from the previous year were divided between the two issues and other articles were commissioned after consultation with students about relevant subjects to include.

Key point 1: linking research articles to an assessed project module minimised the effort required by both students and academics and eliminated the need for editorial review.

The student-led articles for Issue 1 were produced with a little arm-twisting from me; for example, a summer vacation student was coerced into producing a brief article about his experience with the promise that I would comment on, and correct, his writing and he would be able to add this to his CV.

Key point 2: the journal has professional standards and students can receive training where appropriate.

Key point 3: open access on the internet, where their success can be widely celebrated, encourages student participation.

We launched *Biolog-e* to all undergraduates in October and a small group of students from a range of years and programmes expressed interest in joining the editorial board. Through a small number of meetings (maximum two per term), we determined the content for Issue 2. We acknowledged the need for the journal to reach more students and decided competitions with attractive prizes might be a good way to achieve this. Issue 2 has two competitions, a photography one, with a prize of £50 vouchers sponsored by the University of Leeds Skills Centre and a Science Writing competition which arose in response to the students identifying a need for greater opportunity to write science and training to do so. Responding to this, I contacted Dr Kathryn Phillips, News and Views Editor for the *Journal of Experimental Biology*, who had expressed an interest in *Biolog-e* previously. Kathryn came to give a careers talk and training workshop on how to write a short article and she and two colleagues at *New Scientist* and *Science Next Wave* will judge the entries. As both competitions are still running, I can only report that the students who attended Kathryn's talk found it very helpful.

Key point 4: my role was simply as a facilitator and was not excessively time-consuming. *Biolog-e* identifies student needs and responds to these, using outside or existing support resources where possible.

What happens next? The aim is for the editorial board to plan the content for Issue 3 (September 2004) during the summer term. If the students decide that more articles on e.g. careers, how to get the best out of field courses, years in industry or abroad etc., will attract other students to read *Biolog-e,* then I will point them in the right direction to contact relevant alumni, professionals or academic tutors to research and write articles on these subjects. Although much of this advice exists already in student handbooks and other documents, the success of these reaching the students is often limited. Furthermore, students seem to appreciate reading this advice from the student perspective.

Key point 5: Biolog-e represents a simple route to capitalise on student motivation to access the academic environment.

I am pleased to say that other schools from a range of disciplines at Leeds have expressed interest in this project and we are now working with some of these to adapt a template journal for their use. The template and instructions for its use will then be disseminated more widely.

FUTURE PLANS

A significant driver for me in the development of this project has been the opportunity to link research more closely with teaching and to give the able students an opportunity to show their potential within increasingly large and mixed cohorts. In the last year it has become clear to me that there is no route to celebrate the scientific endeavours of first class undergraduates; professional journals understandably view undergraduate contributions as below a threshold level. One paper-based undergraduate journal (Origin) has been developed with LTSN Bioscience support by Dr Jac Potter at University College Chester (*http://www.chester.ac.uk/origin/*); however this is currently an internally-oriented journal. One possible future development is to consider whether there is now a demand for a national journal for undergraduate research. Could such a journal be a motivator for able students and in so

doing, raise standards? Could such a journal be helpful for professionals in selecting candidates for job or PhD positions?

A separate initiative could be to develop interactions between Universities to teach students how to peer review articles from undergraduates at different institutions studying the same programme.

There is also a clear opportunity for adaptation to cover postgraduate training but a major hurdle encountered here is that of copyright in publishing research. This concern is real, but with discussion I believe there will be a route through the issues to enable postgraduates to benefit from this project as well.

I would be happy to hear your comments on any of these future plans and would be pleased to arrange for a wider discussion of these issues through the LTSN.

Finally, I am extremely grateful to David Taverner who put the site together and for his enthusiasm for the project.

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THE LANGUAGE OF BIOSCIENCE

WHENEVER TWO OR THREE ACADEMICS ARE gathered together, conversation soon turns to student literacy. "They just don't know how to write these days" can be an idle moan, perhaps born of the tedium of marking, or a genuinely felt complaint about perceived changes in standards.

How should one respond? It is easy to join in a negative but cathartic spiral of reactionism, blaming student inadequacy on the school system, the internet, text messaging, tabloid journalism or any other suitable social phenomenon which comes to mind. A more measured response avoids blame and says that a professional educator works with the material available: I shall teach my subject but also provide my students with whatever tools they need to express it. The latter position takes more effort, in debate with colleagues and as a teaching strategy, but is somewhat less depressing.

The language of Bioscience has two layers: the outer layer is that of specialist communication; we lead our students to a deep understanding of their subject and concurrently provide them with the precise and comprehensive technical lexicon needed to express it. Most of us take pride in this work and view it as legitimate employment for our professional skills.

The inner layer is more cryptic and less obviously our responsibility. This is communication, but using the non-specialist words and constructions of ordinary language. It provides a substructure for the outer layer and has the curious characteristic that the more it is hidden, the more effective it is. Students need to learn how to support their specialist discourse on a bedrock of natural fluency which goes unnoticed by the reader or listener. They must learn to communicate the message, not the means of expression.

I have found a way of illustrating this to our first year students. During an introductory session called *Communicating Biology*; I play them some music. I deliberately choose something unfamiliar, such as a Haydn string quartet, and ask them to listen very carefully for a few minutes. I then ask what they have noticed.

Typical responses are that the music is old-fashioned, lively, repetitive, interesting, boring. Someone might suggest that it is baroque (!), played by an orchestra, or the sort of thing you hear in lifts. Very occasionally, someone will know what kind of music it really is.

No one ever observes that the instruments were playing in tune with one another. When this is pointed out, there may be groans from the back of the lecture room but no one tries to contradict. Of course, the fact is, they did not notice. And that is my message about communication: good writing or fluent speech are imperceptible and allow the conveyance of meaning, just as fine tuning allows music to be heard without distraction (or pain). If spelling, grammar or syntax are wrong, the reader or listener is distracted and communication fails.

How and when do students learn to use the inner layer of language? Should we expect them to arrive in our classes already able to write and speak with skill, accuracy and precision? Or should we be prepared to coax and coach, providing remedies for deficient technique? More generally, by what point in their educational experience should they have achieved fluency and whose responsibility is/was it to ensure that they have done so?

Since blame is pernicious, we must conclude that the responsibility now lies with us. Words are extraordinarily powerful and, like all powerful things, from antibiotics and motorbikes to armies and democracies, they need careful handling. People who exploit the power of words can achieve action at a distance, influencing the behaviour of others through physical space and over time (sometimes over vast time). As teachers of Bioscience, it is our job to train students to use and control this power. The emerging practitioners of our subject must be able to speak its language fluently and lucidly, knowing not only which words to use but also how to deploy them imperceptibly to best effect.

Most importantly, the guidance we give must be tailored to individual need. Professional integrity is lost if we abandon those who stumble over small rocks simply because the hills ahead afford a better view.

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PRINCIPLES OF ASSESSMENT

'I am returning this otherwise good typing paper to you because someone has printed gibberish all over it and put your name at the top'.

A professor of English,
Ohio State University

Few issues currently get more attention in higher education than the assessment of student learning. Assessment is a very emotional topic, feared by students and seen as tiresome by faculty because of the amount of work involved. Yet, when assessment is done well, involving different methods, aligned with the curriculum and where students are given clear feedback on their work, the experience can be very worthwhile learning experience.

I am currently involved with a 'Benchmarking Club' on assessment, involving eight institutions, a key feature being the involvement of students. Comments made by two different students highlighted for me the need to listen to students and to ensure a common understanding of the issues relating to assessment. The first student said, "I never realised that assessment was for learning." The second comment related to the feedback this student had received on her work, where she was told that the page numbers should have been put on the bottom right had corner of the page and not in the middle! As well as the significance of these comments, it highlighted for me the need for staff and students to engage in debates with each other on assessment. I think we often take for granted that each group has a clear and shared understanding and it is only when the two groups meet to explore such issues that these mismatches become clear.

I also worry about what we as staff take for granted. For example, in the early weeks of a university course we bombard students with information relating to assessment. We talk about rules and regulations, what happens if they fail and then get them to sign a form on plagiarism. Two questions I would ask about this are, 'do they need to know all this information in week one' and 'do they really understand about plagiarism? A more effective way would be to jointly explore with them why we assess, i.e. to help them learn and the role of feedback in that process. One resource that you could use with your students is from the yellow 'Assessment Box' from the Generic Centre. There are currently 12 briefings, with three more to be added later this month (*http://www.ltsn.ac.uk/genericcentre/index.asp?id=16896*). The one I want to draw your attention to is entitled "Assessment: A Guide for Students' written by Phil Race. The contents cover 11 sections including, 'How important is assessment', 'What is assessed', 'Managing your exams' and 'Plagiarism and cheating'. These could be used at the start of a course, where for example groups of students could discuss each section and report back with three key learning points and any questions. This highlights assessment as important and gives both staff and students an opportunity to explore their understanding and any misconceptions they may have about assessment.

I would also suggest that course teams spend time reviewing their assessment practices within the framework of an assessment strategy. To help with producing such a strategy another Briefing in the Yellow Box is "Assessment: A Guide for Heads of Department" by Alistair Mutch and George Brown. Sections include, 'What is an assessment strategy', 'Approaches to take' and 'Preparing to develop a strategy'.

I believe a useful place to start is to discuss the principles of assessment that such a strategy would be built upon. It is also beneficial to have a framework around which to build discussion. One such framework is available from the LTSN Bioscience website (*http://bio.ltsn.ac.uk/resources/assess.htm*). Feedback to students on their work is one area I would highlight for attention. In our busy lives and with increased numbers of students, comments are often perfunctory, not read by students and not used by students to make progress. The Scottish Educational Developers have been collating case studies of good practice in feedback to students on their work and these can be downloaded under the SENLEF project on the Generic Centre website (*http://www.ltsn.ac.uk/genericcentre/index.asp?id=19681*).

Here you will also find a briefing on seven principles of good practice and details of forthcoming events to disseminate this material.

Finally good luck with your assessment practice and I hope all your students know that assessment is for learning.

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The LTSN Generic Centre has 20 copies of the Yellow Box to give away free on a first come first served principle (normally £75). If you would like a copy please email *carrie.drewer@ltsn.ac.uk* with your address to discover if you are one of the lucky 20.

SUPPORT FOR BLIND AND VISUALLY-IMPAIRED BIOSCIENCE STUDENTS

The National Centre for Tactile Diagrams can provide practical help with training and tactile graphics resources. Further information is available at *http://bio.ltsn.ac.uk/ftp/advertising/nctd.pdf*

STUDENT SELF-ASSESSMENT: RECORDS OF PRACTICAL WORK IN PARASITOLOGY

THIS ACCOUNT RELATES TO a parasitology module taught between 1987 and 2002, when the number of students increased progressively from 47 to a peak of around 100. As part of their training in science, students should be encouraged to record practical work in laboratory record books at the time of observation. When student numbers were low the books were individually signed-off at the end of each practical, collected at the conclusion of the module, assessed, allocated a mark and each student was provided with an extensive written commentary of recommended improvements. However, as the numbers of students grew in the late 1980s this style of marking became very time consuming, so much so that a scheme for student self-assessment was devised.

It was essential that students clearly understood how they participated in self-assessment and what benefits they obtained. At the start of the first practical class the importance of laboratory record books was emphasised and the students told that their books would be collected for checking at the conclusion of the module. Guidelines were given in the module handbook about the format in which each experiment should be reported (e.g. to include the following sections: Introduction, Aims, Materials, Methods, Observations, Discussion, Conclusions) as well as details relating to particular exercises. Thus, specific terms of reference for writing up the practical studies were provided.

To assist them to evaluate the quality of their own work students were provided with two sets of criteria. The first defined the benchmarks used in the School of Biological Sciences for award of Honours degree classes. The second detailed the elements that should normally be included in each section of the work reported in a laboratory record book. These latter criteria were posed as a series of questions, as not all were appropriate for each piece of work. Examples are: 'Are aims clearly stated?' and 'Does the discussion consider each point, or set of data, in a logical order?'. Each student was expected to respond by writing relevant particulars into their laboratory record as they completed each exercise. They were, therefore, given specific guidelines about what should be included in their laboratory books. Experience showed that good students attained, and many exceeded, these expectations, whilst weaker individuals performed well when stimulated to put in the effort!

Towards the end of the module students were asked to complete self-assessment sheets to be handed in with their record book. These sheets asked the students to specify, for each of the major practical exercises, those parts that they had or had not included in each account. The self-assessment sheets reiterated the criteria given to guide students at the start of the module to summarise what was included in the laboratory record, but with opportunity for justification of variations in content, layout or style. Students had, therefore, an option of omitting inappropriate parts, or of including extra features to enhance their laboratory record, and of drawing attention to variations. Students were invited to allocate a mark for their work, based on the two sets of criteria outlined earlier.

A computer-based self-assessment system was introduced for a few years, allowing students to return the information electronically at their own convenience. The programme performed well, but involved extra work printing and collating this information with laboratory books! Self-assessment sheets were equally effective and less time consuming.

When checking self-assessed books there was a saving of time, estimated at about 30 per cent, for a number of reasons. First, the completed self-assessment sheet provided a summary of content of each laboratory record, an aid to assessment in itself, but more importantly, the overall standard of most books was greatly improved. Much time was saved not having to write long explanations about errors and omissions in each piece of work. Thus, improved instructions, plus greater student involvement, gave better submissions and outcomes.

The self-assessed marks varied in accuracy: the majority of students proved good judges of quality and allocated sensible, acceptable marks. Very good students tended to underestimate, presumably because they had the ability to see where improvements could be made even in the best work. Conversely, weak individuals often grossly overestimated their work, no doubt because they were unaware of what could be achieved. Corrections to the self-allocated marks were made as necessary.

In conclusion, self-assessment gave valuable gains in quality of work submitted by the majority of students, certainly enough to justify the procedure. Students benefited from extended guidance given in the explanation of the two sets of criteria against which they compared their levels of achievement. Equally importantly, students were involved in the development of their own skills of evaluation and were able to compare their judgements against the experienced assessments of the module teachers.

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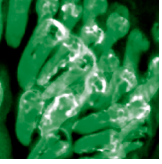

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TUTORLESS TUTORIALS

UNDERGRADUATE STUDENTS, IN PARTICULAR those in their first year at University, have the tendency to be passive during tutorials expecting the tutors to provide them with "ready made" answers. In order to stimulate and challenge these students, we have adopted a much more self-directed learning approach to the tutorials whereby students take more responsibility for their own learning. We have introduced weekly tutorials conducted in the absence of a tutor where students are responsible for the running of the tutorial. They are expected to prepare for the tutorial in their own time and come to the tutorial with answers to a series of questions/issues that are related to the lecture content but have not been taught formally. They are thus expected to analyse problems, locate relevant source material and develop habits of independent study.

The aims of these tutorless tutorials are to:

- promote self-directed learning;
- improve student participation in small group sessions and oral communication skills;
- improve student confidence in the topic and understanding of the topic; and
- stimulate students to form "study groups".

METHODS

Before the tutorless tutorial, staff referred to as "Syndicate", tutors allocate a topic on a specific theme to groups of two or three students. For example on the theme: "The role of enzymes as diagnostic markers", each group of students will need to research on one particular enzyme which is used for the diagnosis of a (or several) disease(s). Students are required to answer a series of questions drawing information from a variety of sources such as textbooks, journal articles, websites, computer programs or sometimes newspaper articles. At the beginning of the first year, such references might be given to the students but as time progresses, students will be required to search for the material. Answers to these questions are to be submitted electronically before the beginning of the syndicate session. The aims of these pre-syndicate self-directed learning (SDL) sessions must be clearly outlined so that students know what is expected of the SDL.

At the syndicate session, one student is elected (on a rotation basis) by his/her peers to act as a facilitator. The role of the facilitator is to:

- overview the running of the session;
- ensure that students participate (there are generally 12 students per syndicate); and
- collate answers from the students, summarise these answers with participation of all members of the syndicate and engage the students to compare and contrast the answers from the various groups in the syndicate. For example, groups will compare and contrast their findings on the structure, role and diagnostic value of the various enzymes. The completed answer sheet, the content of which is examinable, will be handed in to the tutor at the end of the syndicate. In some instances, students will be asked to give an oral presentation, in the presence of their tutor, at the next tutorial session. If the group encounters difficulties with particular answers during the syndicate, the facilitator can obtain from the tutor (who is in the tutorial room next door) a copy of the answer sheet. The tutor can also come and talk personally to the students if more explanation is required. The convenor of the course will generally attend part of these sessions at random. If any further problem arises, the convenor will ask the lecturer to clarify this issue to the students in a formal lecture.

Assessment of these tutorless tutorials is based on the answers to the SDL sessions corrected by the tutors and on peer assessment. The latter is introduced gradually throughout the semester and follows very well defined criteria based on participation rather than on the correctness of an answer.

RESULTS

At first, students are reluctant to participate in tutorials without tutors. However, as time progresses, they show an increased interest and confidence in the topic and they participate more actively in the syndicates as they come to the sessions prepared and thus more knowledgeable. They also participate more as "they are less afraid to say something wrong in front of their peers than in front of their tutor" (comments made by many students). Students also learn to form study groups, a very important aspect if they live off campus in large cities and have therefore little contact with fellow students outside class time.

Surveys have shown that even though students encounter some difficulties with the concept of tutorless tutorials, especially at the first year level, they overcome these difficulties as the year progresses. A minority of groups cannot work in the absence of a tutor. When this occurs, students are allocated to other groups. Exam results have not indicated that students are less knowledgeable in the topics they learn in the SDL sessions; to indicate if their knowledge has improved would require extensive surveys that have yet to be conducted.

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