

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

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## DEALING WITH BENCHMARKS, QAA AND DIVERSITY

WELCOME TO THIS NEW ISSUE OF *THE BULLETIN* in which we offer a range of articles and updates on the activities of the LTSN Centre for Bioscience, including the activities of our Special Interest Groups and our Discipline Consultants. We also are pleased to have a short piece by Simon van Heyningen on the creation and potential uses of the Bioscience Benchmark, which is now published on the QAA Web site ([www.qaa.ac.uk](http://www.qaa.ac.uk)). LTSN has to consider how it can help departments to prepare for the new QAA process and how the Benchmarks, both for Bioscience and for AFASFCS (Agriculture, forestry, agricultural sciences, food science and consumer sciences), will be used.

In reporting what we did before benchmarks were invented, Simon mentions that he does not recall biologists "...calling for more central guidance about what they should teach." Indeed, that would infringe the proud autonomy of the universities in this country. He does not mention *how* we teach (and nor does the Benchmark document), and traditionally little or no instruction has been given to university teachers (in contrast to schoolteachers) on how to teach. Many simply teach how they were taught. More recently Staff and Educational Development Units were set up that did aim to teach university staff how to teach: how to lecture effectively, how to run small groups, and so on. LTSN Subject Centres continue in a parallel, subject-specific way, helping staff to teach more effectively and perhaps more efficiently.

The present government has a commitment to increase vastly the size of the student population with the remit of widening participation in tertiary education to encompass fifty per cent of the age group. This will bring new challenges to the academic staff who will have to deal with a much more diverse range of entrants (although to be fair many institutions do this already and very successfully). LTSN has a role to play in this process in helping staff to deal with this diversity and not to be overwhelmed by numbers and a huge range of different starting levels... as well as doing their research and having a life, etc. There will also be the question of much more input to student support and guidance so as to prevent excessive drop-out rates. LTSN Bioscience proposes to run a major event, a forum, in which we will invite individuals from a wide range of university departments with many different types of teaching experience. The aim will be to try to see the way ahead and to pool ideas about how to teach and support a diverse range of students entering the university. Some of us have a great deal of experience already, while others have been able to continue with an élitist approach without worrying too much about this aspect – so far. The forum, to take place in September, will be quite small and select, but we would welcome suggestions for participation (yourself or 'I know someone who has useful experience'), or for topics to be discussed. Eventually LTSN Bioscience will be the agency by which good practice is spread, although of course by bringing people together in this way we will initiate the formation of a Network – which is what LTSN is all about! ■

Ed Wood, Director

Learning & Teaching Support Network Centre for Bioscience

<http://bio.ltsn.ac.uk/>

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# NEW LEGISLATION, NEW CHALLENGES AND OPPORTUNITIES

*Disability issues are becoming increasingly important in higher education as legislative and policy initiatives change the way in which disabled people are treated within society. The need to develop inclusive practices which give equal opportunities to disabled students has been further stimulated by the extension of the Disabilities Discrimination Act (DDA) through the Special Educational Needs and Disability Act (SENDA), 2001. This landmark legislation makes it unlawful for bodies responsible for the provision of education and other related services to discriminate against disabled students and other disabled people.*

**T**HE MAIN DUTIES UNDER the new section IV of the DDA will come into force on 1st September 2002 and will impact on learning and teaching practices. From this date, it will be unlawful to treat a disabled person 'less favourably' than a non-disabled person for a reason which relates to the person's disability. Institutions will also be required to make 'reasonable adjustments' for disabled students and other disabled people to avoid their 'substantial disadvantage'.

A key part of the legislation is that the duty to make 'reasonable adjustments' is a duty to disabled people generally, not just to particular individuals. This 'anticipatory' aspect means that providers must consider and implement adjustments which may be necessary for disabled students in the future.

## CHALLENGES AND OPPORTUNITIES

Institutions and tutors need to consider adjustments they would make using 'what if?' scenarios. 'What if' a student enrolled on your course is blind or dyslexic or suffers from depression?

Many of the resulting issues are generic in nature and are being addressed by other national

organisations. We feel that it would be better to concentrate our efforts on sharing good practice and experience with respect to subject-specific issues.

Practical work is central to an effective Bioscience curriculum. How can we make practical work accessible? The reaction of many is to propose alternative learning activities for students with disabilities – such as virtual laboratory experiments and fieldwork. But is this the right approach? Only if these learning activities are part of the core curriculum and do not result in students with disabilities being isolated from the rest of the student cohort. Surely, all students should be able to take part in the same activities and enjoy the same higher education experience?

Opportunities arise from reflecting on learning, teaching and assessment practices and identifying ways in which we support students with disabilities. As we become more sensitive to the diversity of student needs we must adjust how we teach and facilitate learning in ways that may benefit all or any of our students.

## THE WAY FORWARD?

The HEFCE has recently commissioned a 'map' of existing resources and materials for the

learning and teaching of disabled students to be published this summer. Interim findings (and our own research at LTSN Bioscience) suggest "that there are far fewer resources appropriate for widespread use than might have been expected. A major concern was that many teaching and learning processes and most discipline-areas lack adequate resources" (HEFCE 02/21).

Therefore we help ourselves by sharing experiences (both positive and negative), approaches and ideas. Are you willing to share your experiences of supporting students with disabilities by writing a short case study? Have you developed or know of any appropriate resources? Have you tackled lab and fieldwork issues? What do you feel are the potential difficulties for accepting disabled students onto courses?

We want to help academic staff address the needs of disabled students – please help us to help you. ■

**Dr Heather Sears**  
Subject Specialist  
LTSN Centre for Bioscience

## DISABILITY FUNDING...

*Funding to develop and disseminate resources for learning and teaching of disabled students is available under 'Improving provision for disabled students' (HEFCE 02/21). The deadline for bids less than £50,000 is Friday 30 August 2002. See [http://www.hefce.ac.uk/Pubs/hefce/2002/02\\_21/02\\_21.doc](http://www.hefce.ac.uk/Pubs/hefce/2002/02_21/02_21.doc)*

## ... AND EVENT

*In April, a number of LTSN subject centres hosted a joint event 'New legislation new opportunities – implementing the new disability legislation'. The day focused on issues for subjects that use lab and fieldwork in their teaching. A report on the day is available from: [http://www.ltsneng.ac.uk/nef/events/past\\_ltsn.asp](http://www.ltsneng.ac.uk/nef/events/past_ltsn.asp)*

# COMPENDIUM OF BIOSCIENCE PRACTICALS: PROJECT UPDATE

**In the coming months we will be looking to add considerable content to the Compendium and we now have an on-line submission form which can be used to contribute materials and resources; alternatively you may contact us at the Centre if you are willing to contribute. In early autumn there will also be an official launch of the Compendium.**

The main aim of this project is to encourage and enable the sharing of ideas, experience and good practice in bioscience practical classes (see also *Bulletin No. 5, Spring 2001, p12*).

The Centre is currently compiling a browseable and searchable collection of items of information, case studies and resources relevant to laboratory and field practical classes and the development of practical skills, including for example:

- » Evaluated practical exercises and case studies
- » Student research projects
- » Descriptions of field and industrial site visits
- » Laboratory method protocols, etc.

We envisage that the Compendium will also include a number of evaluated examples of alternatives

to working in the lab and field, for example: data analysis exercises; demonstrations and equipment workshops, and computer-based simulations and 'virtual' labs such as the 'V-lab – Zoology Laboratory' developed by the Learning Technology Unit at the University of Aberdeen (to find out more visit <http://www.abdn.ac.uk/diss/ltu/pmarston/v-lab/>).

You may already be aware that the Centre has a number of Special Interest Groups (SIGs), including one on *Practical Classes*. These SIGs are intended to encourage discussion of particular learning and teaching issues from a bioscience perspective, and give

Members the opportunity to exchange experiences and identify and develop good practices that may also benefit the wider bioscience community. Dr Allan Jones (Dundee) has recently been appointed as SIG Co-ordinator for this Group. If you are interested in joining this, or any of our SIGs, please contact the Centre.

For the latest news of this project or to contribute, please visit our web site at <http://bio.ltsn.ac.uk/> ■

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## THE CHANGING FACE OF AGRICULTURAL HIGHER EDUCATION

**Agriculture in the UK is undergoing a period of rapid change. This is driven by poor farm incomes and fuelled by a number of high profile crises.**

The importance of agriculture in the national economy continues to decline, whilst the impact of agriculture on the environment receives an ever increasing profile. Strong messages are coming from government and the media on the

need for change and these will be driven by changes in the nature of financial support that the agricultural industry receives in the coming years. Agricultural higher education is inexorably linked with these changes. Many institutions have recognised the changing agricultural landscape over the last decade and have started to adjust their courses and curricula to offer new and different education in wider aspects of rural resource and business management, country-

side and landscape management and wider applied biological science skills.

There is also recognition that with slight changes 'agricultural modules' can have wide applicability across universities as part of the curricula of degrees as diverse as geography, soil science and economics. As well as the changes within our respective disciplines we are facing greater directional guidance centrally in terms of the quality of our teaching, the methods we utilise and who we teach. Issues of widening participation, increased access and equality are all high on the Higher Education agenda.

Few lecturers in Agricultural Higher Education would dispute that we are living through rapidly changing (and therefore exciting?) times. LTSN Bioscience can provide a valuable supporting role in this context. For those of us moving

into new curriculum areas or consolidating existing curricula, resources such as the existing Knowledgebase and forthcoming Practical Compendium and Imagebank will provide valuable information and support as we prepare and share teaching materials. In a broader educational sense the LTSN workshops and materials on issues such as assessment, widening participation and new teaching methods can provide useful parallel support to the institution CPD programmes. We need to make best use of all available resources during this period of transition! ■

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# BENCHMARKS AND BIOSCIENCE

*The Bioscience Benchmark has just been published. It is more general than specific, and is designed to be helpful rather than restrictive.*

**B**ENCHMARKING IS NOT VOLUNTARY. The idea sprung, as did so many things, from the fertile imagination of the Dearing Committee, and has been followed up by order of the Funding Councils (or the Ministers behind them) acting through the Quality Assurance Agency. However, I do not recall biologists before then frequently bemoaning the absence of a benchmark or calling for more central guidance about what they should teach.

What did the Dearing Committee think it wanted? Employers are supposed to have told them that they need information about the minimum that they could reasonably expect a graduate to know. That sounds sensible and unexceptionable. The difficulty lies in knowing what it means. Some employers have quite unreasonable expectations about the detail and the amount of precision they can actually expect, and want to know what particular make of equipment a student will use for an enzyme assay. Others, usually the larger and more sophisticated ones, are much more realistic and accept that all they will get is rather general. Some understand that courses in different places are different and that bioscience (for example) is a wide subject; others would like to see a universal standard exam that everyone has to pass. Almost everyone, not excluding academics, feels that graduates should know at least as much as they did in their young days even though science has moved on. Although the benchmarks were created for employers, they ought in principle also to be useful for students as well as for teachers, especially those that are designing new courses. But the fact is that nobody really knows what they want – making it hard to come up with something that will satisfy anyone, let alone everyone.

For benchmarking, the Quality Assurance Agency divided all human knowledge into 42 different areas. Exactly how these areas were chosen is a bit mysterious, but there obviously had to be a relatively small number otherwise the work could not have been done. All seem

narrow to outsiders and impossibly wide to practitioners. In few of them is it possible to say anything very useful about essential factual knowledge that every graduate must have. As we say in our benchmark, there is not anything much beyond the trivial that has to be known by both animal behaviourists and x-ray crystallographers. We were left, as were nearly all the groups, with little choice but to keep our benchmark relatively generic, and consequently remarkably similar to those of several other disciplines. Everyone wants people who can write. Amassing and critically evaluating evidence is important for scientists, but also for lawyers, historians, accountants and almost everyone else. That will not satisfy many of the employers, but I personally am relaxed about it; even pleased. We did not want to produce a standard curriculum and we have not. We must not allow the benchmark to become a strait-jacket, and it will not. I hope it will even be useful; it might be a guide to people planning new programmes and a check list for those revising old ones.

We were a diverse group that prepared the benchmark – deliberately so, because it is important that everyone is represented: age, sex, speciality, type of institution, location. But that produced fewer problems than at least some expected. We agreed about what a bioscience course consists of, and we have come up with something that should at worst do no harm and may at best be instructive and helpful. ■

[This article is written in a personal capacity by Dr Simon van Heyningen]

*(The benchmark was published on the QAA web site on 26 March 2002: <http://www.qaa.ac.uk/crntwork/benchmark/phase2/biosciences.pdf>)*

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## ADVICE & INFO

**DRAFT CODE OF PRACTICE**  
*(accompanies the DDA Part IV)*  
<http://www.drc-gb.org/drc/InformationAndLegislation/Page34A.asp>

**QAA CODE OF PRACTICE**  
<http://www.qaa.ac.uk/public/cop/copswd/contents.htm>

**NATIONAL DISABILITY TEAM**  
*Manages and co-ordinates projects to enhance disability provision in fifty higher education institutions in England and Northern Ireland.*  
<http://www.natdisteam.ac.uk>

**TECHDIS**  
*Supports the further and higher education community in all aspects of technology and disabilities and/or learning difficulties.*  
<http://www.techdis.ac.uk>

**NATIONAL BUREAU FOR STUDENTS WITH DISABILITIES (SKILL)**  
*Skill promotes opportunities for young people and adults with any kind of disability in post-16 education, training and employment across the UK.*  
<http://www.skill.org.uk/>

# IMPLEMENTING WORK-RELATED LEARNING IN BIOSCIENCE

*Real World is a project with a national focus which aims to enhance the employability of students within the disciplines of Agriculture, Environment, Forestry and Organismal Bioscience through the integration of work-related learning activities into the curriculum.*

**W**ORK-RELATED LEARNING IS more inclusive than other terms such as work-relevant learning, work experience and work-based learning. It is defined as, 'learning outcomes achieved through activities which are based on, or derive from, the context of work or the workplace'. The benefit of developing this idea is that teaching activities are not restricted to the workplace and a wider range of activity can be embraced.

An outcome from the project will be a good practice guide for practitioners on how to introduce work-related learning into the curriculum. To facilitate development, Real World is currently funding a number of institutions to produce case studies of existing good practice or to incorporate work-related learning into existing or new modules. One such development is taking place at the University of Newcastle-upon-Tyne and builds upon recent work funded by LTSN Bioscience.

Dr Olivier Sparagano, University of Newcastle-upon-Tyne, is currently being funded to pilot a new teaching activity within an existing module, Farm Animal Nutrition, by LTSN Bioscience. His motivation for testing new teaching activities resulted from the relatively poor uptake of some modules within his department. A student-led conference was introduced when students highlighted their interest in taking an active role in the organisation of such an event. The conference component allows the students to develop skills such as team building, oral and written communication and interactions with potential employers.

The conference component has proved very

popular with students. Dr Sparagano commented, "I have been very impressed with how the students tackled the work so professionally, organising formal meetings on a regular basis and allocating tasks within the groups. They have shown great enthusiasm and have demonstrated good team skills."

Feedback on this new component to the module indicated that students and staff alike, had underestimated the time, work and effort involved in organising the conference. However, it has been considered a successful venture and so it will be implemented in a stage 3 module, Animal Parasitology, next academic

year with the assistance of funding from the Real World project. It is thought that at stage 3, undergraduates are better prepared to undertake the module assignments and that the module may also inform careers choice. The weighting of the conference component will be increased to 60 per cent in recognition of the workload involved.

A particular difficulty identified by Dr Sparagano is in the assessment of group work. The funding from Real World will allow Dr Sparagano to review and further develop the assessment strategy and criteria. Entrepreneurial skills will also be introduced into the module, as students will be encouraged to liaise with companies and organisations to secure sponsorship to cover the costs of the conference.

Dr Sparagano considers the funding opportunities from both LTSN Bioscience and Real World enable the 'fast tracking,' of developments in relatively short timescales. Through the addition of a work-related context it is hoped that more students will be attracted to the modules and allow them to experience activities which will develop their awareness of work and enhance their employability. ■

**Emma Clamp**

*Project Officer – Real World*

*Academic Development Unit, Careers Service*

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## SWEDISH LIVING PEDAGOGUE

*Dr Anita Hussenius, Chairman of the Institute of Chemistry at the University of Uppsala visited LTSN Bioscience as a member of the Society of Living Pedagogues. Members of the Society, who are funded by the government agency, The Swedish Council for the Renewal of Higher Education, were on a visit to the UK. The Council's role is to stimulate teaching and learning at the national level, and funds the Society partly as an incentive for them to work for renewal on their home campuses and the national level, and partly as a recognition and reward for exceptional teaching achievements. This symposium, entitled, 'Supporting Learning and Teaching on the Institutional, Discipline, and National Levels' was focused on strengthening their collective role in teaching and learning in the UK. The visit provided an opportunity for Dr Hussenius to meet colleagues in the LTSN and see, particularly, how the Centre for Bioscience has built up its own specific programme to support learning and teaching. Dr Hussenius, said "I was delighted to meet staff from LTSN Bioscience. I was interested to know how the network has been able to support the bioscience community which is known for its diversity. The work of the Centre on building and strengthening networks is key to their work and essential for the long-term success of the project." Further details on the Council for the Renewal of Higher Education: [http://hgur.hsv.se/general\\_info/](http://hgur.hsv.se/general_info/)*

## LTSN BIOSCIENCE DISCIPLINE CONSULTANTS

We are delighted to announce the appointment of Dr Lesley-Jane Eales-Reynolds as the new Discipline Consultant for Immunology. Lesley-Jane introduces herself below along with reports from our other Discipline Consultants outlining the work they have all been doing.

The role of a Discipline Consultant is to:

>> assist the Centre in dealing with enquiries about learning and teaching issues

>> advise the Centre on learning and teaching aspects and new developments in their discipline

>> start a register of expertise for their discipline

>> encourage participation of colleagues

**IF YOU ARE INTERESTED IN BECOMING A DISCIPLINE CONSULTANT PLEASE CONTACT THE CENTRE FOR FURTHER DETAILS.**

## IMMUNOLOGY

I have recently been appointed as the LTSN Discipline Consultant for Immunology. I have been teaching immunology for more years than I care to remember, chiefly to students whose principal discipline is something other than immunology. Talking to colleagues, my experiences are not dissimilar to theirs:

- >> many textbooks are too medical or assume too much previous knowledge or experience; and
- >> there is pressure to try to cover the whole subject area in a short space of time leaving students often confused and switched-off to immunology.

Given the interdisciplinary nature of biomedical sciences, it is so important that students have a solid grounding in a number of specialist subject areas and I believe that this can be achieved by altering the way in which we deliver the subject matter. We need to tempt students to take the plunge by convincing them to 'come on in because the water is fine'! I am keen to have a dialogue with colleagues who teach

immunology at any level especially those who have experience in delivering immunology as a minority subject. The LTSN is establishing a database of best practice and I welcome contact from anyone who has found particular books, web sites, electronic media etc which are of particular use. In addition, we want to know about your areas of specialisation (both in teaching and research). As a busy academic who has to fill timetables at both undergraduate and postgraduate levels I know I would find a database of expertise extremely useful! This would provide a resource which will help collaboration in both teaching and research, something I believe to be key to providing our students with a profitable academic experience which will benefit them for the rest of their lives. Please feel free to contact me, especially if you would be happy to provide details for the database, and I will forward a short questionnaire to you. ■

**Dr Lesley-Jane Eales-Reynolds**  
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Sciences, University of Surrey  
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## GENETICS

I am pleased to have been appointed the LTSN Centre for Bioscience Discipline Consultant for Genetics as I believe it is vital that academics acknowledge the importance of their role as facilitators of learning. Higher Education (HE) is facing a time of extreme changes resulting partly from mass expansion but also technological changes. As a geneticist, I am aware that increasing amounts of valuable data are available on the Web or analysed and stored on computers. Sometimes I think it is important to look back at how HE

has changed over the last ten years – we cannot predict the future but we may be able to identify issues that are likely to become significant.

Whilst electronic resources can provide a rich learning environment, they take time and expertise to create. LTSN Bioscience has a vital role to play in encouraging staff to share and reuse both conventional and electronic resources. The Centre has a growing database of reviewed materials making it easier to locate relevant resources.

I am particularly interested in interactive multimedia learning resources and examples sharing,

## PLANT SCIENCE AND BIOCHEMISTRY

I have recently been appointed as LTSN Bioscience Discipline Consultant in the area of Plant Sciences & Biochemistry. My own experience of teaching plant science over the past 15 years is that I have found many of my undergraduates to be 'turned off' by plants in general. Given the importance of plants to society, the elegance of plant biochemistry, physiology and ecology, and the good employment prospects for

and innovative teaching with multimedia. One of the advantages of multimedia is that we can now both show and involve students in a process, molecule, experiment rather than just telling them about it. For example, students often find some of the concepts of molecular genetics difficult to follow as they cannot imagine molecules in three dimensions or carry out the practical laboratory work themselves. In a virtual world they can move 3D-molecules and perform virtual experiments.

The Centre would be particularly pleased to hear from geneticists who have a resource which they would like to share with others. If you use – or know of – a book, piece of software or a web site which you have found useful please let us know. ■

**Dr Vivien Sieber**  
LTSN Centre for Bioscience –  
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Centre for Academic Professional  
Development Learning Centre  
University of North London  
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workers such as plant biologists, this attitude seems a little strange. Perhaps it is my teaching that is at fault. Personally therefore I am keen to try to improve my own teaching by learning from others, and also to share what (few!) good ideas I have. Thus in my capacity as Discipline Consultant I am trying to help the LTSN identify academics who might be interested in forming a network to share good practise and solve problems related to the teaching of plant science across the UK University sector. (By the way I think at this stage we may interpret the term 'plant science' as widely as we want, ranging from plant molecular biology to ecology, and from algae to agriculture)

It is possible that this network remains simply a 'list of names' for

use by the LTSN as 'consultants' when a query is sent to the Centre. I would, however, hope that the network becomes rather more active than that, and should people be interested, the LTSN can certainly help host bulletin boards, discussion lists, or perhaps meetings to discuss work. Basically, the activities of the group will depend on the interests and enthusiasm of the group members themselves. Please, therefore register your interests by contacting me. ■

**Dr Peter Robinson**  
Discipline Consultant in Plant  
Science & Biochemistry  
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## FORENSIC SCIENCE

On the 6 March 2002 the LTSN Co-ordinators for Biosciences, Forensic Science and the Physical Sciences Forensic Science held a joint workshop at the university of Central Lancashire. The workshop attracted an incredibly large and diverse range of interests with almost 60 registrations being received and in excess of 50 delegates attending the conference from all sections of the UK (Northern Ireland, Scotland, Wales and England).

The Swap Shop started with an initial introduction into problems associated with design and development of forensic courses and proceeded to look at specific examples of course work and teaching methods that had been used to support this area including workbook-based and simulation-based exercises. In addition, delegates had the opportunity to

view a number of IT and CD-Rom-based developments. The meeting closed with a discussion session where delegates could identify areas they wished the LTSN Forensic Science Network to focus and develop and, with the number of delegates present and representation now in over 40 universities and colleges, it provides us with a strong and active network to pursue growth in this area.

Forensic Science is an ideal subject for helping meet the LTSN aims of exchanging and sharing good teaching practice given it is underpinned by a range of core skills including oral and written communication as well as analysis. This opens up a wide range of future opportunities for workshops and email discussions. We look forward to a strong and active group within this area. ■

**Prof Dave Phoenix**  
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## ANATOMY

I am the Prosector in the Medical School of the University of Newcastle-upon-Tyne so my main interest is in teaching anatomy to medical and dental students. As these students will treat real people, the anatomy they know must be relevant to their professional career so my approach is to try to teach basic anatomy and then show students how to apply this information. In Newcastle anatomy is taught on the cadaver and computer using cadaveric specimens and a number of web based tutorials to enhance gross anatomy teaching.

During my time as Anatomy Consultant I started a monthly CyberAnatomy newsletter linked to my homepage (<http://anatome.ncl.ac.uk/tutorials/index.html>). This newsletter focused on current issues in anatomy and my views of dissecting room anatomy teaching i.e. how to prepare teaching material and motivate students and staff.

In association with the publisher Wiley-Liss I also run the 'Ask an Anatomist' web site, in these months as Anatomy Consultant for the Bioscience LTSN, I have answered a number of very interesting anatomy queries!

Based on feedback from my site and newsletter I decided to run a course showing other teachers how to dissect cadaveric specimens and create a web-based tutorial. This two-day course ran on 18 and 19 April; further information available from my homepage. ■

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## ECOLOGY

At LTSN, we are keen to gather together resources for the use of Ecology lecturers, and those in cognate areas, in order to facilitate best practice. As Discipline Consultant for Ecology, I would greatly appreciate if you could send me information (via Heather Sears at [h.j.sears@leeds.ac.uk](mailto:h.j.sears@leeds.ac.uk)) on any of the following:

- computer software suitable for tertiary education in all areas of ecology;
- field centres and field course locations, in the UK and overseas, with details of cost, accommodation, strengths, contact details and weaknesses; and
- textbooks used in all areas of tertiary level ecology teaching.

These three areas are important elements of any course. We will then put this information into databases for access.

We will soon be launching our European Ecology Expertise Listing (EEEL). This database will provide listings of experts in a wide range of ecological topics, providing a quick reference volume for student and staff alike, allowing them to contact world experts in their research area. ■

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## ARE YOU OBSERVING THE CODE

QAA expects institutions to meet the precepts in 'Codes of Practice' ([www.qaa.ac.uk](http://www.qaa.ac.uk)) by certain dates, some of which have passed, while others are rapidly approaching. Sections of the code cover:

- >> Postgraduate Research Programmes
- >> Collaborative Provision
- >> Students with Disabilities
- >> External Examining
- >> Academic Appeals and Student Complaints
- >> Assessment of Students
- >> Programme Approval, Monitoring and Review
- >> Career Education, Information and Guidance
- >> Placement Learning
- >> Recruitment and Admissions

Some will be implemented at institutional level but others (e.g. Placement Learning) may require local action by Schools and Units.

## ALL CHANGE

LTSN BIOSCIENCE'S TELEPHONE AND FAX NUMBERS HAVE NOW CHANGED TO:

**0113 343 3001**

# AN ASSESSMENT OF STUDENTS WORKING IN GROUPS

**W**hilst there are many publications describing different models of problem-based learning there is relatively little in the literature concerning the assessment of students working in groups.

Race (2001) suggests three main objectives of team working:

- >> encouraging students to become autonomous learners
- >> developing skills related to life-long learning
- >> encouraging more student feedback

Assessment of students working in teams or groups can be divided into those addressing the product of the group activity and those assessing the group process.

### Assessing the Product of the Group Working

The product of the deliberations of the group can take a variety of forms e.g. oral presentation, poster, written synopsis, practical write-up, computer programme, advice leaflet (for a special group in the population), critique of some software etc.

### Assessment of Students' Relative Contribution

Peer assessment enables the group to decide upon the relative contribution of different members of the group.

### Assessing the Process of Team Work

Since one of the main aims of introducing group work is to encourage students to develop team working

skills it is important to assess these activities. The group itself is in the best position to review progress. David *et al* (1999) refer to five categories which form the basis of assessment:

- >> Responsibility
- >> Information
- >> Communication
- >> Critical sense
- >> Self assessment

The following (adapted from Gibbs 1995) are areas which students can be asked to consider collectively when making a record and assessing their work in the group:

- >> What steps have been taken to organise teamwork?
- >> What records have been made concerning the work of the group?
- >> What roles do different members of the group play?
- >> How has the effectiveness of the group been assessed?
- >> What problems have you encountered in the group and what action was taken to resolve them?
- >> If you were to embark on a second, similar task as a team, how would you do things differently and why?

On-line debate of this topic is currently continuing at [ltsnbio-groupassess@jiscmail.ac.uk](mailto:ltsnbio-groupassess@jiscmail.ac.uk) ■

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## REFERENCES

David, T., Patel, L., Burdette, K., and Rangachari, R. (1999) *Problem Based Learning In Medicine*, Royal Society of Medicine Press, ISBN 1-85315-430-X.

Race, P.A. (2001) Briefing on Self, Peer and Group Assessment. *LTSN Generic Centre Assessment Series No9*, ISBN 1-904190-60-5.

## FAVOURITE FREEBIES

The LTSN Bioscience Knowledgebase holds information about resources used in the Bioscience community. We are striving to keep this up-to-date and are always very grateful for your recommendations – so grateful that you may even win a £10 voucher for 2 minutes work!

If you have a favourite learning and teaching resource (either free or commercial) then let us pass on your tip to others. See the Knowledgebase on-line form for details.



# A REPLY TO AN AUDIT OF DISABILITY PROVISION

**The Special Educational Needs and Disabilities (SEND) Act 2001 requires us to provide an environment in which disabled students have access to a learning environment that will not disadvantage them in their studies. In other words, we have to make reasonable adjustments to the learning environment in order for parity to be achieved with non-disabled students.**

Recently, the field and team leaders in the School of Sciences took part in an audit of disability provision. It became clear that in the current provision, the academic needs of the disabled students are addressed on a case-by-case basis, using where possible the Universities guidelines. These, however, often relate to the mechanics of assessment, which in some cases do not help the disabled student to achieve their potential. This case-by-case approach could form the basis of developing Personal Learning Plans (PLPs) for disabled students. This approach would however, involve more input from the tutors delivering the learning experience, and would have to relate directly to the disabled student.

Issues relating to 'current provision and expected reasonable adjustment' as highlighted in the SEND Act audit fall into three broad categories:

» **Support.** This relates to the physical structure of the building and the lecturing/laboratory space

» **Awareness.** This relates to the training of staff and the communication of disabled student needs

» **Learning, Teaching and Assessment (LTA).** This relates to the graduate experience of the disabled student in order to fulfil their individual award outcomes

For some disabilities, such as wheelchair-users, there is an obvious reasonable adjustment that can be made in terms of getting the access and signage correct. Even this obvious step requires resources, which, based on current levels of national university funding, is likely to prove difficult to implement.

Other disabilities require a deeper look at LTA provision. One such disability is dyslexia. This is a term for a variety of reading, speech, comprehension and scheduling disabilities. This is where PLPs can benefit the student, and although it may feel that we are providing 'special treatment' for the individual concerned, we are, in fact, only providing a level playing field, so that they may achieve parity with the majority of the student body.

All staff need to be aware of aspects of disability and how it relates to their teaching, and what they can reasonably expect from the students. This statement often invokes wariness, and apprehension, especially if the staff member has little, or no, experience with disabled people. However, via the student support service there is a good network of assistance for the disabled student within most universities. This is certainly the

case at Staffordshire University. This also means that there is a wealth of experience within the University sector in enabling disabled students to make the most of their educational (and social!) experience. This needs to be communicated to staff in some way, so that all of us have our awareness raised.

As you can see there are many issues that we will have to face, but I know from looking at the SEND Act audit replies that we undertake a lot of good practice already. From an academic point of view the most challenging consequence of the SEND Act involves learning outcomes and the use of PLPs, of which I am sure we will hear more about in the not to distant future.

## **What do we need to be doing now ?**

The priority here is to ensure that all staff employed in an academic environment are thinking about the inclusion of disability awareness into the design of their teaching, both from a delivery point of view, and from the assessment needed to achieve the learning outcomes. For the support teams it also comes down to increasing your personal awareness of disability issues.

## **Where to go ?**

Here are some web-based resources that might be useful:

» **Disability Rights Commission**  
<http://www.drc-gb.org>

» **RNIB 'See it Right' pack**  
<http://www.rnib.org.uk/seeitright/welcome.htm>

» **Learning Support for Disabled Students Undertaking Fieldwork: Guides**  
<http://www.chelt.ac.uk/el/philg/gdn/disabil/index.htm>

» **WebAIM – Web Accessibility in Mind (Home)**  
<http://www.webaim.org/> ■

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## ACCESSIBLE CURRICULA: GOOD PRACTICE FOR ALL

*This book (available on-line) is intended as a starter guide for making all kinds of learning materials more accessible in the light of the impending introduction of the Disability Discrimination Act in September. Published jointly between TechDis, LTSN Generic Centre and UWIC. Download from <http://www.techdis.ac.uk/pdf/curricula.pdf>*

# PLANTS AND INDUSTRY – A FINAL YEAR MODULE TO EXPLORE APPLICATIONS OF PLANT RESEARCH

*Workplace awareness is frequently mooted as a valuable element of graduate training but is sometimes a difficult target to achieve. Here we discuss an approach which has proved a useful addition to our teaching.*

Undergraduate courses are sometimes accused of being overly-academic. At Plymouth we have attempted to balance this in several ways – through industrial comment on courses, optional placements, work-based-learning modules, commercially-linked projects, cases studies and so on. For discussion of these, see Burns *et al* (1999). In addition since 1992 a structured package has formally promoted industrial awareness – a final year module intended to show BSc Plant Sciences students applications of plant-based work outside academia; to provide support, and examples, for their other studies and develop career contacts. The module comprises three elements: short residential course, formal lectures and student-led case studies.

The residential course is based in the South East, giving the students an opportunity to see work in a different part of the country and providing access to a range of site types. The group visits 4–5 companies; information provided depends on site, but typically covers company profile/structure, product/market information, and a

discussion of current research and development directions, targets and approaches and results as appropriate. At some sites confidentiality guarantees have been required. Students produce team reports on the sites/events visited; these provide the first assessment for the module and are circulated to all students. Visits have included IACR Rothamsted, PBI, Advanced Technologies Cambridge, NIAB Trumpington, DowAgroSciences, AgrEvo and Syngenta. For further discussion see Burns *et al* (1999).

Formal lectures complement these visits. Up to 12 lectures form essentially 'box essays', encompassing subjects such as pressures in the agrochemicals industry, developments in fruit production, impacts of biotechnology, viticulture and wine production. These form the basis for an examination and students are expected to interpolate observations from the visits and peripheral reading.

Case studies provide students with an opportunity to develop specific interests and

perhaps investigate potential careers. In small tutor groups, students individually explore a range of linked topics. These are flexible, allowing each to explore a few areas, and are complementary. Groups meet regularly in student-led seminars to compare notes and discuss papers and reports. Finally reports are submitted on their final choice; these form the second coursework assessment for the module and are again circulated. Topics have included aspects of horticulture, aquaculture, forestry, and medicinal plants.

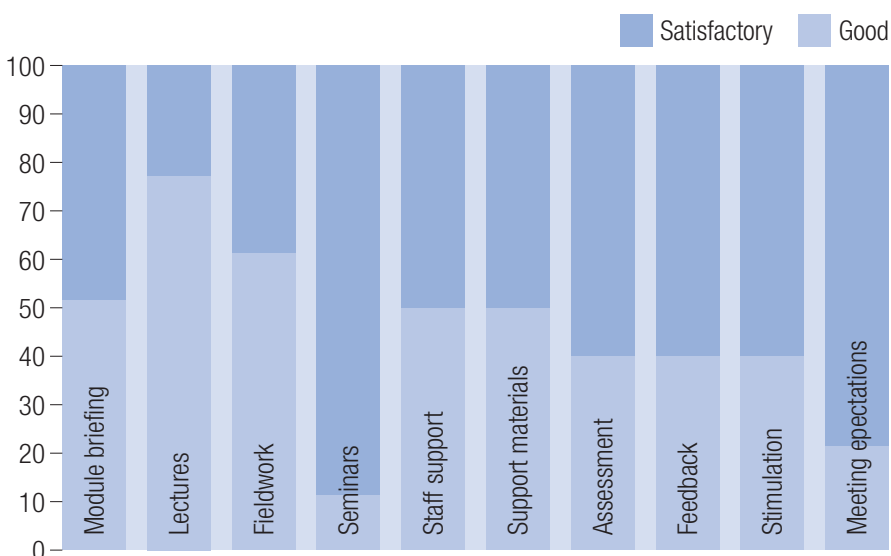
Student performance has been comparable with other modules and has received positive comment from external examiners. Alongside promoting student awareness, the module has also generated staff contacts, undergraduate project opportunities, student prizes and placement possibilities. We have also noticed a sharp increase in student career awareness and subsequent employment. Promoting industrial awareness within undergraduate courses has been indicated as a desired target (CVCP, DFEE, HEQC 1988). Whilst there are many ways of achieving this, our module has proved a useful, flexible vehicle – a good way to enhance the student-led education recommended by Hawkins and Winter (1995). Student response has been positive, especially to lectures and the residential course (Table 1). The following is a typical comment:

*"Overall I found the field course to be a very valuable experience. It gave me a good insight into plant industries and I learned many things I did not appreciate before. For example, I did not realise there were so many stages in the development of a single agrochemical and I wasn't aware of the cost and complexity of patents. The course has given me ideas about the career I would like to follow."*

## REFERENCES

- Burns, M, Lane, S. D., Phillips, J. (1999) A guide to developing employer links in Higher Education. SEED Publications University of Plymouth.
- CVCP, DFEE, HEQC (1988) Skills development in Higher Education.
- Hawkins, P., Winter, J. (1995) Skills for graduates in the 21st Century. Cambridge Association of Graduate Recruiters.

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**Table 1.** Formal student response (There were no returns indicating "unsatisfactory" as a response)

## SPAT – STUDENT PROGRESSION AND TRANSFER FDTL3 48/99

**S** PAT is an FDTL3 project on student transfer and progression being undertaken by the University of Plymouth, with partner colleges Duchy and Bicton, and the University of Ulster, with partner college Greenmount. It has collected information on issues concerning students who transfer into the second and final years of degree courses from other courses. As a result, materials are being produced for dissemination to both staff and students involved in such transfers. Typically, many of these students transfer from HND courses at FHE\* colleges, and come from a variety of non-traditional academic backgrounds. In the future, Foundation degree students wishing to top-up will also take this route (see [www.spat.ac.uk](http://www.spat.ac.uk)).

The project has used semi-structured interviews and focus groups to talk to staff and students involved in transfer. As more top-up students enter university, there needs to be more awareness of their particular needs. Students considering transfer want information on course choices, including the match between their skills

and those required for a degree. On arrival at university, it is important for top-up students to access information about their course. Social integration is also important for successful transition. The SPAT project has identified key stages in the transfer process: provision of information to students considering transfer to a top-up degree; information for students who have been accepted but not yet started; induction of top-up students in the new institution; and provision of key skills appraisals and information to assist students to progress to graduate level skills. SPAT is now producing materials (paper-based and on-line, with information leaflets, FAQs, checklists and quizzes) for students at various stages of the transition process and for staff in FHE and HE. These are designed to promote awareness of transition issues and to give guidance on ways that students can take more responsibility for their own transfer to HE. A strength of the materials will be their adaptability to institution specific needs and most of them will be provided as templates that can be customised. The pack relating to Induction therefore contains a leaflet for staff involved in the induction of top-up students, suggesting topics that should be

covered and emphasising the need for both the provision of information about the course and assistance with social integration into the degree cohort. For students there is a checklist, to encourage them to seek out useful information, such as procedures for borrowing books from the library and where to collect a student card. There is also a separate academic rationale, detailing SPAT research findings and setting them in the context of relevant literature.

Non-traditional entry routes are likely to become more common as government initiatives to widen participation in HE increase. Partnerships with FHE colleges running sub-degree level courses will help in encouraging students to top-up their qualifications to degree level. The progression and retention of these students will be enhanced if their path into the honours degree is made as seamless as possible. The SPAT project is looking for partners with whom to trial our materials and test their transferability; if you would like more information please contact Chris Smart. ■

*\*FHE colleges are Further Education Colleges teaching HE courses.*

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## SPECIAL INTEREST GROUP – PLAGIARISM

**A**s announced in the LTSN Bulletin No 4, published in the autumn of 2001, the Centre has set up a Special Interest Group (SIG) looking into plagiarism. The Co-ordinator is Robert Slater from the University of Hertfordshire.

The SIG is interested in addressing the growing concern that we all have in both plagiarism and collusion. The SIG's aims are to:

- » Identify sources of opportunity
- » Consider approaches already taken to minimise plagiarism
- » Provide advice and examples of best practice
- » Look to the future, bearing in mind

alternatives to traditional teaching such as distance learning and the impact of managed learning environments.

So far, the SIG has identified individuals from bioscience departments who are willing to contribute ideas and act as contact points for their institution. The names have originated from attendance at LTSN Bioscience events. If you did not get chance to attend one of LTSN's meetings then Robert will be delighted to hear from you. If you join the SIG you will be expected to describe some of your own experiences and strategies. In other words you have to be prepared to speak and not just listen. It is a bit like the old adage: 'I'll show you mine if you show me yours!'

Robert spoke at the November meeting in

Leeds and you can see a copy of the slides used in the presentation on the LTSN web site.

Now established, the SIG is conducting a survey into the potential sources of opportunity for plagiarism within biosciences, and the strategies used by departments to keep students from temptation. Shortly, Robert will be contacting SIG members with a series of questions to get the ball moving. There will shortly be more information on this on our web site. In the meantime Terry McAndrew (Robert's contact at LTSN and co-presenter at the Leeds meeting) is looking into internet methods of detecting plagiarism. There will be more about this in future *Bulletins*. ■

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# INTERACTIVE TEACHING IN BIOSCIENCE — NOT ANOTHER NEW METHOD?

**No, interactive teaching is not new; Socrates reputedly started it about 2,500 years ago! It is what teachers already do, asking questions in classes, marking essays, or having group discussions.**

The problem with interactive teaching in higher education lies in numbers; what you can do effectively in a class of five or six students, is difficult in a class of thirty and impossible in a lecture to one hundred and thirty. Yet, for many of us, large classes are the reality and the traditional device for teaching them is the formal lecture. This assumes that facts, ideas and knowledge can be packaged into rules and procedures, described in words and 'told' to students. Students, unfortunately, often miss the point of what is said and the key words and concepts do not have the same connections for students as they do for their teachers. Hence the sort of quotations we all hear from time to time: "...they were not learning what I wanted them to learn..." "students asked me to spend time copying and could listen to the lecture, then they complained I was lecturing straight from my lecture notes!"



So, what can be done in the class of five or six students that cannot be done with fifty or sixty?

- >> firstly, interact with each student
- >> secondly, get every student involved
- >> thirdly, understand what each student knows or doesn't know
- >> fourthly, remedy the problems in understanding as they occur and leave no one behind

Modern developments in computer technology provide a partial solution to the paradox of individual attention in a large class in limited time. We use the PRS – personal response system – (<http://celt.ust.hk/ideas/prs/>) but several similar systems exist.

In outline, the lecturer presents a question, problem or information to the students. This is often in the form of multiple-choice questions, maybe on an overhead transparency, by typing into the PRS software, orally, or even writing on a blackboard! The students send their answers, when the timer is started, by aiming their transmitters at the nearest receiver, and pressing one of ten buttons. They can also give a high or low confidence to their answers. The transmitter is similar in size and layout to a TV remote control and works on the same principle. The receiver is connected into a computer, usually the laptop being used for the lecture

presentation, and the PRS software records and analyses the data collected from the class. The students can monitor their replies because a box on the screen changes colour and records the number of their handset. The system can be used anonymously, so that individual answers are not displayed or recorded, or

the individual answers can be recorded so that the lecturer can measure the progress of individual students, even hold class tests.

The results can be dramatic. Students do more thinking in class, understand concepts better, prepare for lectures and follow up afterwards; they even enjoy it! Several studies have demonstrated the quantitative gains clearly. ■

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## DNA DISCOVERY

April 2003 sees the 50th anniversary of the publication of the Crick/Watson paper on the double helix structure of DNA. To celebrate this ground-breaking event, the British Council and Foreign Office are planning a programme of activities overseas, which may include lectures, conferences, and exhibitions relating to the many facets of excellence in UK bio and life sciences. If your institution would like to participate (details to be worked out), please phone Gavin Alexander at the British Council in Manchester on 0161 957 7018 or email him at [gavin.alexander@britishcouncil.org](mailto:gavin.alexander@britishcouncil.org)