

LTSN BIOSCIENCE

BULLETIN

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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

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EDITORIAL

- 2 The basic 'service' provided by LTSN is that of supporting a Network. Our aim is to network individuals and departments that have innovative ideas for learning and teaching, and promote the sharing of good practice. The support from the Bioscience Centre comes in many forms but depends heavily on a network of *Departmental Contacts* who are on the ground, alerting us to what is going on in departments. Of course, we also expect to provide advice from the Centre in response to Help Desk calls or email enquiries, but this may often be a case of knowing a man (or a woman) who can, rather than being able to do it ourselves. Here we depend on our network of Discipline Consultants and our various contacts typically made through our 'events' around the country. So above all we need your participation and your contributions. In various ways we can often offer financial support for contributions and small projects.
- 6 In addition, our web site and associated Knowledgebase will provide publicity and also offer resources. Here again, populating the Knowledgebase as a teaching resource largely depends on what our community is prepared to provide. In this issue of the *Bulletin* our C&IT Manager, Terry McAndrew, writes about the Knowledgebase, how to use it, and how to contribute to it. We think that items in the Knowledgebase (resources themselves and reviews of teaching resources, books, software, etc) have maximal value to our constituency if they have actually been used or at least commented on by our colleagues in departments.

Two new projects have begun in the last few months which will add resources to the Knowledgebase. One is to examine the feasibility of an Imagebank, and in this issue of the *Bulletin* Aurora Levesley explains this project and describes where she has got to so far. It is worth mentioning at this point that the notion of a bank of biological images originated from our questionnaire survey, carried out when the Bioscience Centre was established, but continued with new members and also with events participants. Many people said that they would find such an imagebank useful in their teaching – if only to stop them breaking the spirit of the Copyright Act (you know what I mean)!

The other project that commenced quite recently is to organise a Compendium of Practical Protocols (laboratory and fieldwork) that people could download and use (or perhaps modify and use). Jackie Wilson, who recently joined us from the University of Northumbria, is in charge of this project (see *article on p12*). A number of organisations have tried to do this in the past with greater or lesser success, starting many years ago with the offer to exchange practical course books in Biochemistry (printed rather than electronic: now that it can be done electronically, so much the better). Personally, I am often asked if the School of Biochemistry at the University of Leeds has a practical on such-and-such a topic, and if so can I supply the protocol – this has happened many times. And it is not just a one-way process. The real value is of not having to re-invent the wheel, of being able to take a practical that is tried-and-tested and incorporating it into one's

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LTSN BIOSCIENCE IMAGEBANK: A SHARED IMAGE RESOURCE

A well-chosen image can have a significant impact in emphasising a point, describing an event or simply maintaining interest. A picture really can paint a thousand words. However, even though images surround us every day, most academics have difficulty in obtaining copyright-free, quality images, for use in teaching and learning. This is where the LTSN Bioscience ImageBank feasibility study hopes to make an impact.

Many academics have taken or have created impressive and informative bioscience images and are happy to allow others in the bioscience community to use these for educational purposes. A shared image resource, particularly if extensive and electronic, could be of great value to the bioscience community.

The LTSN Bioscience ImageBank feasibility study, which is co-funded by JISC (Joint Information Systems Committee) / DNER (Distributed National Electronic Network) and LTSN, aims to identify the real needs of the community with respect to image use and availability. The project aims to run a pilot ImageBank. It is expected that the information gathered in the feasibility study will lead to the development of a full ImageBank, which will consist of freely available images contributed by academics, publishers and organisations, rights cleared for educational purposes, and accessible through the LTSN Bioscience web site.

There are already many image collections available on the web. Reviewed high quality collections, especially those with rights cleared for educational purposes, will be linked to the LTSN Bioscience ImageBank web site. We are also conducting a survey of the bioscience community to assess individuals' needs with respect to digital image use and availability, and as a result have identified high priority image sets, useful features of an ImageBank and copyright issues, which are of concern to many of you. We are addressing all these aspects and many more. The Bioscience

survey is ongoing and we would like to encourage you to complete our on-line questionnaire (available from the LTSN Bioscience web site: <http://bio.ltsn.ac.uk/>). Your contribution will help us tailor the LTSN Bioscience ImageBank to your needs.

We have already been greatly encouraged by the generous response of the bioscience community with over 500 images being earmarked for submission to ImageBank. Contributors are requested to supply a detailed description of each image. We can digitise images from slides or prints, if required, and supply the contributor with them on a CD. Copyright will reside with the contributing individual or academic institution and we will seek to clear copyright for educational purposes centrally with the relevant institution.

To find out more about the LTSN Bioscience ImageBank, please contact us at the address below.

Another interesting image project is ARKive. This is an initiative of the Wildscreen Trust that aims to develop a globally accessible digital library of natural history films, photographs and sound recordings of endangered species (see box for details).

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Top, Darkfield light micrograph of a water flea, *Daphnia*, from Malham Tarn, Yorkshire.

Bottom, The fly agaric *Amanita muscaria*. This species is poisonous, but rarely deadly and contains a potent alkaloid toxin muscarine, as well as a number of hallucinogens.

Photos courtesy of Dr G Beakes
University of Newcastle

ARKIVE WANTS TO HEAR FROM YOU!

Do you want to use film clips and photographs of endangered species in your teaching? Do you own films or photographs of endangered species? Then ARKive wants to hear from you!

ARKive will be the world's first centralised digital library of natural history films, videos, photographs and sound recordings. A not-for-profit scientific and educational initiative of the Wildscreen Trust, ARKive will be accessible to all via the Internet (web site launching Summer 2002).

For further information, contact: harriet.nimmo@wildscreen.org.uk
Help us develop the site for your teaching needs, see:
www.arkive.org.uk/questionnaires/academic/



The JISC Technologies Centre performs the technology transfer function for JISC in relation to teaching and learning. We support a co-ordinated approach to the use of new or near-market technologies in learning and teaching across UK Further and Higher Education by working closely with a range of appropriate bodies such as LTSN and the Regional Support Centres for FE. This is achieved by identifying the key issues for the educational community relating to the interaction of technology and teaching, and collating and disseminating information on these.

In particular, the JISC Technologies Centre:

- ▶ provides technical expertise to the community in the support of learning and teaching
- ▶ investigates and assesses the effectiveness of emerging technologies for learning and teaching
- ▶ co-ordinates intelligence across the FE/HE sectors and the constituent parts of the UK regarding learning technologies
- ▶ provides a conduit between the JISC and the teaching community; and
- ▶ identifies gaps and promotes the community's learning and teaching technology needs to industry

The primary form of dissemination is the JISC Technologies Centre web site which can be found at: <http://www.technologiescentre.ac.uk>.

The site contains useful information and

resources for the community including papers, articles and discussions on the current themes; news; frequently asked questions; a searchable glossary of technical terms and a searchable database of educational technologists in the community. The educational technologists database is designed to help people locate others working in the same area (either subject or geographical).

Technologies Centre themes

This year the efforts of the Centre will be concentrated on the following themes, and we are able to fund reports on innovative work in this area. We also have limited funds available for the commissioning of case studies aimed at highlighting and disseminating best practice:

Virtual laboratories

We will be covering a wide range of practical activities in virtual media, such as field trips, surgery, manufacturing, distributed design teams, performance art, as well as scientific experiments. We will report on best practice and experiences in implementing virtual laboratories.

Remote laboratories

We will look at learning opportunities in which equipment can be controlled remotely for learning and teaching purposes. This could include remote operation of space probes and off-world experiments, underwater geology, underground engineering work, or remote network diagnostics.

Broadband and wireless technologies

We will look at take up rates, technology, convergence (cable, satellite, xDSL, Bluetooth) and consider the implications for on-line learning, lifelong learning and widening participation.

Virtual learning environments

We will look at current developments in this area. We will publish papers on best practice and delivery of effective on-line learning and the support required.

Glossary entries needed

In order to create a glossary database with the broadest coverage for the Educational Technology community, we are calling for entries from those working in the field. If you would like to write an entry, on any appropriate topic within educational technology, we will reward you with a £10 book token for each entry used. We are looking for a short précis of the topic, followed by an approximately 400–600-word complete definition.

The Technologies Centre is a JISC funded initiative. The Joint Information Systems Committee (JISC) promotes the innovative application and use of information systems and information technology in higher and further education across the UK.

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own course or module. A bonus is if Demonstrators' Notes and the recipes for obtaining/making up all the reagents and equipment are also available. (We hope to move in this direction if people are willing to share, but we would not put them on the web site/Knowledgebase where students could download them.)

We hope that you enjoy reading this issue of the *Bulletin*, and we encourage you to leave your copy around in your common room or departmental library when you have done with it, so that others may stumble upon it and find out about what LTSN Bioscience has to offer – or perhaps what they can offer LTSN Bioscience.

Ed Wood, Director, Learning and Teaching Support Network Centre for Bioscience

LESSONS LEARNED FROM A BIOSCIENCE ETHICS MODULE

While ethical considerations can and should flavour many aspects of bioscience degree programmes, we have found there has been value in also having a dedicated module.

An 'Issues in Biomedical Science' module has been offered as a free choice module to second year bioscience undergraduates for some three years now. The module is especially concerned with health care controversies and dilemmas. Participating staff are encouraged to avoid lecturing and adopt a discussonal classroom style. News clips from papers, TV and the Web have proved useful discussion starters, although the pressure to collect them 'just in case they are useful', becomes rather unrelenting. Many students start scrapbooks of their own cuttings.

A whole range of topics have been variously used including, euthanasia, abortion, human cloning, the morning-after pill, IVF procedures, surrogacy, genetic screening, designer babies, separating Jodie and Mary, stem cell research, informed consent, xenotransplantation, animal experimentation and postcode health care. A clear ethos of expecting student contribution to class discussion has been vital. When students say, "I enjoy these classes because you are expected to talk", the penny might be dropping.

Our students have particularly appreciated the contribution of a medical ethicist to the module. The focus of this contribution has been to convey some general understanding of moral frameworks. This is probably outside the remit of your average bioscience lecturer.

Making our science undergraduates into moral philosophers is clearly unattainable, but developing the skills to tease out the issues of a dilemma, listen respectfully to others and present a persuasive argument, are realistically more achievable. One of the strengths of a dedicated module is that it provides a context to practice and assess these and other associated HE Skills. Assessments found to be valuable in this regard have been the presentation of a survey of opinion on a controversy; writing an article for the *New Scientist* on an issue and, in particular, participating in a debate and then reflecting on their debating skills. Two minutes each has proved to be plenty long enough for most students' contributions to the debate, but assessing this contribution with large class sizes requires careful planning.

The students' reflection on how their debating skills have developed over the module's duration is a challenging exercise and their statements have been very informative. Some representative, quotable quotes are: "A skill I feel is really important in debating is listening; the more we are all exposed to exercises such as the 'Grand Debate' the more confident we'll all become; this module has helped to bring out qualities I never knew I possessed; personally I've enjoyed every minute of this module; to devise a solution is not all that easy as all opinions have to be taken into account; over the period of the module my perceptions to back my strong beliefs have come under scrutiny; overall I wish we did a lot more of these types of modules as sharing and discussing ideas thrown around the class are the best ways to learn; the debate taught me the value of team work and respect; I learnt a lot during my two minutes of fame; the debating skills have affected me personally in my social life and I am more confident about expressing my opinions; I had to represent an issue that I believed personally was wrong and that has strengthened my capability to see other people's views; I would recommend that everyone should participate in a debate at some point in their lives."

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SPECIAL INTEREST GROUP IN BIOETHICS

Are you interested in coordinating a Special Interest Group in Bioethics? LTSN Bioscience will be issuing a new call for SIG co-ordinators in the spring. We are keen to establish a SIG in Bioethics. If you are interested, please contact us by email or phone (Itsnbioscience@bmb.leeds.ac.uk or 0113 233 3001).

TEACHING AND SUPERVISION OF POSTGRADUATES

We are trying to gauge the level of your interest in the teaching and supervision of postgraduates and whether you would like to see us broker and provide more materials on this subject. We would be interested to hear your views on this issue, email us at Itsnbioscience@bmb.leeds.ac.uk

LEARNING ABOUT DATA ANALYSIS IN BIOCHEMISTRY

FIVE

This is the final article in a series that presents recent research on learning and teaching in the biosciences at the University of Leeds. The article considers teaching about data handling on an introductory biochemistry module, and raises issues about the implementation of change in teaching.

It is pretty easy to identify who is responsible for the teaching in a lecture course, as there is just one person who delivers the lecture. By contrast, university teaching laboratories usually involve a team of demonstrators, and the person who designed the lab may not be present. This makes the implementation of change particularly challenging, as the aims and rationale for changes has to be communicated quickly and efficiently to a large group of people.

A group of colleagues in the School of Education were working with colleagues in biochemistry to improve the way in which students were introduced to the professional practice of Biochemistry. We decided to focus upon a first-year lab course that included data analysis as a focus. Data analysis was taught through 'dry practicals' – activities where students worked through the analysis of some secondary data. We looked at one activity in some detail, which involved students in calculating values for V_m and K_m from kinetic data for an enzyme and its substrate. Most students worked through the activity without difficulty, and at this level the teaching was a success. However, detailed questioning afterwards suggested that a significant number still had fundamental misunderstandings about the nature of data, not appreciating the factors that contribute to uncertainty in estimates of values. For example, several students indicated that the initial rate of reaction should correspond to an actual measurement (rather than a mean value calculated from repeat measurements), and 25 per cent suggested that the only way to know the real values for constants such as V_m and K_m is to look in a data book!

Misunderstandings such as these should not be dismissed as saying something about the stupidity of students in the sample. We have evidence that these students were typical of others studying science degrees across Europe. The critical issue is how to tackle such difficulties in teaching – the 'dry practical' did not really raise issues about where data came from and why they were treated in the way that they were. For this activity, we suggested building some simple questions into the laboratory manual to get students to confront their misunderstandings. In the case of handling repeat measurements, we suggested using a cartoon where four different approaches to handling the data were presented. Demonstrators were provided with notes about likely student difficulties, and simple ways of explaining the correct approach.

The 'front-line' teachers in laboratory courses (the demonstrators) typically know rather little about the aims of the lab that they are teaching, and they are unlikely to know much about the difficulties that students tend to have in a given activity. By building

'educational' questions into laboratory manuals, demonstrators might well become more effective at engaging with students' thinking and bringing misunderstandings to the surface. If demonstrators can be provided with concrete guidance on how to address students' difficulties – all the better.

The technical report on this case study, including the modified teaching materials, can be found at: <http://edu.leeds.ac.uk/research/groups/cssme/ScienceEd.html> under 'Publications'.

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CASE STUDY

LTSN GENERIC CENTRE ASSESSMENT SERIES – REQUEST YOUR PACK NOW!

The LTSN Generic Centre has launched a series of Assessment Guides and Briefings. The four Assessment Guides are intended for colleagues with particular roles (Lecturers, Heads of Departments, Senior Managers) and students. The eight Assessment briefings are intended for lecturers and other staff involved in supporting learning. The titles are listed on:

<http://bio.ltsn.ac.uk/NV/publicationsgeneric.htm>

The Assessment series will be made available electronically but if you would like to receive a boxed set free of charge (cover price £75) please send an email with your address details to Itsnbioscience@bmb.leeds.ac.uk with the subject 'Assessment series'. Please note that departmental contacts will automatically receive a copy.

PROBLEM-BASED LEARNING IN SCIENCE EDUCATION

Problem-based learning (PBL) has been identified as a 'priority' across many subject areas in Phase 4 of FDTL. There is a lack of evidence about its true effectiveness in medical education – where it has been most widely used. Depending on your objectives, PBL may provide a means of re-vitalising your teaching and engaging students more effectively, or prove an expensive way of achieving a minimal positive effect.

In the 30 years or so since the introduction of PBL in medical education, the approach has been disseminated widely. Despite this, numerous studies have failed to demonstrate any significant effect on medical educational outcomes using PBL curricula, rather than conventional approaches, in terms of knowledge acquisition or clinical performance^{1,2}. Despite these caveats, it appears that PBL can motivate students – in our case to study an area of biological sciences (Biochemistry) outside their main interests.

We have found it helpful to conceptualise learning in biochemistry as academic, technical and tacit, with laboratory work used to illustrate the lecture course and develop technical and tacit laboratory skills.

The need to engage second-year Environmental Biology students with little interest in molecular aspects of biology prompted our introduction of PBL in laboratory work. From Autumn of 1995, students progressing from the first-year were offered a choice between two modules of biochemistry: *Molecules, Cells and the Body* or *Environmental Biology – Molecular Aspects*. The latter module has a framework of lectures to establish the knowledge base and practical sessions involving group work. In the practical sessions, students are introduced to experimental design and, apart from the first introductory session, student-designed laboratory work investigates environmental biology 'problems' that link back to the material covered in the lecture framework.

The approach proves very popular with

students. Group working has not used the 'team approach' common in medical PBL and in American undergraduate courses. Arrangements resemble research groups with individual group members concentrating on their own aspect of the 'problem'. The rigid group rules with penalties for 'violations' often used in PBL are avoided and, as a result, groups tend to be tolerant of 'extenuating circumstances' and work very well, with little friction or failure to participate equitably. Tutorial work is carried out in groups of five or six facilitated by three tutors with higher degrees in biochemistry. Greater emphasis is now placed on Internet sources but with a requirement that students balance their reference to these with references to the scientific literature. Student groups participate in a mock scientific conference at which they present posters. Peer evaluations of the posters are used formatively, rather than summatively, to address student reservations. A move to a year-long module has given more time to develop the practical work approach and provides opportunities for students to refine experimental design on the basis of experience.

The consequence has been much-improved coursework and an increase in student interest in undertaking Honours year environmental biology projects using biochemical techniques. Although setting up and developing the PBL module has been demanding, the student responses have been gratifying. It is difficult to determine if these students are better informed in respect of biochemistry than previously, given the difficulty of matching groups of students. It is, however, interesting that students on a more conventional module also rate their educational experience more highly than before 1995.

For us, PBL has been a successful approach to dealing with students poorly motivated to study biochemistry. We are still, however, left with reservations and unanswered questions, not least of which is: in whose interest is the promotion of PBL via FDTL 4 – students, academic discipline, employers or accountants? We

are interested in your views on the use of PBL in learning with no immediate vocational application, in student views of team and group learning and assessment, and in facilitator views of the need for disciplinary scholarship.

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1. Colliver, J. A. (2000) Effectiveness of problem-based learning curricula: Research and theory. *Academic Medicine*, Vol. 75 (3), pp 259–266.

2. Albanese, M. (2000), Problem-based learning: why curricula are likely to show little effect on knowledge and clinical skills. *Medical Education*, Vol. 34 (9), pp 729–738.

SUBJECT SPECIALIST IN AGRI- CULTURE, FORESTRY AND AGRI- CULTURAL SCIENCES

We are delighted to announce the appointment of Dr Julian Park as a new LTSN Bioscience Subject Specialist. Julian will be supporting the development of the Centre's work in the areas of Agriculture, Forestry and Agricultural Sciences. If you have any queries or wish to contribute any resources regarding learning and teaching please contact Julian via the Centre ltsnbioscience@bmb.leeds.ac.uk

DESIGNING AN ON-LINE LEARNING PACKAGE

On-line learning is another mode of open learning and as such allows students to learn at a time, place and pace that suits their circumstances. However, much so-called on-line learning support material is no more than text based material transferred to a computer – the power of the medium is not fully exploited.

I have always tried to involve students in interactive learning or, at the very least, active learning. The internet and intranets have now made it possible to create these learning environments in which the learner is not confined to text: there is now immediate access to a wide range of easily accessible additional resources. Following the introduction of a new undergraduate programme (BSc Biomedical Science), I decided to trial the on-line delivery of a level one module 'Developmental Biology' using the web authoring programme *Dreamweaver* from Macromedia.

I was determined to exploit the full potential of the medium being limited only by my own creativity and ability to use the software! Important strategic decisions were made from the outset and these determined the overall structure of the package. There would have to be (a)

supporting seminars, (b) a number of laboratory based practicals and (c) supplementary text based materials.

The seminar support was essential to monitor students' learning. I knew that for many of them this would be a new learning experience and I would have to ensure that they were able to cope. The inclusion of two practical laboratory-based sessions were essential in order to address all the learning outcomes for the module. My decision to include a supplementary text (Wolpert, L. [1999] *Principles of Development*, OUP) ensured that the learner used other support and varied resources to enhance learning. Therefore, the on-line materials provided the basis of the package – the 'study guide' – specifying the learning objectives, the assignments and assessment procedures, the programme for the semester and the basic content for each week including appropriate and integrated reference to the set text. Problem-solving activities were included with self-assessment questions, with answers, at specific points to provided feedback for the learner.

The obvious advantages of writing on-line learning materials compared with orthodox texts soon became apparent. Amendments and editing, together with

the use of colour, graphics and white space, presented no problems compared with paper copy – all were cost free and easily included. However, the key lay in the use of hyperlinks. These facilitated the integration of popup explanatory notes, instant access to a glossary of terms, links to distant sites for more information as well as a discussion forum and email.

As the writing progressed and the number of pages grew, there were eventually forty nine files; the problem of navigation soon became apparent. It was easy to get lost. Although page overlay is possible, virtual pages cannot be physically manipulated and the user can only normally view one page at a time. Using a book for reference, it is possible to 'flick' back and forth or hold several pages open at the same time. This is not possible with virtual pages. My partial solution to this problem of navigation was to give each page a colour coded menu with hyperlinks – one link always taking the user back to the programme.

Reviewing the package for this year, I am aware that the learning was perhaps too structured and linear. I would like it to be more open and self-directed using the full potential of the medium, giving more autonomy to the learner – more like a web than a ladder. That is for the future.

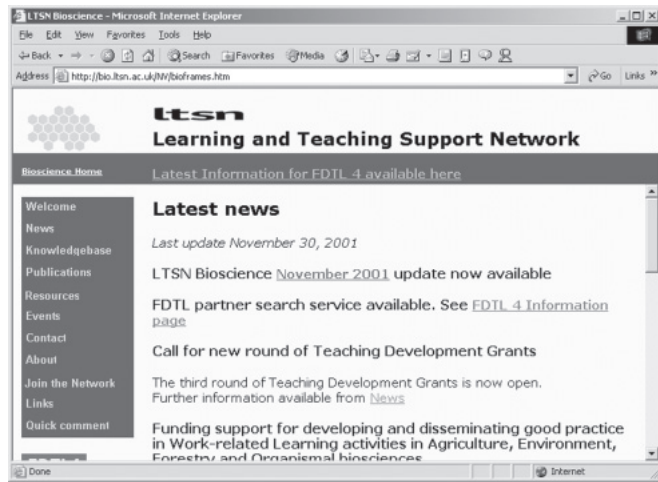
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VIRTUAL LEARNING WORKSHOP – SOCIETY FOR EXPERIMENTAL BIOLOGY ANNUAL EDUCATION EVENT 10 April 2002, Swansea

LTSN Bioscience, the Society for Experimental Biology (SEB) and the Journal of Biological Education are organising a day of presentations, workshops and posters based around the theme of virtual learning. This innovative teaching session is being held during the SEB's annual main meeting, and both SEB members and non-members are welcome.

For further details and registration information, visit: <http://bio.ltsn.ac.uk/>

THE LTSN BIOSCIENCE KNOWLEDGEBASE



If you have visited our web site you would have had an opportunity to browse the LTSN Bioscience 'Knowledgebase'. The Knowledgebase is really a web-based database, designed to hold information about learning and teaching resources that have been encountered and/or reviewed by academic staff. It offers information about web sites, books, teaching packs, software, hardware, projects and organisations.

This is a database of around 1,600 resources that have been offered by the Bioscience community itself, to share its experience of the resource and its potential value to fellow academics. Many of the best resources identified by previous CTI projects – Centre for Computer-Based Learning in Land Use and Environmental Sciences (CLUES) and the CTI Biology project – are also listed here but these have been re-reviewed and updated. Software revisions, changes of web site and supplier information have been discovered. In addition, a significant number of new records about new resources have been added by LTSN Bioscience.

The Knowledgebase exists to hold information on:

- ▶ books and software on learning, teaching and assessment
- ▶ textbooks for use by students;
- ▶ reviews on these items by members of the network;
- ▶ whole articles and links to articles on practical and pedagogical aspects of bioscience teaching;
- ▶ practical class schedules, PowerPoint slides, images, MCQ sets;
- ▶ teaching and assessment tips; and
- ▶ web sites with value in the area of learning and teaching.

If a resource has been used 'in the field' by a colleague then the added value of academic experience is a worthwhile service that LTSN can broker, via the Knowledgebase. As a busy academic, investigating potential resources for learning and teaching can be very expensive in both time and money. One of the aims of the LTSN is to reduce that cost by providing a shareable pool of knowledge and experience. Therefore, the Knowledgebase should be an ideal starting point for your enquiries.

Where do I find the Knowledgebase?

The KNOWLEDGEBASE is available via the main LTSN Bioscience web site through the KNOWLEDGEBASE link in the menu, which connects you to a second web site on the same server and provides sharing of databases on the Web.

(The Knowledgebase server must use a different web server port to avoid clashing with the main web service; there have been a few problems where security conscious (or over-zealous) network administrators, unaware of this software product's officially-registered port have blocked port number ranges including the one used by the Knowledgebase used to talk to your web browser. If this happens to you the Knowledgebase pages cannot be accessed).

If you have an access problem, tell us about it (use the Quick Comment form) and we will discuss the problem with your site network administrators to open it to you. In all cases so far they have been happy to comply.

Is my access to Knowledgebase restricted?

No. You can search and browse Knowledgebase records WITHOUT having to:

- ▶ register a username and password;
- ▶ access it from specific sites; or
- ▶ inform us of your use of the service.

If you join the LTSN Bioscience network (see main web site) you will gain additional benefits WITHOUT having your email bombarded with trivial messages or junk mail. We work very hard to try to keep the communication to a minimum and the quality high but we need community support to enhance the quality of resources. Your recommendations, reviews, comment and experience are valuable to your colleagues nationally as well as to us.

How do I search the Knowledgebase?

There are two principal ways to search the Knowledgebase at the moment. These are:

- ▶ using the quick search header on the top of the Knowledgebase pages; or
- ▶ using the advanced search page.

The quick search method (see top right) provides a simple text matching search of the title and descriptions of resources in the Knowledgebase. Search strings can be combined to narrow a search if the number of 'hits' is too large.

Each record returned is available in a number of views; simple, extended (with additional information) or a print friendly text-only view.

The advanced search method (see bottom right) offers a categorical search of the records. Descriptive taxonomies for learning resources are a lively topic at the moment and are likely to effect future changes to our classification scheme. However, our initial scheme should assist you to refine your queries.

How do I know if the content is up-to-date?

If we are suspicious of the value of a resource which has been listed for a long time then it is clearly identified when the search results are displayed. Some of these old records are valuable historically, to give information about replacement products etc. It may also prompt a member of our community to suggest a replacement. If we suspect that the data may be not completely up-to-date then you should be aware of our suspicion.

LTSN Bioscience has recently appointed a project officer who is primarily concerned with monitoring the Knowledgebase content and adding information about new resources.

What are discipline pages?

New users should select a Discipline Page from the Knowledgebase start page. Once this is set (saved as a cookie) then whenever you select the 'Your Subject' button, it will take you to an area focussed on your subject discipline. News and announcements are presented along with a link to isolate recent updates to the Knowledgebase for your chosen discipline.

What next for the Knowledgebase?

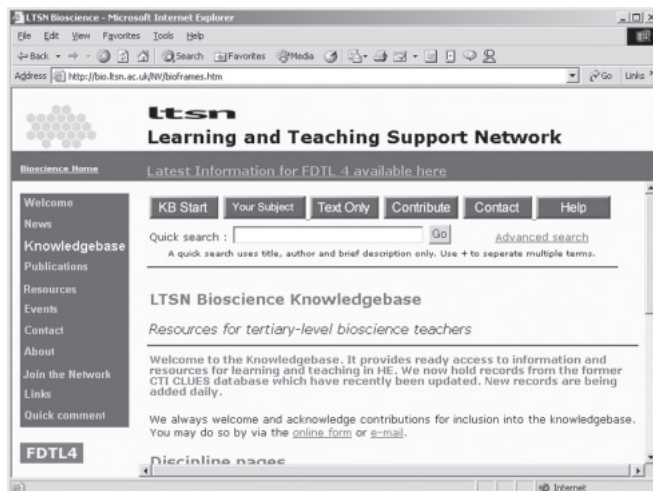
Work is going on behind the scenes to make our records interoperable with other key databases.

'Interoperability of databases' basically means that you can search across a number of related databases with only one request. Any other system can pass the query onto another to maximise the results. It may be that a resource you are looking for is actually used in another subject domain in a completely different way – one that you are unlikely to encounter in your own field.

We have also recently started a project to build a Compendium of Practical Protocols to be made available shortly (see page 12).

How does the Knowledgebase differ from one of the DNER gateway services like BIOME?

The DNER service, BIOME, is complementary to the LTSN Knowledgebase. Our remit includes the networking of knowledge and experience of resources (books, media and software etc) identified and used by the academic community. BIOME identifies resources available on the Internet on our community's behalf. Our emphasis is on resources encountered by academics with potential use for learning and teaching whereas BIOME has a broader scope of interest, but limited to internet sites. Hopefully our 'bottom-up' resources and their 'top-down' resources will meet and complement each other.



Advanced search

Courseware

Searches the title, description and keywords fields in the resource database.

Reference code:

Search term:

Machine:

Subject:

Distributor:

Status:

Modified (date mm/dd/yyyy):

Level:

RecordType:

Pedagogy:

Type:

Holding:

The LTSN Centres are collaborating with the RDN and its DNER services, like BIOME, to interoperate our databases and avoid any replication; we do not expect to duplicate.

How can I add a contribution to the Knowledgebase?

Adding a resource description is easy. Click on the 'Contribute' button in the Knowledgebase and select the type of item e.g. 'resource' you wish to submit. Fill in the fields and we can put it directly into the database after checking and verification. **If you have an item worth sharing, it could be available on our database in less than two minutes.**

If we could get one resource from each of our potential members, (and there are around 7,000 bioscience academics), we would have tremendous coverage and a really valuable resource for all of you.

Your comments

We value your comments on the usefulness of the Knowledgebase. Please use the comment form (click on the 'Quick Comment' button) on the web site to send your feedback to us.

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THE ROLE OF VIRTUAL LEARNING ENVIRONMENTS IN UK MEDICAL EDUCATION

The aim of this JISC-funded project was to report on the status of Virtual and Managed Learning Environments (VMLEs) within UK medical schools; looking at their use and the success and failures of VMLE implementation within such institutions (a full report is available at: <http://www.ltss.bris.ac.uk/jules/jtap-623.pdf>).

Virtual Learning Environments (VLEs) are defined as web-based systems for integrating a range of facilities such as hosting course/support materials, content authoring and management, and student self-assessment.

VMLEs in contrast, integrate the VLE with other data systems including student records and library catalogues. Over the past five years, the use of VMLEs within UK Medical Education has increased, in response to increased student numbers, curriculum changes and technological innovations. The project surveyed twenty one medical schools, including six for whom VMLE development is relatively advanced, looking at the development of such systems, their usage, the training given to staff and students in their use, and obstacles to their implementation. The key findings of the survey are summarized here.

In terms of system development, the majority surveyed had implemented a VLE, with the remainder either still in the process, or considering such an action. Institutions are tending towards the development of either wholly in-house systems, or development in conjunction with other institutions. The inclination seems to be to avoid commercial systems, mainly because they are unsuited to representing the complexity and inter-linking of the medical curriculum. Integration of the VMLE with other institutional data systems is seen as important by many developers, but so far only a minority of systems have achieved this to any significant extent, mostly due to managerial and political difficulties.

At present, VMLEs are used mainly for course administration and the holding of course information; there is less use in terms of actual on-line learning and

teaching activities. Interestingly, it appears from this study that using VMLEs as an alternative to providing printed material is unpopular with students, although developments to deliver the contents of VMLEs to portable devices such as mobile phones or personal digital assistants may in the long term provide a viable alternative to many printed documents.

This project has highlighted a number of obstacles and questions to VMLE implementation that should be considered. Fundamentally, is there support for implementing such a system from within the faculties concerned? In practical terms, those implementing VMLEs need to consider the following: the IT facilities (or lack of) available to them for development and use; the time (or lack of) available both for training staff in the use of the system and in the authoring of appropriate materials; and whether staff will use the system appropriately from a pedagogical point of view. The development of such systems requires substantial resources, and it appears to be the case that as the VMLE system undergoes the development process, it absorbs more resources for its support. This then has a negative effect on the resources available for further development.

With respect to use of the VMLE by both staff and students, consideration needs to be given to appropriate training, dependent upon a number of issues. Firstly, many institutions are now dealing with large numbers of (often) dispersed staff and students. This is likely to become more of an issue over the next few years. Secondly, staff are often not aware of, nor interested in using the system. Thirdly, despite appropriate training, students also need regular reminding to use the system. There are also issues with IPR and copyright concerns which need to be considered, with respect to materials developed by both staff and students.

In conclusion, and within the context of this project, a number of recommendations have been made as a result of the above findings. It is essential that system developers work closely with medical educators on the content and organisation of the systems and

the training of the users. In addition, there needs to be development of systems which give at least equal weighting to the relevant learning objects as opposed to administrative functions and course background information. Medical Faculties must: be prepared to provide strategic direction and support for development and promotion of the VMLE; provide adequate encouragement to staff developing VMLE resources; consider the implications before replacing paper distribution materials with exclusively on-line provision; and promote collaboration between senior faculty and institution decision makers.

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PLANT SCIENCE/ BIOCHEMISTRY TEACHING

I have recently been appointed as LTSN Discipline Consultant in the area of Plant Science/Biochemistry. Since so many undergraduates seem to find plant science a 'turn off', I am keen to try to improve my own teaching, and also share what (few!) good ideas I have. My intention therefore is to try to identify academics who might be interested in forming a network to share good practice and solve problems related to the teaching of plant science across the UK university sector. If you are interested please contact Peter Robinson, Senior Lecturer Plant Science/Biochemistry, University of Central Lancashire. Tel: 01772 893911; email: pkrobinson@uclan.ac.uk

LTSN BIOSCIENCE SPECIAL INTEREST GROUPS

Readers of the *LTSN Bioscience Bulletin* will be aware that three Special Interest Group (SIG) co-ordinators have been appointed to help the academic community identify sources of information on the topics, adopt / adapt examples of good practice and to facilitate debate about the impact and relevance of the topics in UK Higher Education.

At the moment there are three SIG co-ordinators and their topics arose from a call for co-ordinators made by LTSN early last year. The SIG topics that were proposed, and their co-ordinators are:

Assessment of Students Working in Groups

Dr. Stephen Barasi
School of Biosciences
University of Cardiff
Barasi@Cardiff.ac.uk

Plagiarism

Professor Robert Slater
Department of Biosciences
University of Hertfordshire
R.J.Slater@herts.ac.uk

Problem-based Learning in Science Education

Dr. Les Jervis
Department of Biological Sciences
University of Plymouth
L.Jervis@plymouth.ac.uk

The SIG co-ordinators work closely with the LTSN Biosciences Centre at Leeds and can be contacted directly or via the LTSN

Centre (T.E.Walker@bmb.leeds.ac.uk).

The SIG topics arise constantly as issues affecting higher education, often from demands from industry and government for greater 'employability' of new graduates (improved group working and problem-solving skills) or from concerns over the growth in the use of Internet sources by students for coursework assignments (plagiarism). The first two topics are represented widely across subject areas as priorities for FDTL Phase Four funding. Interestingly, given the current level of debate, plagiarism is not referred to explicitly as a FDTL 4 priority, but could be covered in several of the priorities for assessment. The amount of funding allocated to FDTL 4 for the priority areas (£8 million) indicates the seriousness with which HEFCE regards them.

The SIG co-ordinators are in close contact with each other and are developing a common approach to running the Special Interest Groups. They want to be reactive to the needs of the academic community and the first step in establishing the SIGs is to identify the amount of interest in each topic and find out what SIG members want from the SIG. Mailing lists are already being established and if you want to join any particular SIG (or all of them) please contact individual SIG co-ordinators or the LTSN Bioscience Centre.

SIG co-ordinators have already been involved in LTSN workshops and have written articles for the *LTSN Bioscience Bulletin* (see page 6). Suggestions for SIG output include:

- ▶ LTSN workshops;
- ▶ LTSN Bulletin articles and topic updates;
- ▶ advice to SIG members on how to deal with issues arising from topics and their implementation
- ▶ publication (via LTSN) of topic handbooks with case studies; and
- ▶ SIG annual conferences. Possibly joint to cover all three current SIG topics; possibly associated with Learned Society meetings.

The SIG co-ordinators may be able to help you find consortium partners for FDTL 4 funding bids but activities of this kind will require expressions of interest in the SIGs from individual academic community members. Please contact the SIG co-ordinators (or the LTSN Centre) NOW – they are only an email away!

LTSN will be appointing more SIG co-ordinators in the near future. If you are interested in a particular topic of relevance to higher education and wish to propose a Special Interest Group, please contact the LTSN Bioscience Centre.

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Department of Biological Sciences
University of Plymouth
L.Jervis@plymouth.ac.uk

SHARE RESOURCES AND WIN A £10 M&S VOUCHER

Once a month, LTSN Bioscience will put all resource submissions and courseware reviews following the required format (see <http://bio.ltsn.ac.uk/NV/newresrc.htm>) into a hat and a winner will be drawn at random. The winning resource and author will be advertised on our website. *Please note:* LTSN Staff are not eligible for this offer.

LTSN BIOSCIENCE PRACTICAL COMPENDIUM

Practical observation and experimentation is fundamental to the development of biological knowledge and theory, and a theme common to the (outwardly) diverse disciplines that constitute the LTSN Bioscience community.

Training in laboratory and fieldwork form important components of undergraduate Bioscience courses, and practicals are considered an essential part of training for any biologist.

Moreover, the design of field and laboratory practicals to combine development of personal transferable skills with the acquisition of subject-specific skills requires considerable ingenuity and often a different approach from that used a decade or so ago (Dr. Allan Jones, LTSN Bioscience *Bulletin* Spring 2001).

Through our survey and discussions with individuals who have attended our events throughout the UK, we know that this is an area of teaching that:

- ▶ demands much of your time and efforts;
- ▶ is rewarding, but sometimes challenging;
- ▶ often involves an element of re-inventing the wheel (perhaps this need not be the case?);
- ▶ would benefit from more wide-spread sharing and exchange of ideas and experiences within and across disciplines; and
- ▶ you feel LTSN Bioscience could usefully support.

You may or may not know that as of November 2001, LTSN Bioscience has a project to compile a '*Compendium of Good Practice and Innovation in Bioscience Practical Classes*' (no small task!).

The Knowledgebase, our on-line database of learning and teaching resources (see separate article on page 8), will be extended to provide a central shared resource of freely available, tried and tested laboratory and field practical packages. We anticipate these 'practical packages' will

consist of the protocols/schedules that students receive *plus* the accompanying technical information (specific details of equipment, materials required and their preparation, etc) and demonstrators' briefing notes and crib sheets (obviously these would not be made available for students to download). These materials would be made available so that people could download and use (or perhaps modify and use) them in their practical teaching.

Assuming people are willing, we would also like to include a contact email address for the originator of the material, to provide additional advice where necessary and perhaps a contact for technical advice. A number of you have suggested that it might instead be preferable for us at LTSN to field enquiries; if you have thoughts on this matter, please let us have them so that they may inform our decision.

As with other resources in our Knowledgebase, we believe that the information we hold will be of maximum value if we can include reviews or comments from those who have used the resource in some way in their teaching. Wherever we can obtain it, we will make such information available with the practical packages.

The *Compendium* will also include evaluated examples of alternatives to working in the laboratory and field such as computer-based simulations, data analysis exercises, demonstrations and equipment workshops. Do you have any examples that you would be willing to share for the benefit of others?

Some of you will have attended our recent event at the University of Stirling, which involved workshops and discussions on aspects of practical teaching. As the project develops we anticipate that there will be further interest in us providing opportunities for people to get together and exchange ideas and experiences on aspects of practical laboratory and field class teaching, including, in due course, an official launch of the *Compendium*. Further details

of these and other events are available on the 'Events' page of our web site (<http://bio.ltsn.ac.uk>).

The support and delivery of high quality Bioscience practical classes relies on a significant (and frequently largely unacknowledged) contribution from teaching assistants, demonstrators and experienced technical staff. Are you involved in designing and/or delivering bioscience practical classes? Whatever your role, we'd like to hear from you. Please get in touch and get involved with the *Compendium* if you have:

- ▶ any materials you would be willing to contribute;
- ▶ suggestions of other features or items you would like to see included (or not included!); and
- ▶ any other comments about this project.

Jackie Wilson
Project Officer (Resources Support and Development)
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BACK COPIES

Did you miss a copy of the *Bulletin*? We still have a few remaining copies of *Bulletins 1, 2 and 4* (sorry no *Bulletin 3* left). If you would like a back copy please email us at: ltsnbioscience@bmb.leeds.ac.uk, stating which issue you want with your name and address.