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EDITORIAL

This is the second issue of our LTSN Bioscience *Bulletin* and I hope that you will find the range of articles we offer informative and helpful. The LTSN Centre for Bioscience is developing rapidly and our activities are increasing. We held a very successful and pleasant Scottish launch in the University of Abertay Dundee in November (p 3), and there are upcoming launches in Newcastle-upon-Tyne, Manchester and Reading. The format of these events has been to provide plenary sessions on the role of LTSN, and in Scotland, on Benchmarking, and then split into Workshop sessions according to the Institution's choice. In Dundee these Workshops were about Assessment, and about the Role of the LTSN in general. As with all our activities, we are developmental. Things can and will change according to people's needs and according to what we find to be successful: you need to tell us what you want!

Amongst the articles in this issue of the *Bulletin* is one on practical skills by Allan Jones and Jonathan Weyers. Biology is, of course, an experimental science. The information in textbooks, reviews and scientific papers is there as a result of people carrying out experiments and making observations. Students often do not see this clearly: the textbook is to them a collection of 'facts' rather than a set of interpretations of experimental data and observations (and the 'facts' can change). Therefore, training in experimental methods and data interpretation is vital in producing the next generation of biological scientists. Unfortunately, when teaching resources are under pressure there is always the temptation to reduce the number

of practical hours. The modular system has an influence here too. The number of hours may be strictly limited and entry requirements may be so wide as to allow incompletely-trained students on to the next level course. The research project in the final year is widely acknowledged to be an excellent way of training students into the culture of research, yet here again the lack of resources can lead to a downgrading or even a trivialisation of this important activity. We need to keep thinking about this aspect of teaching Biological Sciences.

Another article, from Jenny Lewis and colleagues in Leeds, is on research into learning and teaching – basically into how students learn. This group has made a great deal of progress in this area. It is curious that as scientists our accepted *modus operandi* is to go forward based on the results of previous research. In contrast, when we think about teaching to students we, the biologists, the same scientists, rarely read the appropriate research literature (which does exist, even if it does not supply all the answers), and rarely do we base our teaching practice on educational research findings.

Finally, I would like to mention that our original plans for LTSN Bioscience included an Annual Conference. In speaking to people we have not so far encountered all that much enthusiasm for this, but if this is not the correct majority view, we would very much like to hear from you. And as always, we are very grateful to receive your comments on any aspect of the work of the LTSN in Bioscience. Happy New Year!

*Ed Wood, Director
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THE LTSN GENERIC CENTRE

The LTSN subject centres were established in response to the recommendations published two years ago in the evaluation of the Computers in Teaching Initiative (CTI) and the Teaching and Learning Technology Support Network.¹

In addition to the establishment of the Subject Centres, the Report recommended the formation of two further centres, one concentrating on generic issues and the other on issues related to learning technology. These centres have now been established as the LTSN Generic Centre and the Technologies Centre and the staff have been in post since September 2000. They are both co-located with the Institute for Learning and Teaching (ILT) on the York Science Park.

The *Generic Centre* is headed by Brenda Smith who came from Nottingham Trent University. Other members are Jill Armstrong from Liverpool Hope University; Richard Blackwell from Nottingham University; Norman Jackson from Surrey University; John Slater from Kent University and myself from Leeds University. Brenda and Richard have full time posts, Norman, John and myself 50 per cent, and Jill 80 per cent. John Slater, (whom anyone connected with CTI/TLTP/JISC will know well) is also head of the Technologies Centre as the other 50 per cent of his post. In addition, we are supported by an administrator, Trish Black, and by Richard Townsend who is the LTSN Programme Manager.

The Generic Centre does not engage directly with teaching staff but works collaboratively with the subject centres and higher education institutions. We have been working with them to identify key themes for our activities. These themes have been developed by studying institutions' learning and teaching strategies, examining the QAA Subject Teaching Reviews, and by consultation with the subject centres. A theme which occurred repeatedly in this consultation process was student assessment and a major national project is now in development around this area. This will involve collaboration with (and funding for) the Subject Centres. In addition, collaborative projects are being developed around other themes which have emerged from the consultation process. Each of these themes is being developed by members of the Generic Centre. These are:

- ▶ **Peer Observation of Teaching**
Brenda Smith and Richard Blackwell
- ▶ **Benchmarking** *Norman Jackson and Richard Blackwell*
- ▶ **Problem-based Learning** *Jill Armstrong and Brenda Smith*
- ▶ **Personal Development Plans**
Norman Jackson and Jill Armstrong
- ▶ **Continuing Professional Development programmes for new and experienced staff** *Brenda Smith and ILT*
- ▶ **Good Practice in the Use of Virtual Learning Environments**
Andrew Booth, Jill Armstrong and Tom Franklin
(of the Technologies Centre)

As you can see, I am involved in the last project on the list and by the time that you read this, I hope that we will have been able to announce a national competition in this area – watch this space.

The outcomes of all of these projects will be widely disseminated via briefing papers, articles in journals and newsletters, case studies, bibliographies, web-based material (see below) and resource packs. We will also be organising networking meetings for senior management of higher education institutions.

The Generic Centre is not solely concerned with developing projects. Our strategic aims include the provision and brokerage of advice and information on generic learning and teaching practices; assisting higher education institutions implement their learning and teaching strategies; and building the capacity of the LTSN to support learning and teaching-related national policy objectives and to help shape their development. We are keen to liaise closely with the Subject Centres, each of which has been allocated a contact person in the Generic Centre and the Technologies Centre. In the case of the Centre for Bioscience, the contacts are myself and Tom Franklin respectively.

Personally, I am very much involved in developing the WWW-based activities of the Generic Centre. In addition to the project involving Virtual Learning Environments, I am developing projects which will lead to the establishment of a substantial LTSN/ILT web-based resource. This will provide an interactive web site hosting commissioned articles, on-line publications, discussion areas, feedback and e-mail notifications of updates. It will be linked to the HERO site² (Higher Education and Research Opportunities) to a metadata repository which will allow the material held by all of the LTSN Centres and other sites to be searched. We also expect to commission other organisations to provide information 'feeds'. The aim is to provide the primary web-based source of information on methods and resources for the higher education community.

If you are interested in becoming one of the Generic Centre's online authors, contact me by e-mail at Andrew.Booth@ltsn.ac.uk

Andrew Booth, Learning and Teaching Support Network Centre for Bioscience

¹ An Evaluation of the Computers in Teaching Initiative and the Teaching and Learning Technology Support Network. HEFCE Report 98/47, September 1998

² www.hero.ac.uk

ENQUIRY HELPDESK

The LTSN Centre for Bioscience runs an enquiry helpdesk to answer all your questions on bioscience teaching and learning. Subject Specialists in all areas of the biosciences will be pleased to respond to your enquiries. Please contact us by e-mail or phone (Itsnbioscience@bmb.leeds.ac.uk or 0113 233 3001).

MAILBASE TRANSFERS TO JISCMAIL

The new HE mailing list service JISCmail managed from the Rutherford Appleton Laboratory of the Central Laboratory of the Research Councils has started service with effect from 27th November. This replaces the former UK HE mailing list service provided by Mailbase at the University of Newcastle.

The name Mailbase will be retained by the University of Newcastle, the current Mailbase service provider, and the new service known as JISCmail. The JISCmail service is largely similar to the former Mailbase service, although it is based on the LISTSERV software to which Mailbase would have migrated had HE service rights

not been transferred.

If you are a member of a mailbase list, your list owners should have received a direct notification through the owners-unique mailbase list well in advance of the transfer date. They will have informed you of any specific information pertinent to your list, and made any preparatory administrative changes for the transfer. However, if you have been involved in any mailbase lists, and you have not yet done so, we suggest you take a few minutes to check the JISCmail site information. Members of *ltsn-bioscience@mailbase.ac.uk* have already been notified of the changes through this list, which is now *ltsn-bioscience@jiscmail.ac.uk*.

Detailed information on the transition for users and list owners is available on <http://www.jiscmail.ac.uk>

jiscmail.ac.uk under "Documentation", and contact information for queries about the transition can also be found there. Further details of the new arrangements and the effect of the transition on both users and list-owners will be posted to the JISCmail website.

Messages sent to mailbase will be forwarded for a year, to allow users to adjust to the transfer, and old archives and files will remain available from the mailbase website. However, it is best to begin to use the new JISCmail site as soon as possible, as new material will not be appended to the Mailbase site. JISCmail have attempted to keep the user interface as near to the Mailbase style as possible to avoid confusion, but there have been inevitably some key changes.

Dr Gayle Calverley is On-Line Services Manager at the LTSN Centre for Bioscience

LTSN CENTRE FOR BIOSCIENCE SCOTTISH LAUNCH

Over forty delegates attended the official Scottish Launch of the LTSN Centre for Biosciences at the University of Abertay Dundee on 29 November. The event was judged a considerable success with strongly positive feedback from the delegates who left with both a clear view of the role of the Subject Centre and an "appreciation that LTSN Bioscience want to involve the community and learn from us".

The day began with the Co-Director, Professor Ian Hughes, outlining the Subject Centre's main goals and the range of activities and services the Centre provides or expects to provide for the Bioscience academic community. He stressed that to be a success the Centre needed two-way communication with the community.

The second presentation was on 'Bioscience Benchmarking – the story so

far'. Professor Paul Brain, a member of the Biosciences Benchmarking Committee, presented the issues the committee has been considering in the early stages of the benchmarking process. For example, how can it be ensured that students are trained to maintain the currency of their knowledge after graduation in fast-changing areas and should the high public profile of biosciences necessitate providing students with training on how to deal with ethical, moral and exploitation issues? He also asked for advice on which areas of non-trivial fact all biologists should know. He stressed that the Committee is keen to be as 'transparent' as possible and that their intention is to do a job that "disadvantages no sector of the disparate biosciences community".

After lunch, workshops were provided on the themes of 'Assessment' and 'Supporting Learning and Teaching in Scottish Bioscience Departments'. In the Assessment workshop, Ian Hughes gave

an introductory presentation on peer assessment and discussed the pros and cons of this assessment method, providing hard data to support his findings. Professor Cliff Beevers then introduced two initiatives based at Heriot-Watt University, namely SCROLLA¹ and SCHOLAR, both involved in researching computer-aided assessment. Finally, participants considered their own assessment objectives and outcomes in specific modules by completing an assessment audit.

In the workshop on 'Supporting Learning and Teaching in Scottish Bioscience Departments', the participants discussed a variety of issues in learning and teaching and how the Centre for Bioscience can support the Community. One comment received after the session was: "no longer feeling isolated – other people want to change!"

¹ SCROLLA see URL: <http://www.calm.hw.ac.uk>

PRACTICAL SKILLS IN THE LIFE SCIENCES

All knowledge and theory in biology has originated from practical observation and experiment. As a logical consequence, undergraduate training in laboratory and fieldwork have long formed important components of tertiary level biology.

By any rational criteria, the skills and competences associated with practical work must be considered vital components of 'graduateness' in all life-science subjects. They are rightly emphasised in quality assessment criteria and no doubt will be to the fore when subject benchmarking comes about.

The skills required in modern practical biology is diverse, ranging from the need to observe, measure and record accurately, to those associated with the operation of high-tech equipment. Students, particularly during their final year, need to have developed high-level skills, such as those required for designing practical investigations, keeping records of their work, analysing the data and presenting work in both written and oral forms. While some of these skills are subject-specific, the increasing importance of personal transferable skills (PTS) is a vital feature of modern curriculum design. Unfortunately, this aspect of teaching is increasingly under pressure because:

► The rapid expansion of knowledge in the life sciences, especially in cell and molecular biology, has reduced the curriculum time available for training in laboratory skills. The practical syllabus is under attack both from within, as the knowledge base expands, and from without, as it competes with other subjects for limited timetabled hours.

► The reduction of the value of the unit of resource in science has resulted in a change in the content and frequency of practicals – they have to be increasingly 'efficient' in terms of cost-benefit, a feature often resulting in a reduction in both the amount and quality of the practical experience.

► As access to tertiary education is broadened, the task of educators has been made more difficult by the increasingly diverse academic backgrounds and experiences of students. In biology, this results in practicals having to work at the level of the lowest common denominator in terms of skills and experience.

Field and laboratory work require different skills and abilities. Working in the field introduces issues of personal comfort and safety and the discovery that the effects of discomfort upon the application of skills can be highly significant. Nevertheless, field courses often provide students with some of their most pleasurable and enduring memories of practical biology. Working in the laboratory is usually a more comfortable experience but the issues of safety remain highly important. Fieldwork tends to be more costly and consequently there is a tendency to reduce this more expensive component.

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 less ago. Greater emphasis on small-group work incorporating elements of communication, both verbal and oral, are required as well as more emphasis on formative tutoring.

Assessment of practical work gives rise to difficulty, with the debate about the relative merits of using continuous assessment or of having end-of-course examinations continuing unabated. Formative assessment is vital for student development and is probably best delivered under a continuous assessment regime.

Both students and their tutors require support before, during and after practical sessions, be they in the field or lab. This was a prime motivation behind our involvement in the *Practical Skills* series of textbooks published by Longman/Prentice Hall. Each of the three volumes in this series, *Practical Skills in Biology* (now in its second edition), *Practical Skills in Biomolecular*

Sciences and *Practical Skills in Environmental Sciences*, covers a core of generic material and has specialised chapters relevant to main topic. Of course, it was impossible to cover details of all methods used at advanced levels, and more specialised texts or handouts may still be required in addition.

In theory, providing an easily digested version of the general principles should lead to a deeper understanding of the underlying rationale of methods than can be achieved by learning recipes or protocols by rote. It also encourages greater autonomy in student learning.

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ARTICLES WANTED

Would you like to contribute to a future issue of the LTSN Bioscience Bulletin? We would be pleased to receive your articles, case studies or news items. Alternatively you may like to comment about content or suggest ideas for future features. Whatever your contribution we would like to hear from you. Contact Trish Walker, Centre Manager, Itsnbioscience@bmb.leeds.ac.uk

IMPLEMENTING A VIRTUAL LEARNING ENVIRONMENT (VLE) FOR A MEDICAL CURRICULUM

Virtual Learning Environments are integrated systems of networked on-line resources which support and facilitate learning, teaching and assessment whether this takes place on-campus or at a distance. Many universities and FE colleges recognise the benefits of this type of learning support structure, particularly as learning becomes more student-centred. At the University of Edinburgh we have been developing and implementing a VLE called EEMeC (Edinburgh Electronic Medical Curriculum – <http://www.eemec.med.ed.ac.uk>) to support the new 5-year undergraduate medical course (MBChB) which commenced in the academic year 1998–99 and now has students in the first three years.

The new course differs significantly from its predecessor – core subjects are taught in a much more integrated way with clinical input throughout the course. There is a greater emphasis on student-centred, problem- and case-based learning and teaching, and elements such as clinical skills, ethics and personal transferable skills are more prominent. The inception of a Faculty Group (Medicine & Veterinary Medicine) the Learning Technology Section (LTS) within the Faculty in 1999 brought together the skills necessary to develop an online resource to support and enhance the new course.

An essential starting point was to draw up a structural model of the course and to look at the possibility of using an existing VLE system. Although a number of options were considered, those that were investigated were more suited to courses comprising of single, independent modules which students combined to produce a course. None of these existing VLEs could cope with the course model of the new MBChB where each year consists of closely interrelated subjects and 'vertical themes' span all five years. Other issues

such as multiple tutorial and clinical attachment groups requiring a complex and individualised student timetable were also beyond an 'off-the-shelf' system. We have been able to address these issues only by building our own VLE.

Creating our own system has had particular advantages. Apart from having full control over the interface design and the ability to respond to requests for specific features, we were able to create a system architecture that precisely followed the structure of the course.

The first incarnation of EEMeC was presented to the new MBChB students in 1999–2000. We were able to update existing content and append material as it changed, as well as learning support materials such as lecture notes, PowerPoint presentations, student exercises, self-assessment materials, tutorial support materials, and as lecturers made these available support materials during the year. For the first time ever, clinical staff working outside the central University area were able to get an overview of the new curriculum from their desktop PCs. They could see how their part of the curriculum fitted into what had been previously taught, thus allowing them to plan plan their teaching more effectively.

The system was evaluated by focus group sessions with the users, discussions with the course organisers and by monitoring server usage and it proved successful from day one. As a result of these evaluations, further developments took place to enhance and extend the site. Vertical themes were implemented, teaching room location maps and descriptions were added, and the smaller web sites that covered specific parts of the course were incorporated into the main site. By the end of this first session, EEMeC had become a key part of the course both for staff and students.

For the new session (2000–2001), a number of additional features have been added including dynamic, fully personalised timetables and discussion and chat facilities.

EEMeC is continuously evolving. It now

contains well over 7000 pages and receives in excess of 5000 'page hits' per every day despite covering only the first three years of the course. Future plans include:

- ▶ integration with the institution-wide student-centred web information management system (SCWEIMS) which will provide a 'way-in' to the VLE, integrating information such as a student's registry details
- ▶ incorporating a system for handling student portfolios
- ▶ making course evaluation data more readily accessible
- ▶ moving the static pages over to a fully database-driven solution which creates a single-source repository for all course information
- ▶ creating a tailored staff interface to EEMeC
- ▶ delivery onto the intranets of all of our teaching hospitals (more than 20 across the central belt and Scottish borders) for use of both students on attachment and staff based exclusively in these hospitals

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RESEARCHING LEARNING AND TEACHING IN THE BIOSCIENCES

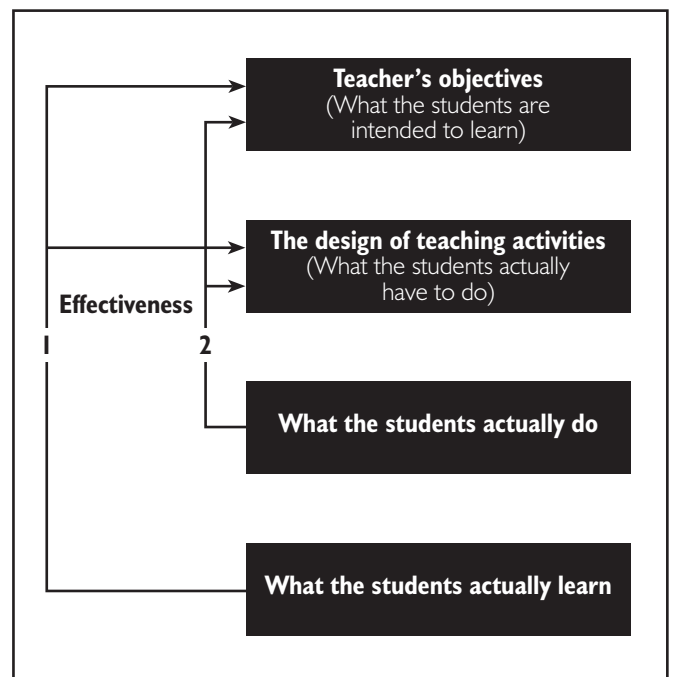
This is the first of a series of four articles which present recent research on learning and teaching in the biosciences at the University of Leeds. This article gives some background information on how we went about the research, highlighting some of the challenges faced by those who attempt to evaluate the effectiveness of teaching systematically. Each subsequent article presents a case study, highlighting how student learning can be improved through systematic enquiry into the effectiveness of teaching.

If asked how to improve undergraduate students' understanding of their discipline, university lecturers might well talk about motivating students to work harder, making classes more interesting, getting students to spend more time studying, or even improving the A-level profile of the student intake. Each of these things would no doubt influence students' learning.

However, lecturers are not in a position to influence features such as the academic profile of the students on their courses (at least in the short term), or the social and work commitments of their students. By contrast, they have a strong influence on the quality of the teaching experienced by students. But what counts as 'quality teaching'? Although the QAA framework developed to assess the quality of teaching suggests some generic features of good teaching, lecturers generally believe that true quality lies in interactions between students and lecturers *in the context of the subject discipline* – and this quality is not picked up through QAA. We agree with this position. However, although lecturers have an intuitive sense of 'what works' (and what doesn't) in their teaching, in our experience this is rarely discussed or evaluated explicitly, making it difficult for a group of colleagues or a department to look systematically at the teaching that is offered to students. Indeed, some would argue that 'good teachers are born, not made', or that teaching is such a personal process that each person should 'do their own thing', negating the possibility of improving the quality of teaching systematically. Although we all know of colleagues with a natural talent for teaching, and we see different approaches to teaching that appear to work equally well, we believe that it is possible to improve the quality of teaching in a systematic way.

In 1994, a group of lecturers in scientific disciplines and a group of lecturers in science education at The University of Leeds started a programme of work to look systematically at the quality of teaching in undergraduate science. Our first job was to decide what we meant by 'quality teaching'. We decided we were interested in the *effectiveness* of teaching at promoting student learning around stated learning objectives. This definition sounds deceptively simple. However, we quickly found it necessary to be more specific about the relationship between student learning and teaching objectives. Our final position can be summarised in the diagram.

The diagram shows that there are several stages between identifying learning objectives and assessing the effectiveness of



Adapted from Millar et al. (1998), available at <http://edu.leeds.ac.uk/projects/lis/labwork.htm>

teaching. In order to assess the effectiveness of teaching, we were constantly asking questions about whether *teaching activities* related appropriately to *learning objectives*, whether students actually *did what was intended* during teaching activities (Effectiveness 2), and whether they *learnt what was intended* as a result of doing teaching activities (Effectiveness 1).

In this series of articles we will present case studies to illustrate how teaching in three undergraduate bioscience courses was evaluated systematically. In the first, Jim Ryder will present an evaluation of a first-year tutorial on the metabolic pathway of glycolysis which aimed to teach students about how biochemical knowledge is used in medical diagnosis. The second case study, by Jenny Lewis, focuses on the use of mini-projects in order to prepare second-year students to undertake open-ended research projects in their final year. In the third case study, John Leach presents the evaluation of a first-year activity in biochemistry which aimed to teach students about handling data on enzyme kinetics.

Issues about the relationship between the aims of the teaching and the teaching activity itself were identified in each of these case studies. Suggestions were made as to how to make links between aims and teaching activities more explicit to both teachers and students. This was particularly important in situations where students are usually taught by people who did not design the teaching activities being used, such as tutorials and laboratory classes. In these cases, although the person who designed the teaching may have been clear about its aim, this clarity was not generally shared by those doing the teaching. In such cases, recommendations were made about how to

communicate to teachers and students about the *learning objectives* of activities, as well as *what to do* during activities.

ACKNOWLEDGEMENTS

The research and development work described in this article was funded by the University of Leeds Academic Development Fund, the University of Leeds Department of Biochemistry and Molecular Biology, Biology, Chemistry and Earth Sciences, and by the European Commission (project PL95-2005: *Labwork in Science Education*). The work reported in this paper was conducted in collaboration with numerous colleagues in the above science departments at Leeds.

**John Leach, Professor of Science Education,
Director of CSSME**

Jenny Lewis, Lecturer in Biology Education

**Jim Ryder, Research Fellow, Formal Science Education
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**Centre for Studies in Science and Mathematics
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<http://edu.leeds.ac.uk/research/groups/cssme/home.htm>

IS IT TIME TO REASSESS THE USE OF VIDEO IN UNDERGRADUATE TEACHING?

University staff involved in teaching life sciences (biology, medicine, sport and a wide range of related subject areas) are invited to participate in a JISC funded project. The project 'LIFESIGN' (Networked Moving Images for the Life Sciences) will develop, catalogue and evaluate the use of streaming video in learning and teaching in the life sciences.

The project will cross conventional subject and departmental boundaries and involves media services (University of Portsmouth), library services (University of Glamorgan), academic departments and educational developers (University of Southampton and University of Wales Institute, Cardiff). It might also involve you and your students. The project will identify and develop a significant collection of video resources in the life sciences in conjunction with LTSN Centre for Bioscience and work with the national 'Managing Agents for Moving Pictures and Sound' to negotiate and clear rights. The project will also develop software to allow full integration of moving pictures and sound material in library catalogues. Delivery of streaming video will take place via two Metropolitan/Regional Area Networks and JANET. Evaluation of the use of these resources is a key aspect of the project.

Video resources have, of course, been used to support learning and teaching in higher education for many years. Indeed issue 1 of LTSN Centre for Bioscience Bulletin included articles on the use of video resources in Food Science and Microbiology and described the *Shotlist* series that supports a wide range of subject areas. Only recently, however, have such materials been capable of transmission within networks or over the internet. LIFESIGN will start by taking existing video resources and re-evaluating their use using the benefits of the increased and independent accessibility offered by 'streaming'. New material will be added where available. Rights-clearance, cataloguing and indexing, pedagogically-sound curriculum development, and critical evaluation are all important and integrated aspects of the project.

To find out more about streaming video and how it might help you to teach or students to learn more effectively please visit our web-site <http://www.lifesign.ac.uk/>. Via this site you will be able to see a range of streaming video and see how new technology is enabling the effective transmission of video across academic networks. This is not something that might happen in the future. It is here now.

We would like to help staff in UK Universities to choose suitable on-line multimedia resources (and acquire rights for them if necessary). We hope to advise staff on incorporating resources within taught courses and to help staff to evaluate their use by students.

To ensure that the video resources that we work with are the ones that you need to support your teaching we need to hear from you. We have established an on-line questionnaire (<http://uwicnet.uwic.ac.uk/studsat/lifesign/lifesign.htm>) that will provide an easy way for you to help us. You are also welcome to contact any of the LIFESIGN people listed below with your views or questions. We promise to reply to everyone who contacts us with an indication of how the project has been influenced by user input. If you have a particular interest in using streaming video in your teaching and would like to be part of the project then please give us more details about your course, your students and your thoughts on using video.

Key LIFESIGN contacts at each institution

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INFORMATION SERVICES SUPPORTING THE LTSN CENTRE FOR BIOSCIENCE: SIGNPOSTS TO PLACES YOU MIGHT WANT TO VISIT

This brief article is specifically about a group of educational information services whose purposes and content complement those of the LTSN Centre for Bioscience. More generally, it considers the place of these complementary services within the emergent national information landscape.

We can take it as read that everyone needs information at some time. Satisfaction of this need depends upon the existence of appropriate resources, their availability and on the enquirer's awareness of those resources. As the volume of information grows and the number of resources increases it is clear that there are problems for both the enquirer and resource provider.

The networking of new and existing resources provides one solution to those problems. The invitation from the editors of the *Bulletin* to say something about our own services is a welcome contribution to that process.

The British Education Index office is a self-financing unit of Leeds University Library responsible for the generation and maintenance of various education-related databases and information services:

- ▶ The British Education Index (BEI): a long-standing index to the contents of significant UK journals in the field of education and training and, increasingly, to report and conference literature
- ▶ *Education-line*: an internet collection of education-related full texts presented by their authors for indexing and archiving: many of these texts are conference papers representing early versions of research findings
- ▶ Searchable programmes of significant educational research association conferences and a listing of conferences, past, present, and forthcoming, on aspects of education
- ▶ the British Education Thesaurus,

which provides the indexing vocabulary for services maintained by the office and a means of retrieval for users

- ▶ the British Education Theses Index (awaiting revival)
- ▶ a new education facility, the British Education Portal, to be associated with BIOME and other national gateways within the Resource Discovery Network (RDN).

All of these services have acknowledged status as sources of information for educational researchers about aspects of educational activity in all sectors. This is one point at which they support the LTSN. Within the ambit of BEI services there is information pertinent to the sector and subject interest of the LTSN Centre for Bioscience and still more information about generic teaching and learning issues.

As information services proliferate it becomes more and more important to ensure that new services complement and connect with existing and established ones. We are working on ways of incorporating appropriate information from our services within those offered by others.

In conclusion, information services are open to multiple uses. Researchers use them to guide their work, publishers use them to identify authors, policy-makers use them to discover evidence. Users of the LTSN Centre for Bioscience might well see BEI services as useful dissemination media for appropriate work of their own specifically related to teaching and learning. The user bases for the Index and the LTSN Centre for Bioscience will be different and complementary and we would welcome that kind of 'use'.

While the following URLs are unlikely to change, individual services will become more integrated with one another so it will be worth revisiting them from time to time:

British Education Index (information page): <http://www.leeds.ac.uk/bei/>

British Education Index (via BIDS Education Literature Datasets: <http://www.bids.ac.uk/Education-line>: <http://www.leeds.ac.uk/educol/>

Conference listings: <http://www.leeds.ac.uk/educol/conflist.htm>

Searchable conference programmes: <http://www.leeds.ac.uk/educol/adcom/beia.htm>

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EDINA SERVICES FOR THE LTSN CENTRE FOR BIOSCIENCE

EDINA, based at Edinburgh University Data Library, is a JISC-funded national datacentre, offering networked access to a range of bibliographic and geo-data resources. For a full list of EDINA services relevant to the Biosciences, see: <http://edina.ed.ac.uk/services/agriculture.html>.

EDINA recently held an Awareness Day for LTSN Subject Centres, with the purpose of informing them about relevant services for their subject areas and developing partnership. The presentations and materials are now available at: <http://edina.ed.ac.uk/docs/events.html>

If you use any EDINA services in learning and teaching, Moira Massey, the L&T Support Officer, would be very pleased to hear from you. (moira.massey@ed.ac.uk).

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Teaching Development Grants

New round – closing date 21 July 2001
see <http://bio.ltsn.ac.uk/> for details