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Ideas, practices, news and support for decision makers active in learning and teaching

RESEARCH AND TEACHING— REPARING THE DAMAGE

Roger Brown suggests how the links can be restored

DOES RESEARCH BENEFIT TEACHING?

and how can we know? asks Dai Hounsell

WHAT DO STUDENTS THINK ABOUT RESEARCH?

Barbara Zamorski explores how learners can develop a more sophisticated understanding

The focus of this issue

LINKING RESEARCH AND TEACHING

Issue 3 Autumn 2002



Exchange **Issue 3** Autumn 2002

Exchange exists to stimulate the sharing of ideas, practices and news about learning and teaching in higher education. It aims to encourage positive change by supporting its readers in developing and enhancing learning and teaching in their communities.

Exchange is a collaborative publication. The partners involved are:
The TQEF National Co-ordination Team (TQEF NCT)
The Learning and Teaching Support Network (LTSN)
The Institute for Learning and Teaching in Higher Education (ILTHE)
The Joint Information Systems Committee (JISC)

Exchange is a tri-annual publication. Each issue includes an examination of a different theme along with a look at news and items of interest on learning and teaching generally.

The views expressed in this publication are not necessarily those of the Editors nor of the partner organisations. The Editors reserve the right to edit, amend or abbreviate copy without notice.

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Comment from the Editors

This issue of **Exchange** brings a focus to the on-going debate in higher education which centres on the teaching-research nexus. This challenging, and sometimes contentious, debate is addressed by a wide range of authors well-known to the higher education sector. As noted in the first issue of this magazine, the intention in spotlighting this debate is to inform and stimulate thinking by decision-makers on matters central to the work of higher education.

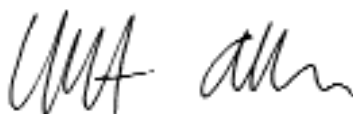
As our guest editors *Mick Healey* and *Alan Jenkins* note:

“This publication is particularly timely for it goes to the centre of current practice and policy debates in UK higher education. Whether quality teaching is based, dependent, or linked to (staff) research is a major research issue. Perhaps more significantly, it goes to the centre of individual academic’s views of their role and practices, and to defining departmental and institutional policies.

Teaching/research relations are also now at the centre of policy debates as to the future of UK higher education. The challenge is to meet the needs of a ‘mass’ higher education, while at the same time holding on to high academic standards and supporting ‘quality’ research. As research is now seen as central to national economic and social goals, there are evident pressures to concentrate research in selected HE institutions and departments. Such arguments for research selectivity, place under question the ‘traditional’ view of the interdependence between ‘research active’ staff and student learning.

Some of the contributors to this issue of *Exchange* present research and policy perspectives on these national policy issues. Others focus on the immediate experience and examples of staff and students attempting (and succeeding!) in forging effective links between research and teaching. Whatever the national policy, individual academics and institutions will rightfully seek to shape their own agendas. This issue gives you ideas to take into your own academic practices and policies on linking research and teaching”.

Also in this issue is an evaluation card. We hope you take a few minutes to respond to the questions on it so that we can continue to shape a publication that is responsive to our readers’ needs. Our next issue will focus on assessment practices in higher education. We anticipate that the discussion will have wide-spread practical application in teaching and learning. Please let us have your views on whether you find *Exchange* interesting and useful.



Cliff Allan



Vaneeta Marie D'Andrea

Focus: Linking Research and Teaching

- 6** Does research benefit teaching? And how can we know? *by Dai Hounsell*
- 8** Institutional strategies for linking research and teaching *by Graham Gibbs*
- 12** Making the departmental link between research and teaching *by Roger Zetter*
- 15** Constructing the teaching-research link in the built environment disciplines *by Chris Webster*
- 17** Of mutual benefit? Research projects in the undergraduate science course *by Jim Ryder*
- 19** Evidence-based practice in health sciences *by Anne McKee*
- 21** What do students think about research? *by Barbara Zamorski*
- 23** Turning the light on ourselves: researching pedagogic practice and policy *by Liz Beaty and Glynis Cousin*
- 25** Towards research-led educational development *by Angela Brew*

Opinions: Linking Research and Teaching

- 27** Let’s stop trying to separate the inseparable *by Peter Scott*
- 29** Research and teaching – repairing the damage *by Roger Brown*

General Interest

- 31** Moving forwards in partnership *by Andrea Rayner*

Regulars

- 3** **Editorial**
- 4** **News**
- 33** **Feature on a Fellow** *Anthony Rosie* describes his experience
- 35** **Events** A selection of forthcoming events examining issues surrounding learning and teaching

New Heads for the NCT and ILTHE

Professor Vaneeta D'Andrea and Dr David Gosling have been appointed as Co-Directors of the Teaching Quality Enhancement Fund (TQEF) National Co-ordination Team. The TQEF was launched in 1999 to deliver the HEFCE's learning and teaching strategy. Vaneeta and David are sharing the post left by the move of former Director, Carole Baume, to the position of Regional Director for the Open University in the North West.

David has been Head of Educational Development Services at the University of East London. He also founded the national Heads of Educational Development Group. Vaneeta has established educational development units at the University of Surrey Roehampton and City University, London, where she currently holds a Chair.

Dr Caroline Bucklow has been appointed as Acting Chief Executive Officer at the Institute for Learning and Teaching in Higher Education (ILTHE). Dr Bucklow will hold the post for an interim period of six months following the departure of founding Chief Executive, Dr Paul Clark, who has taken up the post of Pro-Vice-Chancellor (Learning and Teaching) at the Open University.

Caroline Bucklow was the ILTHE's Director of Accreditation, a post she had held since March 1999. She was previously Head of Education at the British Computer Society, with responsibility for the Society's accreditation programme and professional examinations. She established an honours degree in Technical Communication at Coventry University, the first of its kind in the UK.

The LTSN MathsTEAM

The Engineering Council and the Institute of Mathematics and its Applications have both published reports expressing concern about the growing deficiency in mathematical skills amongst science and engineering students. Four LTSN Subject Centres responded to the report by forming the LTSN MathsTEAM. The centres involved are Maths, Stats & OR, Physical Sciences, Materials and Engineering. The MathsTEAM has been conducting an in-depth survey of current resources and teaching methods in order to identify suitable material for inclusion in three information packs.

The packs will be available in print

and from the four LTSN Centres' websites by early 2003 when the project is due to finish. Survey results, relevant generic information, annotated references and links to useful resources will also be available.

The MathsTEAM is now ready to start commissioning further case studies. If you are teaching mathematics to students within an engineering or scientific context, the MathsTEAM would like to hear from you.

Further information is available from Christine Hirst, LTSN Maths, Stats & OR Network, tel 0121 414 3945, email: c.hirst@bham.ac.uk, or see <http://ltsn.mathstore.ac.uk/mathsteam>

Learning and Teaching Strategies

All English Higher Education Institutions have now submitted their revised learning and teaching strategies to the HEFCE. Once again the TQEF NCT will be undertaking an analysis of the strategies to identify emerging trends, building on Professor Graham Gibbs' earlier analyses (HEFCE 99/55 and 01/37A). In particular the analysis will look at the extent to which the HEFCE's policy priorities are reflected in the strategies.

The TQEF NCT will also be publishing another Good Practice Guide following the success of the two recent publications, *Recognising and Rewarding Excellent Teaching* and *Funding Innovation and*

Disseminating New Teaching Practices. The next Good Practice Guide will focus on monitoring and evaluating learning and teaching strategies.

Over the next six months a series of regional meetings will be held, jointly organised by the TQEF NCT and the HEFCE's Regional Consultants, on implementing learning and teaching strategies. These will be informal workshops to enable colleagues to compare their experience of developing and putting into practice their strategies. For further information on these events please contact the NCT on 01908 858434 or ss-ncteam@open.ac.uk

e-Learning Starter Guides

The Association for Learning Technology and the LTSN Generic Centre have produced a series of eight starter guides to inform colleagues on current learning technology topics. Titles are: Using the WWW in Learning and Teaching; Virtual Learning Environments; Computer-mediated Conferencing; Using CAA to support student learning; Streaming audio and video for course design; Evaluating LT resources and their uses; Integrating online learning into your course; and, Models for evaluating the effect of ICT on student learning. The guides can be downloaded from the ALT website at www.alt.ac.uk or the LTSN Generic Centre website at www.ltsn.ac.uk/genericcentre.

New publication on students with disabilities

From September 2002 new anti-discrimination legislation will require education institutions to ensure that disabled students can access all the services they offer. The JISC-funded TechDis has teamed up with the Association for Learning Technology to publish *Access All Areas: disability, technology and learning to assist institutions with the new legislation*. The publication addresses two key areas:

- **how students can access institutional services using technology, for instance with software that reads aloud to a blind student**

- **how technology can be made accessible for disabled students, for instance how Virtual Learning Environments and computer-based assessment can be modified to ensure disabled students can use them.**

As the legislation covers all subject areas the book is of use to anyone working within an academic discipline as well as to overarching services (learning technologists, librarians etc). A pdf version is available on the TechDis website (www.techdis.ac.uk).

FDTL 4 gets underway

Over 35 projects have secured funding from the HEFCE's fourth round of the Fund for the Development of Teaching and Learning (FDTL) and are now getting underway. The new projects have received £8 million of funding. Mathematics support for the school/university interface; incorporating disability equality in clinical practice and improving the cost-effectiveness of formative assessment in science are just some of the varied topics that will be examined over the next three years.

A two-day 'start up' seminar was run by the TQEF NCT in early September for representatives from the new project teams. A full list of the successful projects can be found on the NCT website at: www.ncteam.ac.uk/projects/fdtl/fdtl4/index.htm

New service to assist in dealing with plagiarism

The Joint Information Systems Committee (JISC) is launching a new national service to help universities and colleges prevent and detect plagiarism. Based at Northumbria University, the new service will seek to promote good practice by providing online



access to a variety of information aimed at senior managers, academic staff and students. This will include guidance on assignments, policies, procedures and student learning. The service will provide workshops and training, as well as on-line access to a central detection facility, located in the UK and supported by iParadigms, the leading US supplier of plagiarism detection products.

Although electronic detection cannot solve the problem of plagiarism, it will assist staff in identifying it, thus allowing them to concentrate on the issue of prevention. The national facility will also allow the checking of student work for collusion within and between institutions, something not currently available.

For further information contact Gill Chester, g.chester@jisc.ac.uk, tel: 01235 822291

Does research benefit teaching? AND HOW CAN WE KNOW?

The relationship between research and teaching is more complex, interesting and important than it may first appear. To advance our understanding, and hence our practice, we need to do more, believes **Dai Hounsell**, than take positions.

In higher education, as in education generally, research evidence rarely resolves long-standing issues. More often than not, it leaves us with new and more compelling questions rather than decisive answers. The protracted debate over the relationship between research and teaching - an often heated but not always illuminating one - follows this pattern.

On the face of it, the research findings on how research may affect teaching look clear-cut. One survey in the United States by Feldman, found that the likelihood that research productivity actually benefits

cause of the separatists, who hold that the relationship is costly and dysfunctional. But doubts arise over past research methods and assumptions. A truer outcome would be a goalless draw, or that distinctively Scottish verdict, “not proven”.

Better or different?

Past research has mostly looked for evidence that teaching in ‘research-led’ universities was rated of higher quality than teaching in institutions where research had a lower priority. In other words, the assumption being tested was that research-led

“... while the teaching which takes place in research-led departments may well be in certain respects distinctive, it is not necessarily ‘better’, more ‘effective’ or of ‘higher quality’ than is teaching geared to other legitimate concerns”

teaching was “extremely small”. For all practical purposes, the two were “essentially unrelated”. Another, by Ramsden and Moses in Australia, saw “little or no foundation for a belief in the existence of a positive causal relationship between effective undergraduate teaching and high levels of research activity”. And a third, a meticulous review of a large number of empirical studies by Hattie and Marsh, concluded that “the common belief that research and teaching are inextricably entwined is an enduring myth. At best, research and teaching are very loosely coupled”.

Such findings seem to undermine the integrationist camp, those staunch believers in a positive symbiosis between teaching and research, and to strengthen the

teaching would be better, in some universal sense rather than *different in kind*. But it can plausibly be argued that, while the teaching which takes place in research-led departments may well be in certain respects distinctive, it is not necessarily ‘better’, more ‘effective’ or of ‘higher quality’ than is teaching geared to other legitimate concerns such as the needs of the professions or social inclusion.

Subject differences

Another source of difficulty has been that a search for commonality of impact of *research on teaching* has underplayed differences in how research is conceptualised, organised and communicated in

different disciplines. These subject differences have a strong influence in opening up (or closing down) opportunities in how undergraduate students can engage with the leading edges of a discipline, and thus on how research might enrich teaching. What may be feasible, appropriate, or worthwhile in one subject area may be difficult or impossible in another. Similarly, subject differences may also determine the potential for sound scholarship by lecturers to be a valid alternative to active involvement in research. As Ron Barnett has argued in *The Idea of Higher Education*:

“The relationship of the (university) teacher to research is analogous to the relationship of the musical soloist to the score. There is no demand on the soloist that he or she be a composer... But it is paramount that the soloist be so directly acquainted with the score that he or she is able to offer us a personal interpretation of it”.

“... although curricula may offer students the chance to be taught by eminent researchers, pressures to maintain a research profile may well limit student access to these researchers”.

Mixed blessings?

A third shortcoming is that past studies have been no less polarised than the debate itself, and have tended to ask simply whether research benefits teaching rather than deeper questions. To anyone with at least some first-hand experience of research universities, it seems perfectly plausible to view the nexus not as wholly desirable or wholly undesirable, but as having both advantages and drawbacks in any given institutional setting. For example, the research-led university may have an outstanding infrastructure - up-to-date labs, abundant library holdings, a very sophisticated computing network - but find it necessary to restrict access by undergraduates to some parts of that infrastructure to protect access by researchers. Equally, although curricula may offer students the chance to be taught by eminent researchers, pressures to maintain a research profile may well limit student access to these researchers, and much first-year teaching may be sub-

“What may be feasible, or appropriate, or worthwhile in one subject area may be difficult or impossible in another”

contracted to doctoral teaching assistants. And courses marinated in research-derived ideas and findings may enthrall a student who envisages going on to postgraduate study, but put off others whose career aspirations lie elsewhere.

Next steps

So where does this leave the debate? A well-founded body of research evidence may be lacking, for the present at least. But we can do more than simply wait until it arrives. Universities, which believe in the potential contribution of research to teaching, could work to close the evidence gap. A first step would be a readiness to document the negative contributions that research can make to teaching. A second would be to try to map the many ways in which research and scholarship actually inform and nourish teaching. As my colleague Charles Anderson, Lecturer in the Department of Higher and Community Education, has suggested, we could explore how research-minded teaching influences:

- the *perspectives* (insights, concepts or developing approaches to enquiry) that are shared with students
- the *processes* which are inculcated — a sense of what counts as evidence within the subject, for example, or of how new knowledge is generated within it
- the *products*, in the form of the written and other assigned work, through which students display their developing grasp of the subject or discipline.

“The most telling evidence is likely to be gathered from the bottom up, not top-down”.

And lastly, taking stock would mean teasing out the impact of research on students' understanding and skills in particular courses and subject areas. The most telling evidence is likely to be gathered from the bottom up, not top-down.

Institutional strategies for LINKING RESEARCH AND TEACHING

Institutions have strategies for research and for learning and teaching. Rarely do these strategies join up. They can, and they should, argues **Graham Gibbs**.

Most institutions have had a research strategy for some time. Quite a few mention in their learning and teaching strategy the importance of research strengths to their teaching. It is still unusual, however, for these learning and teaching strategies to then mention any activity designed to maximise the benefit to undergraduates of research strengths. And I have yet to see a research strategy which took its implications for teaching seriously. While some of the other articles in this issue of Exchange are addressed at teachers who are also researchers, this article is intended to prompt discussion about how the link between research and teaching might be addressed in institutional strategies.

Limiting the negative impacts on teaching of research

Most people, including myself, believe that research can benefit teaching. In practice, the empirical evidence is pretty clear that, on average, it does not. We need to examine why not.

One likely explanation is that, in some circumstances, allocating effort to research simply detracts from the time and energy available for teaching. As time and resource pressures have intensified, the likelihood that this will happen has increased. Studies of the extent of emphasis placed on research and on teaching, at the level of a department, show strong negative correlations. It is rarely possible to give high priority to both.

Both of my daughters have this year studied at leading universities. Both have experienced late feedback on assignments, very little feedback when it does finally arrive and, sometimes, no feedback at all. On the basis of their personal experience, I calculated that Open University students will receive, on average, fifty times as much feedback during their undergraduate careers as will my daughters. The fact that my daughters' lecturers are at the cutting edge of their subject when off undertaking their research does not help my daughters much in relation to the feedback that they don't receive. Departments that emphasise research commonly have policies deliberately to withdraw lecturers from teaching duties so as to preserve their time for research. I have encountered examples of:

- modules where all coursework has been dropped and now there is only an exam
- limiting students' access to their project and dissertation supervisors - in one case to just two meetings for a final year project
- halving the number of seminars, or doubling their size
- stopping all marking of lab reports and of 'problem sheets'
- replacing experienced research-active lecturers with postgraduates who have limited research and teaching experience.

I assume that if departments did not make such policy decisions, and instead placed an equal emphasis on research and teaching, then there might well be a much clearer positive correlation between research excellence and teaching excellence. Much the most effective strategy for strengthening the teaching-research nexus is to stop neglecting teaching, and to provide more opportunities for lecturers' research strengths to have an impact on teaching by them actually interacting with their students.

A US perspective

In 1998 The Boyer Commission published a blueprint for America's research universities in which it noted that, "Thousands of students graduate without ever seeing the world-famous professors or tasting genuine research".

They went on to argue that, "Universities need to take advantage of the immense resources of their graduate and research programs to strengthen the quality of undergraduate education..... There needs to be a symbiotic relationship between all the participants in university learning that will provide a new kind of undergraduate experience available only at research institutions".

Some of the neglect of teaching is a matter not of policy but of culture and of lack of recognition and reward for teaching. The Teaching Quality Enhancement Fund National Co-ordination Team (TQEF NCT) has recently published a collection of case studies of how institutions are building recognition and reward mechanisms into their learning and teaching strategies to try to redress this balance. More than two thirds of institutions have already overhauled their



"... it might be more effective to re-orient the research so that it informed what was actually taught".

recognition and reward systems. However, very few mechanisms include any element which recognises teachers who link research to teaching. Usually rewards for teaching are simply in competition with rewards for research, and the two elements are dealt with entirely separately. It would be possible to reward research which benefited teaching and to reward teaching which made the best use of research.

Re-orienting research

Much of what is written about the teaching-research nexus seems to assume that the research component is inviolate, and that what might change if the nexus is to be strengthened, is the teaching. In some areas it may be possible to re-orient the curriculum so that researchers could teach what they research. But in many subjects, particularly where there are constraining professional requirements, there is little

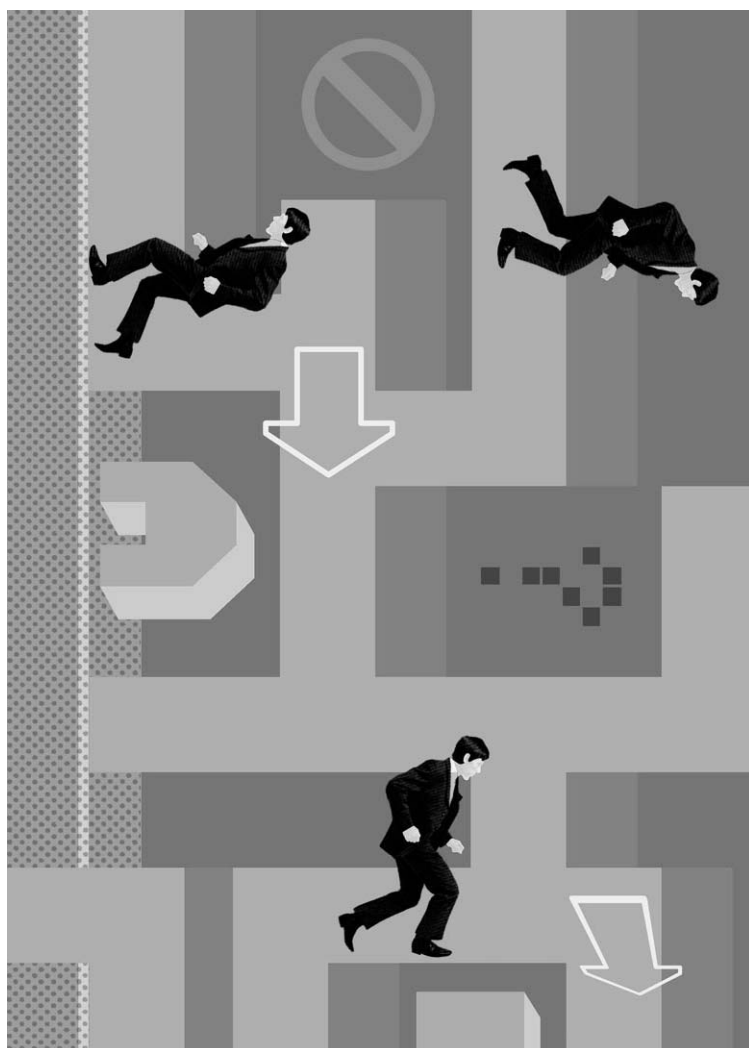
“If one were being strategic in the way research was supported and oriented, so as to benefit undergraduate teaching, one would probably not do very well in the RAE”.

scope for such flexibility. Instead it might be more effective to re-orient the research so that it informed what was actually taught. This re-orientation would not be easy for, or welcomed by, lecturers in mid-career; but it could form the basis of a long-term approach to recruitment of lecturers in the future.

The type of research undertaken could also usefully be re-oriented. Using as categories the forms of scholarship Boyer described in *Scholarship Reconsidered* helps to identify where benefit to

undergraduates is likely to be easiest to nurture. It suggests:

- The **scholarship of discovery** – the type of scholarship most valued in the RAE – is the least likely of all types of scholarship to benefit undergraduate learning, especially in the students’ crucial first year. It is extremely unlikely to relate to much or any of what is taught – it is simply too specialised or advanced. Sensible hypotheses can be developed about how students might benefit indirectly from their teachers being engaged in discovery research, even where the research is on an unrelated topic. For example, students might absorb a research approach and read more widely, or might develop more sophisticated argumentation. All such sensible hypotheses have been demonstrated to have little empirical foundation.
- The **scholarship of application** seems much more likely to lead to benefits to students – through



generation of examples, case materials, the basis for student projects or even supervised internships or consultancies. The RAE often does not value such scholarship, and income generated through applied research may well not count in the RAE.

- The **scholarship of integration** is essential to teaching. In the form of the production of textbooks or reviews of fields it seems highly likely to benefit students, either through the provision of learning resource material or through lectures or other organising frameworks that help students to conceptualise complex fields of study. Scholarship of integration is often not valued by the RAE.
- The **scholarship of teaching** is essential to good teaching, and is also rarely valued by the RAE.

The disjunction here is very clear and sharp. If one were being strategic in the way research was supported and oriented, so as to benefit undergraduate teaching, one would probably not do very well in the RAE. If one's research strategy consisted of little more than trying to do well in the RAE, this would seem unlikely to be the best way to benefit teaching.

“To help meet the crucial ‘access and retention’ Government agenda for higher education, linking research to teaching means supporting the scholarship of teachers”.

Disciplinary differences and departmental strategies

Within all but the research elite institutions, there are varied standards of research, and varied proportions of staff entered into the RAE across departments. In addition, the type of scholarship undertaken in departments usually varies widely, with, for example, an emphasis on consultancy and practice in some applied areas and plenty of scholarship of integration in others. In practice, the way research is most likely to benefit undergraduates is likely to vary widely between departments within an institution. Centrally determined research strategies that set the same kind of research goals for all departments regardless of

Some examples of good practice

Oxford Brookes University, in the context of the move to semesters, required all courses to identify explicitly how they ‘deliver’ teaching-research links.

At Earlham College (USA), applications for research grants have to identify how the proposed research will benefit students through producing a ‘pedagogic impact statement’.

McMaster University (Canada) has established an Inquiry Project, to develop inquiry based courses across the University, starting in year one.

Individual academics applying for promotion at the University of Auckland (New Zealand) need to show how their research and teaching are linked.

their history or context seem just as doomed to failure as central learning and teaching strategies that set educational goals independently of the kinds of pedagogy used in different disciplines. If it is intended that research should benefit teaching, then it is essential to allow and encourage departments to work out how this benefit might best operate in their own unique context, and to develop and support locally varied strategies accordingly. Getting departments to engage in the debate necessary to develop locally relevant strategies to achieve this link is the first and most important step.

A list of references relating to this article can be found at www.exchange.ac.uk

Making the departmental link between RESEARCH AND TEACHING

Departments can and should play a central role in enhancing research-teaching relationships. There are many ways to achieve this, as this article explores.

The link between research and teaching happens, or not, within departments and faculties. This is where teaching and research are organised, resourced, staffed and delivered. This is where research agendas are set, and where teaching programmes are designed and delivered. This is also where the relationship between teaching and research is most susceptible to disciplinary developments and values. Departments provide the critical interface between institutional policies and strategies, whose impact on the teaching-research nexus is no more than formative, and the programme level, where the students' teaching and learning experience is implemented.

How can departmental policies and strategies be designed to plan, promote and enhance the relationship between teaching and research? Of course, different departments and subject groupings will respond to these challenges in different

ways. But, Project LINK (Linking Teaching with Research and Consultancy in the Built Environment) an FDTL Project has developed some answers (see box).

The core idea of this article is that enhancing the relationship between research and teaching has to be created, planned and structured in a systematic way by departments. Two helpful early activities consist of the following:

- a *Departmental Focus Group* is especially valuable in bringing together research and teaching staff where 'two camps' exist. It is an effective way of exploring staff perceptions, sharing current experience, identifying constraints and opportunities, and generating momentum for further development
- a *Departmental SWOT analysis* can be used to examine such things as curricula dealing with research-based and research-led learning; management, organisation structure and staffing; and cultures of inclusiveness or exclusiveness.

Project LINK

Linking Teaching with Research and Consultancy in the disciplines of Planning, Land and Property Management and Building is an FDTL project being undertaken by Oxford Brookes University, The University of the West of England, University of Westminster and Sheffield Hallam University, into the what, where and how of "Linking Teaching with Research and Consultancy in the disciplines of Planning, Land and Property Management and Building". As well as producing a portfolio of effective practice regarding course design it is also shaping departmental and institutional policies that support productive relationships between *research and teaching*. Further information can be found at: www.brookes.ac.uk/schools/planning/LTRC/

Strategies

Building on the SWOT analysis, a valuable next stage is to carry out a detailed audit of teaching programmes and research. This should provide a systematic review of how and where departmental research feeds into teaching programmes and how effectively it is integrated. It should also review programme design and structure and curriculum content and programme delivery, to identify how the student experience of teaching and learning is linked to research.

Departments should also review their learning and teaching and research strategies and committee structures, ensuring that these are complementary and together address and strengthen the teaching-research links. These strategies should set objectives to:

- enhance the curriculum to make more explicit research-led and research-based elements
- integrate research-based/led learning
- develop the profile of pedagogic research.

The critical question here is - 'How does your department's learning and teaching strategy articulate links between teaching and learning and research?'

“The link between research and teaching happens, or not, within departments and faculties”.

Staff resources

The relationship between teaching and research will only be developed if academic staff are committed to this relationship, and are supported by enabling structures and resources.

Division between research and lecturing staff is frequently asserted to be the biggest barrier to enhancing teaching-research links – a division which the RAE is thought to compound. Another frequent assertion is that good researchers are not necessarily good lecturers, and vice versa. We might all recognise these stereotypical beliefs; some of us may share them. However, there is little systematic evidence to confirm them.

Departments can be proactive in challenging these assumptions and myths, and in developing coherent strategies to enhance the nexus. Better cohesion can be achieved by harmonizing teaching teams and research clusters, for example by:

“enhancing the relationship between research and teaching has to be created, planned and structured in a systematic way by departments”.

- enabling and encouraging all staff to join research clusters
- requiring clusters and teams to develop coherent strategies for both research and teaching activities, and the links between them
- ensuring that research clusters and teaching teams use programme development and review to enhance the synergies.

Equally important will be to review staff development policies, for example by:

- ensuring that research-teaching links are nurtured through staff development policies
- using workload planning to encourage more integrated management of teaching and research
- encouraging staff to use sabbaticals to develop research-based or research-led teaching
- encouraging contract research staff to participate in teaching
- ensuring that senior researchers teach across programme levels, helping to embed a research-led teaching culture for students.

Curriculum and programmes

In the end, how effectively teaching and research are related can only be tested by the quality of the outcomes. What is the student learning and teaching experience? What are the longer-term benefits, in terms of employability and of the critical awareness and research skills demanded in a knowledge-based society? Similar questions incidentally might be asked about the ways teaching can enhance your research.

Beneficial outcomes are not automatic.

Programmes need careful design and evaluation if they are to achieve these beneficial outcomes.

You could start with a 'route map' of the programme content, showing where and how research supports content and delivery. This will point up opportunities to revise or develop new programmes – or more likely modules – which better incorporate staff research (i.e. research-led teaching), or ensure that

“... encourage staff to use sabbaticals to develop research-based or research-led teaching”.

programmes/modules are more directly research-based.

Similarly, course teams can carry out a pedagogic audit of their programmes. Here the focus might be on delivery and assessment which involve research-process and problem-based methods of learning. Students can learn by investigating issues, framing questions, solving problems, testing and interpreting evidence, by critical engagement with, and application of, research literature and reports. This simulates the student research process, and can be delivered in group and project work.

A specific part of the audit should focus on how research skills development takes place in programmes. This involves reviewing student progression in developing research skills, acquiring knowledge of research methods and demonstrating independent research capacity. Much of this learning might be incorporated directly into substantive modules.

Aim for inclusivity by seeking ways to engage students more directly in the department's research culture by:

- making more information available to students on staff research activities and output
- focusing dissertation topics on staff research interests
- encouraging student involvement in staff research and consultancy.

Validation and annual programme review are useful tools to assess the scale and effectiveness of research-teaching links. Departments can ensure that programmes satisfy generic outcomes, which enable students to understand, learn and benefit from research-based inquiry, to acquire research skills, and to undertake independent research. Such reviews can clarify where research skills are taught, practiced and assessed, and a more integrated delivery of research and scholarship within all modules or units can be achieved, rather than exclusively in those devoted to 'research methods'.

It is the individual's scholarly engagement with her or his subject, and how this engagement is brought to the lecture room and research setting, that, above all, mediates the relationship between teaching and research. In seeking to enhance the relationship between teaching

and research, it is vital to allow for, indeed to encourage, diversity of practice. But the relationship will not develop automatically - it needs strategies, resources and well designed teaching programmes.

A list of references relating to this article can be found at www.exchange.ac.uk



“A specific part of the audit should focus on how research skills development takes place in programmes”.

1 Disciplines shape the relationships between teaching and research. The following series of three articles explore some of the variety of practice. First we examine the perspective of the built environment disciplines.

Constructing the teaching-research link in the Built Environment disciplines

Knowledge creation is no longer the preserve of the universities. In the applied subjects of architecture, construction and urban planning - as with medicine, education and social work - useful knowledge is created on the job as much as it is in the research lab, lecturer's office or classroom. This has always been the case, albeit not always recognised. What is new is the fast-growing complexity of knowledge and its applications, and the widespread availability of advanced infrastructure to support home and industry-based learning. In this kind of environment, teaching and research need to be inextricably linked. Students, teachers and professionals in the workplace are all learners and researchers as well as teachers.

The world of practice

Teachers of construction law, property management, materials, urban design, transport systems and housing policy have to research the world of practice each year to keep up-to-date. Most course work in the built environment disciplines uses 'real-world' cases and students learn to use the quick and dirty research methods that they will apply when working as professionals. Students and teachers research and learn together through live projects, study visits, simulations, design studios, consultancy and visiting speakers. Practising architects, planners, surveyors

and project managers discover knowledge haphazardly on the job, and reflect systematically through continuing professional development. They exchange knowledge with students and teachers via work placements, project supervision and the reports they write.

Academic research is mostly applied, offering reflection, critical analysis and experimentation. The outcomes of this academic research are rarely too complicated for undergraduates to understand, and tend to find their way into curricula as illustrations and discussion material.

In these vocational subjects there is, then, a natural fluidity at the boundaries between teaching and research; between doing, discovering, learning and disseminating. Fluidity can be messy. The messiness

“Students, teachers and professionals in the workplace are all learners and researchers as well as teachers”

gets greater as knowledge expands and fragments into multiple specialisms. This messiness poses challenges for both research and teaching. For research, the challenge is, first, how to bring discipline to a research field that is highly topic-oriented and informed by diverse theoretical perspectives, and,

An example of integration - student teams and Sunderland City Council

Part of the spine of the Environmental Studies Degree at the University of Sunderland is a set of integrative 'Environmental Issues' modules. The second semester delivery of these modules brings together students from levels one, two and three for a 'local sustainability' project. The students work in small research groups looking at various aspects of sustainable development, in collaboration with Sunderland City Council. In 2000 each group was set the task of producing a sustainability profile for one of Sunderland's wards.

There was a differentiation of roles and learning outcomes between levels:

- level three students were directed to take a lead in the project management and research design
- level two students led in data analysis and shaping data collection strategies
- level one students led in fieldwork and basic research.

Each student team was required to submit a 5000 word joint report on their particular ward and to present their findings at a public conference attended by City councillors, external partners and invited members of their local communities.

secondly, how to do this in a way that keeps the bigger picture - in the end, an applied picture - in mind. For teaching, on the other hand, the challenge is how to sample from an ever-expanding knowledge base - including the fruits of academic research - to create a coherent curriculum and learning experience that both educates and trains.

Creating synergies

The danger for a vocational subject is that teaching and research interests tackle the challenges of complexity and messiness in incongruent ways, and lose the synergy that gives their subject coherence. Professional accreditation bodies, of which there are many in the Built Environment, tend to address the knowledge problem by prescribing content. This can easily lead to curriculum 'creep'; that is an impoverishment of the educational experience and a distancing of teaching and research.

On non-accredited courses, and where professions are less prescriptive, there is greater scope for academics to align research and teaching interests and for curricula to evolve more naturally. If academics have no incentive to correct this alignment to the

needs of industry, however, then academy and industry move further apart. Industry and the professions hit back by calling the academy to the negotiating table (as is currently the case in the construction industry, architecture and planning).

Academics plead that they are captives of the RAE and, perhaps, of their university's mission.

Getting an incentive structure right for a healthy teaching-research balance is difficult enough. Designing one to rescue the naturally creative partnership between the academy and industry without compromising teaching and research excellence is more difficult still. Outcomes from well-intentioned incentive schemes are famously perverse. Those Built Environment professions currently talking about relinquishing control over the curriculum may have it right. A university department with a commitment to a vocational mission will need its own internal incentives to align teaching and

research with its mission, and its own mechanisms for adjusting its mission to the changing needs of students, industry and academic staff.



2 The second article in our series examines teaching and research from the viewpoint of the science subjects.

OF MUTUAL BENEFIT?

Research projects in the undergraduate science course

Placing student research projects within the undergraduate course creates a direct link between staff research interests and students' learning experiences. What are the benefits and challenges of such projects for students and staff? With colleagues, I carried out an investigation into the impact of final year undergraduate research projects within several science departments, based at my own institution, to find some answers. The departments involved provided all their final year students with a research project experience, for example empirical work in the laboratory, analysis of a computer database, fieldwork or a theoretical analysis project.

Contributing to departmental research

Several features of student research projects supported departmental research efforts. For those lecturers working within large research groups, the presence of undergraduates provided an opportunity for PhD students to gain valuable professional development skills through their involvement in the day-to-day supervision of students. Having undergraduates come through research groups also provided a stream of potential PhD students for the group. Furthermore, we found several instances where student research projects resulted in co-authored academic publications.

Of course, these benefits come at a price. The involvement of students in research generates significant challenges. Many lecturers reported spending considerable time in guiding students,

particularly when PhD students were not available to support supervision. Student laboratory projects also drained limited financial resources, with costs compensated only partially by income from the teaching budget. A few students required considerable support, and were disruptive, rather than supportive, of the lecturer's research effort.

The student experience

Many students said that their research project had given them a fascinating insight into cutting edge research. *"It's your little baby (...) you do get really interested in one particular branch, little aspect of science. Whereas if you're working on different experiments every week, every session, it's just another experiment isn't it? (...) [With project work] you do get into what you're doing. We all did, I think," said one final year science undergraduate.*

Analysis of student learning over the project period showed that many students had transformed their view of how science research works. In particular, there was much more recognition that science advances through research programmes involving global networks of scientists often working on

"Analysis of student learning over the project period showed that many students had transformed their view of how science research works".

Examples from elsewhere:**A student research Journal at Chester**

Biological Science staff at Chester College have developed Origin – A Journal of Undergraduate Research in the Biological Sciences, which:

- annually publishes representative examples of research by students in the department
- gives “motivated students the opportunity to publish their findings by providing a rigorous but supportive review and editorial process”
- is supported by the LTSN Bioscience.

More information is available at www.chester.ac.uk/origin/

Many US universities have similar web-based student journals.

Developing disciplinary understanding at University College London

In term one, year one all students in the geography course at University College London do a project which aims to develop understanding of doing geographical research. The basic procedures are:

- each first year tutorial group is allocated a member of staff who is not their tutor
- that member of staff gives to their tutorial groups three pieces of writing which are representative of their work and their CV, and arranges a date for the interview
- before the interview, students read these materials and develop an interview schedule.

On the basis of their reading and the interview, each student individually writes a 1500 word report on a) the objectives of the interviewee's research; b) how the interviewee's research relates to his or her earlier studies and c) how the interviewee's research relates to his or her teaching, other interests and geography as a whole.

Women writers on the web at the University of Manchester

The Corvey Women Writers on the Web Project based at Sheffield Hallam University supports students doing and publishing research.

- Largely funded through the UK Arts and Humanities Research Board, the Corvey Project is developing a database of Romantic era women writers and selected texts.
- This research resource is specially designed to support students in researching and publishing using this material. An electronic journal Corinne (Undergraduate Research on Romantic-Era Literature) supports students and staff publishing their research.
- Dissertation students adopt a text or author and produce an individually negotiated portfolio of work which contains source documents in digitised form, a literary historical survey and a critical analysis.

More information is available at www.shu.ac.uk/corvey

competing ideas.

Project work also gave students a sense of ownership and responsibility that motivated them. Significantly, many students stated that their project work had informed career decisions about whether or not to pursue postgraduate research opportunities.

The open-ended and long-term nature of project work presented all students with considerable challenges. Many became disillusioned at some point during their project with what they perceived to be a lack of progress. In particular, the difficulty of getting reliable results in science research was a shock for students used to carefully designed practical activities within laboratory courses.

Worth the effort?

Research projects provided the majority of students in our study with a learning experience that synthesised, and showed the relevance of, much of their previous undergraduate study. Despite, or perhaps because of, the challenges they faced, many students found research work the highlight of their undergraduate experience. Of course, departments must consider the resource and workload implications of such projects. I have highlighted from our study some of the unique benefits for students and staff that projects can provide. Can alternative activities provide these benefits? If not, are we prepared for these learning opportunities to be lost from the undergraduate course?

A list of references relating to this article can be found at www.exchange.ac.uk

“... many students found research work the highlight of their undergraduate experience”.

3 The final article in our series examines the teaching and research issue from the point of view of the health sciences.

EVIDENCE-BASED PRACTICE IN HEALTH SCIENCES

In health care, there is general professional consensus that evidence-based practice is good practice. The idea is not new. Professional bodies require their members to remain up-to-date. This implies knowing current research, developing new skills and modifying practice to take account of advancing technological and scientific possibilities. What is new, however, is that evidence-based practice strengthens the link between research and practice, and challenges practitioners to be clear about the basis for their professional judgements and actions. Evidence-based care, moreover, promises to discipline the routinisation and habituation of practice, the trap of continuing to do what has always been done because it has always been done that way.

What are the implications of the rise of evidence-based practice for medical and health sciences curricula at undergraduate, pre and post-registration levels?

Learning how to learn

The rate of scientific advances requires health practitioners to be self-directed learners who know how to learn. In health



care, so much changes, so quickly, that educators must 'future-proof' training. This means building, at pre and post-registration levels, students' capacity to define their individual learning needs and search out appropriate training. This review of the vision of the practitioner as a self-directed learner is very relevant to the emphasis on evidence-based practice. Both challenge traditional approaches in medical and health sciences education, which have valued committing 'facts' to memory, and instead assert the importance of critical thinking.

Linking research, teaching and practice

Cardiology provides an illuminating example of how health practitioners experience the challenge of changing their practice over time. Fifty-year-old consultant cardiologists, and their seniors now

“Evidence-based care cannot resolve, and may only inform, how dilemmas might be managed”.

practice quite differently from how they did when they trained. Research has extended the possible range of interventions, and has developed understanding about how best to manage heart disease.

Cardiologists have had to develop new skills, change their practice and continue to learn. A key part of the change process has been their ability to make professional judgements. Research sometimes points in opposite directions. The benefits and side effects of new treatments take time to establish. Familiar health care approaches are not easily or quickly replaced, often for good reasons. Practitioners must operate within resource constraints and, at times, with competing views about what should be done for the patient. Evidence-based care cannot always resolve, and may only inform, how dilemmas might be managed. Health practitioners must learn to cope with clinical uncertainty and make the professional judgements for which they are accountable.

Linking teaching with research supports professional judgement by allowing practitioners to develop critical thinking, review research and also its applicability to patients. Research requires that a problem be framed as a question, that an investigation be appropriately designed, evidence analysed and recommendations for future action made. These processes and abilities support life-long learning, and enable practitioners to judge, rather than just comply with, the results of research.

What counts as evidence or research?

Evidence-based care, and how it is taught, together have the potential to enhance professional judgement. However, they are not the new panacea for the education of health professionals. This is particularly true if, as sometimes happens, evidence is defined narrowly, to exclude the growing body of qualitative educational literature on the impact of informal learning on practice and decision-making. Informal learning is

Linking teaching and research in the disciplines

This national project for the Learning and Teaching Support Network Generic Centre involves:

- exploring how to embed teaching-research links in disciplinary communities
- the creation of generic support materials to help further embed teaching-research links in disciplinary communities
- support materials to include a web site with links to international projects working on the teaching research nexus; a guide to support making strong linkages in departments and a range of workshop materials for others to adapt
- embedding teaching-research links in five LTSN Subject Centres disciplinary communities initially: Bioscience; Geography, Earth and Environmental Sciences; Hospitality, Leisure, Sport and Tourism; and Law; and recently extended to include English and Medicine
- providing a framework, ideas and strategies that will also support other LTSN Subject Centres in developing such links.

More information is available at

www.ltsn.ac.uk/genericcentre/projects.asp

learning gained outside classroom and lecture situations. In health sciences, informal learning tends to be gained in workplace settings through occupational experience. Educationalists have been interested for some time in defining the nature of non-formal or experiential learning, and in exploring its role in decision-making processes. Professional decision-making is informed by both formal and informal knowledge. We will better serve health practitioners by educating them about the role of both in shaping practice.

In summary, evidence-based care has a valuable contribution to make in educating health professionals for the demands of real practice. If evidence is defined narrowly, it may exclude from review the impact of workplace learning and cultures upon practice. Evidence-based care strengthens the drive towards curricula that emphasise the development of critical thinking and learning how to learn.

A list of references relating to this article can be found at www.exchange.ac.uk

“Professional decision-making is informed by both formal and informal knowledge”.

What do students think ABOUT RESEARCH?

Students can develop a more sophisticated understanding of the role of research in universities - particularly if they are helped to produce as well as consume research. This article explores the benefits to all.

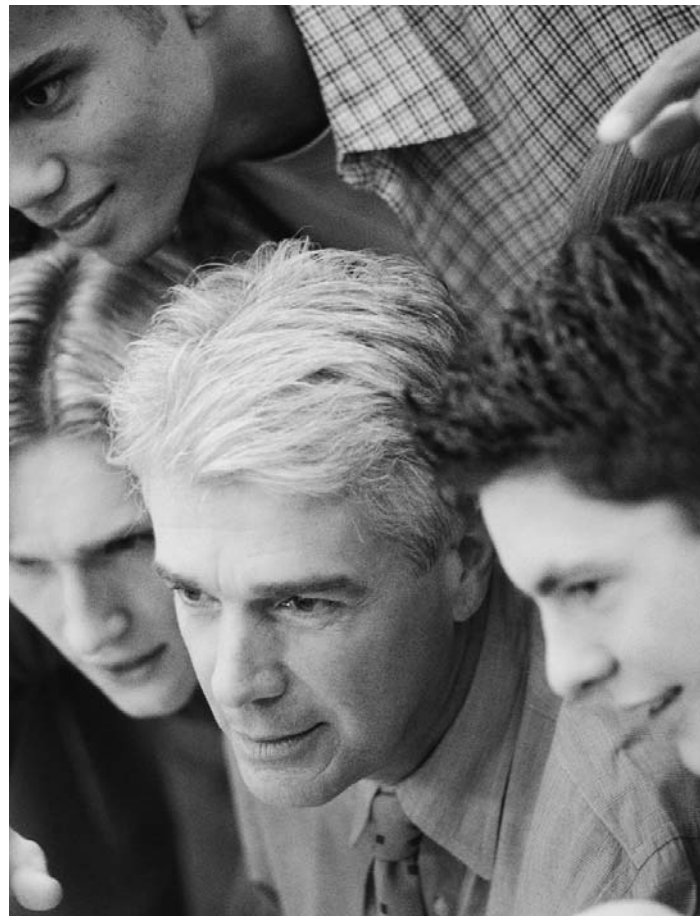
Twelve third-year students at the University of East Anglia (UEA) collaborated with academic staff (including myself) and the Students Union on the 'Research-Led Teaching and Learning in Higher Education' project based at the same institution. The aim was to investigate undergraduates' experience of the relationship between teaching and research in their university.

Experience of research-rich environment

Generally, we found that students valued highly the experience of studying in a research-rich environment. Undergraduates reported many examples and illustrations of what they considered an essential relationship between research and teaching. These examples also revealed a range of different views as to what constitutes research. It was clear that, for many new students, their initial views were often to associate 'research' with laboratory research ('men in white coats'). But this early assumption was gradually overlain with other images, and with a deeper understanding of research, as they progressed through their undergraduate careers.

Research-based teaching

A key distinction was made between teaching which simply placed students as audiences of the research carried out by their teachers and teaching which



“A key distinction was made between teaching which simply placed students as audiences of the research carried out by their teachers and that teaching which engaged students directly in research activity ...”

engaged students directly in research activity, the former being more common than the latter in some disciplines. This distinction was critically important to many students. If universities really want to build an inclusive research culture, and to develop the appetite of today's undergraduates to become tomorrow's research students, then they should do more to initiate students into the processes of research in their undergraduate years.

Intention and perception

There was evidence of a gap between university policy intention and student perceptions. In particular, there were some ways in which, in practice, undergraduates felt excluded from the 'research community'. While the need to better understand the links between research and teaching and learning was important to students, this was not something they were always explicitly 'taught'. Rather it emerged slowly as a personal realisation. As one reported, research *'does not jump out and grab you. If you are looking for it however, you will find it. Open your eyes to research and it will no longer be at the background, but will be at the foreground of everything you see and do'*.

Another study of student awareness of research in their university

In a recent survey of almost 200 students at the University of Gloucestershire, only just over half were aware of books, journal articles and other forms of research and consultancy output produced by staff in the university. However, the positive aspects of staff involvement in research - increasing understanding, or stimulating interest and enthusiasm - were identified by students almost five times as frequently as possible negative aspects, such as lack of availability of staff, or apparent lack of interest of staff in teaching and facilitating learning.

'Open your eyes to research and it will no longer be at the background but will be at the foreground of everything you see and do'.

The complete research process was often invisible to undergraduates. The partial picture they had, from its visual signs or traces, could be, and often were, misread and misunderstood by them. Most had a poor grasp of the nature of academic work. Although they clearly appreciated the idea of the university as a strong and active research community, in which they might be included, few were aware of the full range of sectors and activities of the university, or of the relationship between intellectual capital gained through research and other resources (human and financial).

A better understanding

The student researchers in the project suggested that fuller knowledge of these aspects of university life might help better understanding of the role of research in the wider curriculum by undergraduates, and thus provide them with access to a more complete and valuable learning experience. As one student researcher finally commented, *'Although this would not have bothered me before I came to university, studying at UEA has made me realise how stagnant and narrow-focused study would be without the aid of research. Research keeps things alive and allows ideas and knowledge to progress and move forward'*.

A list of references relating to this article can be found at www.exchange.ac.uk

1 One of a pair of articles which show how research and teaching can be linked by lecturers and educational developers researching pedagogic practice and policy.

Turning the light on ourselves: researching pedagogic practice and policy

There has been a long tradition of teachers researching their practice in the compulsory sector. By contrast, practitioner research into university teaching and learning is relatively new.

Doubtless this is due in part to the kind of research that typically is rewarded in higher education. The hitherto homogenous and educationally privileged nature of British student populations may also have discouraged pedagogic research. However, accompanying the substantial changes in numbers, academic preparation, background and needs of those now entering our universities, we can trace a turn to higher educational research and development to support these changes. This turn includes the growing provision of funding for research partnerships which involve practitioner research.

Funding

Besides major national research or development projects, such as the Economic and Social Research Council (ESRC) Teaching and Learning Research

“... practitioner research into university teaching and learning is relatively new”.



Programme and the Higher Education Funding Council for England's (HEFCE's) Fund for the Development of Teaching and Learning, most Learning and Teaching Subject Networks offer seed-corn funding for local projects of research and development. Many universities provide internal funding for academics wanting to research their teaching. And a significant number of educational development units are encouraging practitioner research within programmes of professional development.

LIZ BEATY, Director, (Learning and Teaching), the HEFCE

GLYNIS COUSIN, Senior Research Fellow, Centre for Higher Education Development, Coventry University



because they create powerful dialogues between different fields of inquiry, allowing each to learn from the other. Two examples with which we are involved are the Geography, Earth and Environmental Sciences Subject Network's 'Enhancing the quality of fieldwork through pedagogic research' project funded by the LTSN and the ESRC funded 'Enhancing Teaching and Learning in Undergraduate Education' project. In

Practitioner research and cultures of inquiry

Practitioner research sometimes clashes with discipline-based cultures of inquiry which value researcher objectivity, which often means researcher distance from the object of study. In our experience, many academic colleagues express an initial anxiety that intimacy with the research site must bring problems of bias. However, this anxiety appears to be diminishing as colleagues begin to appreciate that using their own practice as a laboratory enables them to conduct what Schon in *The Reflective Practitioner* calls 'frame analysis'. This involves them becoming aware of the frame within which they practice in order to develop an awareness of other frames. What elevates this analysis to research is its subjection to rigorous, public enquiry. This can be done fruitfully in partnerships between subject specialists and educational specialists.

Partnership research

Higher education research partnerships between educationalists and subject specialists are very rich

both these projects of co-inquiry, we are working with colleagues who are interrogating their professional practice in a mutual quest to understand more about the nature of their subjects from a pedagogic perspective. In our view, the prospects for an enriched as well as expanded university sector depend on a cultural shift that values practitioner research within these kind of interdisciplinary partnerships.

A list of references relating to this article can be found at www.exchange.ac.uk

“Higher education research partnerships between educationalists and subject specialists are very rich because they create powerful dialogues between different fields of inquiry, allowing each to learn from the other”.

2 The second of a pair of articles which show how research and teaching can be linked by lecturers and educational developers researching pedagogic practice and policy.

TOWARDS RESEARCH-LED Educational development



A few weeks ago I was investigating what people understood by research-led teaching and what their institutions were doing to bring research and teaching together. I was astonished when the head of one educational development centre said: “We’re not concerned with research. We’re just here to do teaching development!”

Taking research seriously

It’s true there was a time when educational developers could focus on teaching and forget about research. Those days are now gone. Developers are having to take research seriously because universities, whether or not they are ‘research-intensive,’ are seeking to bring research and teaching closer together.

In today’s accountability context, data-hungry academic managers need to make decisions on the basis of evidence. For example, what has focused the minds of deans in my own institution on the need for

changes in teaching is the data on students’ experience which we, the educational developers, have collected. Developers need to be ready to respond to managers’ requests for data, which means taking research into teaching and students’ learning experiences seriously.

Graduate certificates in higher education teaching, ILT memberships, FDTL funded projects on teaching development and the like all mean that teaching is becoming more scholarly. Academics are more and more encouraged to use coherent theories of teaching and learning, and to make curricular decisions on the basis of evidence. They are demonstrating their use of scholarly processes in teaching award schemes and promotion. Educational developers cannot just sit on the sidelines. Unless they, too, take research seriously, they will not have credibility.

Evidence-based educational development

This means that educational development has itself to be evidence-based. If teachers are going to engage in the scholarship of teaching, educational developers must exemplify this. This means doing research which is useful in academic development work, and using research, explicitly, in development activities.

One aspect of research-led teaching that is growing fast is inquiry-based learning. One variant of this, problem-based learning, has been around for some time

“... educational development has itself to be evidence-based”.

medical and professional fields. It is now spreading through undergraduate education more generally. In problem-based learning, the curriculum is organised around the process of research. Unless educational developers take research seriously, they are unable to support academics as they implement these approaches.

Importantly, developers have a role in generating discussions about the possibilities for research and what it might become. There are lots of things developers know about good teaching which could be used to enhance research. For example, good communication has long been considered important in teaching, and is now being recognised in scientific research. And reflective practice, which is a recognised part of professional higher education teaching, is now becoming increasingly important in research.

Many developers are ill-prepared for these challenges. They feel distant from academic research, and are often sceptical about how it can dovetail with their practice. Many are not skilled in doing research. But they must now become credible researchers in order to be credible as agents for change. They must take research seriously. Universities are working to make teaching research-led. Developers must work to make educational development research-led, too.

A list of references relating to this article can be found at www.exchange.ac.uk

Linking research and teaching: A GUIDE TO KEY READING

Boyer, E. L. (1990) *Scholarship Reconsidered: Priorities of the Professoriate*. New Jersey: The Carnegie Foundation for the Advancement of Teaching.

This seminal book argues that the emphasis in US universities on ‘discovery research’ has been at the expense of more integrative scholarship and connecting research to student learning.

Brew, A. (2001) *The Nature of Research: Inquiry in Academic Contexts*. London: Routledge Falmer.

A study of the nature of research, this book argues for a much wider perspective on what is research and discusses the implications for teaching-research links.

Jenkins, A., Breen, R., Lindsay, R. and Brew, A. (2002) *Reshaping Teaching in Higher Education: Linking Teaching and Research*. London: Kogan Page and the Staff and Educational Development Association

A range of strategies, to strengthen teaching-research links is presented, strategies that individuals, course teams, departments / institutions and national systems can adapt. International examples are included and the research evidence is reviewed.

Jenkins, A. and Zetter, R. (2002) *Linking Teaching and Research in Departments*. York: Learning and Teaching Support Network Generic Centre.

Suggestions are provided for those with department leadership roles for research and teaching.

The Boyer Commission on Educating Undergraduates in the Research University (1998) *Reinventing Undergraduate Education: A Blueprint for America's Research Universities*. New York: Stony Brook State University of New York. (naples.cc.sunysb.edu/Pres/boyer.nsf) Suggestions are offered, particularly for research elite universities, on connecting staff research to student learning.

Zubrick, A., Reid, I., & Rossiter, P. (2001) *Strengthening the Nexus between Teaching and Research*. Canberra: Department of Education, Training and Youth Affairs.

(www.detya.gov.au/highered/eippubs/eip01_2/default.htm)

Descriptions are given of how three contrasting institutions (research elite University of Western Australia, regional/access-led University of Ballarat, and professionally-led Curtin University) formulated strategies to strengthen the nexus between research and teaching in the context of their particular institutional missions.

“Let’s stop trying to separate the inseparable”



In our knowledge-intensive society, we are all both teachers and researchers. The present separation between teaching and research damages both, argues **Peter Scott**.

The case for maintaining the link between teaching and research can be simply stated: you cannot communicate knowledge without adding to it, and you cannot add to knowledge without communicating it. Every act of exposition, every dialogue with a student, has the potential for creating new insights; and all research findings must be communicated (the wider the better).

The conventional view holds that the separation of teaching and research is inevitable, because it enables both activities to become more ‘professional’. This view must be challenged. The conventional view is only true if professionalism is defined in reductionist terms which diminish the creative potential of both teaching and research. The parallel view that differentiation between teaching and research universities (code-name: ‘Operation Diversity’) is equally inevitable must also be challenged; both types of university, not simply those that concentrate on teaching, would be incomplete.

These views need to be challenged more strongly than ever in the light of the Higher Education Funding Councils’ recent decision to commission a ‘major review’ of the Research Assessment Exercise (RAE). The main purpose of this review, of course, is for the

“... the traditional arguments for associating teaching and research are stronger than ever”.

funding councils to be seen to be responding to the criticisms of the RAE 2001 – or, rather, of its funding outcomes. After all it is barely three years since the last ‘fundamental review’ of the RAE. No change then; not much now? Certainly this latest review is no more likely than the last to question the need to maintain two separate regimes, for research and for teaching.

Valuing the link

On the contrary, the traditional arguments for associating teaching and research are stronger than ever. High-quality teaching must be informed by research – in two different senses.

The first argument is that effective teachers must cultivate habits of self-critical reflection, on what they teach and how they teach it. This does not mean that all higher education teachers must be engaged in research ‘of national/international significance’, to adopt the language of the RAE. However, condescending references to ‘scholarship’ (reading the books that other people write) or to ‘keeping up-to-



“...you cannot communicate knowledge without adding to it, and you cannot add to knowledge without communicating it”.

date’ are inadequate descriptions of this professional responsibility.

The second argument is that best practice in teaching (and assessment) is increasingly based on research techniques such as student projects and group assignments. Not only teachers but also their students must be researchers.

The right of universities to award their own degrees and determine their own academic programmes (with a little ‘help’ from professional bodies and, now, Quality Assurance Agency benchmarks, frameworks and guide-lines) must be rooted in an intellectual authority that can only be derived from research and scholarly activity. The proliferation of new courses and qualifications, such as Foundation Degrees, and of new modes of delivery and learning environments, such as web-based learning management systems or

work-based learning, increases rather than diminishes the need for such authority.

A knowledge-intensive society

These now traditional arguments, suitably modernised, have been reinforced by new arguments derived from the changing constitutions of knowledge and of society itself.

First, knowledge production is now much more widely distributed. It takes place anywhere and everywhere – in the community, or the company, as well as the academy, or the laboratory; and certainly in the classroom and lecture-hall. Just as it has become difficult to disentangle knowledge producers from knowledge users, so it is now difficult to say who is ‘teacher’ and who is ‘researcher’.

Secondly, in a knowledge-intensive society we all have to be ‘researchers’, just as in learning (or intelligent) organisations we all have to be ‘teachers’. The signs are everywhere – from the rise of ‘evidence-based’ public policy to instant access to ‘expert’ information on the Internet. Universities have been slow to adapt to this new, more flexible and reflexive, environment. There is a risk that, if higher education continues to insist on ever-more rigid professional and

“Not only teachers but also their students must be researchers”.

institutional demarcations (contrary to its own values and traditions), it will become part of an ‘old economy’ of knowledge – and suffer the same fate as other ‘old economies’.

“RESEARCH AND TEACHING – repairing the damage”

National policies and funding arrangements have variously weakened and ignored links between research and teaching. This article explores what can be done to restore these links.



Institutions have, for many years, been funded separately for research and teaching. Whilst this makes for a number of artificialities, institutions have generally been able to cope with these. But the position is now more serious for those who want to see a closer relationship between research and teaching. Why? Because neither of the assessment methods, for research or for teaching, looks at how institutions develop and manage the relationship between research and teaching.

The arrangements for assessing teaching quality are marginally better than those for research. One or two QAA continuation audit reports have commented (adversely as it happens) on institutions' claims about the benefits of staff research for student learning. Moreover, the new Framework for Higher Education Qualifications makes the explicit assumption that honours level work will be taught by staff who are themselves engaged in research and scholarship, and further that the extent to which this happens can be checked through future institutional audits.

RAE impacts

By contrast, the Research Assessment Exercise (RAE) contains no provision for evaluating the impact of the

Rejecting a link...

HEFCE's Review of Research (2000) notes that "Despite the evidence of a synergistic relationship between teaching and research, we make no recommendation about this: it would be wrong to allow teaching issues to influence the allocation of funds for research".

... and encouraging a link

Staff seeking individual entry to the ILT since 1 August 2002 are required to demonstrate evidence that "you ... have actively sought opportunities to create links between your teaching or support for learners and your research and scholarly activity or relevant professional engagement".

The Quality Assurance Agency's degree-level descriptors state the "an Honours graduate will have developed an understanding of a complex body of knowledge, some of it at the current boundaries of an academic discipline. Through this, the graduate will have developed analytical techniques and problem-solving skills (and) be able to evaluate evidence, arguments and assumptions, to reach sound judgements".

“If we are to begin to encourage re-connections between research and teaching, therefore, it is surely with the RAE, or any successor exercise, that we should start”.

research being assessed on other activities. More importantly, there is ample evidence that the exercise has reinforced the conventional lack of parity of esteem between research and teaching of which there is such abundant, and continuing, evidence. The RAE has also damaged curriculum innovation. If we are to begin to encourage re-connections between research and teaching, therefore, it is surely with the RAE, or any successor exercise, that we should start.



Options for linking

There are various options here. It would be particularly attractive to require institutions to show, as part of their bids for research funding:

- how they manage research to ensure that teaching at all levels benefits from staff involvement in research, including research into student learning
- how any possible negative consequences of staff research, such as staff absences on sabbaticals, are minimised
- how effective synergies are developed between the institution's research and learning and teaching strategies.

More generally, any future arrangements for funding and assessing research should strive to strengthen

the link between research and teaching rather than weaken it. In particular, if research funds are to be restricted to elite units, departments or institutions, consideration should be given to establishing special funding streams for scholarships, for staff or institutions outside these flows. This would help ensure that scholarship functions effectively as the vital link between research and teaching as suggested in the HEFCE's Fundamental Review of Research Policy and Funding in 2000.

The relationship between research and teaching is a serious matter. We should be serious about it.

A list of references relating to this article can be found at www.exchange.ac.uk

Meanwhile, in other countries:

In the **USA**, The National Science Foundation provides competitive awards to institutions, departments and individuals for developing teaching-research links.

The 1996 **Hong Kong** RAE explicitly valued the production of textbooks and e-learning.

In 2000, **New Zealand's** Academic Audit Unit audited all universities for how they linked research and teaching, and studied the effects of this link.

Hopefully the further review of the RAE can look at these and other ideas.

“...any future arrangements for funding and assessing research should serve to strengthen the link between research and teaching rather than weaken it...”

MOVING FORWARD in partnership

Andrea Rayner describes moves to introduce more coherence into national teaching quality enhancement and examines some successful work being undertaken through current collaborations.

Quality enhancement and collaboration in learning and teaching are both currently high on higher education's national agenda. During the spring and summer of this year, the Teaching Quality Enhancement Committee (TQEC), chaired by Sir Ron Cooke, has been considering the roles and relationships of the three main agencies concerned with teaching quality enhancement in higher education. The TQEC was established by the Higher Education Funding Council for England (HEFCE), Universities UK and the Standing Conference of Principals (SCOP). Its brief is to make recommendations on ways to promote relationships between the various quality enhancement agencies and avoid unnecessary overlap in their areas of work. The three main agencies included in the review are the Higher Education Staff Development Agency (HESDA), the Institute for Learning and Teaching in Higher Education (ILTHE) and the Learning and Teaching Support Network (LTSN).

The review is designed to dispel any confusion in the HE community about what exactly these agencies - working with other bodies concerned with teaching and learning such as the TQEF National Co-ordination Team (TQEF NCT) and the JISC (Joint Information Systems Committee) - actually do. The review will clarify the areas of responsibility of each agency and make recommendations on how to support students, staff and institutions in achieving high quality education. But behind the plethora of acronyms there is already a great deal of synergy and positive collaboration between the agencies. Two of these (the ILTHE and LTSN) are among the partners in Exchange. Here we report on three activities in which two or more Exchange partner organisations are co-operating.

A RAPID track to collaboration in engineering

RAPID 2000 is a Fund for the Development of Teaching and Learning (FDTL) Phase 3 project co-ordinated by the NCT. It aims to promote skill development on undergraduate programmes in Civil & Building Engineering.

The success of such a project often requires the involvement of academics from other institutions. Dissemination is key, not only in engendering involvement but also in raising the profile of the project's work.

RAPID 2000, of which I am Project Manager, has a particular advantage - I share office accommodation with the LTSN Subject Centre for Engineering. Having the support and advice of the relevant LTSN Subject Centre in your discipline is critical. When you are in the same office as the source of that support and advice, so much the better!

How has RAPID 2000 benefited from working so closely with the Subject Centre? Here is one example. Recently, the Engineering Subject Centre held a seminar for the Engineering Professors' Council. At this event, the requirement to offer students a means of personal development planning (PDP) by the academic year 2005-06 was discussed. Many present were totally unaware of this requirement. It was agreed that I shall demonstrate the web-based PDP tool developed through RAPID 2000 at the next seminar for senior engineers.

The RAPID 2000 Project Director, John Dickens, is also the Director of LTSN Engineering. John comments:

"LTSN Engineering has developed good working relationships with most FDTL engineering projects. Our activities range from support on steering groups to organising specific workshops. This collaboration benefits both parties. Project Managers are helped by the provision of easy access to the academic community for dissemination. LTSN Engineering benefits by being able to incorporate the expertise developed in the projects into our activities. This helps us at LTSN Engineering to deliver one of our main aims: enhancing the quality of learning and teaching across engineering. Our relationship with the RAPID 2000 project is an excellent example of this".

ALAN MADDOCKS, RAPID 2000 Project Manager, Department of Civil & Building Engineering, Loughborough University

Learning to Work in the Built Environment

The FDTL 3 project Learning to Work: Working to Learn is based in the Schools of Surveying, Architecture and Landscape at Kingston University. The project has worked closely with the LTSN Subject Centre for Education in the Built Environment (CEBE), based at Cardiff University, since the project began in September 2000. Support for the project at all stages has come from both the TQEF National Co-ordination Team (NCT) and CEBE.

The Learning to Work: Working to Learn project team is undertaking a number of pilot learning and teaching initiatives all designed to prepare architecture, landscape, planning and surveying students for their placements into professional practice.

The team has also delivered workshops to surveying practitioners who are responsible for supporting graduates already in the workplace towards the attainment of professional qualifications. Andy Roberts of CEBE comments:

"We are increasingly facing demands, from the Government and from the built environment professions, for graduates who possess the necessary skills for professional life. It is often inappropriate for these skills to be taught within the narrow confines of academia. Developing work-based partnerships between educators and practitioners can be more beneficial to the students. The Learning to Work: Working to Learn project provides valuable resources in how these partnerships might be developed, which CEBE can disseminate further".

CEBE has assisted Learning to Work: Working to Learn on a number of levels. These include:

- disseminating research outputs through inviting the project to deliver workshops at CEBE conferences. These workshops and conferences have provided excellent networking opportunities
- disseminating pilot learning and teaching initiatives, through articles in the CEBE newsletter and through publicity for project events in the electronic newsletter
- providing information and contact details for institutions conducting related research work. This has helped the project team to avoid repeating work already completed by others
- using the CEBE website as a dissemination tool for project information and details of outputs and events.

CEBE's work in collating information on learning, teaching and research from all Built Environment Schools has provided an invaluable resource for Learning to Work: Working to Learn, where a large amount of research, development and dissemination has been required in a short two-year period.

PAUL SWANN, Project Manager, Learning to Work: Working to Learn, School of Architecture and Landscape, Kingston University

The UK Centre for Legal Education and the ILTHE

Collaborating with other agencies is a vital part of the work of the UK Centre for Legal Education (UKCLE), the LTSN's Subject Centre for Law. Collaboration enables the centre to draw widely on current practice, and to provide expertise and resources on aspects of learning and teaching to the legal education community.

The UKCLE and the ILTHE have collaborated on several activities. In 2000 we were invited to submit an outline for a law-based book as part of an ILTHE/Times Higher Education Supplement series entitled 'Effective Learning and Teaching'. The book was published by Kogan Page in May this year and has been very well received. The chapters address generic themes of professional practice, reflection, assessment and the use of information technology in teaching as well as more specific aspects of teaching in law. Sally Brown at the ILTHE and Jonathan Simpson at Kogan Page helped us to strike a balance between theory and practice. The result is a genuine collaboration of effort and a development and sharing of ideas about what legal education can be.

In addition, UKCLE has enjoyed taking part in the annual ILTHE Conference (ILTAC). ILTAC enables the Centre to disseminate information, meet new people, share ideas and make links with projects. Over the last three years, the Centre has presented sessions at ILTAC, together with other LTSN Subject Centres and staff from other HE institutions. Topics have included personal development planning and challenges for professional training. The diversity and international make-up of the participants at ILTAC means that we gain feedback from a number of disciplines as well as an insight into global perspectives.

KAREN HINETT, Education Developer, UK Centre for Legal Education, University of Warwick

Living the life of a FELLOWSHIP HOLDER



THIS ISSUE: ANTHONY ROSIE

Anthony Rosie, who won a National Teaching Fellowship in 2001, writes on how the Fellowship has had an impact on his teaching.

When I won my National Teaching Fellowship in 2001, my initial euphoria at winning was quickly tempered by questions and concerns.

How would my project fare? Would students and colleagues expect me to be different because I was now a National Teaching Fellowship winner?

Just over a year later, I can reflect on twelve months that did not go quite according to plan but a time in which I learned a great deal of benefit to me in my work with students.

Starting a project

My project is on peer tutoring and the use of on-line environments in students support. By late September 2001, ten second-year Social Science students had volunteered and been trained to act as peer mentors to new first-year Social Science students on a face-to-face basis. A good, fast start, I felt. Yet the first trial in 2001-02 did not work out quite as we planned.

Very few first-year students came to the peer mentoring sessions. Why? We had publicised peer mentoring in different ways, while academic tutors had also encouraged first-years to take part in the project.

On reflection, the student mentors and I agreed that we had offered too much, too soon to the first-year students. Given this early experience, the greater part of my work at the beginning of the project has been concerned with trying to understand what forms of support students feel they need, what forms of

support they feel are less helpful, and how students approach their learning.

Much research has been published on student learning, student motivation and factors that encourage success. I have contributed to this research and my own work with students is premised on bringing about change in student experience. Yet there is a real sense in which we as academics do not fully understand some of the ways in which students work and learn. By listening to students on an informal basis, as well as through conducting a small-scale research project, I have now become clearer about how to take the project forward. The main outcome of this reflection is the realisation that I need to shift the direction of my NTFS project.

Tutorials and self-tutoring

Whether coming straight from school into higher education or starting an HE course as a mature student, many new arrivals bring with them negative experiences of being taught. They also bring a series of personal 'recipes' for handling learning situations. Whether or not we feel that they are appropriate for learning in higher education, we must start by accepting that students bring these recipes with them. For instance, when explaining ideas in classes and to tutors, students tend to use a discourse of idealism. However, in other, less formal, situations, they use a rather different discourse of 'debunking' and rebuttal. Students are often surprised when they find I want them to write privately and informally for each other,

using their real and informal thoughts on a topic as well as producing formal writing for me. Peer mentoring is potentially problematic because it addresses issues that are often expressed in the idealist discourse, but the setting and approach may be more appropriate for the 'debunking' discourses of uncertainty.

A second issue that emerged was the strong desire for effective tutorials. Students give many reasons for avoiding taking up fortnightly individual or small group tutorials to discuss issues arising from their work with their tutors, while at the same time welcoming tutorials as a means of learning. Not all approaches will suit everyone.

By summer 2002, I became convinced that it would be helpful to work with students to help them become self-tutors. To be able to tutor oneself might seem bizarre. I believe that, when students have acquired the skills to question themselves and others, they are better placed to take part in effective tutorials with their teachers.

My NTFS project is now moving on to develop a tutorial approach for a group of second-year students taking one of my modules, on which they can build in their final year. By the end of 2002-03 they will, I hope, be effective self-tutors and also be able to work with other students. The intention is that the students will then act as peer mentors using their tutorial skills in the final year of my project.

Self-tutoring and its place in my teaching

I work in a School of Social Science and Law. My university and my school have supported all aspects of my work in learning and teaching, and also my NTFS award. They have made it possible for me to teach fewer courses and to concentrate on developing resources with students – a collaborative activity. For me, the field of historical-comparative sociology is relatively unfamiliar, but I am looking forward to teaching a course in this field. I have enjoyed reading my way into this as a key vehicle for my NTFS work.

Working with students on the historical emergence of the state, revolution and the contemporary world promises a great deal. As I have studied and developed learning materials, two questions have struck me. Firstly, what do I do when I come across ideas and approaches with which I am unfamiliar?

Secondly, how can I encourage students to engage in ideas and materials from a remote past in order to explore current experiences?

Of course, I too use shortcuts and recipes for my own learning, based on repertoires I have built up over the years. I may be more adept than my students in finding and interpreting sources, but our positions as learners of new materials are very much the same. How will I develop this idea and this practice further?

The module I am using for this particular work is called 'Comparative Social Structures'. I teach it with a colleague and this coming year I will provide most of the lectures and all the seminars and workshops. I have planned a tutorial workbook for the students – hardly a novelty, but this workbook draws on both online and hard-copy resources. I am developing electronic resources that include models of events and situations that will be new to many students. The resources are being constructed in ways that students can use while working in small groups, engaging in dialogue and debate.

For instance, I am currently constructing a series of maps of Europe and Latin America at different historical moments. These enable students to see the spread of empires, such as Muslim Africa and Europe in the 11th century and the 16th-century Iberian conquest of Latin America. Students can then follow particular events and personages through a series of information and question points for discussion.

I have also changed the assessment and the focus of my courses - I now include far more formative computer-based assessment, and also require reflection on personal learning. What I hope will be of particular value in the coming academic year is the combination of elements to help students develop their personal tutoring skills. Through the University's student mentoring projects, run by Student Services and the Students' Union, these second-year students should gain credit or an award through acting as accomplished tutors themselves in their final year. The resulting peer mentoring will be the richer because we will then have a profile of personal learning, as well as records of how problems were surmounted and, above all, how enjoyment and satisfaction were gained. We will also have an honest portrayal of the different discourses students use in their learning.

Events

A selection of forthcoming events examining issues surrounding learning and teaching



Engineering Education 2003, Access, Retention and Standards: IEE **6 – 7 January 2003, Southampton Institute Conference Centre**

Details: <http://conferences.iee.org/ee03/home.htm>

Attracting people to the Engineering profession and the entry standards of both student and newly employed engineers are issues that have been much debated in the media over recent months, and the wider implications form the basis of Engineering Education 2003.

LILI 2003: Complexity, Creativity and the Curriculum

10 January 2003, University of Warwick

Details: <http://www.ukcle.ac.uk/lili/2003.html>

The 2003 LILI conference seeks to address the implications for the law curriculum of changes in higher education, whether arising from factors such as globalisation and the use of information technology, or key policy initiatives such as widening participation, employability and quality assurance.

Reusable learning objects in health professional education: from theory into practice

15 January 2003, Manchester

Fee: £30.00

Details: <http://www.medgraphics.cam.ac.uk/ucel/workshops/>

The aim of this workshop from ALT and the UCEL is to introduce participants to the concept of reusable learning objects with a step-by-step series of presentations and discussions that will show all the stages and processes required to create the resources.

The Creative Planning Curriculum **16 -17 January 2003, Woburn House Conference Centre, London**

Fee: £40.00

Details: <http://cebe.cf.ac.uk/news/events/creative/index.html>

A workshop for senior decision-makers in the planning academy. Changes in the higher education market are forcing planning schools to rethink planning education. It is a propitious time therefore for the academy to do some creative thinking.

The National Conference for Student Progression and Transfer

16 – 17 January 2003, University of Plymouth

Details: <http://www.spat.ac.uk/national.html>

A national conference exploring current issues relating the transfer of top-up or direct entry students into higher education, with a specific focus on the experience of HND students moving into stages 2 or 3 of a degree programme.

Personal Development Planning - Physical Sciences

29 January 2003, Glasgow

Details: www.physsci.ltsn.ac.uk

The aim of this workshop is to help academics in the physical sciences to explore the most effective ways of implementing PDPs with their own students.

Assessment of Competence using OSCEs **19 February 2003, St Bartholemews and the London**

Details: http://www.ltsn-01.ac.uk/resources/meetings/workshops/LTSN01_workshops

This is a workshop for medical school staff who want to learn about the principles and practicalities of Objective Structured Clinical Examinations (OSCEs).

Teaching with the Web: does it work? **19 February 2003, University College London**

Details: www.physsci.ltsn.ac.uk

Looks at ways to use the web in teaching physical science subjects.

JISC Conference **4 March 2003, International Convention Centre, Birmingham**

Details of the JISC Conference and the new ICT Strategic Workshop and Seminar series for 2003 will be available on the JISC website <http://www.jisc.ac.uk/events/>.

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