Queen's University Belfast

REFLECTIONS

MAY 2007

About ***Reflections***

Welcome to the fourth issue of Reflections, the newsletter which focuses on teaching, learning and assessment in Queen's and more generally in higher education. Reflections is published once a semester by the Centre for Educational Development and provides a forum for discussing learning and teaching initiatives in Queen's. We aim to balance articles from the various support units within Queen's with contributions from academics and guest writers.

Our cover article is on internationalising the curriculum by Dr Viv Caruana from the University of Salford. Viv has done extensive work on this topic on behalf of the Higher Education Academy and recently came to Queen's to give a seminar, as part of the Guest Speaker Series, on approaches to providing students with an internationalised focus to their studies. We also report on another Guest Speaker event, a workshop conducted by Chris Rust from Oxford Brookes University on lightening the assessment load while increasing student learning.

Various current and upcoming initiatives are reported, including the new Student Guidance Centre, the Insight into Management programme organised by the Queen's Careers Service and an update on the CETLs. In addition several staff members have sent in short articles about current projects in learning and teaching.

Contributing to the next Reflections

We would very much welcome contributions for our next issue of Reflections to be published in Autumn 2007. Contributions can take several forms:

- Articles on an aspect of teaching and learning or student support (generally 500–750 words);
- Shorter 'newsflash' items, e.g. reporting on a recent event or advertising a new venture or up-coming event (100–200 words);
- Brief synopses of recent interesting articles on teaching and learning from the educational literature (100–200 words);
- Letters or responses to previous articles or to recent developments in H.E.

Contributions can be submitted via e-mail to Linda Carey, (l.carey@qub.ac.uk) or Liz McDowell (e.mcdowell@qub.ac.uk)

Linda Carey
Editor of *Reflections*

Internationalising the Curriculum through joined-up thinking

By Dr Viv Caruana, University of Salford

Dr Viv Caruana is an Education Development Co-ordinator and Programme Leader for the University of Salford's Postgraduate Diploma in Higher Education Practice and Research and Module Leader for the PG Certificate. She is also active in the design and delivery of staff development events which aim to support staff in enhancing the quality of the student learning experience. Her research interests include the impact of the global knowledge-based economy and learning society on learning and teaching in HE with special reference to internationalising the curriculum and interdisciplinarity.

The 'internationalisation' phenomenon is currently sweeping the UK HE sector, posing challenges for both policy makers and those engaged in supporting student learning. The drive to 'concretize' internationalisation raises a host of conceptual and practical issues. In order to engage meaningfully with the internationalisation agenda and to grasp the fundamental principles which underpin the notion of an internationalised curriculum, we need to understand the origin and evolution of the movement.

If curriculum design is not to be a mammoth task devouring resources at an ever-increasing rate, it is necessary to adopt a holistic approach to the internationalised curriculum - an exercise in 'joined-up thinking' that exposes the connections between internationalisation and related policy agenda that seek to influence the HE curriculum.

Internationalisation has traditionally been viewed as the response to changes brought about by globalisation, the most significant being the breaking down of domestic barriers between societies and cultures and the subordination of all to the market. Globalisation has also been cited as the origin of a 'marketisation discourse' that has come to pervade higher education as international competition intensifies. Taken together with institutional 'shortfalls', globalisation creates pressure to develop a favourable 'brand' in the international marketplace geared towards maximising foreign earnings from the recruitment of international students.

However, whilst international competition remains a significant driver for internationalisation, universities' efforts are now being re-focused on the need to enable

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graduates to compete in an increasingly global world of work, to function effectively in international and multicultural workplaces and to negotiate the uncertainties of a 'super-complex' world. This trend in thinking has engendered a marginal shift away from ethos, student mobility and content towards the 'graduate attributes' or 'competency' approach to internationalisation.

Within the internationalised curriculum, we are thinking about how we can develop cross-cultural capability in students who, for one reason or another, cannot study abroad. In this context, 'Internationalisation at Home' (IaH) is increasingly assuming significance. IaH is defined as 'any internationally related activity with the exception of outbound student and staff mobility'. Thus, it focuses on activities 'beyond mobility', critiquing traditional actions in the process of internationalisation and countering the 'lighthouse' perspective that internationalisation is something you do abroad.

In effect, Internationalisation at Home links the international and the intercultural dimensions of HE teaching and learning in such a way as to raise awareness of and promote values of cultural diversity and equity in the classroom. It is clear that the goals of internationalisation and Equality and Diversity are similar, each intending to facilitate mutual understanding, tolerance and respect and these goals can be realised through curriculum design based on the principle of IaH.

While Education for Sustainable Development (ESD) has traditionally been regarded as the territory of geographers, scientists, engineers, it is clear that the internationalised curriculum and the sustainability curriculum share common ground since internationalisation is the response to globalisation and sustainable development is an attempt to 'humanise' it. Today's vision of sustainable development embraces an interconnection of issues such as poverty alleviation, social justice, democracy, human rights, peace and environmental protection – issues common to the notion of the 'Global Citizen'. This concept encompasses sustainability literacy, skills and knowledge, including problem solving in a holistic, non-reductionist manner; holistic thinking to support critical judgements; and a high level of reflection to identify, understand, evaluate and adopt values conducive to sustainability.

Whilst institutions have a responsibility to consider the economic imperatives of globalisation, university teachers and others supporting learning have a responsibility to interpret mission statements, policy documents and strategic plans to determine the most appropriate ways of introducing an international/intercultural dimension to the student learning experience. It is crucial to consider not simply 'what we do' but 'why we do it'. A holistic approach to internationalisation makes the vital connections that bridge the gap between rhetoric and reality.

Maria Lee, Head of CED (l), with Viv Caruana (r)

Using the QOL Assessment Tools in skills practical classes

By Chris Hunt, School of Geography, Archaeology and Palaeoecology

On coming to Queen's 18 months ago, I inherited a first year module which attracted about 110 students. The module 'Human Evolution and its Environmental Impact' had a series of partly-online numerical skills practicals written by Mike Baille, who had the module before me. These necessitated the students downloading the information, carrying out calculations on the computer using Excel, then printing out the results for me to mark. A vast pile of paper was generated – and a huge amount of time was spent checking the calculations and marking.

Relief came with attendance of a staff training event on the QOL Assessment tools, run by Gill Kelly from the Centre for Educational Development. It was easy to see that if the students did their calculations and entered them into the assessment tool, the system could be programmed to recognise a correct answer and give feedback on a wrong answer ('You should have multiplied the figure by 3 at this point').

By setting up the 'Cloze' procedure to recognised numbers generated at various stages in a calculation, you could even use the system to identify at which stage they went wrong and give appropriate feedback. The multi-choice part of the assessment tool could be used to test understanding of the results.

e.g. 'Does the answer you have got indicate

1) a strong positive correlation

2) a weak positive correlation

3) no correlation

4) a weak negative correlation

5) a strong negative correlation?'

It takes about two hours to set up a practical that runs for one and a half hours. Students get their marks and feedback instantly, while the work is still fresh in the mind. There is no marking, the module assessment shows that students enjoyed and learnt from the experience and the marks rose on these practicals to such an extent that in the exam board this term my colleagues told me that the module was out of line with our other first year modules. Clearly, you don't get the personal touches that a good marker gives to feedback, but with a big class, this is difficult to do anyway.

This type of approach works well with fairly simple material and would most likely be a nightmare with really complex ideas or calculations. But for your big Stage 1 skills classes, this might be an approach to try. Thank you, Gill!

Insight into Management – an opportunity to learn through experience and to gain experience through learning

By Mr David Foster, Queen's Careers Service

Background

Insight into Management helps students make sense of what graduate careers in management can offer them. While most students have part-time jobs these days, not all will have experience of the graduate work place. Insight into management simulates graduate work and seeks to engage students in a range of business related functions and activities. This helps participants to experience the tasks and duties associated with graduate work, appreciate the nuances of organisational culture and helps them to make decisions about their own careers. As many graduate careers in business and management are open to graduates from all degree disciplines, this course is relevant to all students at Queen's irrespective of subject studied.

How is Insight into Management Structured?

The course has a central business game running throughout a three-day intensive programme of activities. Students are allocated into project groups and work on both the central business game and a range of interactive case studies (e.g. responding to a business brief, developing a product, a marketing plan, a sales pitch and constructing a prototype for demonstration purposes). These case studies encircle the core game throughout the three-day period.

With a typical Insight into Management day lasting from 9am–9pm and beyond, the programme challenges both the physical and cognitive reserves of students although encouragement and support is always available from Careers Service staff and team facilitators (recent graduates drawn from careers in industry and commerce). All in all, it is a busy, tiring experience which also has a lot of fun and builds a strong sense of camaraderie amongst participants.

Students at the Innovations Fair

What are the aims of the programme?

At a very basic level, we hope students will:

Learn about themselves

Learn about others

Try new things

Discover potential careers.

What Skills does an Insight into Management Student Develop?

Students develop a range of employability skills critical to success in securing a job and then being effective in the workplace:

Teamwork

Communication

Problem solving

Decision Making

Time Management

Analysis of Information

Presentation

Networking and Negotiation.

Management of self and work

Self-Confidence

Entrepreneurial outlook

Sensitivity to others

Self-Awareness

Creativity and initiative.

Student evaluations of the course demonstrated increased development and performance of the skills listed above amongst the student cohort.

How is Learning from Insight into Management Structured?

The process through which students learn on Insight is based on Kolb's Learning Cycle. At various points throughout the course, team facilitators help students experience real business related tasks, reflect on the experience, apply it to their own situation, and forward plan. Students are supplied with a learning log at the beginning of the course which helps to structure their experience and assist the reflective process.

Similarly, the recent graduates who work as team facilitators undergo facilitation skills training provided by the course director and other staff from Queen's Careers Service. In September 2006, the Staff Training and Development unit at Queen's was also involved in this work, helping team facilitators apply their learning from the Insight experience to their current job and their future personal and professional development.

To find out more about Insight into Management contact: Dr David Foster, Queen's Careers Service at 028 909 75640 or email d.foster@qub.ac.uk. Students interested in registering for the course running from 11–13 September 2007, should contact Joanne Mulgrew, Programme Assistant on 028 9097 4151 or email: joanne.mulgrew@qub.ac.uk or call to 8 Malone Road.

Communities of Practice in the Classroom

By Jonathan Skinner, School of History and Anthropology

The Anthropology and Ethnomusicology Research Cluster (AERC) in the new School of History and Anthropology, is progressive in its teaching and learning of anthropology. Lecturers have used learning journals with their students for courses on the 'anthropology of emotions', fieldtrips for research methods students, drumming circles for 'anthropology of performance' students, tourist souvenirs for 'anthropology of tourism' students, flag making for 'anthropology of art' students, and gamelan and drumming ensembles for Ethnomusicology students. The School has had a music and performance tradition ever since the School's first Professor of Social Anthropology, John Blacking. Two recently introduced results of his influence are a wooden-floored performance room and a music and video-orientated hypermedia room. It is the ideal environment for experiments in the teaching and learning of anthropology, and the new module 'the anthropology of modern dance' was the ideal module in which to carry out these experiments.

Working from the academic premise that "movement is the mother of all cognition" (Sheets-Johnstone 1966), I convened a module 'The Anthropology of Modern Social Dance' in which students were encouraged to participate in active learning workshops with visiting dance instructors. In this module, students formed a "community of practice" (Lave and Wenger 1991) and listened and watched dancers tell and dance their life stories, they interviewed them, and they then became apprentices, learning some of the dance movements themselves (hip hop, salsa, jive, tango, modern African dance, break dancing, and rueda) – I taught the jive as well as some of the salsa, just as I have taught free classes to staff and students throughout the University. These masterclass weeks were interspersed with more traditional lecture and tutorial sessions to give continuity and a theoretical overview to these more experiential sessions.

The module was evaluated in terms of student feedback: a triangulation of focus groups, questionnaires, self-esteem surveys, and module and visitor evaluation forms, and examined through the traditional 2 hour examination with a written learning journal. From these we learned that,

- Students preferred an embodied approach to learning and absorbed and retained learning faster, easier and for longer periods
- Students became 'autonomous learners' as they felt emboldened to take up dance classes and to study dance literature outside of the curriculum and university
- Student made insightful connections between dance experiences, dance readings, and embodied educational theories
- It was not just students' kinisthetic intelligence which was fostered, but student self-esteem which raised as the module progressed
- Positive student feedback came from this embodied approach to learning.

Salsa instructors instructing staff and students

This module was supported through a TQEF2 grant as a research and teaching exercise in bodily intelligence. We used performances of understanding to engage with students, devolving much of the structuring of sessions to the students themselves. They took to their responsibilities, filming classes, hosting instructors, interviewing them and learning the dances – often going back to their digs to teach their flatmates the moves and to recount the culture of the dance to others, or to search out for dance lessons around Belfast. In this way, they spread their new skills to others and took on the teacher's mantle. The films they made and the masterclasses they recorded are an archive for future classes and can be used by the next cohort of 'anthropology of modern social dance' students, as well as research students in anthropology. Future innovations will be to re-create the students as a community of practitioners through the collective use of WebCT as they make notes on their readings and comment on each other's essays. This development will also require careful forethought and planning as it too constitutes a conceptual redefinition of the traditional roles in classrooms. It requires both teachers and students to embrace new educational relationships.

The final comments, however, must come from some of the students:

Through completing this module, we are able to use our bodies to think, as well as act with. We are given an alternative and more comprehensive way in which learning is stimulated. […] The mode of learning in this module most definitely promotes long-term retention of ideas, concepts and skills. The combination of readings, performances and hands-on apprenticeship makes critical anthropological ideas touch our senses in different ways. (learning journal extract)

"I found how the module had a strictly modern feel. I also believed that it transformed the traditional university structure. […] I believe the module was a success because it enabled me to learn about myself – my likes, dislikes, my habits and beliefs. It extracted these aspects from my character in a way that I never thought possible."

References

Lave, J. and E. Wenger 1991. Situated learning: legitimate peripheral participation, Cambridge: Cambridge University Press.

Sheets-Johnstone, M. 1966. The Phenomenology of Dance, Madison: University of Wisconsin Press.

J. Skinner (Ed.) (2005) Special Edition: Embodiment and Teaching and Learning in Anthropology, Anthropology in Action, 12(2), pp.1-82.

The Road to Medicine

Dr Marise Heyns

Division Basic Medical Sciences/Anatomy

Allister Foy receives the Ann Green Bequest Prize certificate from Dave Wilson, Head of Division Basic Medical Sciences

Medicine is an integrated, multi-disciplinary field where patient care, scientific knowledge, teamwork and problem solving feature heavily. Allister Foy graduated from QUB with a BSc(Hons) Biomedical Science degree and is currently enrolled in the Graduate Entry Medical Programme in Medicine at Swansea University. Allister undertook a dissection-based anatomy research project in his final year, in which he investigated 'Potential Sites of Referred Pain and Dysfunction Resulting from Lumbar Intervertebral Disc Herniation'. He subsequently received the Ann Green Bequest Prize, which is awarded annually to a student in Biomedical Science, or Anatomy or a Medical/Dental intercalated student of Anatomy, who, in the judgement of the Board of Examiners, produces the best Level 3 research project in the subject of Anatomy or a closely related subject.

As the supervisor of his Level 3 research project with an interest in his career progression, I asked Allister to reflect on how the Biomedical Science degree and his research project had facilitated his preparation for such a varied and challenging degree and future career. This was his response:

"Biomedical Science, as the name suggests, fully explores human anatomy and physiology in both health and disease. The course structure is such that one has sufficient opportunity to explore areas of scientific interest such as cancer biology or exercise physiology, whilst ensuring that subject matter integral to the understanding of human anatomy and physiology is comprehensively studied. The degree has without doubt aided me in my medical studies, through its balance of excellent teaching, self-directed learning, critical appraisal of scientific literature, oral and poster presentations and group-work. In the final year of the degree, I undertook an Honours research project in anatomy under the expert supervision Dr Marise Heyns. This project was highly challenging and rewarding, and will certainly aid my professional development during my medical career. It gave me the opportunity to study a topic of interest, employing techniques such as critical literature appraisal, experimental design and technique and scientific writing. Upon completion of the project, I was given the opportunity to present the findings at two scientific conferences. It was a very positive and rewarding experience and resulted in a journal publication. This will all be of great benefit to me throughout my current studies and future medical career."

"In summary, Biomedical Science has not only given me the opportunity to study medicine, but has also established a firm basis for many of the qualities that are essential in the modern doctor including the scientific principles of health and disease, communication skills, teamwork and professionalism".

I feel, as a Teaching Fellow in the Division of Basic Medical Sciences, that we are indeed providing an excellent programme for our students, and our approach of self-directed learning fosters an appreciation for continuous education that will be to the advantage of these students, not only in future studies but also in their future careers and career progression.

Educational Research and Teaching Symposium

The Teaching Fellows in the Division of Basic Medical Sciences are organising a symposium titled 'Topical Issues in Biomedical Education' during 13–14 September 2007. The symposium would be of interest to anyone teaching in Medicine, Dentistry, Nursing, Biomedical Science and related subjects. Invited speakers will cover topics such as Problem-based classes, Intercalated degrees, Standardised Assessment, Ethics in Biomedical Science and Student Selected Components.

Anyone interested in contributing either an oral or a poster presentation or interested in attending, can contact Dr Etain Tansey (Physiology / e.tansey@qub.ac.uk) or Dr Marise Heyns (Anatomy / m.heyns@qub.ac.uk).

The Student Guidance Centre

By Russell Rowley, Head of Student Support Services

There is a strong relationship between high quality student guidance and student progress and achievement. That this is true is supported by an increasing amount of research and is further reinforced by the following statement from Universities UK.

"Student services have traditionally been seen as a 'reactive' support department – inherently a 'good thing' and there to support the academic experience for students, but essentially a safety net. Perceptions are changing. Increasingly, services are 'a first port of call' involved in supporting all students, rather than 'a last resort for students with problems."

The above statement very much reflects the thinking behind the Student Guidance Centre.

You may have noticed building works taking place next to the bookshop at Queen's. This is the construction of the entrance to the new Student Guidance Centre which will be located on the 1st and 2nd floors of the building which used to be the Staff Common Room/ Club.

This ambitious development is bringing together the University's student services, which provide information, advice and guidance services, into a single point of contact because the University recognises that the Student Experience is enhanced by the input of high quality, well researched information, advice and guidance. Although especially for students throughout their academic life, and prospective students, clearly staff will also wish to know of the facilities and services it will provide.

Initially, it will accommodate those services involved with Admissions, Student Records, Exams, Careers (including Work Placement Centre and Jobshop), Counselling, Disability, Finance (Income Office, Clubs and Societies and Student Support Fund) and Widening Participation. It will include also, the newly created Learning Development Unit, possibly within a 'Skills Centre'. The Learning Development Unit, which will be staffed by a Learning Development Officer and 2 Learning Development Tutors, has been established to work in collaboration with academic colleagues in the development and delivery of academic and learning skills provision.

The £3m redevelopment, which is scheduled to open for the new academic year starting September 2007, will provide students with a large open plan area, within which they will be able to access a wide range of information, both in paper form and electronically on any student related matter.

Not only will the information be easy to access, importantly, it will be easy to use. This student information area will have 15 networked PCs for student use and additionally, a bank of laptops for students to borrow, for use within the Centre. As the Centre will be a wireless zone, students will be able to access on-line services using the laptops.

Of course, students will continue to be able to consult with key guidance centre staff, including Careers Advisers, Counsellors and Disability Advisers. The refurbishment includes a number of interview and meeting rooms, thereby facilitating services in the delivery of support and development to students within the one location.

So, whereas currently students sometimes have to go to a number of different locations depending upon the information required, from September that should no longer be the case.

The benefits for Students

A single point of contact for students and prospective students with the University's principal academic support services

Increased use of ICT to facilitate student interactive use of resources

Gives students a number of information sources including take away material and interactive resources

Places students' needs and expectations at the core of all services

The benefits for Staff

A single reference point for enquiries point for enquiries relating to student support

A single reference point to which to refer students

As a result of the synergy created by bringing services together, academic colleagues will experience a more integrated approach to the support of students

The staff moving to the Student Guidance Centre can help, support and improve student transition into the University and beyond. From recruitment and admission, through induction and on to academic success and employability; the staff of the Student Guidance Centre can make a huge difference.

Plagiarism Awareness and Prevention for Research Students

by Dr Lillian Greenwood, School of Electronics, Electrical Engineering and Computer Science and Mrs Gill Kelly, CED.

Articles in the press suggest plagiarism is rife in British universities. Whilst we do not believe this to be the case, across the UK universities have been re-writing definitions of plagiarism and reviewing their policies. In addition to purchasing plagiarism detection software, institutions (including our own) are encouraging the introduction of plagiarism awareness sessions at undergraduate level, as studies show students do not fully understand the conventions of academic writing and citation and are not entirely clear what "plagiarism" means1,2,3.

However, our work in plagiarism awareness, prevention and detection in Queen's informs us that a significant proportion of postgraduate entrants are also confused over how to acknowledge the work of others appropriately. Students entering postgraduate programmes can often be changing the discipline, institution and even the country in which their studies are based. Such changing contexts, plus gaps in plagiarism education at undergraduate level, can leave postgraduates confused about the exact nature of plagiarism – at this level a major academic offence.

Several of our colleagues have told us they found the work required in preparing a plagiarism case, where a lengthy dissertation is involved, extremely time consuming. Where plagiarism of electronic sources is suspected, the TurnitinUK detection software can be used to speed up the evidence gathering part of the process (unless the student has waived copyright their consent is required). This, however, will alleviate only part of the workload.

It is in the interest of both research student and supervisor that plagiarism is prevented from the outset of a research degree. Support for prevention is offered through two complementary approaches, designed to supplement the tutor's instruction to students:

1) Plagiarism awareness sessions are offered as part of the Postgraduate Skills Training Programme. Entitled 'Plagiarism', the workshops, facilitated by Dr Lillian Greenwood, School of Electronics, Electrical Engineering and Computer Science, help students understand what is meant by plagiarism and how to avoid it. Students can opt to do this session early on in their postgraduate programme.

2) The TurnitinUK software is also available for supervisors to use as a formative tool with new research students – uploading a short piece of work prior to the first submission allows the tutor and student the opportunity to see if electronic sources are being used without appropriate citation. The tool is also available for more formal continued use if the supervisor and student so wish.

For details of the plagiarism workshop contact Nuala McCabe (Postgraduate Office) or Lillian Greenwood, l.greenwood@qub.ac.uk. For further information on the TurnitinUK plagiarism detection software please contact Gill Kelly CED, extn 6595, g.m.kelly@qub.ac.uk.

1 Dawson, M. & Overfield, J., 2006. Plagiarism: Do students know what is is ? Bioscience Education e-journal,[online] 8-1, Available from:< http://www.bioscience.heacademy.ac.uk/journal/vol8/beej-8-1.htm> [accessed 19December 2006]

2 Franklyn-Stokes, A. & Newstead, S. , 1995. Undergraduate cheating: who does what and why? Studies in Higher Education 20 (2), 159-172

3 Underwood, J. & Szabo, A,. 2003. Academic offences and e-learning: individual propensities in cheating. British Journal of Educational Technology, 34, 467-478

Motivating and exciting students

a new approach to 1st year teaching

By Dr Charlie McCartan, CEAIL (NI) and Dr Sarah Marshall, CED

Motivate and excite students

Demonstrate the relevance of the other subjects in Stage 1, and their ability to solve real-world problems

Clarify understanding of the nature of engineering and what engineers do

Improve understanding of fundamental concepts

Provide practical engineering experience

Start to develop professional skills: computing, report writing, information retrieval, presentation skills, team working etc

Bridge the gap between school and university, and ensure that students can cope with the change in learning methods

The School of Mechanical and Aerospace Engineering has been recognised and funded by DEL as part of the Centre for Excellence in Active and Interactive Learning (NI), one of three such Centres (CETLs) at Queen's. The funding was awarded to Engineering on the basis of its leading role in CDIO, an international initiative to reform engineering education so that graduates are more fully prepared for careers as professional engineers. CDIO stands for Conceive, Design, Implement, Operate – representing the main steps involved in creating engineering products, processes and systems. The School has been using the CDIO principles, syllabus, standards and methodologies to frame a range of curriculum changes.

Curriculum approach

The CDIO standards promote active approaches to learning, the integration of skills and knowledge, the inclusion of design-build experiences and the inclusion of an 'Introduction to Engineering'. These standards have been addressed through a new double module, 'Introduction to Engineering', the learning and assessment of which is integrated with the content of the other modules taken by first year students.

The purpose of such an introductory course, which should be one of the first required courses in a programme, is to provide a framework for the practice of engineering. This framework is a broad outline of the tasks and responsibilities of an engineer, and the use of disciplinary knowledge in executing those tasks. Students engage in the practice of engineering through problem solving and simple design exercises, individually and in teams. This course also includes personal and interpersonal knowledge, skills and attitudes that are essential at the start of a programme to prepare students for more advanced product and system building experiences.

In 2006–07, this module was taken by all first year Mechanical and Aerospace Engineering students. Objectives for the Introduction to Engineering module (Table 1) were derived and prioritised through interviews and discussions with staff in the School. These interviews were carried out as part of a supported change management programme which was undertaken in partnership with the UK Centre for Materials Education, one of the HE Academy's national subject centres.

'Introduction to Engineering' runs throughout Semesters 1 and 2, and includes weekly lectures covering the development of professional skills, a six-hour course on team-working and three design-build projects. These projects each provide opportunities for the development and assessment of personal and professional skills and for the application and assessment of content from other first year modules:

Project 1: Model Racing Car project, which includes practical aspects of design relating to a Mechanical Design module.

Project 2: Bicycle Wheel project, which contains analysis and testing relating to a Materials module.

Project 3: Robotics project, in which mechanisms and programming relating to an Engineering Dynamics Module are applied.

All projects carry equal weighting towards the final mark and it is a requirement of the module to complete all three projects.

The projects each have an associated introductory lecture and a post-project reflective lecture, and include tutor, peer and self assessment. The assessment of professional skills is integrated via the range of assessment media: Project 1 includes a written report, Project 2 includes poster presentations and Project 3 an oral presentation.

Is it working?

A full evaluation will be carried out at the end of the academic year, and in subsequent years, but emerging evidence, including staff and student feedback, module statistics and benchmarking against the CDIO standards, would suggest that not only are the objectives in Table 1 being addressed by the new approach, but also that there has been a positive effect on student retention and progression.

Transferability

While this work has been developed in the context of first year Mechanical and Aerospace Engineering, we believe that the model is one that could usefully be adapted for other first year courses. In summary, it provides a means of integrating skills and knowledge development and helping students to understand, and appreciate the relevance of, fundamental concepts in their chosen discipline.

Assessment: lightening the load while increasing the learning

By Alison Skillen, CED

On 23 February, Queen's hosted an interactive workshop led by Dr Chris Rust, Head of the Oxford Centre for Staff and Learning Development at Oxford Brookes University. The workshop, which was attended by over 30 colleagues, was organised by the Centre for Educational Development as part of its 2006/07 Guest Speaker series.

Dr Rust claimed that it is a 'cliché that we do too much assessment'. It is important to distinguish between assessment as marks and grading and assessment as feedback to students; in terms of the latter, he remarked that 'we can never do enough'.

Dr Rust considered a range of practical ways that staff might reduce their assessment workload without damaging the student learning experience. Through several case studies, he showed that there was good evidence that changes made to reduce the assessment burden on staff, sometimes even improved the student learning experience.

Strategies considered included involving the students in the marking process through self- and peer-assessment, for example, through the use of model answers.

One scenario (Forbes & Spence, 1991) involved Engineering students who had weekly maths problem sheets which were marked by the lecturer. However, increased student numbers meant marking had become impossible and the classes had become big enough for students to hide in and some of them had simply stopped completing the problem sheets. The result was that the exam mark declined from an average of 55% to 45%. To address this problem, the course team introduced a course requirement for students to complete 50 problem sheets which were then periodically peer assessed but did not contribute to the course assessment mark. The average exam mark increased dramatically from 45% to 80%. The course team believe that it was getting the students engaged with the learning task through involvement in the assessment process that was the primary reason for the increase in the marks well above the previous level.

Chris also suggested four ways of mechanising the assessment process –

1. the use of statement banks (generic banks of subject-specific statements which can be numbered and attached to marked work);

2. computer-aided assessment;

3. essay marking criteria and assignment attachment sheets; and

4. optical mark readers for use in marking multiple choice answers.

Chris Rust with Linda Carey and Ken Brown

He outlined a number of strategic programme decisions which might be taken in order to reduce assessment with no detrimental effect on student learning. These included:

· identifying and reducing repetitive assessment – e.g. writing lab reports every week may not necessarily increase what students learn from the lab work or develop report writing skills;

· using more varied assessment methods – a mixture of fewer essays backed up by objective tests might ensure both development of writing skills and reasoning skills and the desired broad coverage of the material;

· Distinguishing between courses with different goals – different courses should have unique assessment patterns rather than all courses being assessed with the same type and volume of assignments. Other assessment strategies might include: a briefing paper, an article, a book review, an annotated bibliography, a draft research bid, an A-Z, an encyclopaedia entry, a response to a client's question or a poster;

· Reviewing the need for extensive summative assessment in the first year where most assessment is effectively pass/fail and where almost all students pass regardless of the assessment system used;

· Assess only selected pieces of student work from a greater portfolio of work they have produced.

Reducing the time spent on feedback might include:

· Giving general feedback to the whole class rather than individual feedback

· Using feedback forms

· Using students to peer/self-assess work

· Using statement banks

· Using computer-based tests

· Providing focussed feedback on a different criterion each time

· Using audio tape to comment on students' work – tone of voice can convey more information than from written comments and is sometimes easier than deciphering the assessor's handwriting!

Feedback from participants about the event was very positive. During the event, several participants indicated that they would implement some of the ideas suggested – e.g. the self-assessment check-list, use of more peer marking and fast track feedback. Comments from the evaluation of the event were very positive and ranged from - 'a fresh and interesting approach', to 'a dynamic, knowledgeable speaker' and 'excellent, really worthwhile - everyone should attend!' On this basis, we hope that Dr Rust will visit Queen's to facilitate a further workshop on a future occasion.

Details of Dr Rust's presentation and handouts are available on http://www.qub.ac.uk/directorates/AcademicStudentAffairs/CentreforEducationalDevelopment/ProfessionalDevelopment/LearningandTeachingEvents/GuestSpeakerSeries/

Bringing **Medical Imaging** to Undergraduates

By Dr Jason Greenwood, School of Mathematics and Physics

Physics, like the Mathematics it relies heavily upon, is a rather esoteric subject, although, as the name suggests, there is an intimate relationship with the physical or 'real' world. Students who study Physics have a wide range of potential careers open to them, some of which may not appear to link directly to their studies.

Laura Downie receiving the Unilever-Earnshaw Prize in 2006 from Dr David Cunningham

Medical Physics is one of the few professions for which this link is clear and it is becoming more important as new technology is introduced to hospitals. Therefore, it provides the opportunity for students to see how their core Physics is relevant, as well as providing knowledge and understanding valuable to employers. In the Department of Physics and Astronomy, we have catered for the growing interest and importance of Medical Physics by introducing new modules and a new programme – "Physics with Medical Applications". In the final year "Physics in Medicine" has proved to be the most popular optional module with an uptake by female students of greater than 50%, a statistic which is extremely rare in a UK Physics Department. Through collaboration with the NI Medical Physics Agency (NIMPA) we have been able to undertake some student projects in local hospitals, but we have been seeking cost effective in-house projects to give more students exposure to this subject.

With the support of NIMPA and the Teaching Quality Enhancement Fund, we now have access to the powerful medical imaging package Analyze®. This software enables any type of medical image to be accessed, viewed and processed. It is built in a Windows® environment and does not require computer programming skills, so that students are able to quickly gain competence in its use and perform powerful medical image processing.

One project we have piloted involved the study of severe epileptic seizures. Gamma images of blood flow in the brain during and after a seizure were studied by the students. Analyze® was used to find statistically significant differences, from which an area of abnormal blood flow could be identified. This "active" region was then mapped onto a third brain image obtained using a Magnetic Resonance Imaging (MRI) device. This information can be used for patient diagnosis and pinpointing the location for brain surgery. Final year student Laura Downie gives her perspectives on this project.

I chose to study Physics because I found it interesting and thought-provoking and I was keen to increase my knowledge of topics I'd only briefly focused on at school. I also saw it as an opportunity to learn more about new theories and ideas being put forward, and to make use of experimental methods for laboratory work. I chose to study the "Physics in Medicine" module in my final year because I wanted to learn more about the techniques being used and developed to help detect and cure disease. I selected the Analyze project as the imaging techniques used by the software were linked to the "Physics in Medicine" module, which would improve my understanding and also widen my knowledge about epilepsy.

After carrying out the project, I have learned how to interpret and manipulate medical images and carry out statistical analysis on the images provided. This has increased my understanding of the processes carried out in hospitals when dealing with a condition such as epilepsy. I found the software quite straightforward with the most impressive aspect being the capability to render a 3D volume of various structures in the body.

After graduating, I would like to take a year out from studying to travel. Following that I am considering a career in a field combining Physics and Health Care, as I think this would be a very rewarding and ever developing area of work.

Undergraduate Scholarship Schemes

By Maria Lee, CED

The University's Education Strategy seeks, as one of its aims, to ensure that the curriculum is informed by research at all levels. Drawing on Griffiths (2004) and Healey (2005), we can broadly define Research-informed Teaching at Queen's as:

This article focuses on 'students learning to do research' through involvement in special undergraduate research programs where they participate in the actual research being carried out in the University, under the guidance of academic staff and gain insight into research work. In addition to strengthening links between teaching and research, other benefits identified in such an approach (Seymour, Hunter, Laursen, & Deantoni, 2004, Blackmore & Cousin, 2003) include:

Encouraging closer links between academics and students

Increasing awareness of academic research and induction into the requirements of academic professionalism. This includes a greater appreciation of the time involved, the care needed to make accurate observations and keep detailed notes, the attention to detail required, the tedium and repetition of some lab tasks, the long hours researchers worked, and their difficulties in achieving desired results.

Increased confidence (for example in ability to do research, contributing real knowledge as a researcher, or feeling like a researcher)

Intellectual development in thinking and working like a researcher including improved ability to apply knowledge and skills, development of critical thinking and problem solving skills and a more advanced understanding of the nature of research/ how academic knowledge is developed

Developing transferable skills e.g communication skills, time management, a wide range of research skills including bibliographical searching, organisation of data, experimental skills.

Clarification of career goals

Students learning about others' research	Staff use their own research and that of others in the discipline to illustrate ideas, concepts, and theories or to provide examples
Students learning to do research	Opportunities for students to learn about how to undertake research within their discipline. This learning may or may not take place within 'research methods' modules
Students learning in research mode	Students develop knowledge and researcher skills by learning in 'enquiry' mode, rather than being the recipients of teacher-processed knowledge
Staff involved in pedagogic research	Staff inform their teaching practice through practitioner research and reflective practice or make use of the learning and teaching research of others

A number of universities within the UK e.g. the University of Warwick, University of London and Imperial College London, have introduced Undergraduate Scholarship Schemes over the last number of years. However, there are a number of schemes funded by external groups to which Queen's staff/students can apply. These provide funded research opportunities for a defined period of time, typically in a summer vacation, as part of a research team or alongside an established academic researcher. Most undergraduate research schemes appear to be targeted at the early years of undergraduate education; i.e. in the first or second years.

Examples include:

The Biotechnology and Biological Sciences Research Council Vacation Bursaries

British Society for Animal Science Summer Placement Scheme

EPSRC: Vacation Bursary Programme (piloted 2006 with 15 Universities).

Experimental psychology society: Undergraduate Research

Genetics Society Summer Studentships

Institute of Structural Engineers Undergraduate Research Grants

Nuffield Foundation: Undergraduate bursaries in Science

Science Foundation Ireland (SFI) (Undergraduate Research Experience & Knowledge Award. This programme supports active research participation by undergraduate students in any of the areas of research funded by SFI and is open to students from Ireland and abroad

Society of General Microbiology: Vacation Studentships & Elective grants for medical, dental and veterinary science students:

Universities Federation for Animal Welfare

Welcome Trust Vacation Scholarships

Queen's students are participating in such schemes. Queen's has received four grants per year on average over the last 3 years from the Nuffield foundation while the most recent figures available from the Welcome Trust Vacation Scholarship show that there were 267 awards in 2004 and that Queen's was in the top 20 Institutions for awards receiving between 5-10 awards.

References

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Healey, M. (2005) Linking research and teaching: disciplinary spaces, in: R.Barnett (Ed.) Reshaping the university: new relationships between research, scholarship and teaching, 30-42. Maidenhead: McGraw-Hill/Open University Press.

Seymour, Elaine, Hunter, Anne-Barrie, Laursen, Sandra L. and DeAntoni, Tracee. "Establishing the benefits of research experiences for undergraduates." Science Education 88, 4 (2004): 493-534.

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An advance date for the diary

Centre for Educational Development

Learning and Teaching Conference

17th and 18th September 2006
Canada Room and Council Chamber, QUB

Theme:

Encouraging Student Engagement and Attainment

Keynote speakers:

Professor Lorraine Stefani, University of Auckland
'A Southern Hemisphere perspective on student engagement'

Professor Ray Land, University of Strathclyde
'Threshold concepts and troublesome knowledge'

Professor Sally Brown, Leeds Metropolitan University
'Using formative assessment to foster student engagement and achievement'

In addition, parallel workshop sessions will be facilitated by the keynote speakers and by invited Northern Ireland practitioners.

Publicity material and registration details will be circulated shortly.
There will be no charge for Queen's staff members.
For further details please contact theCentre for Educational Development
Ext 6570, e-mail ced@qub.ac.uk, www.qub.ac.uk/ced

All Ireland Society for Higher Education 3rd International Conference

30th & 31st August 2007
NUI Maynooth, Ireland

Teaching and Learning in the Changing World of Higher Education

Diary Dates

4th December 2006
Call for Abstracts Opens

26th February 2007
Registration Opens

20th March 2007
Deadline for Submissions

20th April 2007
Notification of Acceptance

30th & 31st August 2007
3rd International Conference
NUI Maynooth, Ireland

AISHE

Teaching and Learning in the Changing World of Higher Education
http://www.aishe.org

The Road to Medicine

Dr Marise Heyns

Division Basic Medical Sciences/Anatomy

Allister Foy receives the Ann Green Bequest Prize certificate from Dave Wilson, Head of Division Basic Medical Sciences

Medicine is an integrated, multi-disciplinary field where patient care, scientific knowledge, teamwork and problem solving feature heavily. Allister Foy graduated from QUB with a BSc(Hons) Biomedical Science degree and is currently enrolled in the Graduate Entry Medical Programme in Medicine at Swansea University. Allister undertook a dissection-based anatomy research project in his final year, in which he investigated 'Potential Sites of Referred Pain and Dysfunction Resulting from Lumbar Intervertebral Disc Herniation'. He subsequently received the Ann Green Bequest Prize, which is awarded annually to a student in Biomedical Science, or Anatomy or a Medical/Dental intercalated student of Anatomy, who, in the judgement of the Board of Examiners, produces the best Level 3 research project in the subject of Anatomy or a closely related subject.

As the supervisor of his Level 3 research project with an interest in his career progression, I asked Allister to reflect on how the Biomedical Science degree and his research project had facilitated his preparation for such a varied and challenging degree and future career. This was his response:

"Biomedical Science, as the name suggests, fully explores human anatomy and physiology in both health and disease. The course structure is such that one has sufficient opportunity to explore areas of scientific interest such as cancer biology or exercise physiology, whilst ensuring that subject matter integral to the understanding of human anatomy and physiology is comprehensively studied. The degree has without doubt aided me in my medical studies, through its balance of excellent teaching, self-directed learning, critical appraisal of scientific literature, oral and poster presentations and group-work. In the final year of the degree, I undertook an Honours research project in anatomy under the expert supervision Dr Marise Heyns. This project was highly challenging and rewarding, and will certainly aid my professional development during my medical career. It gave me the opportunity to study a topic of interest, employing techniques such as critical literature appraisal, experimental design and technique and scientific writing. Upon completion of the project, I was given the opportunity to present the findings at two scientific conferences. It was a very positive and rewarding experience and resulted in a journal publication. This will all be of great benefit to me throughout my current studies and future medical career."

"In summary, Biomedical Science has not only given me the opportunity to study medicine, but has also established a firm basis for many of the qualities that are essential in the modern doctor including the scientific principles of health and disease, communication skills, teamwork and professionalism".

I feel, as a Teaching Fellow in the Division of Basic Medical Sciences, that we are indeed providing an excellent programme for our students, and our approach of self-directed learning fosters an appreciation for continuous education that will be to the advantage of these students, not only in future studies but also in their future careers and career progression.

Educational Research and Teaching Symposium

The Teaching Fellows in the Division of Basic Medical Sciences are organising a symposium titled 'Topical Issues in Biomedical Education' during 13–14 September 2007. The symposium would be of interest to anyone teaching in Medicine, Dentistry, Nursing, Biomedical Science and related subjects. Invited speakers will cover topics such as Problem-based classes, Intercalated degrees, Standardised Assessment, Ethics in Biomedical Science and Student Selected Components.

Anyone interested in contributing either an oral or a poster presentation or interested in attending, can contact Dr Etain Tansey (Physiology / e.tansey@qub.ac.uk) or Dr Marise Heyns (Anatomy / m.heyns@qub.ac.uk).

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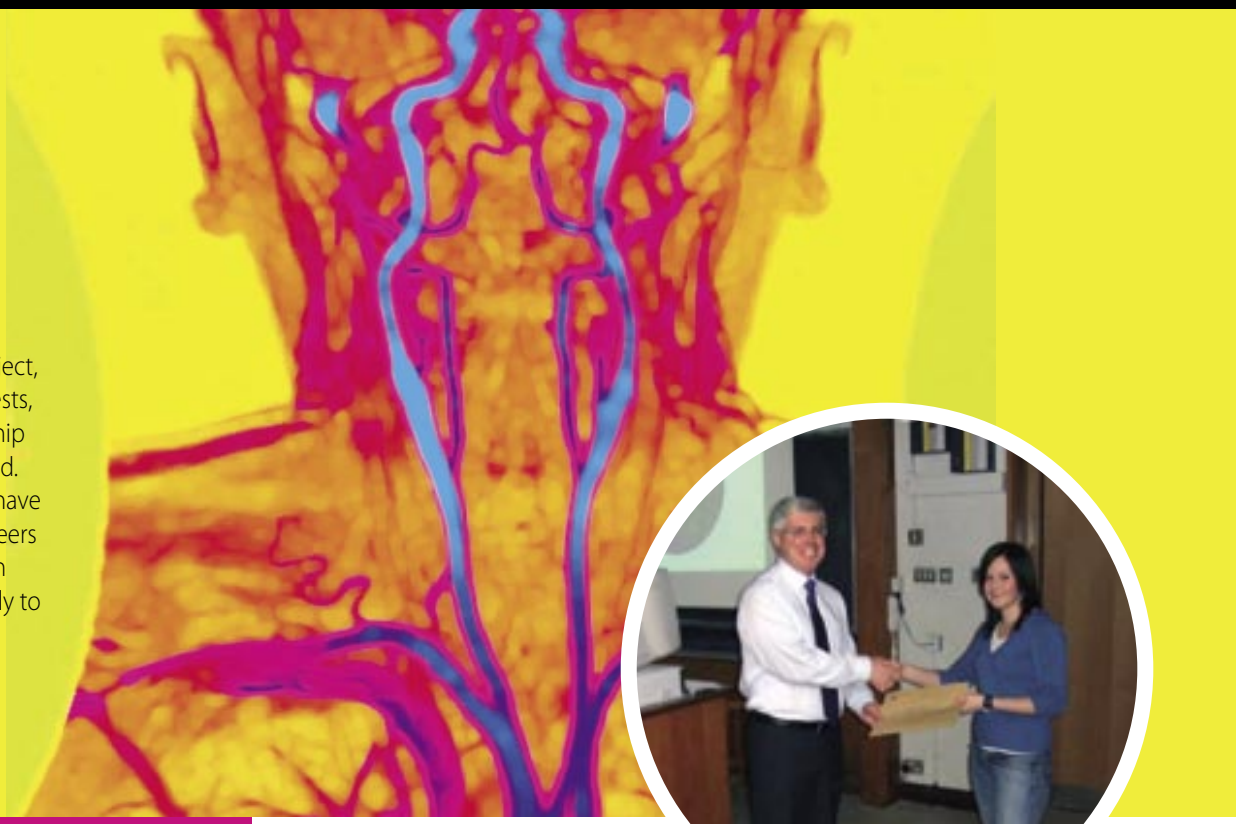

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