

Making engineering more attractive?

▶ **Engineering departments across the UK are struggling to maintain student numbers and admissions figures are a major cause of concern. Is there a way we can make our programmes more attractive to the next generation of engineers? One method the science community have used to address this problem is to add “forensics to everything”, resulting in increased student numbers throughout this area. Can hybrid programmes do the same in engineering?**

These issues were discussed at the LTSN Engineering Midlands Regional Event at Coventry University in February. Delegates heard that as a response to dwindling applications for conventional engineering courses, universities over the past few years have been offering hybrid programmes (e.g. Music Technology, Media Engineering, Sports Technology, etc.) or product design type courses to bolster student numbers.

Being able to offer unaccredited courses to those students with backgrounds that don't allow them to go onto the traditional accredited engineering courses helps to widen participation, and hybrid programmes are being designed to attract students from a larger pool as a result of their multi-disciplinary nature.

However it was noted that there was more to creating a hybrid than just simply giving a course a 'sexy' title – if the programme is not backed up with interesting modules relating to the hybrid topic students are likely to drop out very early on.

Interdisciplinary collaboration was seen as key to making these courses a success, for example linking with a conservatoire for a music technology programme and a hospital and medical school for a degree in medical engineering.

The biggest concern raised at the event was the worry that there were not careers after graduation for many of these hybrid programmes, whereas the traditional courses lead to virtually guaranteed employment.



Students on a sports technology course

This led to discussions on whether or not students really care if their course is going to make them employable. It was thought that students were so put off by the hard engineering and maths in traditional courses that they would rather take the 'softer option' and risk struggling to find a job.

Overall it was felt that many hybrid programmes had been successful in attracting students to engineering departments, especially overseas students, because they are interesting and different, and the students seem to be well motivated.

Dr Sarah Williamson, LTSN Engineering and John Begg, University of Derby

For further details about the information presented at the Midlands Regional Event please see: www.ltsneng.ac.uk/nef/events/past_ltsn.asp

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LTSN Engineering Progress Report

November 2002 – March 2003

▶ Mini-Projects and Special Interest Groups

■ LTSN Engineering received 18 proposals for Mini-Projects or Special Interest Groups by the deadline at the end of February. We would like to thank all the proposers for their effort in putting together their bids. The individual bids will now be assessed and we anticipate that it will be difficult to select from the large number of bids received. The successful proposals will be announced at the beginning of April at www.ltsneng.ac.uk/hec/mini_projects/

▶ HE in FE

■ In November, LTSN Engineering published a scoping study of 'HE Engineering Provision in FE Colleges' which was sent to over 150 FE colleges across the UK. We are happy to be developing links with this area of the community and are currently building our list of named contacts. If you would like to find out more about becoming a contact for your college please get in touch via enquiries@ltsneng.ac.uk

▶ Events

November was a busy month in LTSN Engineering's event calendar with the Scottish and Welsh Regional events taking place, as well as our *Librarians' Day* and *Strategies for Quality Assurance and Enhancement* workshops.

■ The Welsh Regional Event **Maths Support for Engineering and Science Students** was organised jointly with LTSN Maths, Stats and OR Network and offered the opportunity for delegates to raise awareness of the challenges faced, share ideas and gather resources on supporting students.

■ **Student Motivation and Retention in Engineering**, our Scottish Event, was hosted by the University of Strathclyde's Mechanical Engineering Department and provided an opportunity to showcase the departments interactive classrooms and Peer Response System. The event attracted speakers and delegates from across Scotland and discussion centred around the differing approaches to student motivation and retention in Scotland.

■ Following the success of last year's event, LTSN Engineering, LTSN Maths, Stats and OR Network and LTSN Information and Computer Sciences organised a second **Librarians' Day**. The workshop attracted over 40 librarians and information managers from around the country and included presentations from EEVL and SearchLT Engineering.

■ Academic staff are being asked to cope with a number of issues emanating from various government agencies that will require changes in the way we operate. LTSN Engineering ran two workshops on **Strategies for Quality Assurance and Enhancement** designed to help academics address current government issues such as Widening Participation and Progress Files through integrated Learning and Teaching Strategies at departmental level.

▶ LTSN Engineering Team News

■ The LTSN Engineering team would like to welcome back Fiona Lamb from maternity leave into her new role as Associate Director.

LTSN Engineering Regional Departmental Contact Networks

▶ LTSN Engineering is establishing "Regional Departmental Contact Networks" to enhance the role of its existing departmental contacts, encourage new contacts to join our network, increase the support it is able to give to all contacts and give a sense of ownership of LTSN Engineering. It is hoped that these Regional Networks will create greater collaboration within the eight regions of the UK (Scotland, Northern Ireland, Wales, Northwest, Northeast, Midlands, Southwest and Southeast).

Regional Co-ordinators are being appointed across the country and those selected to-date can be seen below. It is their responsibility to communicate with the other contacts in the region and discover areas of common interest. A small amount of funding has been allocated for the Regional Networks to develop these areas of interest in a number of possible ways, for example holding workshops with expert speakers.



Scottish Co-ordinator

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Welsh Co-ordinator

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Midlands Regional Co-ordinator

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Southeast Regional Co-ordinator

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We still have vacancies for Regional Co-ordinators in the following regions: Northern Ireland, the Northwest and the Southwest. If you are interested in any of these posts please see the following for further details:

www.ltsneng.ac.uk/ale/fundopps/regional_networks.asp



▶ The Electrical and Electronic Engineering Assessment Network (e³an) is comprised of academics from across the UK who have worked together to assemble a test bank of peer reviewed questions.

Topics include:

- Circuit Theory
- Computer Tools
- Control
- Datacomms
- Digital Electronics & Microelectronics
- Electromagnetism
- Maths for Engineers
- Physics of Semi-Conductors
- Power Electronics
- Signal Processing
- Telecomms

This resource is now available free of charge to all UK academics. A copy of the database can be downloaded from the project website:

www.e3an.ac.uk

The database currently contains several thousand questions which may be used in a variety of contexts, for example providing:

- ready made content in automated tests;
- sample questions to modify;
- a student revision aid;
- content for generating tutorial or example class sheets;
- questions for self test and diagnostic testing;
- a tutor resource demonstrating types of assessment.

The questionbanks are currently being trialed and their use evaluated.

For further information please contact Su White, Project Co-ordinator, email info@e3an.ac.uk



Resource Guide for
Engineering, Mathematics
and Computing

▶ Developed for the UK HE community, the Resource Guide for Engineering, Mathematics and Computing, takes a subject based approach to raising awareness of relevant electronic resources through providing both online and printed guides to key resources.

This guide gives an overview of the JISC collection of electronic resources relevant to these subject areas and, where appropriate, complementary resources and initiatives which fit within the Resource Guide Scope Policy have been included. The paper version of the guide has been enclosed with this edition of *translate*.

Please email Sarah Kelly, s.kelly@hw.ac.uk, the Resource Guide Adviser if you wish to order more copies.

There are also plans to offer a variety of awareness raising and training activities – providing a co-ordinating role, bringing staff and students in higher education a variety of free activities tailored to suit their needs. Further information can be found at:

www.jisc.ac.uk/resourceguides/emc

The RGEMC is part of a UK wide, JISC funded initiative covering seven subject areas. Links for the other six guides can be found at:

www.jisc.ac.uk/resourceguides/

Book Reviews



▶ Book reviews have now been added to LTSN Engineering's range of resources. Already you have demonstrated strong support by volunteering in large numbers to help build this into a useful resource. Initially 14 book reviews have been commissioned with 7 of these already completed and available online at:

www.ltsneng.ac.uk/er/bkrev/

"This book provides a highly comprehensive practical introduction to speech processing and synthesis in text, software and reference data; a must buy for graduate students who want to get to grips with these areas of activity."

"For me, the book generally does what it 'says on the tin' but lacks a forward thinking, integrative approach to synthesise the subjects together with a proactive section on low energy design."

We have many more books awaiting review and are now looking for a second set of reviewers, please visit:

www.ltsneng.ac.uk/ale/fundopps/book_review.asp

As well as choosing a book from our list you are also welcome to suggest one of your own.

In the future LTSN Engineering plan to extend the reviews from student texts to also include other texts relevant to engineering education as well as providing more links to appropriate book reviews from publishers and other LTSN subject centres.

Undergraduate Ambassadors Scheme

- ▶
- Encouraging a new generation of engineers
 - Providing key skills to undergraduates
 - Supplying role models for pupils

The Undergraduate Ambassadors Scheme (UAS) aims to reward engineering, science, technology and maths undergraduates with course credit for participating in a project in which they work as teaching assistants and act as role-models in local schools.

This Scheme provides an opportunity for final year undergraduates to gain valuable transferable skills by giving them firsthand experience of teaching. At the same time, the scheme will provide schools with a practical assistant – knowledgeable and enthusiastic – to engage pupils in science and maths.

Based around a suggested module structure, the Scheme will be adaptable to fit in with specific course requirements for individual university departments. Typically, the undergraduates will spend half a day per week in a school for one term and UAS will give guidance on key aspects of the Scheme including administrative issues, school placements and training.

If you would like further information on UAS please contact Ravi Kapur, Project Director, email ravi@ravikapur.freeserve.co.uk

► Project Page

Working with Students with Disabilities

Improving provision for disabled students (2003-05)

The HEFCE/DELNI have recently funded 24 new projects to develop and disseminate resources relating to the learning and teaching of disabled students and these projects are expected to have a sector-wide impact. The programme is supported by the National Disability Team who provide advice to projects, transfer expertise and good practice across the sector and act as a first port of call for institutions seeking advice or support on meeting the needs of disabled students.

www.natdisteam.ac.uk

LTSN Engineering will be supporting a number of these projects and below are descriptions of three projects that have a specific engineering interest. LTSN Engineering's workshop "Working with Students with Disabilities" on Tuesday 24th June at Loughborough University will provide the opportunity to find out more about these projects, help engineering departments think about the implications of the new legislation and to find out more about the resources and help available, including the LTSN Engineering Guide to Working with Students with Disabilities. For further details about LTSN Engineering's work on disabilities please see:

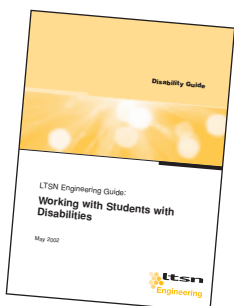
www.ltsneng.ac.uk/er/dis/

An online British Sign Language/English Glossary for Science Education

The University of Wolverhampton has received HEFCE funding to continue their pioneering work in the development of specialist on-line British Sign Language (BSL)/English glossaries for use in higher education, by deaf students and interpreters. This latest project, which builds on an earlier project in art and design (please see www.artsigns.ac.uk) involves the research and development of five 'specialist' BSL/English glossaries in engineering, the built environment, physical sciences, biological sciences and environmental science. The identification and definition, in plain English and BSL, of key engineering terms will be achieved through consultation with LTSN Engineering, specialist academic staff, deaf graduates, deaf professionals in the relevant fields, interpreters and BSL academics.

The wider implications of the project, in terms of its potential for enhancing access and informing pedagogic practice, will be explored through a variety of dissemination methods, including conference presentations, staff development events and messages to mailing lists linked to education and employment networks.

If you would be interested in contributing to the project please contact Diane Peacock at d.peacock@wlv.ac.uk or Judith Mole at judithm@directlearn.co.uk



If you would like a copy of LTSN Engineering's Guide to Working with Students with Disabilities' please visit our website

www.ltsneng.ac.uk/er/resources/

if you require an alternative format please contact us on enquiries@ltsneng.ac.uk

Enhancing the Experience of Students with Disabilities in Engineering

Focusing mainly on engineering, the aim of this project is to enhance the experience of students with disabilities by enabling institutions, faculties, departments and individual members of staff to assess their current level of provision and by offering clear guidance on how to address shortfalls in provision.

The primary objectives of this project are to develop a web-based Audit – Analysis – Action – Assurance (4A) diagnostic tool for use at various levels within institutions and to address the quality of provision offered to students with disabilities.

At present, academics rely upon paper-based diagnostic guides. Whilst useful, these lack the accessibility and immediacy of a web-based option. Such an option could provide immediate feedback, access to appropriate case-study materials and specific advice to academics seeking to meet the needs of their disabled students. Furthermore, the web-based tool could be updated with fresh material, examples of good practice, evolving case law, etc.

In addition to this the objectives of this project are to:

- Develop case study material on the experiences of students with disabilities;
- Implement, monitor and evaluate the 4A diagnostic tool in a range of HE Institutions;
- Disseminate both work-in-progress and outcomes throughout the HE community;
- Offer the transfer of the 4A diagnostic tool and implementation strategy across non-engineering disciplines.

For further information, or to express an interest in becoming involved in this project, please contact: Alan Maddocks (Project Manager) email: a.p.maddocks@lboro.ac.uk

The Triple 'A' Project: Achieving Accessible Assessment

This HEFCE-funded project on improving provision for disabled students focuses on an identified need: to address the area of accessible assessment design.

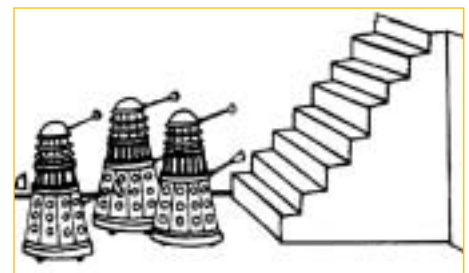
It has two main aims to:

- develop high quality transferable resources to support academic staff in the design and implementation of inclusive assessment strategies,
- encourage an institution-wide culture that proactively addresses the learning needs of disabled students.

Four subject areas are involved in the project: Art and Design, Broadcast Journalism, Engineering and Horticulture. Each subject area is looking at different assessment tasks and methods, different disabilities and is producing a range of materials and resources for both staff and students.

The Engineering subject area is focusing on the assessment of group projects and is exploring ways of diversifying approaches to group assessment design to achieve inclusion. The aim is to produce materials that will support students in the assessment process and also provide a resource for staff.

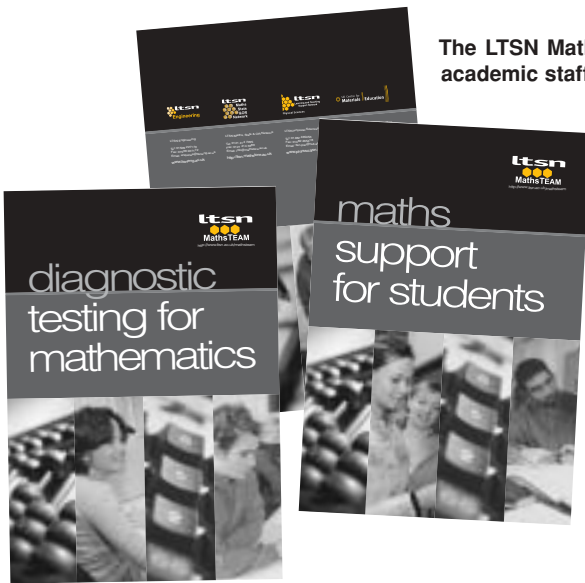
For further information on the Triple 'A' Project, please contact Caroline Stainton, The Nottingham Trent University caroline.stainton@ntu.ac.uk



Well, this certainly scuppers our plans to conquer the universe!

LTSN MathsTEAM

▶ Supporting academic staff in teaching maths to engineering students: Resources now available



The LTSN MathsTEAM is pleased to announce the publication of three new booklets supporting academic staff in teaching maths to engineering students:

- Diagnostic Testing for Mathematics
- Maths Support for Students
- Maths for Engineering and Science

The LTSN MathsTEAM has collected over 60 case studies in the areas of diagnostic testing, student support and teaching mathematics in the context of science and engineering. These case studies are intended to assist you with the challenge of enhancing the basic mathematical skills of engineering students. The contributing authors discuss the execution of current teaching practices based on each of these three topics. They talk about the barriers and the enablers in setting up these learning initiatives and offer practical suggestions for you to gain a better understanding of the present situation and related topics that merit further exploration and research.

All three booklets are available electronically from the LTSN MathsTEAM website at:

www.ltsn.ac.uk/mathsteam

If you would like to receive your own complimentary paper copies of the LTSN MathsTEAM booklets please email enquiries@ltsneng.ac.uk or phone 01509 227170.



UK Standards for Professional Engineering Competence

▶ LTSN Engineering would like to thank all those who provided comments regarding the review of Standards for Registration as a Professional Engineer. We received over 120 individual replies regarding the review of standards for registration from a wide cross-section of the community, with approximately 70 universities being represented in the replies. LTSN Engineering also received comments from industrial contacts, the Royal Statistical Society, the Institute of Education, the Institute of Maths and its Applications and the Engineering Professors' Council.

Issues arising included:

- The issue of registration being based on input standards.
- Is registration of value?
- Clarity and flexibility of standards.
- Progression opportunities.

All of the comments and issues raised in your replies were presented to EC (UK) at the review meeting on 16 December 2002.

Two consultative documents are now available setting out proposed specifications for new standards for registration for Professional Engineers and Engineering Technicians.

The Draft Specifications for both the Professional Engineer and the Engineering Technician can be downloaded from:

www.engc.org.uk/registration/standards_review.asp

EC(UK) have invited responses to these drafts from all interested organisations and individuals via uk-spec@engc.org.uk The closing date for receipt of responses is Thursday 24 April 2003 and it is anticipated that a final version will be published in June, with the standards themselves available in the autumn.

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April 2003

transferring learning & teaching throughout engineering

about

LTSN Engineering is one of the 24 subject centres of the Learning and Teaching Support Network. The Centre provides subject-based support to promote high quality learning and teaching in engineering education.

If you would like to express your own opinions on this edition of **translate**, then please write to us at:

enquiries@ltsneng.ac.uk

and we will publish a summary on our website and in future editions of **translate**.

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Talking Point

▶ **What will the White Paper "The Future of Higher Education" mean to engineering departments?**

There is good news in the white paper for all engineering departments if they play to their strengths, but as with all change there will be winners and losers. In terms of research the "elite" will become the "super elite" and there will be some ruffled feathers in the middle order. The rest will have to engage with the Regional Development Agencies and build on the Technology Transfer route to secure extra funding. With the increased emphasis on Foundation Degrees, this will put even more pressure on recruiting students, despite Mr Clarke's optimism "that the numbers studying traditional three-year courses will remain steady." The fee structure for doing 2 years in FE and then 15 months in HE must be far more appealing than three years at University, never mind the four-year MEng! Will students choose to do a Programme with full top up fees or one without, remember you get what you pay for, or do you?

*David Bell
Associate Dean (Learning and Teaching)
School of Engineering and Technology
University of Northumbria at Newcastle*

▶ The TQEC (Teaching Quality Enhancement Committee) was established in 2002 to review the arrangements for support of quality enhancement in teaching and learning in UK higher education and to identify any gaps or overlaps in the work of the four main agencies in this field – the QAA, ILTHE, LTSN and HESDA.

The final report of the TQEC on the 'Future Needs and Support for Quality Enhancement of Learning and Teaching in Higher Education' was published in January 2003. The committee recommends a new organisation to deliver the emerging QE agenda, which seeks to improve effectiveness and value for money. This new Academy would encompass ILTHE, LTSN and HESDA (the QAA is not included). The TQEC's recommendations are highlighted in the White Paper, referred to as the 'Teaching Quality Academy', which should provide a strong context for the new Academy's work.

*Both the White Paper and the TQEC final report are available from:
www.ltsn.ac.uk*

▶ **Ghost Writer Needed**

Unfortunately we have to bid farewell to Prof. Pete Cole, writer of our 'Cole's Lore' column on our website. A sabbatical, personally arranged by the entire staff of his current department, alas proved too tempting. Pete is going to run a new foundation degree in Reverse Engineering at the University of Poppleton and we wish him the best of luck.

If you are interested in putting pen to paper on Pete's behalf please email cole@ltsneng.ac.uk

future events

A more comprehensive listing of events can be found on our website:

www.ltsneng.ac.uk/nef/events/

9 April 2003

LTSN Engineering Workshop – Open and Distance Learning in Engineering

The Open University, Milton Keynes

10 April 2003

LTSN Engineering Northern Ireland Regional Event – Developing Departmental Learning and Teaching Strategies

Queen's University, Belfast

7 May 2003

JISC Strategic workshop on eLearning in the workplace
Stirling

14 May 2003

JISC Strategic workshop on eLearning in the workplace
Birmingham

May 2003

LTSN Engineering Southeast Regional Event
University of Portsmouth

May 2003

LTSN Engineering Northeast Regional Event – Student Progression
University of York

16 June 2003 to 20 June 2003

ALE2003 – Active Learning in Engineering Education
Boston, Massachusetts, USA

24 June 2003

LTSN Engineering Workshop – Working with Students with Disabilities
Loughborough University

22 July 2003 to 26 July 2003

ICEE - International Conference on Engineering Education
Valencia, Spain