

# eng CETL



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Engineering Centre for Excellence in Teaching and Learning

# Annual Stakeholders' Report 2007

**engCETL** was established in 2005 and has now completed its second year of operations. This Stakeholder Report gives us an opportunity to inform you of the exciting activities that we have completed between July 2006 and July 2007, and to outline some of our future plans.

**OUR MISSION** is to be recognised as the UK centre for excellence in the research, development and provision of engineering education – particularly through an active involvement with industry.

**engCETL AIMS** to build on the excellent engineering provision at Loughborough, and long-standing collaboration with industry, and to extend the processes through which industry makes an input into student learning, making them more sustainable and transferable by:

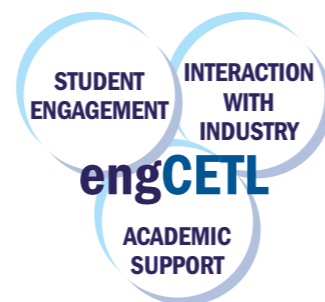
- enhancing the student learning experience;
- initiating a cultural change that supports a reflective and evidence-based approach to teaching;
- facilitating the production of graduates who are employable, innovative, productive and enterprising;
- being innovative, with a key focus on technology-enhanced teaching and learning;
- supporting, recognising and rewarding those who work towards achieving the engCETL aims;
- demonstrating impact and sustainability of the engCETL work.

**“FROM THE OUTSET I WAS ENCOURAGED BY THE ‘CAN-DO’ NATURE OF THE engCETL TEAM, WHO SHOWED ME AROUND THE AVAILABLE ROOMS AND DESCRIBED THE MULTIMEDIA AND SUPPORT FACILITIES.”**

**THE engCETL TEAM** increased further this year, with three new research students, a Clerical Assistant and an Acting Associate Director. All 22 desks are now occupied in the office area of the upper floor of the Keith Green Building. Eager to develop the people potential, two development days were organised for staff and one jointly with the seconded academics, which provided an opportunity to brainstorm future activities as well as to learn more about each other.

## WHO WE ARE

The **engCETL staff** work with engineering related academics, students and staff. engCETL includes a wide range of skills, with a team of pedagogic researchers, industrial and academic co-ordinators, learning technologists, academics and students.



### CONSULTANTS

Prof George Brown  
Prof Harry Tolley  
Dr Ivan Moore

### engCETL ADVISORY BOARD

26 members  
Chair: Director of Education at the Royal Academy of Engineering

### engCETL PANEL

15 members  
Chair: Dean of Engineering

### SECONDED ACADEMICS

Dr Keith Gregory  
Barry Haworth  
Tony Hodgson  
Dr Richard Holdich  
Dr Jane Horner  
Dr David Twigg  
Dr Peter Willmot

### MANAGEMENT TEAM

Prof John Dickens – Director  
Fiona Lamb – Associate Director (Maternity Leave)  
Dr Adam Crawford – Manager  
Derek Blease – Acting Associate Director

### engCETL STAFF

Dr Sarah Bamforth – Pedagogic Research Associate  
Melanie Bates – Learning Technology Co-ordinator  
Judith Burton – Centre Administrator  
Kirsty Carter – Academic Co-ordinator  
Jenny Logan – Online Learning Development Officer  
Dr Caroline Lowery – Learning Technology Co-ordinator  
Dr Sue Morón-García – Research Associate  
Paul Newman – Web Developer  
Richard Newman – Industrial Liaison Officer  
Dr Glynis Perkin – Progression Project Officer  
Nick Rawle – Clerical Assistant

### PROJECT STAFF

Staff involved in projects such as Rights and Rewards and JISC Web-PA and four funded Research students

## ACHIEVEMENTS IN YEAR 2

**engCETL** activities are comprehensive and wide-ranging, yet inter-related, and the Centre has focused on **eleven integrated activity strands** which form the basis of its operations:

- Industrial Interaction
- Departmental Engagement
- Support and Resource Development
- Pedagogic Research
- Transfer of Practice
- Institutional Integration
- Reward, Recognition and Developing Staff
- Student Engagement, Satisfaction and Employability
- Marketing
- Sustainability
- Wider Dissemination

One of the major accomplishments for this year is how we have integrated our people and products into the activities of Loughborough University. At an institutional level, engCETL is well placed to integrate with University policy and strategy, both through institutional membership of the engCETL Panel and Advisory Board: Pro Vice Chancellor (Teaching), Dean of Engineering, Associate Dean

of Teaching (Engineering), two Heads of Department, Director of Professional Development, Seconded Academics and/or Departmental Teaching Co-ordinators.

Integration is also achieved through engCETL staff membership on key University committees: the Director who is a member of five learning and teaching related committees; seconded academics sit on faculty boards, Senate and teaching co-ordinator groups; engCETL staff are represented on the Moodle Steering and Developers groups, sit on various industrial advisory boards and represent engCETL on other University learning and teaching projects.

The following table lists some of the technology-based tools that have been developed and their usage. It shows an encouraging uptake to both new and old projects. The usage figures give a strong indication of the scale and impact of the development work undertaken by the engCETL. In total, there are 25 resources currently in use across the University.



NAME	DESCRIPTION	DEPARTMENTS USING SOFTWARE								Academic Users	Student Users 05/06	Student Users 06/07
		Aero	Elec	Chem	Civil	D&T	IPTime	Wolfson	Other			
Academic Profile Pages	A teaching profile to encourage recognition and collaboration		✓		✓	✓		✓	9	47	Staff tool	Staff tool
Attendant	Attendance monitoring system			✓	✓	✓	✓	✓	10	88	2325	4398
Co-Tutor	Personal tutor system	✓	✓	✓	✓	✓	✓	✓	12	498	4564	5029
CourseGenie	Tool to produce structured, high quality, online teaching resources		✓	✓	✓		✓	✓	25		Staff tool	Staff tool
Digital Electronic Assessment	Online assessment tool		✓							3		114
Echo	Online project allocation system		✓				✓	✓		10	259	327
Engskills	Online sandwich placement information	✓	✓	✓	✓		✓	✓		97	220	485
Information Inspiration	Content management system for sustainability website					✓				1		107
Lab Webform	Online labs submission form		✓							1		222
QSMT	Online quantity surveying measurement tutorial				✓					1		88
Web-PA	Online peer assessment system	✓	✓	✓	✓	✓	✓	✓	9	43	790	3135

## JISC WEB-PA PROJECT

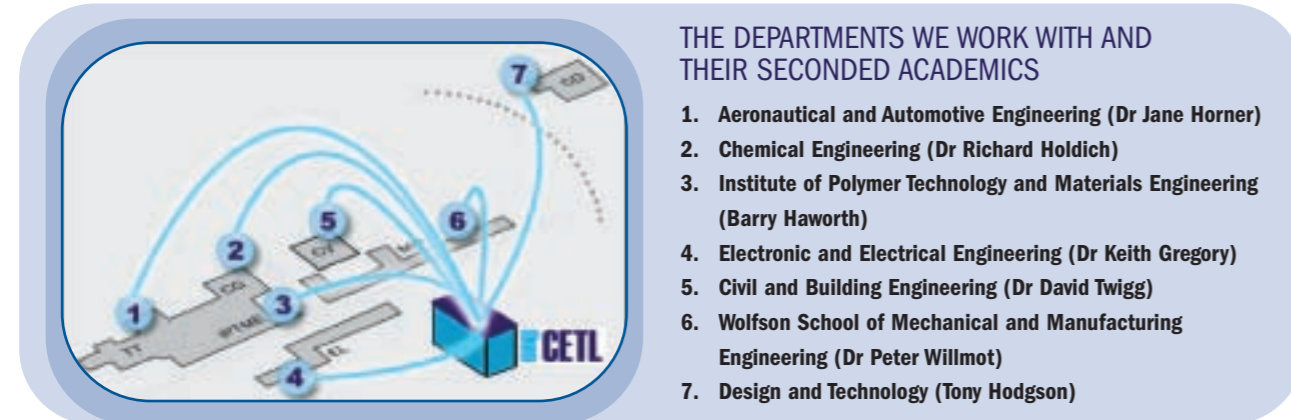
One major accomplishment was the successful bid to JISC for a £200k two year project, tasked with developing an open source version of our online peer moderated marking system, Web-PA, which had been further enhanced by engCETL in 2006. Two new members of staff were employed on this project, which is led by Loughborough University in partnership with Hull University and the Engineering and Physical Sciences Subject Centres.

## RESEARCH STUDENTS

**engCETL** is proud to welcome three new research students, Mahmoud Abdulwahed, Marion Gao, and Fakhte Soltani-Tafreshi, who join Yussuf Ahmed in pursuing their PhD research in Engineering Pedagogy.

## ACHIEVEMENTS WITHIN DEPARTMENTS

engCETL's seven seconded academics operate as an interface between those who work in engCETL and their own departmental colleagues. They see themselves as 'disseminators' of information and 'champions' of ideas emanating from engCETL to departmental colleagues and they work to get the latter involved in its activities.



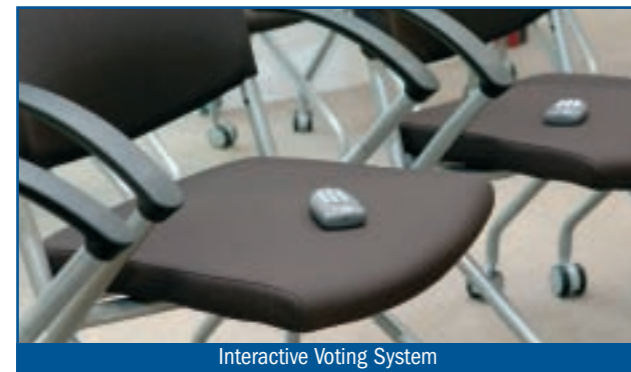
This year we received **additional capital funding** from HEFCE, which was divided between our seven departments.

### Aeronautical and Automotive Engineering

- The Department has used CETL capital funding to purchase a wide range of items to support teaching, including software to support aircraft design group projects, and transducers to develop a new undergraduate laboratory activity in aerodynamics. Approximately 10 staff and 350 students have already benefited from the new equipment.
- engCETL's Research Associate coordinated an in-depth evaluation of an undergraduate design and build project with Goff Tearle, financed through mini-project funding, which included an observation of the activities involved in the assignment and the student feedback. The aim of the evaluation was to inform the development of the module within the curriculum.

### Chemical Engineering

- Capital funding has been used to purchase resources for group teaching and teamworking activities including pilot plant equipment, replicating industry at a smaller scale. This equipment has already impacted on 120 students and 5 staff



- The Department was also involved in the trial of engCETL's interactive voting system. It was found that designing meaningful questions was the key to success, and it seems to have a positive effect on students' comprehension of the lecture content.



### Civil and Building Engineering

- Capital funding has been used to furnish a seminar room and an open-access student workroom, and to install audio-visual equipment. All three rooms (seminar, work room and studio) are in regular use by students and staff from across the Department's programmes. The seminar room and design studio are regularly used for recruitment days and by visiting sponsors from industry.
- engCETL was involved with a transfer of practice in 2006, when a Civil and Building Engineering teamwork and leadership module was successfully offered to Mechanical Engineering students. Colleagues from both departments worked closely together and a conference paper, detailing this transfer of practice, was produced. This year it was extended further to students from Manufacturing and Materials Engineering.



### Design and Technology

- Capital funding has been used within the Department to amalgamate three teaching areas into a larger and improved design studio space. Approximately 20 staff and 450 students benefit from these new facilities.
- In May 2007 the engCETL foyer area was proud to host display stands marketing the coursework produced by the Part B 'Design Practice 4' module. The coursework from the student group projects consisted of high quality prototypes which were designed, manufactured and marketed.
- engCETL is involved in working with the department to develop a CAD resource tool that is being developed in two stages; firstly, creating the webpages and secondly, the tutorial content for the tool. Stage one feedback from students is leading to further enhancements.

### Electronic and Electrical Engineering

- Capital funding has been used to re-develop Departmental teaching space, and partially re-equip project laboratory space that has the potential to impact on up to 40 staff and 250 students.
- engCETL completed a project in collaboration with CREST entitled "Renewable energy and employability - embedding industry involvement". This attempted to increase industrial involvement in MSc project work, with a view to giving students direct real world experience. The project also aimed to build teaching capacity by identifying potential teachers from those working in industry. Six example MSc case studies are now available on the CREST website: <http://crestdl.lboro.ac.uk/industry/>
- engCETL also undertook an investigation in the department into the behaviour of students when submitting work electronically. The overall aim was to explore the way in which students manage their workload and whether electronic submission helps.

### Institute of Polymer Technology and Materials Engineering

- The Department has used additional engCETL capital funding to enhance teaching and learning facilities in key areas relating to polymer product manufacturing, including industry standard materials selection software, CAD software, processing, testing and analysis equipment.
- engCETL's Industrial Liaison Officer was involved in a project that aimed to create new links with industry to promote postgraduate modules and courses, and to increase the recruitment of part-time postgraduate students and to develop the course programme, with a particular focus on Applied Design students. 95 companies were contacted to promote postgraduate courses and DIS placements.

### Wolfson School of Mechanical and Manufacturing Engineering

- Additional capital funding was used within the Department to purchase video conferencing and interactive facilities to liaise with industry, and to purchase professional active learning materials for a project leadership module. More than 350 students have benefited from new facilities and resources so far.
- The Innovative Manufacturing Technology degree website was developed this year by one of engCETL's Learning Technology Coordinators, and our Industrial Liaison Officer helped to develop a series of student placement case studies that are available on the website: <http://imt.lboro.ac.uk/casestudies.html>
- The Department conducted an investigation with engCETL into the process of project allocation, using an online tool (Echo) developed by engCETL. This investigation incorporated student experiences of the process and how this might be improved, aiming to demonstrate to colleagues the value of the discussion period associated with the process. Results of this will directly feed into the redevelopment of the Echo software in the next year.



**"THE KEITH GREEN BUILDING ROOMS PROVIDED AN EXCELLENT PLATFORM FROM WHICH TO DELIVER OUR MESSAGE, OFFERING EXCELLENT NATURAL LIGHTING, FIRST CLASS MULTIMEDIA SERVICES, AND FLEXIBLE FURNITURE ARRANGEMENTS. SEVERAL OF THE VISITORS COMMENTED POSITIVELY ON THE FINANCIAL INVESTMENT THAT THE UNIVERSITY HAD MADE IN THE BUILDING"**  
DR RUSSELL COGGRIVE, WOLFSON SCHOOL AND MANAGING DIRECTOR OF PHASE VISION LTD

## ACHIEVEMENTS WITHIN OUR THEMES

### Learning Spaces

During our first full year of opening we began a comprehensive evaluation of the engCETL learning space, to identify the use and benefits of the space and the ways in which its full potential can be realised. An external consultant has conducted focus groups and interviews with student and staff users of the space. Occupancy of the rooms for scheduled teaching ran at a capacity of 70% in Semester 1 and 60% in Semester 2 from all five engineering departments, with additional bookings from student groups in non-teaching scheduled slots.



engCETL Enterprise Event

A pilot programme known as 'learning@uni' was delivered to an intake of Mechanical Engineering students at the start of the 2006/7 academic year. engCETL has supported the programme lectures in undertaking research to probe students' perceptions of learning at school and university and their experiences of making the transition between the two. A paper detailing the findings of this research is to be presented at the International Conference of Engineering Education in September 2007.

### Industrial Interaction

The ENGAGE project is about encouraging dialogue between industry and universities (with a focus on engineering, physical sciences and materials) being co-ordinated by the Engineering Subject Centre with support from the Physical Sciences and Materials Subject Centres through funding from the HEA Academy. engCETL staff are represented on three of the four working groups. engCETL also developed the ENGAGE content management system website: <http://www.engsc.ac.uk/engage/>

### Pedagogic Research

Achievements include recruitment of three further PhD research students, work related to reward and recognition, successful research events, setting up of a research library, the development of a draft research strategy, and an impressive list of publications.

engCETL RESEARCH STUDENTSHIP	SUPERVISION TEAM
Transferable skills developed during placement	Chemical Engineering/ IPTME
Project-based teaching and learning	Civil and Building Engineering/Wolfson School of Mechanical and Manufacturing Engineering
The use of a telaboratory for teaching and learning in Chemical Engineering	Chemical Engineering/Electronic and Electrical Engineering
The impact of sponsorship on academia, students and industry	Civil and Building Engineering

### Enhancing Teaching and Learning

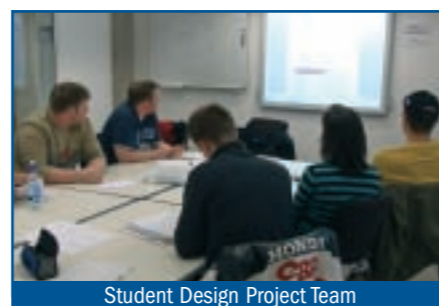
engCETL continues to develop dissemination material for academics both on campus and nationally, and we now have packs of leaflets available that detail some of our products and services. This year a new seminar series was also established, and highlighted the work of four university teaching award recipients. Look out for future events advertised through our website!

### JISC Rights and Rewards Project

Learning Technology Co-ordinator Melanie Bates was seconded for one day a week to work on the Rights and Rewards project to develop a pilot teaching and learning material repository, called PEDESTAL. One aspect of this informal repository, which aims to promote the sharing of teaching resources and expertise, was to provide Loughborough staff (including academics and support staff) with a profile page. To date, over 50 people have added to their profiles and over 100 teaching resources have been deposited. PEDESTAL can be found at: <http://pedestal.lboro.ac.uk/>.

### Learning Technology

Our team of learning technologists have completed an overview of their software tools and systems, working towards a standardised way of working in both code and structure, to enhance crossover support. They are also working with our Faculty Network Systems team to implement a more rigorous procedure to maintain, secure and update our IT infrastructure to support our ongoing work.



Student Design Project Team

### Student Engagement

The first workshop for students entitled 'Technical Report Writing' was held on 14 February 2007, attracting 28 students from five engineering departments. engCETL also hosted our first enterprise event for engineering-related students from 26 - 28 March. 24 students participated, delaying their Easter vacation by three days to attend the event. They worked in small teams to form a business and attempted to obtain the winning vote in the 'Dragons' Den'.

**"THE EVENT IS VERY INTERACTIVE, EDUCATING AND ENLIGHTENING"**  
CIVIL AND BUILDING ENGINEERING STUDENT

## DISSEMINATION AND LOOKING FORWARD

Staff associated with the Centre have been successful in publishing 12 journal papers and 19 conference papers. Topics include peer review of team marks using a web-based tool, attitudes to author contributions to digital teaching and learning repositories, and providing a laboratory experience for distance learners in engineering. Professor John Dickens was an invited keynote presenter at the Engineering Education Conference 2006 and the Engineering Professors' Council Annual Congress in April 2007.



engCETL Director

engCETL staff have received over 30 international visitors from across Europe and as far afield as China, Australia, America and Egypt. engCETL is building on these links with overseas institutions and is looking to collaborate with recent visitors Euan Lindsay (Australian Association of Engineering Educators) and Ian Cameron (Australian Carrick Fellow) who has planned a short term secondment to engCETL in Year 3.

### East Midlands CETLs

There have been ongoing interactions between the CETLs in the East Midlands including a joint display stand at the annual CETL Conference 19 March 2007. engCETL was proud to host an East Midlands Learning Spaces Evaluation Event on 20 February 2007, bringing the regional CETLs together to discuss their ongoing evaluation strategies.



Pedagogic Workshop

facilitate discussion, extend understanding, share expertise and promote greater understanding of pedagogic research and evaluation. A workshop was run by engCETL in July 2007, with sponsorship gained through the Higher Education Academy.

### Engineering Ethics

engCETL has jointly funded a project with the Engineering Subject Centre (EngSC) and Inter-Disciplinary Ethics Applied (IDEA) CETL to develop a series of engineering ethics case studies. The aim of the project, which is led by the IDEA CETL, is to develop teaching materials that will support the teaching of ethics to students of engineering through the creation of an online database of practice-based case studies and with supporting commentary and teaching notes. The case studies will be freely available for use in the teaching of undergraduates across the UK and beyond.

### Engineering Subject Centre (EngSC)

EngSC and engCETL ran two joint pedagogic research workshops for engineering academics which will now be disseminated nationally through funding from a HE Academy mini project award (by Dr Sue Morón-García, engCETL and Liz Willis, EngSC), which will lead to the creation of a pedagogic research toolkit.

### Professional Development

engCETL's new joint Research Associate post in collaboration with Professional Development has been involved in a range of research activities. For example, the Personal Development Planning (PDP) project aimed to identify the ways in which students are engaging with PDP and what opportunities there are to increase future engagement.

### Finance

engCETL spent 92.7% of its Year 2 recurrent budget this year. The full capital expenditure was spent, in line with the HEFCE schedule.

	YEAR 1	YEAR 2
Recurrent Spend	£425k	£495k
External Commissioned Work	£11k	£12k
Capital Spend	£1.4M	
Additional Capital		£245k
Further Income - JISC	£160k (Led by Information Science)	£200k (Led by engCETL)

### Looking forward

After two years of operations, engCETL's aims and objectives are still very much in line with those of the University and the National CETL Programme. The key issues for future development include:

- Adoption of an action research methodology, enabling engCETL to systematically pilot test their products, obtain feedback from users (staff and students) and provide the Centre with well-founded evidence of the impact of its activities.
- Continue to draw the seconded academics and their colleagues into collaborative working relationships with each other and with members of the CETL staff, identifying new ways of sharing knowledge and skills.
- Continue the two major external evaluation projects and commission further evaluations as required, in line with core engCETL aims and activities.
- Successfully negotiate at least one further, part-funded, PhD studentship.
- Continue to work with the Pro-Vice Chancellor for Enterprise to develop enterprise education in the engineering curriculum.
- Continue the analysis of the teaching of engineering design projects across engCETL departments, to form a series of case studies to disseminate internally and externally.
- Identify new methods of engaging students in engCETL activities, whilst continuing and enhancing existing methods that have been found to work well.