

Engineering education world

Contributions are invited for this feature. News items on policies that concern the engineering education world, new courses and curricula either of a unique nature or of international interest, new innovative laboratories and concepts, funding news for engineering research projects involving international participation, special international continuing education courses and news, industry–university interaction, engineering faculty news, and developments in engineering education of international interest. Please send news items and conference information to the Editor-in-Chief. Public relations offices of universities and human resources divisions in industry are requested to contact the Editor with news items concerning engineering education and training.

Europe

Concern about imbalance in Erasmus student exchange numbers

We have reported that growing numbers of students from continental Europe are choosing to study in Britain, while the number of British students who study elsewhere in Europe is declining – an imbalance that has begun to worry higher-education officials in the UK, and causes financial problems for their institutions. The lack of interest on the part of British students in taking courses elsewhere in Europe is being blamed on a number of factors, chief among them a lack of foreign-language skills, but also non-recognition of European study periods and degrees awarded are a factor.

In 1995–96, the most recent year for which such figures are available, a total of 21 808 students from elsewhere in Europe came to study in Britain under the Socrates-Erasmus program, the main student-mobility project sponsored by the European Union. That number represents 26 per cent of all students in the program that year, the highest proportion for any participating country.

The same year, only 11 735 British students took courses in other European countries under the program. That number was slightly lower than in the two preceding years, said a spokesman for the government's Department for Education and Employment.

The Erasmus program, as it is commonly known, was developed by the European Union 11 years ago to encourage exchange agreements that would enable students to enrol at an institution in another country, for terms lasting from three months to a year. In addition to the 15 EU member countries, the program has been open to institutions in Iceland, Norway and Switzerland.

Erasmus students do not pay tuition, but a university has to pick up the costs of any 'excess' number of students. For example, if a British university has 100 students going out under the program, and 200 students coming in, it must absorb the cost of educating the extra foreign students.

Britain, in fact, has been subsidising not only Erasmus students but also thousands of other students from EU countries. When students who are not taking part in the Erasmus program, or in any other EU-sponsored exchange projects, study at a public institution in other member nations, they pay the tuition charged to students in that country. Until this fall – when British universities will, for the first time, impose tuition fees of about \$1600 per year – students from EU countries studying in Britain have not had to pay anything.

Outside the Erasmus program, some 45 000 European students were pursuing undergraduate degrees full-time at British universities in 1995, the

most recent year for which statistics are available. Only about 10 000 British undergraduates were enrolled at institutions in continental Europe.

A report, *Student Mobility in the European Community*, was prepared by a committee of the House of Lords. It said Britain needed 'a commitment to a national strategy which will encourage more British students to study abroad'. According to the report, the reasons for the student-exchange imbalance include these:

- Foreign-language training has taken a back seat in British schools, and fewer students are graduating from high school with enough language abilities to study abroad. Meanwhile, English is becoming the universal business language, and continental-European students are eager to come to Britain to study in English.
- British universities tend to be smaller, have high faculty-to-student ratios, and are more paternalistic than universities on the continent of Europe, making them more attractive to British students as well as those from elsewhere in Europe.
- Most British undergraduate degrees are completed in a highly structured, three-year period, making it hard for students to squeeze in a foreign-study experience.

With Cyprus, the Czech Republic, Hungary and Romania about to join the Erasmus programme, the likelihood of an even greater imbalance looms.

One of the most serious problems, experts in the UK acknowledge, is that the current financial structure in British higher education discourages universities from seeking more EU students and encourages them to focus instead on recruiting other foreign students, who must pay much higher tuition. Foreign students from outside the European Union who study in Britain must pay the full cost of their education, which averages \$9600 a year for undergraduates.

Under the Erasmus program, a university signs a contract with a partner institution in which both agree to exchange an equal number of students. But that isn't always how it turns out. Last year, said **Roger King**, vice-chancellor of the University of Lincolnshire and Humberside, his institution sent about 200 students to European universities, and received about 300. In the past, he said, his university and others in Britain, as a gesture of goodwill, had allowed more Erasmus students to enrol than were stipulated in the contracts, and covered the extra costs. But now, for financial reasons, he said, his and other British universities are being forced to cap the number of such students.

It was 'not without some discomfort' that he and other vice-chancellors had made that decision. 'It did cause some criticism and annoyance among our continental-European partners,' Mr. King said. 'Particularly from those in France, Germany, and Spain, there is a feeling there should not be any cap, that this is not in the spirit of Europe.' His university is now focusing heavily on recruiting

students from outside the European Union, particularly from the Middle East. 'We're looking with a very wary eye at whether we should take in Continental EU students in very large numbers,' he said.

Other educators say, however, that the answer is not to limit the number of EU students coming to Britain, but to come up with a strategy to encourage more British students to study overseas. In its recent report, the House of Lords panel said Britain, as part of the world's largest trading blocs, needed to grow closer to its European partners, not more distant from them. The committee noted a need 'within British industry for graduates who had a command not only of European languages, but also of European ways of thinking and living'.

Already, the government is developing a strategy to try to bring that about, according to an education spokesman. Actions to be taken by the government include:

- Making up any tuition revenue that universities may lose by enrolling larger numbers of Erasmus students.
- Encouraging vice-chancellors and individual academic departments to take a 'European strategy' more seriously.
- Providing more information to give British students a better sense of what studying abroad is really like – and its potential benefits.

The report also called for 'urgent action' to improve language teaching in schools and universities. Mr. King and other academic leaders, however, are sceptical that the foreign language skills of British students will improve anytime soon. 'There is a marked reluctance in our population to learn other languages,' he said. 'It smacks of the old colonialist to say that, but it's realistic.'

A table showing the number of students in Europe's Erasmus program, 1995–96, broken down by country.

Country	Sent	Received	Imbalance*
Austria	2301	1618	70.3%
Belgium	3978	3077	77.4%
Denmark	1930	1393	72.2%
Finland	2530	1400	55.3%
France	13 336	15 177	113.8%
Germany	13 638	10 299	75.5%
Greece	1897	1056	55.7%
Iceland	103	49	47.6%
Ireland	1618	3312	204.7%
Italy	9000	4987	55.4%
Luxembourg	68	9	13.2%
Netherlands	5180	4912	94.8%
Norway	1212	728	60.1%
Portugal	1609	1276	79.3%
Spain	10 547	10 220	96.9%
Sweden	2912	2491	85.5%
Switzerland	1048	830	79.2%
United Kingdom	11 735	21 808	185.8%

* At 100%, the number of students received would equal the number of students sent.

Source: Report from the House of Lords Select Committee on the European Communities: 'Student Mobility in the European Community'.

United Kingdom

Record number of new students – but engineering stagnating

University admissions reported that a record number of students have applied for the 1998/9 academic year. Higher education courses drew 226 000 students on the first day of the clearing process after A-level results were announced. A spokesman for **David Blunkett**, Education Secretary, said the figures vindicated the Government's decision to introduce tuition fees of £1000 a year. 'The figures are encouraging. They are further evidence that students recognise the value of a university education and the fairness of the new funding system.' Students were choosier about their courses – business studies, management and accountancy are the most popular. Courses in technology, engineering and particularly, mathematics have hardly attracted additional recruits after the examination results were announced. In fact, in 1994 19 000 students took up engineering, but this figure has now fallen to 17 000. Despite efforts to attract more women there were 2500 new women in engineering studies in 1994, with the same number in 1997. The situation has not improved for 1998 as the latest figures of published vacancies have shown.

Centres for teaching expertise to be set up by universities

The Higher Education Funding Council for England (HEFCE) is to invite bids for teaching centres as a new learning and teaching initiative. It will decide which institutions have been successful on the strength of the bids alone, and not on information provided through the Quality Assurance Agency's new quality assurance system.

This initiative will be set up in parallel to that by the new Institute for Learning and Teaching in Higher Education. An important point in this initiative is that it will be distributed among different subjects recognising that good teaching is subject-dependent and teaching practice in one subject may have little in common with good teaching in another.

Cliff Allan, policy principal at HEFCE, said: 'We believe there is a lot of evidence to suggest many academics look first to their own discipline for good practice in teaching and learning. It is sensible therefore to develop a major infrastructure for the subjects to improve teaching.' The centres could carry out and promote research into innovations in teaching, and take responsibility for sharing expertise. They might promote particular teaching materials and technologies. Above all, they would encourage change at the subject level, said Mr Allan.

The emphasis on subject expertise, rather than generic teaching skills, is a new departure.

Faculty is ageing and retiring early – a chance for younger academics

Latest figures from the Higher Education Statistical Agency (HESA) show that the average age of full-time academic staff in UK universities is 45.5 years, up from 44.5 in 1997. The proportion of staff aged 45 and over has risen from 38% to 42% over the same period. The proportion of staff aged 55 and over has risen from 12% to 15% over the same period. The proportion of staff aged 65 and over has risen from 3% to 4% over the same period. The proportion of staff aged 70 and over has risen from 1% to 2% over the same period. The proportion of staff aged 75 and over has risen from 0% to 1% over the same period. The proportion of staff aged 80 and over has risen from 0% to 0% over the same period. The proportion of staff aged 85 and over has risen from 0% to 0% over the same period. The proportion of staff aged 90 and over has risen from 0% to 0% over the same period. The proportion of staff aged 95 and over has risen from 0% to 0% over the same period. The proportion of staff aged 100 and over has risen from 0% to 0% over the same period.

No. 14 last year; Duke University, which slipped from third place; and the University of Pennsylvania, which moved up one notch. The University of California at Berkeley and the University of Virginia were selected as the best public universities. Stanford was said to offer the best value.

Noting the fluctuations in the rankings, Mr Shepard said: 'Schools don't change that much, so the only thing that can be changing is the *US News*' formula or the way schools are reporting their data. All this moving around is meaningless, which means the rankings are meaningless.'

Stanford was one of several institutions that began posting statistics on the Internet last year as an alternative to the *US News* rankings. Some of the data – such as SAT (Scholastic Aptitude Test) scores, enrolment figures, and financial-aid calculations similar to those in the magazine rankings. But Stanford's Web site includes information not found in *US News*, such as indicators of faculty quality (including memberships in national academies), and excludes some data that *US News* publishes (such as student-faculty ratios). All rankings are available on line at:

HYPERLINK <http://www.usnews.com/usnews/edu/home.html>

A trend towards technology transfer and entrepreneurial activities

The University of Chicago and other research universities that traditionally have emphasised more theoretical science have been forced to re-examine their focus in order to adapt to rapid technological change and economic globalisation.

Much of the impetus for change has been the minimal increases in federal research grants, combined with increased competition for that money. A typical case is that of the University of Chicago which during the last two decades has seen its ranking as a recipient of science money slip from among the top 10 US universities to about 20th, while technology-oriented universities have come to the fore. Chicago has now tried to build on its strengths in the life sciences by combining those disciplines with its medical school, aiming to capitalise on biotechnology developments. The university also has created an in-house venture-capital operation to back professors' entrepreneurial efforts through start-up companies and technology-transfer deals. Chicago's reorientation, typical of a world-wide trend for innovation, will be rewarded with commercial revenue. Criticism comes from the academic community which claims that directed research for profit may be in the way of traditional university research which aims at pure science and discovery with commercial benefits not in the primary line of sight.

Emerging technologies course

A survey course on emerging technologies at the University of Illinois at Urbana-Champaign isn't just a set of lectures and discussions. It's a

production. A cameraman films each class, and the university has invited local business leaders – and anyone else with an Internet connection – to watch the lectures live on-line. It's a new way for state universities to reach out, says Frank Rusch, one of the course's lecturers. He is also the associate director of the education division at the National Center for Supercomputing Applications, which is based at the university.

The goal of the course, which is offered through the supercomputing centre, is to introduce students to the new ways that technology is being used in education and in the workplace. Topics include digital libraries, computer modelling, and data mining – combing through enormous data banks to find useful patterns of information. Some 20 graduate and undergraduate students are enrolled in the course, which is held in a high-tech classroom with a networked computer on every desk. Students who are bored with the lecture can look at related material on the course's World-Wide Web site, or send e-mail to their friends. They can even watch the live broadcast of the class on the Web.

About 100 on-line visitors tuned in to the first session of the class, and employees of Allstate and Microsoft have expressed interest in watching the lectures. The visitors do not receive course credits, however, and are not able to ask questions.

Australia

Offshoot private university established by the University of Melbourne

Australia's second oldest university, Melbourne, has broken new ground by establishing a private offshoot, which it hopes will generate enough income for it to join the world's top-rank institutions. In establishing Melbourne University (Private) Ltd, the University of Melbourne is the first in Australia to create a commercially oriented twin institution whose principal objective is profit. The move will probably be followed by other public universities.

Although Australia has two other private universities – Bond and Notre Dame – and most public universities operate commercial companies to market their wares, Melbourne's planned Aus\$250 million private partner is unique. It is the first in which a state government has officially approved the establishment of a private university as an offshoot of a public institution. This allows the company that has been set up to operate the institution to call it a university.

Students vehemently oppose such schemes. They argue that the private university will draw resources and students away from the public institution. Vice-chancellor **Alan Gilbert**, however, has consistently claimed that Melbourne is massively underfunded compared with similar universities in Britain and the United States. The main target students of the new university are

executives and managers from industry who want to improve their education and skills.

India

Non-accredited universities are to be eliminated

India's education ministry is cracking down on 'fake' universities that have mushroomed with the surge in demand for degrees. Education minister **Manohar Joshi** told parliament last week that the government plans to amend the University Grants Commission Act, covering higher education, to give it more power to stop the proliferation of unofficial colleges. A four-member task force is working out the amendments to the act. Dr Joshi said: 'The UGC has, within the existing legal framework, been making endeavours to curb the menace and remove the existence of fake universities, but results so far have been somewhat limited.'

The UGC's role restricted itself to issuing periodic warnings against fake universities as it does not have the legal powers to take action. Since the universities are neither recognised nor funded by the UGC, it has no control over them. The police can act only on individual complaints. Unofficial universities have recruited academically weak students desperate for a university degree that could act as a passport to a job. The self-styled universities are mostly run by retired lecturers and education officials. It is alleged that they have managed to continue because of their connections in the UGC and education ministry.

China

The government decides on who can take up a job

Young people of working age in China will not be allowed to take up jobs until after completion of one to three years of higher education or professional training, according to a new government ruling. The ruling will apply in 200 Chinese cities by the end of this year, extending to more regions next year, said **Zhang Xiaojian**, chief of vocational skill development under the ministry of labour and social security. The move is part of a strategy designed to ease the job crisis worsened by the more than 10 million lay-offs from state-owned enterprises so far this year. Between now and 2000, 18 million urban and 54 million rural youths will seek jobs. Probably one third of them are going to be disappointed.

Since March 1997, 63 cities have piloted the scheme, with 110 000 people going through the education process. 'The compulsory training program is designed to make junior and senior high-school graduates more competent, and cushion the pressure on the job markets,' Zhang said.

In urban and rural areas, 30 per cent of high-school leavers would normally enter the workforce without any vocational training, although it is a requirement of China's education and labour laws.

China has 17 000 vocational schools and 30 000 training centres capable of training 3.5 million people a year. Also, about 20 000 enterprises are able to provide training for their own staff. The government will decide on the courses to train young people for both current and future needs. Training programs will be open to high-school graduates who fail entrance exams or do not wish to take up university places. In many cities youngsters are being required to sign training contracts with employers who designate institutions to carry out training. As China changes from a planned to a market economy, the government says it plans to shift help towards those old and middle-aged workers, while demanding that young people square up to new challenges, Zhang said. China's unemployment rate is about 5 per cent. A government report said that by the end of last year urban unemployment tipped 12.1 million and rural unemployment 150 million. Experts are stressing China should not let the unemployment rate go beyond 6 per cent, as China does not have a sound social insurance system.

Conferences

Pedagogics in Design Education

19–20 November 1998
State Scientific Library
University of West Bohemia
Pilsen, Czech Republic
Contact: Prof. Stanislav Hosnedl
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CAL '99

Virtuality in Education

28–31 March 1999
The Institute of Education, London, UK
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e-mail: p.orme@dial.pipex.com
HYPERLINK <http://www.elsevier.nl/locate/cal99>

10th International Conference on College Teaching and Learning

14–17 April 1999
Jacksonville FL, USA
Contact: Bill Martin
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e-mail: wmartin@fccj.org
HYPERLINK <mailto:wmartin@fccj.org>
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American Society for Engineering Education Annual Conference

20–23 June 1999
Charlotte, North Carolina, USA
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