

# 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.

## USA-Western Europe

### *A significant new angle on production and engineering skills*

A recent survey of productivity skills of shop-floor workers related to prior education shows that the much-criticized lack of vocational and apprentice training in the USA as compared to Western Europe may actually constitute an advantage for US productivity. This productivity is 60% higher than in the UK and 25% higher than in the Netherlands in key chemical and electrical engineering industries. Whereas 40% of British workers have completed apprenticeships, only 5% of US workers have done so. Over 90% of engineering workers have no formal training. Reasons behind this productivity may be the high number of engineering graduates employed by US industry. In the USA around 25% of engineering graduates are employed, whereas only between 8 and 13% of such graduates are employed in Western Europe. Another reason is the high integration of practical skills in undergraduate engineering education in the USA. This is well portrayed in our special issue on instrumentation just published (*Int. J. Engng Ed.*, vol. 11, no. 4/5). Another factor is the greater expenditure by USA firms on external qualifications of their employees. More workers and employees get higher and continuing education funded by their companies. The report *Productivity, Machinery and Skills in the United States and Western Europe* by **Geoff Mason** and **David Fine-**

**gold** is available from the National Institute of Economic and Social Research, 2 Dean Trench St., Smith Square, London SW1P 3HE, UK.

## United Kingdom

### *Open funding decisions: a common problem*

The Council for Academic Autonomy has published a report on *Academic Democracy* which surveys the degree of participation of academic staff in decisions on funding. The council claims that academics have a right to take part in all decision-making processes in their institutions. The report says that there is evidence that staff are not informed on decisions made in finance, staff selection and promotion. All academics should have access to agendas, minutes and papers on decisions made at the institution. Staff assemblies where all members can voice their opinions on matters of policy are rare. The situation is typical of higher education institutions the world over. The question is whether open decision making is going to improve academic environments in times of scarce resources.

### *Funding crisis: the UK is just a case study*

Major cuts in funding are to be faced by UK universities and colleges of higher education. Real term reductions are of the order of 7% for the coming year and a further reduction of 12% in 1988; these cuts are to be accompanied by a squeeze of 9% in

student grants, an increase in student loan rates, and a squeeze on staff payments. This is partly offset by an increase in vocational training and apprenticeships. The government wants to see an expansion of the Private Finance Initiative between the private sector and higher education. Budget squeezes for higher education are planned for other European countries, e.g. Germany and France. Whether public money can be replaced by private support would probably depend on the softening of engrained public sector bureaucracy which hinders the invasion of private money in higher education, as well as the split attitudes of academic staff regarding interference of non-scientific aims in academia.

#### *Collaborative work is on the increase*

In a recent study on trends in scientific research at the Science Policy Research Unit the number of collaborative papers was investigated. Collaboration between several researchers and institutions is on the increase; 40% of papers published in 1991 involve work done in more than one institution. International scientific partnerships have increased by 75% in the 1980s and amount to about a quarter of published research. The most intensive international collaboration in research is in the field of medicine. The biggest areas for publication, according to a survey of the Science Citation Index, were medicine, chemistry and the life sciences. Companies did not appear to be regular publishers in scientific journals, which may reflect on the lack of incentive for promotion in firms where employees have a publishing record. The survey is available from the Science Policy Research Unit, University of Sussex, Brighton, UK.

#### *A new tool for the web*

The **University of Southampton** has developed a universal tool for multimedia authoring and publishing called *Microcosm*. The tool is being presented at the Boston conference on 'the web revolution' organized by the Massachusetts Institute of Technology. The tool is a distributed link service for web applications. It can be used for publishing, authoring and reading applications. The tool has been used for maintenance and as a multimedia information authoring package by companies.

#### *University income and marketing*

A study published on *income generation and universities* finds that the demand for the services of higher education institutions is increasing. However, the image that higher education has in the outside world is generally poor. Enterprises often complain about the quality of service provided by academic institutions. This compares unfavourably with the service given by private providers. Marketing of services is deficient in that many private enterprises are unaware of the potential of higher education. The campus image is also a factor in the assessment of quality of service. Dreary campus

surroundings are unattractive compared with new private sector facilities.

## Italy

#### *Scheme for expatriate researchers fails*

A project launched by **Antonio Ruberti**, former European Science and Technology Commissioner and Minister of Scientific Research, to bring back top Italian scientists and researchers who reside in other countries has not materialized to the hoped for extent. Some of the scientists who came back were unknown, and could hardly contribute to the country's research potential. Others were not provided with resources: the Nobel Prize winner **Renato Sinalco**, for example, was relegated to a remote laboratory in Sardinia without sufficient infrastructure and facilities. He has since returned to the USA claiming that an opportunity was missed to make the country competitive. The main drawback seems to be that a research environment is needed to produce good research, and it is not enough just to provide a good salary. The research climate in the USA is what is getting the results, such a climate needs to be built up, and this takes time.

## Ireland

#### *Irish universities fight for independence*

The current Labour Minister of Education is out to change Irish university government. The minister, **Niamey Bhreathnach**, wants the post of Provost at Trinity College filled through a selection committee with outside representation, and to appoint local authority representatives to its board. Irish universities oppose such outside or creeping government representation in its administrative bodies. The minister also wants equal representation of women in the administrative bodies. The Irish universities will keep fighting for their independence.

## Germany

#### *Dissatisfaction of students at peak*

A study by the Higher Education Information System (HIS) reveals a record number of students dropping out of studies. In 1993-94 over 600,000 students dropped out of university—almost a third of the student body. Of the drop-outs, 73% were dissatisfied with their studies, 63% were unhappy with the organization of studies and 53% felt their job chances were just as good without a degree. Students also commonly work part time while they study and grab the opportunity of taking up job offers without graduating. Such jobs do not necessarily entail less pay. The drop-out rate shows an alarming increase in the past two decades. The higher education system was reformed over 20

years ago, at a time when finances were adequate and the student population was relatively small. The institution of so-called academic self-administration by the reformers of the day, which meant sharing administrative tasks between a body of administrators and the academic staff, is showing signs of cracking up. The unique system in Germany diffuses responsibilities and paralyses any efforts for change by innumerable diluting administrative and committee processes. Staff hire is also controlled by the trade union which introduces additional delays.

#### *Lazy professors*

University professors have been shirking their duties. Teaching loads of 8 hours per week are not being kept. At the University of Oldenburg, president **Michael Daxner** has authorized students to check that their professors keep their commitments. Numerous complaints of professors either not appearing for lectures, setting up bogus lectures with no students or ignoring the timetable have been reported. At Hamburg University, medical students claimed the professors were committing 'teaching fraud'. The relative number of professors not fulfilling their commitments is small, but with funding and staff cuts combined with an increased public awareness that permanent jobs in the public sector, which includes academia, should come under scrutiny, pressures for control are on the increase. Just for fun, try calling a German university professor on the phone: the chances of an answer—unless he/she has a secretary or an answering machine—are slim.

#### *University fees again*

Finally, German university rectors are proposing university fees. An *ad hoc* sum of DM 1000 per student per semester (there are two semesters per year) has been under discussion by the conference of rectors and presidents of German institutions of higher education. Almost universal protest has ensued, although the vehemence of the protests is relatively mild. The argument for fees is the possibility of allocating the income to overcome university financial crises. Arguments against the fees are that it could reduce enrolments, as exemplified by the University of Zurich, which lost 20% of its student freshmen when fees were imposed. Although not a public argument, the quality of students has declined steadily in recent years, so that a reduction in numbers may not be so disastrous. Alternatives to fees have been proposed by **Jürgen Rütgers** in the form of increased interest on student loans. This measure would penalize the less well-off students who are only eligible for such loans. As usual, the notion of fees has to settle in the minds of proponents and opponents before another round of discussion on its introduction is going to take place.

#### *What's in a name?*

The *Fachhochschule Hamburg*, one of the country's largest tertiary education institutions, has discovered that it is not happy with its name. This long-standing, but tongue-twisting name for this type of institution is has four letter 'h's in it—far too many! What is more, errant typing tends to transform the address partly into a common dirty word in English, or into a combination of English and German semi-pornography. Apart from all this, it was believed that the degree status of such an institution could be discerned from its name (see a related problem in New Zealand). The august body of administrators has now decided to drop the first part, i.e. *Fach* (i.e. 'professional', 'subject'), from the name. This follows a similar move by the same type of institution in Bremen. And well advised they are: as is quite apparent, it is the most hazardous part of the name for English speakers and writers. What remains is *Hochschule Hamburg*—still not quite university in name, but getting a little closer. At least it is synonymous with it in Germany. Pundits could still say that the direct translation of *Hochschule* into English is 'high school'.

## Lithuania

#### *Old party degrees are back*

The Lithuanian government has decided to reinstate higher degrees given by the Communist Party to members of government and industry who have not passed a university course. The diplomas are obtained from so-called higher schools outside the university sphere. Around 400 persons hold such degrees, which are strongly opposed by universities and will create recognition difficulties in the European Community. It is as yet unclear whether holders of these degrees will be able to get employment, as local authorities and universities are fighting their reinstatement.

## Turkey-United Kingdom

#### *Exporting degrees controversy*

The Turkish Board of Higher Education is uneasy about the operations of some British universities. They contend that foreign universities are offering higher degrees without being licensed to do so. Two of the British institutions involved are Oxford Brookes University and John Moores University, Liverpool. It cannot be ruled out that money is one of the driving motives. Both these institutions come from the former British polytechnic group, which as new universities are in need of financial injections in order to build up their research activities. Oxford Brookes University is co-operating with Dogus Educational Institution, which is part of a Turkish media corporation. The British university claims that they are acting legally, with the backing of the British Council and the Education Minister.

They did not, however, contact the degree-granting body in Turkey. It is clear that national authorities and universities are unhappy if inroads are made by foreign universities which are seen as competitors. One argument is that franchises and outstations are not providing the same quality of education as home institutions. As an example of educational export, it represents an increasingly networked international complex of higher education. Another argument against this type of dissemination is that it operates outside the control of local entry requirements. There is no doubt, however, that with an increasingly international network of educational facilities we will have to contend with competition in the future. Big brother Internet is waiting.

### Israel

#### *Supercomputers to be installed*

The USA has approved the sale to Israel of two supercomputers for high-level research. Previously the sale of such computers was restricted as it was argued that they could be used in the development of nuclear weapons, which Israel has in fact already completed. The machines to be delivered are a Cray J90 and an IBM SP2. The Cray can process 5200 million theoretical operations (MTOps) per second, and the IBM 7000 MTOps. Israel has advanced development projects in molecular chemistry, biotechnology and pharmaceuticals in which these computers can be used.

### New Zealand

#### *Polytechnic name or status problems*

The problem bandwagon over the image of polytechnic degrees has reached New Zealand. While European and US degree status rivalries have been rampant for some time, New Zealand polytechnics are now also battling for more recognition. Polytechnics in the country have had degree-awarding status since 1990. In order to increase their degree status value the Association of Polytechnics is planning to establish universities out of the polytechnics. Institutions that are not (named) universities seem to have an inferior public image. The plan is to establish one entity called the New Zealand University of Technology that would elevate all polytechnic degrees to university status. Individual polytechnics could also become universities. The Auckland Institute of Technology (a polytechnic) has applied to be granted university status. It is perhaps worth noting that the Massachusetts Institute of Technology and the Ecole Polytechnique seem to have survived quite well with their 'inferior' names!

### Canada

#### *Severe higher education budget cuts and staff redundancies*

The University of Waterloo is letting 340 employees go. This Autumn there will be 140 less academics to teach 22,000 students. The university, with changes that normally would take 10 years to accomplish, is trying to look at the situation positively. It is a chance to rebuild the university, which is noted for its work in environmental studies and in computer sciences. Together with other Canadian institutions, it is trying to meet a 15% cut in government spending on higher education. Out of a staff of 2300, 5909 were offered early retirement in Waterloo. Other universities and colleges face similar cuts. The higher education institutions are making an effort to get more funding through market-oriented activities, in order to alleviate the public funding cuts.

### Conferences

#### **ED-Media & ED-Telecom 96 World Conference on Educational Multimedia and Educational Telecommunications**

Boston, MA

17-22 June 1996

Contact: ED-Media 96/AACE

PO Box 2966, Charlottesville, VA 22902, USA

E-mail: AACE@virginia.edu

Tel: +1 804 973 3987 Fax: +1 804 978 7449

<http://aace.virginia.edu/aace>

#### **ASEE International Conference on Engineering Education and Practice**

22-24 June 1996

Washington, DC

Contact: Frank Huband

1818 N Street NW, Washington, DC 20036, USA

Fax: +1 202 265 8504

E-mail: [intcon@asee.org](mailto:intcon@asee.org)

#### **World Congress of Engineering Educators and Industry Leaders**

2-5 July 1996

Paris

Contact: UATI, UNESCO

1 rue Miollis, 75732 Paris, France

Tel: +33 1 43 062029 Fax: +33 143 062927

E-mail: [unispar@unesco.org](mailto:unispar@unesco.org)

#### **M2E2: Multimedia in Education IEEE Second International Conference**

3-5 July 1996

Melbourne

Contact: Hanna Scientific

POB 677

Mount Eliza, Victoria 3930, Australia

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**Australian Engineering Mathematics  
Conference: Research, Education and  
Industry Linkage**

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**Third East-West Congress on Engineering  
Education**

16-20 September 1996  
Gdynia, Poland  
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Monash University, Clayton, Melbourne, Victoria  
3168, Australia  
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