



UNESCO International Centre for Engineering Education



Newsletter

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From the Director

Following a busy and eventful year for engineering education, the Christmas break saw a welcome respite from activity, at least on the international front. The fairly quiet period since November '97 did present the Centre with an opportunity to focus on its first Annual Conference and meeting of its Academic Advisory Committee, which was held between 11-14 February at the Centre's homebase, Monash University, Melbourne, Australia. The event was conceived as an opportunity to allow the UICEE's growing membership to interact with each other in person, rather than merely via the Internet.

Expanding the Centre's membership and the international network of individuals and institutions committed to the globalisation of engineering education stands out as the Centre's paramount objective for 1998. The consistent growth in membership and satisfying turnout at the Conference bode well for this enterprise.

One thing that is becoming increasingly apparent to us from discussions held throughout the year with our institutional and prospective converts is the growing need for an active R&D institution to assist academia globally in the struggle to improve engineering and technology education.

At the same time, a primary concern for academia involved with engineering and technology education is the dearth of funds available for engineering and educational research, the detrimental effect of which is beginning to be felt, and the consequences of which are likely to be long term. There is perhaps a light at the end of the tunnel however with the increasing support in the USA for academic institutions, and it is to be hoped that other governments around the world will recognise the wisdom of this policy reversal and follow suit.

In terms of support, there is a clear challenge for UNESCO to increase its involvement in engineering and technology education, an area which truly deserves the description of *wealth-creating*, and one which can so posi-

tively contribute to the development of less privileged nations and therefore to global peace and stability.

A number of international meetings initiated by the UICEE in 1997-98 will help to promote the cause of engineering education worldwide and will assist UNESCO in identifying a range of important issues, topics and ideas to be tackled by this highly respectable institution.

UICEE and (CE)² MoU

The globalisation of engineering education took a stand against superstition in the auspicious signing, on Friday the 13th of February, of a Memorandum of Understanding (MoU) between the UICEE and the Faculty of Science and Technology of Glasgow Caledonian University (FST), Scotland, UK. The primary objective of

the MoU is to establish a partnership between the organisations and to develop a sub-centre of the UICEE within the FST at Glasgow Caledonian University. The sub-centre will be known as the *Caledonian Centre for Engineering Education* (CE)². Working with the UICEE to further the globalisation of engineering education, (CE)² will be the focus for the UNESCO enterprise for the development of academic and research related activities in engineering education. Both parties agree that the objective is to have only one UNESCO recognised centre, and together

they will seek recognition of the sub-centre by UNESCO as an extension of the UICEE.

Under the agreement the new sub-centre will operate to realise the mission objectives of the UICEE, in particular in UK and Europe, and will include the exchange of



Prof. Peter LeP. Darvall, Deputy Vice-Chancellor of Monash University, opening the 1st UICEE Annual Conference.

UICEE Partner



scholars in pursuit of academic and research related activities in engineering education, co-operation in the organisation of international meetings, and joint production of publications, books and software in engineering education.

As a leading international centre for workplace learning, the Glasgow Caledonian University will also bring its expertise in this area to the partnership and will provide a focus for academic and research activities in this speciality.

VicRoads Design in Fiji

For a number of years now VicRoads has been progressively changing its method of operation to comply with a clear purchaser/provider model. This split of functions separates those areas responsible for programme delivery from the actual providers, allowing for greater competition and, ultimately, lower costs of service provision. The consequences are inevitably far-reaching. In some instances quite literally.

In order to facilitate the separation a number of the provider departments within the organisation, including VicRoads Design, have moved to become self-sustaining businesses, encouraging them to become more externally focused. One avenue for expanding the involvement with external organisations for VicRoads Design has come in the form of technology transfer projects within Australia and overseas.

One such project is currently underway in Fiji. Design Systems, a technology consultancy within VicRoads Design, won the contract to provide consultancy services to the Fijian Public Works Department, who, having assessed available hardware and software, decided to implement the MicroStation and InRoads Computer-Aided Design and Drafting (CADD) packages.

The project involves work on the Sawami Road, a 15km stretch of two-way, two lane road running through mountainous terrain about 20 minutes from Suva on the island of Viti Levu; it is currently unsealed and subjected to approximately 3,500 mm of rain per year.

As well as coordinating the obvious transfer of technology in the form of hardware and software, Design Systems is responsible for the transfer of considerable knowledge and expertise that it has acquired and developed over many years of operation. Such a transfer essentially takes two forms. The first obviously involves training in the use of the applications, in this instance over six months in Australia and Fiji on a real project.

The second mode of transfer takes the form of system configuration of the applications, that is, customising the systems according to the expertise acquired through years of carrying out road design and the use of sophisticated CADD and systems tools.

The value of these projects is twofold; firstly, it allows the VicRoads Design Systems team to share the considerable knowledge and skills that exist within the organisa-

tion; and secondly, it provides the team with the opportunity to maintain and develop their own expertise in response to the needs of an increasingly diverse range of clients.

UICEE Annual Conference

The 1st UICEE Annual Conference, under the theme *Globalisation of Engineering Education*, was held at Monash University between 11 and 14 February 1998 with close to 100 registrants from twenty countries, some as far afield as Uruguay, Scotland and Canada.

Over 60 papers were presented, the high quality of which was attested to by two independent referees in the first instance, and by the votes of Conference participants in the second. The Conference produced a volume of proceedings which reflects the broad range of engineering and technology education research and development activities carried out in collaboration with the Centre and beyond.

An extremely friendly atmosphere was particularly conducive to the building of linkages and the strengthening of relationships at the Conference, perhaps the most important outcome of any meeting.

UICEE Paper Awards

On the final day of the Conference, participants were able to vote for those papers presented which were felt to have made the most significant contribution to the Conference and to engineering and technology education in general.

Five awards were nominated:

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| Diamond | <i>A web-based quiz generator for use in tutorials and assessment</i> , by A. Carbone, P. Schendzielorz and J.D. Zakis, Monash University, Caulfield, Australia. |
| Platinum | <i>The Engineering Mechanics Interactive Lecture Series: a new concept in hybrid computer-based learning</i> , by A. Fernando, H. Kelly and B. Chapman, Monash University, Clayton, Melbourne, Australia. |
| Gold | <i>Does a multicultural mix bring an extra dimension to software engineering design teams</i> , by A.L. Simcock, Victoria University of Technology, Melbourne, Australia. |
| Silver | <i>The ASTutE tutorial assistant: efficient, accessible and interactive</i> , by F. Austin and S. Rothberg, Loughborough University, Loughborough, Leicestershire, United Kingdom. |
| Bronze | <i>VicRoads: a state road authority in transition</i> , by J.E. Coles, Roads Corporation Victoria, Melbourne, Australia. |

Expanded versions of these excellent award winning pa-

pers, selected keynote addresses and regular papers will be published in the *Global Journal of Engineering Education*.

Badge of Honour Awards

During the Conference Banquet on Friday 13 February, the Director was pleased to present the UICEE Badge of Honour Awards for *distinguished contributions to engineering education, outstanding achievements in the globalisation of engineering education through the activities of the Centre, and, in particular, for remarkable service to the UICEE*.

The four recipients of the Silver Badge of Honour were Mr Kerry Burke of VicRoads, Melbourne, Australia; Mr Ron Seidel of Regency Institute of TAFE, Adelaide, Australia; Mr Alan Smith of Auckland Institute of Technology, Auckland, New Zealand; and Ms Duyen Nguyen, the UICEE's Project Officer and one of its postgraduate students, the award's youngest recipient. It is hoped that the awarding of the Badge of Honour to Ms Duyen, an award that bridges the gap between the existing and up and coming generations of engineering educators, will also encourage more youth to become actively involved in the cause of engineering education.

We wish to congratulate those awarded for their personal achievements in engineering education.

Swedish Delegation

The Centre was pleased to host a delegation of 25 senior engineering educators and university administrators from Sweden, who visited Australia to learn about Australian engineering education in general, and the work of the UICEE in particular. Whilst in Australia the delegation attended the *1st UICEE Annual Conference* and spent time in the Centre and Monash University. In Melbourne the delegation had the opportunity to visit VicRoads, UICEE industry partner, and the Royal Melbourne Institute of Technology, and in Sydney, the University of Sydney and the University of Technology, Sydney (UTS).

A pleasant social interlude during the Conference was provided by the Swedes in a *Swedish Night*, at which the Swedes entertained Conference participants and guests with their rich national folklore and culture.

The Centre is looking forward to facilitating more visits to the UICEE by international academics.

Centre's Homepage

Under the creative and organisational eye of Ms Shi Tao, a postgraduate student in the UICEE, the Centre's homepage has undergone significant restructuring and redesign in recent months. The amount of information on the site has increased considerably as the

Centre's activities have expanded, particularly in terms of services offered to members, and it was necessary to organise the site for greater efficiency. It is now more attractive and information is more easily found.

A number of new directories have been added to the site, including a Members' page which lists all institutional and individual members, provides links to institutional sites, and biographies with photos of members.

Other new directories include an ILG-EE page - the Centre is the Secretariat for the ILG-EE - and a Reports page, which contains the Centre's Annual Reports and Forum and Congress Reports.

UICEE Reports

With the establishment of the APHEN-EE sub-network, it was essential to create a forum for engineering educators to discuss issues of innovation in engineering and technology education, not only by electronic means, but also in person. Therefore, the *1st Asia-Pacific Forum on Engineering and Technology Education* was organised and staged by the UICEE from 6-9 July at Monash University, under the Honorary Chairmanship of Professor Michael L. Brisk, Dean of Engineering at this University. As an activity of the recently established Asia-Pacific Higher Education Network, Engineering Education sub-network (APHEN-EE), a primary purpose of the Forum was to bring together academics and individuals concerned with engineering and technology education in the region in order to formulate an action-oriented agenda for the network.

A comprehensive report on the Forum and its outcomes, including recommendations for an action-oriented agenda for the APHEN-EE, has been developed and is available on the Internet through the Centre's homepage: <http://www.eng.monash.edu.au/uicee>

The Centre's Annual Report for 1997 is also available through the Centre's homepage.

Membership

A call for renewal of membership and for new membership will be circulated by the end of March. New and existing members are kindly requested to send us (preferably via email) their short biography and full colour photograph for inclusion in the Centre's homepage.

We are planning a new service for members in the form of a database of expertise, which will list and categorise members' expertise and will be available to other members and those seeking someone with a given proficiency. A questionnaire regarding members' expertise will be circulated in the near future and the information gathered will be made available on the Internet under each individual's biographical details and through an independent search facility.

Mexican Forum

A pleasant Mexican winter greeted participants from twelve countries from the region and beyond to the *1st Latin American and Caribbean Forum on Engineering and Technology Education*, held in Puebla, Mexico, between 26 and 28 January 1998. The theme of the Forum was *Developing Human Resources for Latin America and the Caribbean*.

As well as making three presentations the UICEE Director had the pleasure of being Honorary Chairman of the meeting, which was attended by over two hundred individuals, half of whom were graduate students eager to learn more about engineering and technology education.

One of the meeting's most important outcomes was the establishment of a Latin American and Caribbean network on engineering and technology education.

Professor Dr Jorge Guzmán Arciniega, Rector of the Instituto de Estudios Superiores en Ingeniería de Puebla, received the UICEE Silver Badge of Honour in recognition of his involvement and achievements in engineering and technology education in the region.

It is envisaged that the Forum will become a permanent venture and the UICEE welcomes proposals for a suitable venue for the Forum in 1999.

Global Congress

Preparations are in full swing for the 1998 *Global Congress on Engineering Education*, which incorporates the *4th East-West Congress on Engineering Education*, the *5th World Conference on Engineering Education* and the *1998 International Congress of Engineering Deans and Industry Leaders*.

Over 200 paper proposals by individuals from more than 50 countries have already been received. Judging by the proposals, the Global Congress will provide comprehensive coverage of a wide range of issues and topics related to engineering and technology education, both a timely overview and a testimony to the relevance of the Congress as we head for the 21st century.

The deadline for submission of full papers is the end of March, however anyone wishing to contribute to this important event is still most welcome to submit a paper and should contact the Centre immediately.

TAFE

The *1st UICEE Annual Conference* initiated a number of avenues for collaborative research and development between the Centre and institutions involved in vocational and Technical and Further Education (TAFE).

We were pleased to have a session by the Regency Institute of TAFE, Regency Park, Adelaide, South Australia, lead by its Director, Ms Maureen Morton, and Mr Ron Seidel,

Head of its Faculty of Engineering. This renowned institution will provide leadership in this area of engineering and technology education through the Centre.

The main objective of this collaborative activity is to ensure effective collaboration between all sectors involved in engineering and technology education in order to enhance educational opportunities for students.

The Centre will develop an interest group, using electronic avenues for communication, lead by Mr Ron Seidel.

UICEE Libraries

In March the Director will be writing to all UICEE institutional members, with an offer to establish a *UICEE Library in Engineering Education* in their institutions.

The Centre will supply its publications to institutional members free of charge on an on-going basis in recognition of their support, loyalty and collaboration with the UICEE. Each collection of the publications is currently valued at about A\$2,000.

The objective behind this enterprise is to provide its member organisations with access to contemporary engineering education material.

Women in Engineering

A scholarship under the *UICEE Women in Engineering Education Scheme* was awarded to Miss Duyen Q. Nguyen in November 1997.

The scheme offers scholarships for women in engineering education leading to the award of the degree of Master of Engineering Science by research. Exceptional research projects may be continued, leading to the award of the degree of Doctor of Philosophy. Particular emphasis is placed on research into human aspects of engineering, engineering pedagogy, training methodologies in engineering, educational technology, multimedia and computer-aided engineering education.

Ms Duyen commenced her studies under the scholarship in January 1998. Her project is a timely investigation into the status and quality of environmental engineering education. The first stage of the project, already completed, involved a survey of industry and academic views on the inclusion of issues and topics of sustainable development and environmental engineering education in engineering curricula, and on the desirable qualities and attributes for practising graduate engineers. Particularly interesting results were forthcoming from Australian industry chief executive officers. The results will be used in future curricula development.

Publications and Meetings

The UICEE's current lists of publications and of up and coming meetings is available through the Centre's homepage at: <http://www.eng.monash.edu.au/uicee>