
The Academic Impact of the Global Congress on Engineering Education*

Zenon J. Pudlowski

Director

UNESCO International Centre for Engineering Education (UICEE)

Faculty of Engineering, Monash University, Clayton, Melbourne, VIC 3168, Australia

Congress General Chairman

I am delighted, and indeed honoured, to have this opportunity to offer a few concluding remarks concerning the outcomes of this week's Congress activities. The main objective of this first *Global Congress on Engineering Education* has been to bring together academic, industry and governmental leaders and to confront them with contemporary problems and challenges of engineering education and industrial training. Particular emphasis was placed on how best to assist education institutions in developing countries and countries in social, political and economic transition in their efforts to restructure and modernise their university engineering education.

On behalf of the Congress participants, I wish to express our gratitude to all the sponsors, co-sponsors and supporters for their intellectual, moral and financial support.

There has been a huge gap between academic institutions in developed countries and those in the developing world and in countries in social, political and economic transition. In formulating the Congress objective, the organisers hoped to attract the interest of many international academics, which would then provide an important input into the vital debate on the role of developed countries in the process of assisting those in less privileged countries. We believe that this objective has only moderately been achieved.

Another objective of this Congress was to focus on tertiary engineering education at a time when universities face common problems related to the influx of new technologies and advanced production processes. In addition, the Congress was concerned with the continuation of international collaboration and global linkages so well established through the effort of all members of the UNESCO International Centre for Engineering Education (UICEE), and through a wide

range of activities. It seems that these objectives have largely been achieved.

Close to 140 senior academics from over 30 countries, including many rectors, vice-rectors and engineering deans, some from very remote parts of the world, registered and participated in the paper presentations and discussion sessions. 18 keynote addresses and over 100 paper presentations were made during the Congress and most of the contributions are included in the Congress Proceedings. In addition, a few regular papers not included in the Proceedings were presented at the Congress.

The Congress Programme included a variety of problems relating to engineering education and industrial training that needed to be identified clearly and discussed. However, not all the topics suggested in the call for papers were covered in the conference papers. Several issues, not envisaged in the original set of topics, were aired in excellent paper presentations and plenary discussions.

Apart from the two opening addresses, presented at the Opening Ceremony, four special plenary sessions, so-called *country sessions*, were conducted, with 12 keynote addresses in which specific issues in engineering education were presented. There was also a plenary session with four papers in which so-called global issues were presented and discussed. The addresses were followed by open discussions. This format was used in order to ensure a more interactive participation in the Congress. There was also a workshop-type plenary session, prepared by the Glasgow Caledonian University, on workplace learning. The highlight of the plenary sessions was the discussion concerning an international project on the development of a global curriculum.

Another innovation introduced at the *3rd East-West Congress on Engineering Education*, the commencement of each paper session with a lead paper identified as the most representative of the topic under con-

* Concluding address presented at the *Global Congress on Engineering Education*, held between 6 and 11 September 1998, Cracow, Poland

sideration, was continued at this Congress. There were 20 lead paper presentations at the Congress, with all speakers considering topics of national and international relevance and presenting their thoughts and ideas on how to help develop engineering education on a worldwide basis.

Professor Peter LePoer Darvall and I have endeavoured to introduce to you the concept, activities and achievements of the UNESCO International Centre for Engineering Educating (UICEE) and to encourage you to join the Centre and become a member of the *UICEE Family of Engineering Educators*. Since its inception in January 1994 the Centre has carried out a number of activities for the benefit of the entire engineering community, including conducting educational surveys, undertaking research projects, organising functions and seminars and establishing global communication networks. Through its activities, the UICEE endeavours to tackle and solve contemporary challenges and problems in engineering education and, in particular, to assist developing countries in improving their higher education.

The concept, structure and major activities of the UICEE, which acts as a national and international clearing-house for the transfer of information on engineering education, and the results of over four years of energetic operation, in which it developed its many linkages, activities and projects for the international engineering community, were presented in the address.

It is envisaged that a *Congress Report* including a list of recommendations and an action-oriented agenda to be taken up by all Congress participating bodies will be developed, and it is hoped that the *Report* will be placed on the Internet at the *UICEE Home Page Reports* site in due course. We are grateful to Dr Russel Jones, Consultant, World Expertise LLC, Falls Church, Virginia, United States of America, for his preliminary overview of the Congress, so skillfully developed in so short a time, representing his views on the Congress' major themes, issues and proceedings.

At tonight's Congress Banquet, Professor Peter LePoer Darvall, Chairman of the UICEE Academic Advisory Committee, will announce the UICEE best paper awards in celebration of academic excellence. I believe that the Awards Committee has already finalised its deliberations. The awards are in five categories and are presented to the authors of papers included in the Congress Proceedings that were considered by registered Congress participants to offer the most outstanding contribution to engineering education. The five awards are Diamond (the symbol of the UICEE), Platinum, Gold, Silver and Bronze. The diplomas will be sent by the UICEE in due course.

UICEE Silver Badges of Honour for distinguished contributions to engineering education, and for outstanding service to the Centre, will also be presented at the Congress Banquet.

I wish to congratulate in advance the Congress participants who will receive these awards.

The Congress is proud, and indeed delighted, to have provided the venue for the *11th General Meeting of the International Liaison Group for Engineering Education* (ILG-EE). The Group's deliberations were, in general, concerned with future activities and projects, and, in particular, with the establishment of effective means for international collaboration and dissemination of information on engineering education.

The special role of the UICEE, which is the host of the ILG-EE Secretariat, was considered. Some discussion touched on the impact of the UICEE's publications and meetings on engineering and technology education, successfully produced and staged in the last few years.

The Group discussed its involvement in, and support for, a number of regional conferences on engineering education instigated by the UICEE and held in 1997 and 1998 in the lead-up to the Global Congress. The objective of this conference series was to raise the profile of engineering education in such regions as Central and Eastern Europe, Latin America and the Asia-Pacific. The co-ordination of future global meetings was also high on the agenda.

It has been proposed that the *12th General Meeting of the ILG-EE* will be held in conjunction with the *2nd Asia-Pacific Forum on Engineering Education*. The Forum is being organised by the UICEE, and will be staged at the University of Sydney, Sydney, Australia, between 4 and 7 July 1999. You are all cordially invited to attend this Forum.

It should be noted that several important initiatives which may have a strong impact on the status and quality of engineering education and training in the world have been formulated and will be undertaken as a consequence of this Congress. It is also hoped that many new activities will emerge in the near future in consequence of this Congress.

We should realise that much has been done academically in Central and Eastern Europe since our last meeting in 1996. However, countries in this region still experience fundamental difficulties in restructuring and modernising their university education systems. And we are not entirely happy with the progress. The post communist old guard still occupies important positions and they seem to be blocking progress that would expose their incompetence.

The issue of mobility of academic staff and stu-

dents has again been raised during this Congress, although some progress has been made in this matter in the last couple of years. The United Europe has recognised that the world at large has already experienced a movement of professionals and ideas as never before. Therefore, work has been in progress on an efficient system for the recognition of professional qualifications and accreditation of foreign qualifications to be introduced in the European Union. We still believe that a more global system that would make due allowances for different educational approaches and cultural backgrounds is urgently needed. Perhaps the development of a global curriculum is the correct way to go, at least for developing countries. It is hoped that members of the UICEE will play a significant role in this endeavour.

It is our belief that in the existing economic situation the quality of engineering education is at stake. The process of commercialisation of academia is causing many problems. Eroded teaching standards, a lack of proper quality control, deepening division between academic managers and teaching staff over the priorities of the academic endeavour are critical issues. Hampered by reductions in funds, teaching staff must look for alternative and more efficient ways for course delivery. This, however, depends very much on the engagement by academic staff in fundamental and applicable research into engineering teaching and learning processes and the application of modern technology and media to engineering education practice. It is

our belief that in the near future there will be world class universities, well equipped, using modern technologies and globally linked with other partners, that will dominate the education market, and there will be schools producing poor engineers who will only enlarge the pool of unemployed people. In which group of universities would you like to be?

It is believed that this Congress has provided us with some directions. It seems that a serious engagement in engineering education research, global networking and teamwork, development of a global curriculum, joint development and exchange of teaching materials, mobility of staff and students, exchange of information are the ways to go.

We appeal to the senior academics who have participated in the Congress to facilitate and stimulate the involvement of their faculties in these areas of engineering education activities. The UNESCO International Centre for Engineering Education is pursuing these matters but we need your support and active participation in our research and development activities. The best way to do so is to join the Centre and become a member.

In conclusion, I shall again express my sincere gratitude to you for your participation in, and contribution to, this Congress, and I look forward to meeting you all again at the *2nd Global Congress on Engineering Education*.

In the meantime I wish the ones who are leaving Poland a pleasant and safe return home.

Proceedings of the 1st Asia-Pacific Forum on Engineering and Technology Education

edited by Zenon J. Pudlowski

The *1st Asia Pacific Forum on Engineering and Technology Education*, held at Monash University, Clayton, Melbourne, Australia between 6 and 9 July 1997, heralded a promising new phase in the development and delivery of engineering and technology education in the Asia-Pacific region. Close to 100 participants from 23 countries from Asia, Europe, Africa and the Americas attended the Forum. Over 80 paper presentations were made, 78 of which are included in this volume of Proceedings.

As an activity of the recently established Asia-Pacific Higher Education Network, Engineering Education subnetwork (APHEN-EE), a primary purpose of the Forum was to bring together academics and individuals concerned with engineering and technology education in the region for discussion and the exchange of information, and the formulation of an action-oriented agenda for the network. The papers included in the Proceedings superbly indicate the fertility and dynamism of prevailing discourse from which the way forward will be determined.

Papers were presented in one of six so-called Asia-Pacific Forum sessions covering the diverse and significant issues of *International Collaboration*, *New Methods in Engineering Education*, *Information Transfer and Multimedia*, *Learning Styles in Engineering Education*, *Industry/Academia Collaboration* and *Issues Concerning the APHEN-EE*. The proceedings should prove to be a valuable resource for some time to come for those involved with engineering and technology education.

To purchase a copy of the Proceedings, a cheque for \$A100 (+ \$A10 for postage within Australia, and \$A20 for overseas postage) should be made payable to Monash University - UICEE, and sent to: Administrative Officer, UICEE, Faculty of Engineering, Monash University, Clayton, Victoria 3168, Australia. Tel: +61 3 990-54977 Fax: +61 3 990-51547