



The Australasian Association for
Engineering Education

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NEWSLETTER



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From The Editor

Welcome to the first 2008 newsletter of the Australasian Association for Engineering Education (AAEE). I've been called a lot of things in the past (most of which are unprintable) but never a newsletter editor, so I sincerely hope I don't disappoint you too much with my first attempt here at digital journalism.

I'll start with a story from one of my recent engineering graduates, who on her first day at work stood by the office shredding machine as the CEO hurriedly approached with an important looking document. "Can you quickly make this damn machine work?" he asked in a distraught manner. Eager to impress, she took the document, pushed the mains plug into the socket, switched it on, waited for the ready light to illuminate and promptly fed the paperwork through the spinning rollers. "Excellent, I'll have two copies please".

Anyway, I won't beat around the bush any more because typically the first newsletter of the year has a lot to cover and this issue is no exception. The executive committee have all helped me to recap on the past events of 2007 (most notably the conference and the awards) and have provided an indication of what is yet to come in 2008. This really does promise to be an exciting year.

From the President



2008 is a year of opportunities in engineering education. Within the next month, we should see published the latest Review of Engineering Education, completed by Em. Prof. Robin King, sponsored by ACED, ATSE and EA and funded by Carrick. Some of its key recommendations in which AAEE will play a part include:

- Engineering schools must develop best-practice engineering education, promote student learning and deliver intended graduate outcomes.
- Enhance staff and material resources to enable delivery of best-practice engineering education.
- Engineering educators and industry practitioners must engage more intensively to strengthen the authenticity of engineering students' education.
- Address shortages in the engineering workforce by attracting and retraining people from non-traditional backgrounds e.g. women, mature age engineers, engineers with overseas qualifications.

After the accreditation workshop in Melbourne on 21 Feb, we discussed how, as an AAEE community, we might address some of these issues. Some of the ideas discussed were:

- Sharing learning resources
- Outreach to schools
- Sustainability
- Assessment
- Culture change and Women in engineering
- Etc

As part of this agenda, this year we are putting special emphasis on the Special Interest Groups as a way of building communities of practice to address some of these issues. We have established these groups on the EDNA site (<http://www.edna.edu.au>), which provides collaborative tools for the educational community.

To participate, simply click above and then register as a user. Once registered, click on Groups. You should see a set of categories of groups. Click on Higher Education and then scroll down to find Australasian Association for Engineering Education. You should then see our Edna home page. Scroll down that page to find the groups. Once you join, you'll find AAEE under My Groups in the left panel.

Each special interest group has a Forum and a Wiki at the moment, with other tools to be added. Please contribute to the discussion (Forum) or help to build resources via the Wiki. If you have an idea for another group, please leave a message in the general forum. Some of the SIGs are:

- CDIO/PBL
- ERM (Educational Research Methods)
- Remote Labs

- Librarians
- Mathematics
- New Academics

During the year, you should see some workshops organised by AAEE, so keep an eye on further announcements. If you have ideas for others, please contact one of the Executive. If you'd like to be the campus contact for AAEE, please let me know. Encourage your colleagues to join. It's free and an easy way to be kept abreast of engineering education issues. Finally, if you want to join a collaborative research team around one of the above issues, please let one of us know.

Roger Hadgraft, President (roger.hadgraft@unimelb.edu.au)

Joining AAEE and the benefits

AAEE has an established global network of people who are deeply passionate about engineering education. For a full set of instructions on how to become a member of AAEE and join this expanding network, go to <http://www.aee.com.au/join/> and download an application form.

In brief, **members of Engineers Australia and students can join for free**, others are asked to part with a very small fee that goes towards some of the administration costs.

The Journal

Publish or perish! Did you know that we have our own '**internationally peer reviewed**' journal?

The Australasian Journal of Engineering Education (AJEE) aims to publish reviewed technical papers on all aspects of engineering education. Papers that are submitted follow an autonomous peer review process, with two independent reviewers as required by the DEST review guidelines. The following paper categories are accepted for review:

- **Research paper** a paper making an original contribution to engineering education knowledge.
- **Special interest paper/project report** report on significant aspects of a major or notable project.
- **Review paper for specialists** an overview of a relevant area intended for specialists in the field covered.
- **Review paper for non-specialists** an overview of a relevant area suitable for a reader with a relevant engineering education background.

The following submission categories are also accepted on the editor's discretion:

- **Tutorial paper** a paper which explains an important subject or clarifies the approach to an area of design or investigation.
- **Technical note** a technical note or a letter to the editor, which is not sufficiently developed or extensive in scope to constitute a full paper.

The expected length of acceptable contributions will vary considerably, but 5000 to 6000 words or equivalent for papers would be the norm. Technical notes should not exceed 1500 words.

AJEE is currently published as an online journal only with two issues per year (May and December). This means that papers are uploaded and able to be accessed as soon as the review and formatting processes are completed. We do, however, have a one off publication of several papers in May each year of the best of the conference papers presented at the Annual Australasian Association for Engineering Education Conference, which is held in the December of the previous year. We are also endeavouring to produce special themed sets of papers each year. The editors and editorial panel would be pleased to accept suggestions for these themes.

The Australasian Journal of Engineering Education (AJEE) is run using the Engineers Australia Technical Journals Editorial Manager online paper submission and tracking system. Submissions can be made via the website at <http://www.editorialmanager.com/eatj>. We welcome manuscripts, **volunteers to be reviewers**, suggestions for special issues, and any and all suggestions on how to make our journal better serve the engineering education community are welcome. You can reach the editors via email at journal@aaee.com.au.

To submit a paper, authors need to register themselves at www.editorialmanager.com/eatj. The system will then walk them through the necessary steps to complete their submission. During this you will be asked if you are prepared to be a reviewer.

There is also a step by step guide at: http://www.engineersmedia.com.au/journals/em_author_tutorial.pdf

PLEASE PLEASE PLEASE tick yes. The journal can only function effectively if there is a healthy network of reviewers.

Papers can be submitted in any electronic format, as Editorial Manager automatically converts them into a PDF for easy viewing by editors

and reviewers.

The journal presents a means of exchanging current work and ideas, predominately from Australasian engineering education faculties and as a resource for Continuing Professional Development for our community.

The editor of the journal is Dr Les Dawes, and assistant editors are Dr Euan Lindsay (MIEAust) and Dr Yvonne Toft. The members of the editorial board are Dr Clive Ferguson, Prof Robin Ford, A/Prof Roger Hadgraft, Prof Robin King, Dr Stuart Palmer and Prof John Simmons.

Papers from 2007 onwards are available at the Engineers Media AJEE site. You will need to enter either your Engineers Australia membership number or your AAEE membership number to gain access. Papers published prior to 2007 can be accessed at Australasian Association for Engineering Education site.

The Website

The overhaul of the AAEE website continues, with a move to make more resources available, either directly on our site, or through links to other similar organisations. We are also looking to increase the support we give our special interest groups by implementing tools like wikis and mailing lists. Check out the site www.aaee.com.au - and if you have any ideas or feedback, send them to the webmaster, Euan Lindsay (e.lindsay@curtin.edu.au).

The 2008 Executive

A new AAEE Executive committee was voted in during the 2007 conference. Members now include:

- Roger Hadgraft - President
- Elizabeth Godfrey - Vice President
- Frank Bullen - ACED Representative
- Alan Bradley - EA Representative
- Christine King - EA Secretariat
- Wageeh Boles - Past President
- Yvonne Toft - Awards / Journal
- Anne Gardner - Awards
- Les Dawes - Journal
- Euan Lindsay - Website
- Colin Kestell - Newsletter
- Duncan Campbell - CDIO
- Lesley Jolly - ERM
- Prue Howard - 2008 Conference



The 2008 members of the executive committee had their first meeting in February at the Brisbane office of Engineers Australia. Pictured above (from left to right) are: Colin Kestell, Les Dawes, Alan Bradley, Lesley Jolly, Duncan Campbell, Roger Hadgraft, Prue Howard, Anne Gardner, Liz Godfrey, Yvonne Toft, Frank Bullen. Wageeh Boles and Euan Lindsay were unable to attend due to a clash of engagements.

At the meeting the committee discussed successes of 2007 and ensured that the plans for 2008 are well under way.

The 2007 Conference

The 2007 conference at the University of Melbourne last December was very well attended: There were 205 full and day registrations, 30 industry visitors and 35 Engineers Without Borders (EWB) students. We would all like to express our sincere thanks to our sponsors, the Melbourne School of Engineering, Autodesk, RMIT University, IEEE (best papers) and to the exhibitors, MathWorks, John Wiley, Duff & Macintosh, Emona Instruments.

There was a busy program which started on the previous Friday, with the 21C Maths Symposium. On Sunday was the Learning Styles workshop run by Therese Larkin and Dan Budny. On Monday, the conference opened with a focus on engineering practice issues. Our keynote was Ian Cameron followed by Robin King and the Review. The day included an afternoon workshop where our invited senior industry colleagues worked with AAEE members on ways to address some of the outcomes from the Review. Tuesday was EWB day. Lizzie Webb provided the opening keynote followed by Larkin & Budny. David Radcliffe was the keynote after lunch. Anette Kolmos opened Wednesday, with a focus on PBL and sustainability, with a major workshop from the Natural Edge Team. The conference concluded with the usual votes of thanks and a wind-down at Rydges, which was a great way to farewell colleagues at the end of the event. On Thursday, there was a PBL workshop attended by 35.

Overall there were 77 papers presented and 6 workshops as well as special workshops from the Carrick Institute and Natural Edge. There were 7 keynote speakers. Papers were presented in a condensed style, with presentations limited to 8 minutes. This freed half the time for discussion, which seemed to be well received by most participants and chairs. All the papers are accessible at:

<http://www.csse.unimelb.edu.au/aaee2007/>

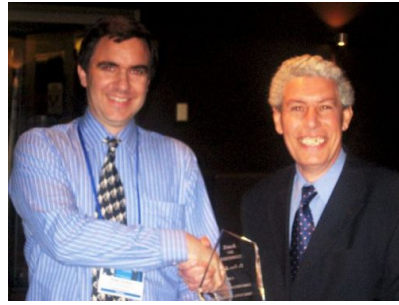
It's now time to be thinking about the paper you'll write for this year's conference. Details for that are elsewhere in this newsletter.

The 2007 Awards

The winner of the award for Teaching Excellence went to Richard Buckland from the University of New South Wales and Peter Sutton of the University of Queensland was highly commended.



Richard Buckland receiving his award from Wageeh Boles



Peter Sutton receiving his high commendation from Wageeh Boles

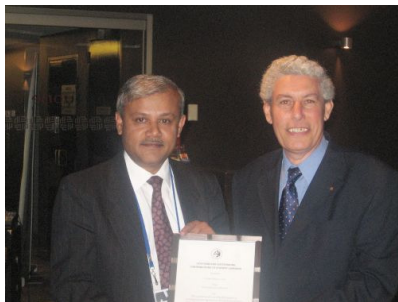
The winner of the award for Programs that Enhance Student Learning went to Antonija Mitrovic from the University of Canterbury with citations awarded to John Hamer from the University of Auckland, Giles Thomas & Paul Furness from the Australian Maritime College, Syed Mahfuzul Aziz from the University of South Australia and Peter Ashman from the University of Adelaide.



Antonija Mitrovic receiving her award from Wageeh Boles



John Hamer receiving his citation from Wageeh Boles



Syed Mahfuzul Aziz receiving his citation from Wageeh Boles



Colin Kestell on behalf of Peter Ashman, receiving Peter's citation from Wageeh Boles



Kurt Paterson and PJ Radcliffe receiving their award for best paper from IIEEE.

The 2008 Conference

The Rydges Capricorn Resort, Queensland (December 7th to 10th)

Ten years on from the very successful AaeE conference at Gladstone, Central Queensland University is pleased to invite you back to sunny Queensland to join us from December 7th to 10th, at Rydges Capricorn Resort for the 2008 conference.



The theme of **To Industry and Beyond** asks you to think of how we need to educate engineers not only for industry, but to create holistic professional practitioners.

The conference will include refereed papers and allow you to participate in thought provoking workshops. Pre and post conference workshops will also be on offer.

Use the magnificent pools and facilities of the resort to aid your reflective processes when you are not attending the presentations or workshops. After the conference, stay a while and visit the Great Barrier Reef or the Beef Capital. The resort will be offering reasonable rates for conference participants. Accommodation includes single rooms through to family apartments.

Important dates

- **9th May 2008**: Expressions of Interest (100 word description or statement of intent for paper or workshop)
- **11th July 2008**: Full paper due
- **15th Aug 2008**: Notice of acceptance of paper
- **12th Sept 2008**: Final paper due

Further details of venue and conference will be available on the conference website which is coming soon.

Other Conferences of Interest

- Challenging education: Feminist and anti-oppressive strategies in teaching and learning. The first Nordic conference on feminist pedagogies, Uppsala, Sweden, 14th - 16th of June 2009
- NorWiP - Annual Meeting 2008 - GenDADA. Crossing Perspectives on Gender and Physics Conference 17-19 September 2008 Uppsala University
- 30th June 2nd July: FYHE Hobart
- 3rd to 5th July: SEFI Aalborg Denmark
- 14th to 16th July: EE2008 Loughborough
- 15th to 18th July: ICWES14 Lille, France
- 22nd to 25th October: Frontiers in Education Saratoga NT
- 29th November to 4th December: NZARE/AARE Brisbane
- 7th to 10th December: AAEE Yeppoon, QLD

CDIO (Conceive, Design, Implement, Operate)

CDIO represents a life cycle concept familiar to many of us in engineering, probably using different labelling. We practice it in our engineering design, curriculum design and embed it within our curriculum. Led from within MIT (MA) a number of years ago, a global CDIO community of practice has grown. The CDIO community shares many resources, some of which are available to non-members (it's worth a look - see the link below). In July of 2007, a CDIO workshop was hosted at the University of Sydney. There was a lot of enthusiastic and intensive discussion with about 31 attendees. At that meeting, the ANZ Regional Group Steering Committee was formed.

At the AAEE conference at Melbourne University in December 2007, a CDIO workshop was facilitated (Duncan Campbell, Roger Hadgraft and Carl Reidsema) to (a) gauge the degree of interest in CDIO from the participants, (b) identify what opportunities may exist in adopting CDIO in curriculum design and delivery, and (c) how might we further a community of practice in Australian and New Zealand engineering education. Excluding the presenters, 25 delegates from 13 universities, plus representation from the Australian Council of Engineering Deans (ACED), indicated their interest in CDIO. There was much positive discussion led from the audience. Many thanks to Carl for his role in facilitating and to Roger for so eloquently capturing the discussion. One outcome of this workshop was a proposal to form a CDIO special interest group within AAEE. I have volunteered to lead the AAEE CDIO SIG as part of my tenure on the AAEE Executive.

You can expect see a number of CDIO activities including a special session to be proposed for the AAEE 2008 Conference and a web-based group area to promote collaboration, the sharing of experiences and the sharing of resources. My intention is to establish facilities such as wiki's, blogs and resources sharing within this group.

You can subscribe to the AAEE CDIO/PBL Interest Group via the EDNA AAEE web-site <http://groups.edna.edu.au> (look for the listing under Higher Education). This web-based group will be a work-in-progress, so stay tuned and please contribute as you see opportunity.

ERM (Educational Research and Methods)

A workshop on educational research methods was held at the last AaeE conference and most people who attended indicated that they would like to see the association establish a special interest group for ERM. Members feel that the group will provide a venue to:

- sound out/critique proposed research methods
- assist in the analysis/interpretation of data/results
- collaborate on larger projects
- be a source of background literature for a new project
- promote of rational and robust evaluation methods
- provide mentoring and training in unfamiliar territory

As a result of our activities we aim to produce better and more convincing research that will help raise the status of the field of engineering education compared to the more technical areas of engineering. We hope to run a full day workshop at the next conference and provide lots of opportunity for members to interact and develop their ideas.

Everyone is welcome to get involved and you can find us on the new AaeE webpage. Go to <http://www.groups.edna.edu.au/>, use the search term engineering

Useful Reading

Roger Hadgraft recommends **The Practice of Problem-Based Learning** by Amador, Miles and Peters. Roger believes that "This is a great introductory book for those wanting to jump into various forms of Problem Based Learning. It's just 135 pages and an easy read, with lots of quotes, stories and examples".

Margaret Jollands of RMIT recently read **Scientific Research in Education** Ed. RJ Shavelson, L Towne, National Research Council 2002 Washington DC : National Academy Press. Here's what she thought: "I found it to be very well written and easy to read. It gives a comprehensive summary on recent education research in the US and gives a blueprint for scientific research that can equally well be applied to education. It was interesting to read that "the prevailing view is that findings from education research studies are of low quality and are endlessly contested..", which distils what I have heard at RMIT for many years. It discusses at length why it is more difficult to do high quality scientific research in education than in technical disciplines, and why it is harder to make accurate predictions. It discusses the limitations of non-randomised field trials, which is the most common methodology, and its selective bias. It's available from Amazon.com for a modest price.

Anne Gardner recommends: **Handling Qualitative Data - A Practical Guide** by Lyn Richards. Anne says that "it has many very practical guides for generating, storing, analysing and using qualitative data. As engineers we tend to use quantitative data, but don't have so much experience with qualitative data. Knowing what to do with this type of material will be useful for people interested in pursuing educational type research."

Other recommended reads include:

- James, R., McInnis, C. & Devlin, M. (2002). Assessing learning in Australian universities. Melbourne, Australia: Centre for the Study of Higher Education and The Australian Universities Teaching Committee. Available online at: <http://www.cshe.unimelb.edu.au/assessinglearning/docs/AssessingLearning.pdf>
 - Jolly, L. (2001). Graduate Attributes Fact Sheet 1.10 Implementing Graduate Attributes. Brisbane, Australia: University of Queensland, The Value Added Career Start Program. Available online at: http://www.vacs.uq.edu.au/final/1_10.pdf
 - Neumann, R. (2000). Communicating Student Evaluation of Teaching Results: Rating Interpretation Guides (RIGs). *Assessment & Evaluation in Higher Education*, 25(2), 121-134.
 - Barrie, S. 2006, "Understanding What We Mean by the Generic Attributes of Graduates", *Higher Education*, Vol. 51, No. 2, pp. 215-241.
 - Barrie, S., Ginns, P. & Symons, R. (2007). Rewarding and recognising quality teaching and learning in higher education - Interim Report: Student surveys on teaching and learning. Chippendale, NSW: The Carrick Institute for Learning and Teaching in Higher Education Ltd. Available online at: http://www.carrickinstitute.edu.au/carrick/webdav/site/carricksite/users/siteadmin/public/t&lindicators_interimreport_study6_nov07.pdf
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Useful Links

The Australasian Association for Engineering Education: <http://www.aee.com.au/>

The American Society for Engineering Education: <http://www.asee.org/>

The European Society for Engineering Education: <http://www.sefi.be/>

The Carrick Institute: <http://www.carrickinstitute.edu.au/carrick/go>

The Knack: <http://www.youtube.com/watch?v=CmYDgncMhXw>

Job Opportunities

Many Universities require that their students complete a period of work experience as part of the program requirements. For your students

to have a great and exciting opportunity to complete this overseas, please ask them to visit: <http://www.swin.edu.au/iaeste> or email australia@iaeste.org

The Australian 2020 Summit

The Prime Minister of Australia Kevin Rudd will convene an Australia 2020 Summit at Parliament House on 19th and 20th April to help shape a long term strategy for the nation's future. The Summit will bring together 1000 leading Australians to the national Parliament to debate and develop long-term options for the nation across 10 critical areas.

Submissions: Organisations, while being specifically excluded from having representatives at the Summit, do have the opportunity to put forward written submissions. Engineers Australia will be putting forward a submission. The submission will be coordinated through the International and National Policy Directorate. I am seeking input from all relevant groups about issues that should be raised under the specified areas, where applicable. Submissions are limited to 500 words per topic. The topic areas are listed below. All input must be forwarded to me via email by COB 1st April 2008 to enable me to collate responses. lhardwicke@engineersaustralia.org.au

Topic areas: Future directions for the Australian economy - including education, skills, training, science and innovation as part of the nation's productivity agenda Economic infrastructure, the digital economy and the future of our cities Population, sustainability, climate change and water Future directions for rural industries and rural communities A long-term national health strategy - including the challenges of preventative health, workforce planning and the ageing population Strengthening communities, supporting families and social inclusion Options for the future of indigenous Australia Towards a creative Australia: the future of the arts, film and design The future of Australian governance: renewed democracy, a more open government (including the role of the media), the structure of the Federation and the rights and responsibilities of citizens Australia's future security and prosperity in a rapidly changing region and world.

Nominations to attend the summit: Participation in the Summit is limited to individuals. Representatives from organisations such as Engineers Australia are specifically excluded. If members are interested in participating in the Australia 2020 Summit as an individual delegate on 19-20 April 2008 in Canberra, they can complete the nomination form and return it to the Summit organisers by no later than COB Monday 25 February 2008. The nomination form can be downloaded from <http://www.australia2020.gov.au>

Individuals will not be speaking on behalf of Engineers Australia, nor should there be an expectation that Engineers will provide funds for travel to the Summit.

Future Newsletter Contributions

As this newsletter nears its end, I'd like to point out that it would be great to hear from members regarding anything else that may be deemed news worthy for future issues. While I sit here relieved that I've finally put together my first edition, I also find myself panicking about the next one - I have absolutely nothing! How about including one or two member profiles so that we can all learn a little more about each other? Whatever you have, anything, anything at all, please send it to me at colin.kestell@adelaide.edu.au

Thankyou!