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# AaeE2010 Past, Present, Future

the 'keys' to engineering education  
research and practice

5-8 December 2010,  
University of Technology, Sydney, Australia

## Conference Aims

This conference is dedicated to enhancing the quality, relevance and performance of engineering education in all disciplines in Australasia. It will serve as a forum for the sharing of innovation and good practice and will provide delegates with the opportunity to critically and creatively engage with new ideas and research that might help them develop their own approach to learning, teaching, assessment and research in engineering education.

Abstracts are invited from academics, support staff, undergraduate and postgraduate students, librarians, professional engineers, employers and anyone else who has a vested interest in fostering excellence and innovation in engineering education.

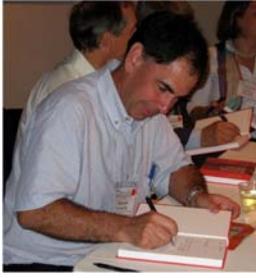
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## Keynote Speakers

**Edward F. Crawley** is the Ford Professor of Engineering at MIT, and is a Professor of Aeronautics and Astronautics and of Engineering Systems. He received an S.B. and Sc.D. in Aerospace Engineering from MIT. He has served as the Department Head of Aeronautics and Astronautics at MIT, the Executive Director of the Cambridge – MIT Institute, and currently serves as the Director of the Bernard M. Gordon – MIT Engineering Leadership Program. His research focuses on the domain of architecture, design and decision support in complex technical systems that involve economic and stakeholder issues. Dr. Crawley is a Fellow of the AIAA and the Royal Aeronautical Society (UK), and is a member of three national academies of engineering: in Sweden, the UK and the US. He has served as chairman of the NASA Technology and Commercialization Advisory Committee, and



was a member of the 1993 Presidential Advisory Committee on the Space Station Redesign, and the 2009 U.S. Human Spaceflight Plans (Augustine) Committee. He recently co-chaired the NRC committee reviewing the NASA Exploration Technology Development Program. He was a visiting lecturer at the Moscow Aviation Institute, and is a Guest Professor at Tsinghua University in Beijing. He was a finalist in the NASA Astronaut selection in 1980. In 2004 he received the Distinguished Eagle Scout Award of the Boy Scouts of America. He has founded three entrepreneurial companies, and currently sits on several corporate boards.



**Dr Keith Willey** Ph.D. B.E.(Electrical 1st Hons, Medal) is a Senior Lecturer in the Faculty of Engineering and Information Technology at the University of Technology, Sydney. He commenced his academic career after 20 years in the Broadcasting and Communications industry and maintains a professional interest in telecommunications. In the area of education, Keith's research interests include the learning and assessment associated with working in groups, the innovative use of self and peer assessment, collaborative peer learning, the nature of informal learning in professional practice and the provision of learning oriented assessment and feedback.

Keith is a current ALTC Teaching Fellow. He has previously been awarded an Innovative Teaching and Educational Technology (ITET) Fellowship by UNSW in 2004, the UTS Teaching and Learning 'Team Teaching' Award in 2009 and an ALTC Citation for Outstanding Contributions to Student Learning in 2010. Keith has had many invitations to speak and has been a visiting scholar at both national and international universities. His commitment to developing high quality teaching and learning practices is supported by extensive educational research published in many journal articles and peer reviewed conference papers. Keith is the Project Manager and lead developer of the self and peer assessment software tool known as SPARK<sup>PLUS</sup> currently being used by faculty at 18 national and international universities.

#### **Collaborative Learning, Assessment and Feedback**

You may have heard the old saying "what gets assessed is what gets learned". If assessment is our chief motivator in determining what and how students learn it is a wasted opportunity if we only use to indicate what students have learnt. Our assessment tasks should be specifically designed to motivate learning, not just assess that learning has occurred. Furthermore it could be argued that mistakes compress learning, hence we should provide opportunities for students to make mistakes, receive feedback, reflect and be tested again in various contexts. In addition, students need to be involved in the assessment process to develop the critical evaluation skills and judgement. The benefits of collaborative learning assessment and feedback is not only do they have the potential to improved learning outcomes and mimic professional learning which is often simultaneously both individual and collective but also with careful design the capacity to change students culture and reduce academic work loads. In this keynote we will explore the design and benefits of successful collaborative peer learning activities.



**Dr Pat Bazeley** provides assistance and time out (and good food) to local and international researchers from a wide range of disciplines at her research retreat at Bowral, in the Southern Highlands of New South Wales. She also holds senior, part-time appointments in Research Centres at the University of New South Wales and at the Australian Catholic University, and has served as an Associate Editor for the Journal of Mixed Methods Research. Her particular expertise is in helping researchers to make sense of both quantitative and qualitative data and in using computer software for management and analysis of data. Her publications focus on qualitative and mixed methods data analysis, and on the development and performance of researchers.

#### **Going beyond sprinkles and chunks: integrating qualitative with quantitative evidence to support research and development in professional education.**

Educational research by professionals, usually with a development or evaluative practice orientation, deals with complex social situations that cannot be adequately understood using only statistical data and analyses. Qualitative data and interpretive analyses can be employed to reveal the thinking that underlies questionnaire responses and numeric scores; help researchers to comprehend learning and professional behaviours; provide a basis for understanding the mechanisms behind observed statistical regularities or patterns in learning and behaviour; and to assist in identifying and understanding the social and organisational dynamics of practice settings and applications.

When qualitative data are employed, it is critically important to go beyond the simple add-on reporting of 'themes' or sprinkling of quotes for the qualitative component of a research or evaluation study. Instead, clarified concepts and deeper theoretical understanding can be developed by progressing through a 'Describe, Compare, Relate' process in the analysis of data. Ongoing integration with quantitative data will further enrich analysis and reporting. The use of computer software to assist analysis can make a substantial contribution to achieving these ends.



**David Boud** is Professor of Adult Education in the Faculty of Arts and Social Sciences at the University of Technology Sydney. He has been involved in research and teaching development in adult, higher and professional education for over 30 years and has contributed extensively to the literature in conjunction with colleagues from many disciplines, including from various branches of engineering. Previously he held the positions of Dean of the University Graduate School, Head of the School of Adult and Language Education and Associate Dean (Research and Development). He is a 2007 Australian Learning and Teaching Council Senior Fellow and in 2010 completed the project associated with this 'Student assessment for learning in and after courses'. See [www.assessmentfutures.com](http://www.assessmentfutures.com)



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# SUBMIT YOUR PAPER HERE

## Key Dates:

Abstract Submission	31st May, 2010
Full Paper Submission	<b>Extended to 16th July, 2010</b>
Notification of acceptance & reviewers' comments	27th August, 2010
Final paper submission	17th September, 2010

To view the paper formatting click [here](#).

## Types of Submission

### Scholarship of Practice papers:

Papers are invited presenting work on the conference theme. Submissions should present the work, where appropriate, within the context of the existing case studies and relevant literature in the area.

Suggestions for consideration in all submissions:

- Background - including context and environment
- Methodology
- Benefits and Issues
- Evidence of Success
- Reflections/Recommendations
- References

### Research Papers:

Papers are invited on both completed and ongoing engineering education research activity. Submissions should address the key questions listed below:

Papers should include:

- What is the **context** or background of the study? What are the most significant findings from other research studies which influenced your work?
- What are the **research questions**? Why are they important to engineering education?
- What **theoretical framework(s)** did you use? Explain any theoretical concepts which are critical to the research.
- Discuss your **methodology**. How did you collect **data** to investigate your research question? From whom did you collect it? How did you **analyse** the data?
- Discuss your major **findings** and/or **conclusions**. Outline your chain of reasoning from data analysis to findings. Are there other interpretations which

could fit your data and analysis? Are there alternative interpretations which you ruled out?

- Discuss any **recommendations** for engineering education. Indicate **future research plans** or additional questions raised by this research project.
- Acknowledge any support you received for this project.

Authors of both types of papers will be asked to give a 10 minute presentation, with full papers being double blind peer reviewed and published in the proceedings.

### **Workshops:**

Colleagues wishing to lead an activity based session, with the emphasis on high levels of attendee participation, are invited to submit a proposal for a 90 minute session.

In addition to the overview of the workshop, submissions should highlight the key issues or topics to be

covered as well as the intended learning outcomes for participants, an indication of how the session will be structured and how activities and discussion will be facilitated.

Workshops will be 90 minute activity based sessions with the emphasis on high levels of attendee participation. An overview of the workshop will be published in the proceedings.

Colleagues wishing to lead a workshop on the days before or after the conference should contact the Conference Chair separately.

### **Undergraduate Poster Competition:**

Undergraduate students are encouraged to submit an abstract for a poster submission on the best way to improve engineering education at their own institution.

### **Peer Review Process**

All submissions (at both abstract and full paper stage) will be reviewed by at least 2 members of the conference peer-review panel. The panel will be asked to consider whether the paper provides sufficient evidence that the presentation will be of interest to the target audience of the conference and the contribution it may make to the overall aims and themes of the conference.

### **Key dates**

Abstracts for all types of submission should be no more than 250 words and should be submitted through EasyChair (<http://www.easychair.org/conferences/?conf=aaee2010>) by **31st May 2010**. Full papers will be accepted up until 20 June 2010. Workshop proposals should be submitted by 10 September 2010.

Authors will be notified as soon as possible of any corrections needed to the submissions, final papers for publication should be submitted by 6 August 2010.

Authors will receive acknowledgement of acceptance by 10 September 2010.

*Please note all authors wishing for their paper to published in the conference proceedings must register to attend by: 22<sup>nd</sup> October 2010.*

**Photographs:**

The Conference Committee is also calling on all members of our community to send interesting photographs taken at any previous AaeE conference to [aaeeconference2010@uts.edu.au](mailto:aaeeconference2010@uts.edu.au)