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TEACHING FOR DIVERSITY – CHALLENGES AND STRATEGIES

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EDITORIAL

2011 marks the first Australian Conference on Science and Mathematics Education (ACSME). The conference proudly continues the tradition of the Uniserve conferences which has brought together science and mathematics teachers from higher education to discuss issues, ideas and solutions for university science and mathematics education for 17 years. The new ACSME format has taken the Uniserve experience on the road. This year, in its first time outside Sydney, it meets in Melbourne where we welcome new participants as well as old friends to grow our community of science and mathematics educators.

It is a particularly interesting time for university science and mathematics education in Australia. Our resources to improve science education across the university sector are increasing both in breadth and depth. At the same time we are facing new challenges as the funding models for higher education shift and the Australian Government calls for radical increases in participation (Bradley, Noonan, Nugent and Scales, 2008). The number of students choosing advanced level mathematics in senior secondary school is decreasing (Henderson and Broadbridge, 2007) and the interest in science degrees is at best static. Science faculties have to find ways to engage and work with an increasingly diverse student group. We must look for excellent learning outcomes for students who wish to become research scientists, for students who will apply and use science in their careers and also for students who will be the informed citizens discussing and voting on scientific issues. The 2011 ACSME conference concentrates on teaching for diversity: challenges and strategies.

So, what tools do we have to improve learning outcomes for science students in Universities? 2011 is an exciting year for science and mathematics teaching in higher education. For the first time, Australian universities have a consensus about learning outcomes for science graduates (Jones, Yates and Kelder, 2011). The Learning and Teaching Academic Standards (LTAS) project which drafted the threshold (minimum) learning outcomes for a bachelor degree in Science included an extensive consultative process stimulating much thought about the value of science degrees and how good learning outcomes relate to curriculum. This new framework for science curricula reflects the views of university educators, employers and students. It will be an important tool in considering the central role for degree learning outcomes proposed by the new tertiary education regulator, TEQSA (TEQSA discussion paper).

We also have an increasing bank of good practice developed through science teaching and learning projects funded by the Australian Learning and Teaching Council (ALTC), through national projects such as the ASELL movement and through publication in national and international journals and conferences such as ACSME. We have active communities exploring the scholarship of teaching and learning in science. As well as providing evidence for effective teaching and learning, research into university science education addresses crucial questions about why we should encourage students to study science and how science degrees can complement other disciplines in tertiary education.
The third tool for improving science education is the shared practice and stimulating ideas of our colleagues. In 2011, the ALTC announced funding for a suite of networks for science and mathematics education. The allocation of funding provides a new mechanism for bringing science educators together to share existing resources and build new ones. ACSME is proud to support the new networks as they gather momentum.

This year, ACSME attracted over 70 submissions to the conference from authors. The papers represent a wide range of topics and include over 30 full peer-reviewed papers, over 30 abstracts and a group of interesting proposals for ideas exchange. A major theme amongst the submissions was quantitative skills which is a key concern in preparing students for studying science and mathematics. Authors also addressed the conference theme in papers exploring teaching strategies, student engagement and experience and the links between secondary and tertiary education.

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We look forward to seeing you at the Australian Conference on Science and Mathematics Education (17th Annual UniServe Science Conference).