

Chapter 6

Go WEST – Supporting Women in Engineering, Science and Technology: An Australian Higher Education Case Study

Jacquie McDonald

University of Southern Queensland, Australia

Birgit Loch

University of Southern Queensland, Australia

Aileen Cater-Steel

University of Southern Queensland, Australia

ABSTRACT

Australia appears to be lagging behind countries in North America and Europe regarding the participation of women in engineering, science and technology courses and careers. This chapter reports on a current project undertaken by a regional university to build a mentoring and support network among female Science, Engineering and Technology students, staff and industry professionals. As well as the context and history of the project, the chapter describes the activities undertaken and the challenges faced in making the project sustainable. Factors critical to the success of the project are identified and include securing funds and commitment from senior management, having a multi-disciplinary team with strong leadership and effective support, and using information technology to enhance personal networks and to promote activities.

INTRODUCTION

Women are traditionally under-represented in disciplines often summarized as STEM (Science, Technology, Engineering and Mathematics), or SET (Science, Engineering and Technology). Statistics

(Australian Council of Engineering Deans' report, 2008; Osborne, Rees, Bosch, Ebeling, Hermann, Hilden, 2000) indicate that this phenomenon is prevalent in developed countries around the world, commencing with lower female participation in high schools, continuing into tertiary education, and it is even more pronounced in professional life due

DOI: 10.4018/978-1-61520-657-5.ch006

to the difficulties of combining work and family commitments with long working hours. In a university context, women tend to be disadvantaged in career paths with fewer women applying for promotion than men, and proportionally more women appointed at lower academic levels than men. However, research shows that women benefit from mentoring and networking, with positive results reported from programs that focus on women's needs (Mysyk, 2008). Research shows that mentoring during formative years of education is a predictor for the future participation of women in STEM study (Dyer, 2004). Also mentoring of junior female academics assists women to obtain tenure (Stewart, Malley & Lavaque-Manty, 2007).

The context for this case study is an Australian regional university: the University of Southern Queensland (USQ). USQ has both on-campus and external students, offering a flexible blend of distance and online education in the Faculties of Arts, Business, Education, Engineering and Surveying, and Sciences. USQ has approximately 25,000 student enrolments, with 75 percent of these students studying in external mode, including 30 percent international students. Many external students are mature age, with work and family commitments, studying part-time by completing one or two subjects a semester over four to six years of study. This flexibility provides access to many who would normally be unable to complete higher education study, but does create enormous pressure on students as they often study in isolation and need to balance study, work and family responsibilities.

So how could a networking and mentoring program be designed and implemented at a regional Australian university characterized by a high proportion of students enrolled at a distance, and with low female student and staff representation in SET? How would it fare in an environment where decision makers are predominantly male? This chapter provides a case study based on a project implemented at USQ. It describes the activities of the Go WEST project team (Go Women in En-

gineering, Science and Technology), an initiative funded through a university equity grant in 2007 to establish a university-wide, cross-disciplinary professional network to mentor and support female SET students and staff. The background of this chapter provides the context by describing the relevant policies and summarizing literature related to women in SET at Australian Federal and State Government levels. USQ's equity policies and practices are summarized. The case study methodology is then described followed by an account of the history and current activities of the Go WEST project. The challenges faced are outlined, followed by a discussion of possible solutions and recommendations. Future research directions are suggested.

This case study provides useful insights for other groups who are considering appropriate activities to address the imbalance of women in traditionally under-represented disciplines.

BACKGROUND

While many studies report that women are under-represented in SET areas in the developed world (Osborne et al., 2000), a comparison of four countries appears to indicate that female participation in Australia is at the lower end of that scale (Office for Women, 2006). For instance, where in 2005 the percentage of female professional engineers in the United States was 10 percent, in the United Kingdom 9 percent and in Canada 8 percent, it was only about 5 percent in Australia. The same paper reports that a quarter of the Bachelor in Information Technology (IT) graduates in Australia were female in 2003, compared to 28 percent across America in 2001-2002. In the UK, more than a quarter of postgraduate computer science degrees were completed by women and in Canada 28 percent of computer and information systems professionals were female in the year 2000. As noted in the following paragraph, not much improvement has been recorded.

17 more pages are available in the full version of this document, which may be purchased using the "Add to Cart" button on the publisher's webpage:

www.igi-global.com/chapter/west-supporting-women-engineering-science/43205

Related Content

Problem-Based Learning and Authentic Assessment as an Implementation of Outcomes-Based Education in the Computer Engineering Program of Ateneo de Davao University

Eufemia Fallerand Edicio Faller (2017). *International Journal of Quality Assurance in Engineering and Technology Education* (pp. 22-36).

www.irma-international.org/article/problem-based-learning-and-authentic-assessment-as-an-implementation-of-outcomes-based-education-in-the-computer-engineering-program-of-ateneo-de-davao-university/221382

Work-Integrated Learning in Postgraduate Design Research: Regional Collaboration between the Chinese Mainland and Hong Kong

Kin Wai Michael Siu (2011). *Work-Integrated Learning in Engineering, Built Environment and Technology: Diversity of Practice in Practice* (pp. 164-183).

www.irma-international.org/chapter/work-integrated-learning-postgraduate-design/53294

Conferences as Learning Spaces for Advancing Knowledge and Action for the SDGs: Insights From Youth Experiences

Mona Betour El Zoghbi (2019). *Building Sustainability Through Environmental Education* (pp. 89-120).

www.irma-international.org/chapter/conferences-as-learning-spaces-for-advancing-knowledge-and-action-for-the-sdgs/219053

Collaborative Sustainability Strategies for Online Laboratories

Roger Watson, Aaron Coble, Amit Bhave, Andreas Braumann, Andrew Smallboneand Markus Kraft (2012). *Internet Accessible Remote Laboratories: Scalable E-Learning Tools for Engineering and Science Disciplines* (pp. 468-490).

www.irma-international.org/chapter/collaborative-sustainability-strategies-online-laboratories/61472

Setting up a Learning Environment in an Interdisciplinary Professional Collaboration

Elin Legland (2015). *Handbook of Research on Recent Developments in Materials Science and Corrosion Engineering Education* (pp. 329-347).

www.irma-international.org/chapter/setting-up-a-learning-environment-in-an-interdisciplinary-professional-collaboration/127453