

# Mentoring Australian Girls in ICTs

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## INTRODUCTION

In *Australia*, the participation rate for females in information and communication technology (ICT) courses in secondary, vocational, and higher *education* is significantly lower than that of males, and is decreasing (Thorp, 2004). In Queensland, Australia, only 20% (at most) of ICT *students* and employees are female, with the IT first preferences for tertiary admission down 22% for 2004 enrolments (Thorp, 2003). This downturn is in line with the trend in other Western countries and reflects the general lack of interest in ICT education amongst *adolescents*.

Recent Australian research confirms the importance of *role models* and *mentors* when adolescents are considering career options (Clayton, 2005). The importance of implementing sustainable strategies, such as *mentoring programs*, to rectify this imbalance cannot be understated. Jepson and Peri (2002) believe that mentoring programs should commence at middle and *high school*. Early mentoring programs are valuable as girls have fewer ICT role models and mentors in the classroom, industry and computer games (Carey, 2001). Mentors in these programs need to provide an accurate portrayal of the broad range of careers available in the ICT field (Klawe, 2002).

To date, a number of mentoring programs and intervention activities have been and continue to be undertaken in Queensland. This article presents three different mentoring programs the authors have been involved in and discusses the challenges involved in implementing these strategies. The first two programs discussed are for high school students and the third is for *university* students in ICT degree

programs (von Hellens, Beekhuyzen, & Nielsen, 2005).

Adding to the complexity of this problem, funding to implement programs aimed at increasing female participation in ICTs may be difficult to justify due to the problems of measuring the effectiveness in achieving this goal. Australian researchers recognize this problem and are concerned about the absence of ongoing evaluation of programs to encourage girls into ICTs (Lang, 2003). While this chapter makes recommendations for implementing new strategies based on the experiences discussed, more work needs to be done on how to evaluate the efficacy of ongoing and future strategies.

## BACKGROUND

Existing research on mentoring has focused mainly on mentoring programs within the workplace. According to this research mentoring schemes can help companies improve the gender balance of their staff and to develop a stable corporate culture (Limerick, Heywood, & Daws, 1994). According to mentoring expert Ann Rolfe-Flett (2002), a genuine outcome of mentoring programs in Australia is increased student retention. However, there is no clear Australian evidence connecting mentoring to improvements in recruitment of students to specific areas of study.

Mentoring programs in schools are aimed at achieving the fullest potential of each student in emotional health, academic achievement, interpersonal relationships and vocational knowledge through a positive relationship with at least one adult (MacCallum & Beltman, 1999). Although there is a

diverse range of models of mentoring programs operating in Australian schools, there are no examples of students being mentored specifically on ICT career choices. The ICT mentoring programs discussed in this chapter are the first to address the lack of research in this area.

## **HIGH SCHOOL MENTORING**

### **Mentoring Program 1**

The first example of high school mentoring is the program for Year 11 students established in 2001; a collaboration between information and processing technology (IPT) teachers in a Brisbane high school and researchers at Griffith University (GU). The focus was specifically on female students although the program also included male students enrolled in the IPT class.

When selecting role models and mentors, care needs to be exercised in that females with a specific role in the industry are included and they can demonstrate attainable levels of achievement (Standley & Stroombergen, 2001). In keeping with this recommendation, 28 mentors were recruited, comprising ICT professionals, academics and recent graduates. Groups of 4 to 5 students were allocated a mentor who would assist the students with analysis and design of a programming assignment and provide general advice about the nature of ICT work and the skills needed to succeed as an ICT professional. Presentations of these assignments and past student work occurred during a concluding breakfast function. A research officer acted as a liaison between mentors and students and maintained contact with the schoolteachers.

Focus group interviews were conducted with the participating students to get in-depth comments about their mentoring experiences and changes in perceptions about ICT education and work. Feedback was also sought from teachers and mentors. At the end of the mentoring program, an online survey was used to collect demographic data and perceptions of ICT education and work from the Year 11 and 12 students. This data provided information on gender balance in the ICT course and the students' perceptions of ICT education.

Most mentors believed it was a worthwhile initiative and would be willing to support the program in the future. Students were eager to meet their mentors face-to-face and used the time to find out more about ICT study and where it can lead. This helped fit the IPT subject into the bigger picture and give it a real-life context. The mentors helped students with problem solving, teamwork and with their class assignment by sharing their expert knowledge on ICT project principles, risk management, and business systems.

The program provided more accessible role models for female students and provided a strong positive image to female students and corrected the widely held view that the ICT industry is intrinsically a male domain. Mentors became role models for female students, offering general information and advice about the industry and providing examples of the diversity of career paths within the industry and the variety of training options and skills that are considered valuable, all of which will positively promote careers in the ICT industry.

The main problem of the program was the lack of opportunity for students and mentors to meet before the program started. This would have provided a means of breaking the ice and perhaps facilitated communication and interaction during the program. Some groups made little or no effort to contact their mentors, while on the other hand, some mentors did not respond to student emails. These incidents indicated somewhat unexpected project management problems that could be corrected in future mentoring programs by more careful monitoring of communication between students and their mentors.

This program demonstrated that such a program could be a viable way to challenge female students' perceptions of ICT education, and to make ICT a more attractive career option. However, to confirm this finding, an IT mentoring program should also involve longitudinal studies on female students' perceptions of IT work and education. Such a study would help gain a better understanding of the way women help configure the institutional realm of ICT work and how this understanding can be passed on to school students.

The positive experience from this program helped Queensland Government's Office for Women and GU establish an ICT mentoring program for several

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