

A REVIEW OF “UNLOCKING THE CLUBHOUSE: WOMEN IN COMPUTING.”

Jane Margolis and Allan Fisher

Margolis & Fisher’s book “Unlocking the clubhouse: women in computing” is an important publication for anyone involved in computer science education at either secondary or tertiary level in Australia. The book describes how Carnegie Mellon University (CMU) increased the number of females enrolling in the computer science degree from 7% in 1995 to 42% in 2000. This is a remarkable achievement considering that most Australian and US computer science degree courses struggle to get their female enrolment up to double figures. This dramatic increase in female enrolments was the result of multi-pronged interventions, aimed at poor practices in secondary and tertiary computing teaching.

Margolis and Fisher’s analysis of interviews with male and female students extracted some disturbing facts about the student experience. Of this study 75% of the males acknowledge a “magnetic attraction” to computers, and only 25% of the females. Many males described themselves as having an “epiphany” like experience when they discovered computers and programming while females neither look for, nor want this all-consuming interest. Females are usually “turned on” later in life, at senior high school, often through the involvement in a programming class. Females reported consistently feeling like under-achievers, and unable to make mistakes or question openly in class without being “continuously under suspicion because of their gender”. While males reported consistently feel proud, comfortable, within a group of like minds “dreaming in code”, the experience for some females interviewed was “a descending spiral of eroding interest through the corrosive effects of lack of confidence, negative comparisons to peers, poor pedagogy, and biased environments”. The interviews showed that females were attracted to computing applications with relevance in the wider world of business, medicine, music, or languages for example, and the abstract nature of teaching programming contributed to “extinguishing” interest in this field.

CMU provided a summer program for secondary school teachers that provided strategies to improve their teaching of programming, as well as gender education. Senior high school was targeted because a greater percentage of females were attracted to the discipline through programming classes at secondary school (33% of sample of females as opposed to 9% of males). Teachers were provided with strategies to improve the gender balance in their computing classes such as deliberately focus on recruiting bright girls and female friendship circles; hold information sessions for counselors, teachers and parents to emphasize the importance of IT in all occupations, as well as hold girl-focused events, clubs, and camps. To deal with the preference of females for real world examples in computing, teachers were encouraged to have a close look at their curriculum as well as provided with “A baker’s dozen ways to enrich programming assignment”. Teachers were sent back to

their schools with an action plan that committed them to spreading the word and encouraging cross-curricular computing in their schools.

At the tertiary level CMU computer science lecturers and teaching assistants were provided with gender equity education and training in gender inclusive classroom practices. There was an attempt to design a discovery-based course with the aim of placing computer science in a real world context. To counteract the differences in skill levels on entry, and negate the feeling that females have of not belonging because they don't "dream in code", pre-entry and summer programming classes were offered. Female academic and student lunches were organised and an informal student-mentoring network was encouraged.

Margolis and Fisher strongly recommend that institutions "pay ferocious attention to the quality of the student experience" to ensure that gender inclusiveness and not exclusiveness is involved. Positive discrimination for women, assertiveness training, support groups and using real world examples in the curriculum can all be implemented at the tertiary level in Australia, however building strong links with feeder secondary schools worked well for CMU, a well-funded world-renowned computer science school, but Australian universities may find this more difficult due to their lower international profiles and lack of funding. The problem also exists of no single pre-requisite computer science course of study, or a particular programming language recommended in the VCE curriculum. The challenge in these types of programs is to keep the ball rolling. Often they are driven by individual personalities and likely to fade when the instigators move on.

Margolis and Fisher have written a very readable book, applicable to all computer science educators. The freshness of the language which is not weighted with jargon, but enlightened with metaphors of fire and religion, capture the experiences that males feel towards machinery, that females do not want to feel, but that should not be a pre-requisite for studying or working in this field.

Reference:

Margolis, J & Fisher, A 2002, *Unlocking the Clubhouse: Women in Computing* The MIT Press Cambridge, Massachusetts.

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