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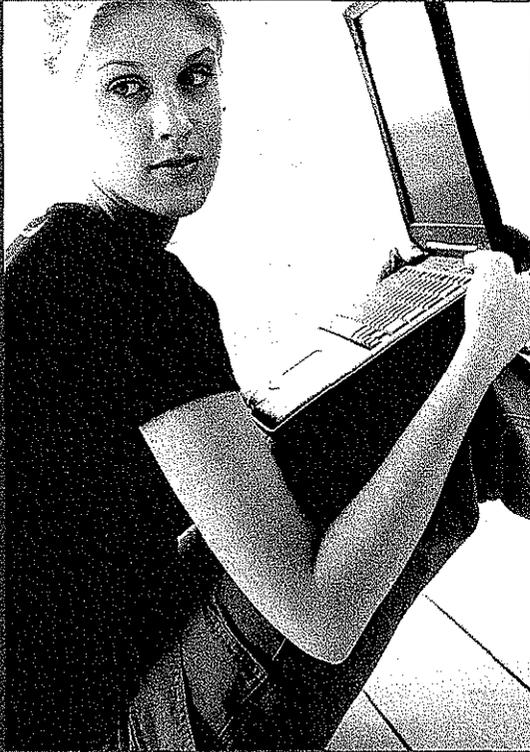
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Girls and computing – still a way to go

Years after the introduction of computing in Australian schools, computer classrooms are still heavily dominated by male students studying subjects which have little appeal to female students, writes Deakin University Information Systems Senior Lecturer Annemieke CRAIG.

Computing was first introduced in Australian high schools in the mid 1960s by predominately male maths and science teachers. In the 1980s and 1990s classroom experiences of computing were often associated with mathematics due to the housing of computers in these departments, and the mathematical or science backgrounds of computing teachers. Resources were scarce so competition among students to get access was often intense. This environment became perceived as a male domain.

These days computer classrooms are better equipped with appropriate resources and are much more friendly places. Students have greater access and exposure to computers in the school as well as in the home. Consequently many students are confident in their use of technology both as a learning tool and for entertainment.

But while the hardware, software and the curriculum in the computing classroom have evolved and continue to change, one thing remains the same: girls are less likely to choose computing as a subject to study or to consider it for a future career.

Social impact of under-representation

In the engineering workforce there are fewer female than male engineers and this has a detrimental effect on society. As Wulf (1998) explains, "We limit the set of life experiences that are applied, and as a result, we pay an opportunity cost, a cost in products not built, in designs not considered, in constraints not understood in processes not invented". This is equally true of computing – an area where women currently account for about 20% of the Australian ICT workforce. Not only are women in the ICT profession a small group, they are also a decreasing minority. This reduces diversity and creativity in the profession.

The impact of the absence of women designing and developing ICTs can be best illustrated by an example: A voice-recognition system

was developed which was calibrated to male voices only and therefore the final product did not hear women's voices. A videoconference system built around this software, where the camera automatically focused on the person speaking, could not hear the women and therefore the women were also not seen.

There are also examples from science and engineering which demonstrate how development groups that are not representative of its users can go wrong.

Tests conducted on the first airbags showed that they saved lives. However, once in use, women and children were injured and even killed by inflating airbags. The original design team had been made up almost exclusively of men and the tests had been conducted on an 'average' 176 centimetre male

driver. If there had been more women involved in its development, the fatal flaws in the airbag may have been avoided. It is reasonable to assume that the same

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situation is being replicated in the computing industry.

Without diversity in boardrooms technology companies create products which they think women want: mirrors on mobile phones or lipstick memory sticks. However as Twist (2004) reports, “There is a fine line between making technologies appeal to wider audiences and patronising that audience with devices that look pretty but do not do much”.

Why are girls not attracted to computing?

The under-representation of women in computing is an issue in many countries. However, in some nations computing is gender neutral. This indicates that it is societal attitudes, rather than inherent ability, which is the major cause of the imbalance.

A number of studies over the last two decades indicate that the answer involves a complex range of factors. These factors can loosely be grouped into three categories: those relating to the computing discipline and the profession (including public image, an alienating culture and constant change); those relating to the pre tertiary or tertiary

institution (including the unconscious promotion of gender stereotypes and a perception of computing as a male domain); and factors relating to the individual (including family background, lack of role models and a lack of knowledge about computing careers). The consequences of these factors include products that fail to meet the needs of all, a lack of diversity in development teams, processes not being invented and products not being built.

What is being done?

Numerous programs aimed at encouraging more female students to consider computing or to successfully complete computing courses have been conducted. Initiatives have ranged from mentor programmes, producing videos, special classes for female students, running workshops and computer camps to creating a more inclusive curriculum. Programs have also been created to equip these students with the necessary skills needed to work in this field. These intervention programs have so far had varying degrees of success.

However, changing attitudes and increasing the awareness of the difficulties women face in any non-traditional area is

a long-term process. It is an ongoing task requiring commitment from those in the profession, governments and educational institutions.

If you have implemented intervention programs or strategies (large or small), please email acraig@deakin.edu.au so that we can keep adding to the body of knowledge regarding what works, and what does not.

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