

Support schemes for first year computing students and electrical and computer engineering students at Curtin University of Technology



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This paper reviews support schemes for first year students in the School of Computing and the School of Electrical and Computer Engineering at Curtin University of Technology. Two support schemes are currently operating, one based on staff mentoring students and the other on senior students mentoring first year students. A graduate student from Computer Science has written software to streamline administration of the student mentor scheme.

The schemes were introduced to assist students with the transition to university and hence improve student retention. They are designed to assist students from diverse backgrounds, especially female students, students from rural and isolated areas and students from overseas, ie students who are most at risk in first year.

First year environment in computing and engineering

First year, particularly the first semester, at university is recognised as a difficult and hazardous time for students. The content and assessment requirements of both computing and engineering courses are sufficiently demanding to seriously tax the minds of students and exhaust them with lack of sleep. Undergraduate students in any year of study experience the sustained concerns of study skills, completion of assignments, time management and exam preparation. First year students have the increased difficulty of doing everything for the first time. They may not be confident that they will be able to cope or that they have chosen the most suitable course. First year students often have few, if any friends in their courses. They face the well-known dangers of the transition from school to university, most importantly the increased independence and loss of close supervision. In the first month they are faced with tasks which individually seem minor but combined together can be overwhelming: enrolling, obtaining a parking permit, finding and understanding the timetable, negotiating transport to and from the university, finding a free parking bay, finding venues, setting up a computing account, remembering their username and password, obtaining a student card, organising laboratory access, enrolling in laboratories and tutorials, finding toilets, library and places to eat etc. A mother of a first year computing student in 2001 said that even weeks into first semester she was arriving home from her day at work to find her fit teenaged son asleep, exhausted from the rigours of his day at university.

Engineering students are fortunate in that they attend many units together and often share mathematics and physics units with only small numbers of other students. Computing students however, take units which the School of Computing provides as service units for other Schools and often find themselves in very large lecture groups. The former experience an environment in which it is relatively easy to start to recognise faces and become acquainted with other students. The latter can find it very difficult to make friends because they find themselves always sitting with different individuals. For these students, assistance with meeting fellow students is very beneficial.

Women in the computing and engineering courses can benefit immensely from support. The engineering groups are almost homogenous in gender with women being very noticeable by their rarity. Minority groups experience isolation, can find themselves the subject of humiliation and miss out on the emotional boost associated with a sense of belonging. In the computing student groups the women are not as few as in engineering but often perceive a “chilly” climate regardless. Women usually start the course with less computing experience than men. Extensive computing experience is not a course entry requirement but obviously helps with some aspects of the course. Women view computing differently from men, being more concerned with the uses of computers than with the “wow” factor of computing [Moxham and Roberts]. Teaching and assessment of computing courses has tended not to emphasise important skills required of computing professionals and which women tend to enjoy, such as teamwork and communication skills. A recent evaluation of women in engineering programs studied women's persistence in undergraduate engineering (including computing) courses at 53 institutions of higher education [Goodman, I.F., et al., 2002]. It found that female students' participation in support activities such as mentoring is important for them to remain in engineering.

Curtin has a high number of international students. These students, and those from rural areas, need to cope with the emotional and physical stresses of living away from home and in a different culture. As for all the above groups of students, those from overseas or outside Perth, have the usual first year hazards and more. These students have much to gain from staff and student support schemes.

Staff mentoring students

Up until the year 2001, students in the School of Computing were allocated a staff member as a mentor. This meant that staff members often had up to thirty mentees. The allocated staff member was available for his or her mentees to speak with in the case of any concerns related to the course. Many students made use of this support scheme. Problems raised included inability to cope with the course, accumulation of work, problems with boyfriends/girlfriends affecting ability to study, illness in the family, etc. In several cases the staff members found themselves the first source of support for students extremely emotionally distressed and found that the students were grateful to have someone to listen. A disappointment was that students tended to approach staff members when problems were already well-developed. Many students whose academic results suggested major problems, did not seek assistance. Much of the staff's time spent with mentees was answering questions of an administrative nature. Staff noted that many of the students' problems were solved by the students, when the importance of time management was brought to their attention.

In the School of Electrical and Computer Engineering first year students are allocated a staff member as a mentor. Each staff member is allocated approximately 10 students. The students email their staff mentor in the first week. Staff members receive progressive assessment

results for first year units and arrange to see any students whose results are “poor”. This scheme was assessed in 1997 and the results published [Lawrance, Hullett and Goodell]. Staff members found that it was time-consuming to look up their mentees’ results in the class lists. The intention is to catch those struggling students who would not otherwise seek support. The support can be very beneficial but some students always slip through without meeting their mentor even when a meeting is requested by the mentor. In many cases it is simply important to the students that a staff member is available to refer them to appropriate sources of assistance.

In 2001, the School of Computing allocated an academic staff member, in particular a young woman who had recently completed her PhD, as a person to whom students can bring concerns. She mainly provides the kind of support that would be provided by a course controller or a sub-dean in science. She can assist students with selection of courses/units and provide answers to administrative queries. Although students are not formally allocated staff mentors, students continue to go to academic staff as a first point of contact with study problems and also personal difficulties, such as relationship problems.

Students mentoring students

In 2001 both Schools introduced a scheme by which senior students mentor first year students in their own School. Senior students volunteer to be mentors during second semester of the previous year. They provide contact details and personal information used for mentor/mentee matching. They attend a mentor workshop run by a senior counsellor from Curtin's University Counselling Service. First year students apply to be allocated a mentor on the day when they enrol at University. They provide the same type of information as that asked of the mentors.

At the beginning of first semester each first year student is matched with a mentor. The mentors are notified of the name and contact details of their mentee(s). The mentors contact their mentees and arrange to meet. Face to face meetings at least fortnightly are recommended while email or telephone contact should be at least weekly. The mentor/mentee relationship seems to die a natural death by the end of first semester.

Mentor workshops

Workshops are organised whereby mentors are introduced to the following topics: the role of a mentor, the mentor/mentee relationship, confidentiality issues, ethical guidelines, helping skills, personal interview skills, keeping clear boundaries, empathetic responding, recognising and managing stress, referring.

The mentors try to help the students without tutoring them. The counsellor stresses the importance of the student mentor as someone who can help the first year student to realise that his or her feelings are normal because the mentor has usually experienced similar feelings. Student mentors can provide useful “hidden” knowledge that they have about when it is a good time to ask a lecturer a question, where it is good to eat, where to sit in a lecture theatre etc. Mentors are not meant to solve students' problems but to help the students to make appropriate decisions themselves.

One student sent an email after the workshop saying that it was really helpful for his relationships with friends. Now he knew how to help his friends without solving their problems for them.

Allocation of mentees to mentors

Mentors are more likely to be useful to first year students who will have similar experiences to those the mentor experienced in first year. For this reason the mentors and mentees are matched so that as far as possible, while maintaining reasonable distribution of mentees across the mentors, the mentees are allocated mentors of the same gender, home (Perth, rural Australia, particular overseas country), age (mature or not), course of study. In 2001 in the School of Electrical and Computer Engineering there was a one-to-one match between mentors and mentees. In the School of Computing, mentors were allocated up to six mentees.

The software for the scheme was written as a computing student project. She devised a procedure to perform the mentor/mentee matching with the priorities required by the scheme co-ordinator. The software matched every mentor with every mentee and obtained a score for every match as shown in Table 1. The matches are first sorted by highest score and then matches with the same score are sorted by mentor with the mentor with the lowest number of matches at that score being placed first. In the sorted order each match is used if the mentee does not yet have a mentor and if the mentor does not yet have the set maximum number of mentees.

Table 1. Scores for mentor/mentee allocations

	Mentee	Mentor	Score
Gender	F	F	100
Rural	Yes	Yes	60
International	Same country	Same country	40
International	Diff country	Diff country	30
Mature	Yes	Yes	10
Course	Same course	Same course	5

Results

Students provided comments by email. Positive comments tended to be general. The following were extracted from responses to a call for mentors for 2002:

I would like to be a student mentor for next year 2002 since I had great help from my mentor this year [C. Ooi, personal communication, October 15, 2001].

I am Henry (2nd year student), one of those students who participated in the school mentoring program (as a mentor) for this year starting February. Thanks for the wonderful opportunity, I found it was a very exciting and helpful experience. I'll be glad to participate for the next year [H. Kalunga, personal communication, September 14, 2001].

Several mentors experienced difficulty contacting the first years. Many also found that the first year students did not remember about the mentoring scheme when first contacted by their mentors. They had been provided with a hard copy of information on the day they enrolled and they were told about the mentor scheme on orientation day but it seems that the students receive too much information on these days to be able to absorb it all.

A request was emailed to mentors calling for reflective information about the 2001 scheme to assist in planning for 2002. Responses showed that mentors advised students on the following: parking, buses, the second hand bookshop, study groups, time management, the need to ask questions, the advantages of joining societies and clubs on campus, hazards for students etc.

Watch out for the applied maths units...Hidden maths gets a lot of people [C. O'Neil, personal communication, February 4, 2002]

Mentors enjoyed the experience of interacting with first years. Many noted their participation on vacation and graduate employment applications and asked the scheme co-ordinator for letters of reference. One employer contacted the scheme co-ordinator to say that he considered a student's participation as a mentor for a first year student to be a valuable point in an employment application he had received.

Future plans

Staff will provide student support in 2002 in a similar manner to previous years.

In 2002 there will be improved first year awareness of the student mentoring scheme. More flyers will be posted on noticeboards throughout the buildings and the scheme now has web pages, which can be accessed through the School home page. There will be a lunch in the first week of semester when first year students and mentors can meet each other.

The software written by the computing student provides online applications for mentors and mentees. Much time will be saved because the data will not need to be entered by the scheme co-ordinator. Errors in telephone numbers and email addresses will be reduced. Time will also be saved because the matching of mentors and mentees will not be performed manually. The software will send emails to the mentors providing them with the names of their mentees. It is very important that the matching and notification happens quickly because mentors are most useful if they can meet the mentees very early in semester.

Conclusions

Support schemes are helpful to both first year students and their mentors (staff or students). Academic staff can provide sound academic and administrative support to first year students. Students with major personal problems should consult the appropriate university staff. However, not all students are willing to use staff as mentors. This is especially so for first years who often find university an intimidating experience. Student mentors provide a more approachable source of support and have a wealth of useful tips because they have "been there and done that". The student mentors gain valuable personal skills from providing support to first year students.

References

- Goodman, I.F., Cunningham, C.M., Lachapelle, C., et al. (2002) Summary and Conclusions, Women undergraduates in engineering need community. In *Final Report of the Women's Experience in College Engineering Project* [Electronic Version] (p179). Cambridge, MA: Goodman Research Group, Inc., Retrieved June 12, 2002, from http://www.grginc.com/WECE_FINAL_REPORT.pdf
- Lawrance, W.B., Hullett, J., Goodell, J.E. (1997) Changing the Ethos in Electrical and Computer Engineering at Curtin University. *Proceedings of the Australasian Joint Regional Conference of GASAT and IOSTE 1997*, 117-122

Moxham, S., Roberts, P. (1995) *Gender in the Engineering Curriculum*, Victoria: The University of Melbourne, Swinburne University of Technology, University of Ballarat.