

A Mentoring Scheme for International Masters Students

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We conducted a pilot study of the mentoring scheme for Master of Engineering international students at the University of Adelaide. The scheme aims to provide a smooth transition into the new learning environment and to support students in academic matters. This is achieved by integrating the supporting activities for the initiation, adjustment and settling-down stages into a student-centred structured program. The program was conducted over a period of time sufficient for students to reach a stable state of adjustment.

Keywords: acculturation, internationalisation, mentoring

1 Background

The University of Adelaide introduced one-year Master of Engineering (ME) programs in 2004. Each ME program is a coursework named degree program with specialisation. The programs have attracted international students from a number of countries. In 2004, of the ME international students commencing studies at the Faculty of Engineering, Computer and Mathematical Sciences (ECMS) in 2004, about 65% were from China, 15% from India, 10% were Malaysian, and the rest from Iran and Korea. The trend of students predominately coming from China continued in 2005 and 2006.

Most students undertaking postgraduate coursework studies at an Australian university will experience some form of culture shock in the early stages of living away from home in a foreign country. Culture shock refers to the stress that builds from the daily experience of many differences when residing in a new cultural environment. This stress can lead to feelings of helplessness, loneliness and distress.

Students admitted to study ME at the University must have a related undergraduate engineering degree with Honours or equivalent. However, although students from ESL (English as a second language) countries may possess good technical knowledge from their undergraduate courses, the terminology was not taught in English. The translation of the language for the student can delay the learning process.

Unfamiliarity with the usage of certain scientific software packages can pose a major obstacle for new students. Many universities in Australia use MATLAB or its variants as part of the tools for teaching in university courses. MATLAB is a high-level computing language and interactive environment that was designed to facilitate computationally intensive calculations (The MathWorks, Inc., 2007). International students coming to Adelaide may have little or no knowledge of this software tool.

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There can be significant differences in the teaching techniques and learning expectations between Australia and the home countries of most international students. When commencing studies at the University of Adelaide, the majority of international students are unsure of what is expected academically. Upon attending the first lectures, many feel overwhelmed by the pace of delivery and volume of material presented. Lecturers take background knowledge from undergraduate courses for granted, yet this knowledge may not have been part of the students' education. Many feel alarmed when they are unable to understand what is being said due to unfamiliarity with the accent and speaking style of the lecturer. Students may not catch unfamiliar names, terms or references.

In view of the many challenges confronted by postgraduate coursework international students and the desire to ensure a smooth transition into the new educational environment, a mentoring scheme was developed in ECMS. The scheme covers the personal mentoring and bridging classes.

The purpose of this paper is to describe the mentoring scheme and the experiences gained from the process of its design and implementation.

2 Motivation and Key Objectives

The motivation of the mentoring scheme is to assist students in managing difficulties and adjusting to the new environment in a way that provides the greatest chance of academic success.

Most people living in a foreign cultural environment will experience changes of feelings over time that basically follow the *acculturation curve* of the social psychology theory of adjustment (Hofstede and Hofstede, 2005, Tung, 1982). Figure 1 shows the curve. Feelings (positive or negative psychological state) are plotted on the vertical axis and time on the horizontal axis. Phase 1, *euphoria*, is the novelty of experiencing a new environment to further one's horizons. In the second phase, *culture shock*, the newcomer experiences the stress due to differences and encountered obstacles. Phase 3, *acculturation*, begins when the newcomer learns to function in the new environment and becomes integrated into a new social network. Phase 4 is the *stable state* of mind that the newcomer eventually reaches. In this phase, the newcomer may experience feelings that are positive, neutral or negative.

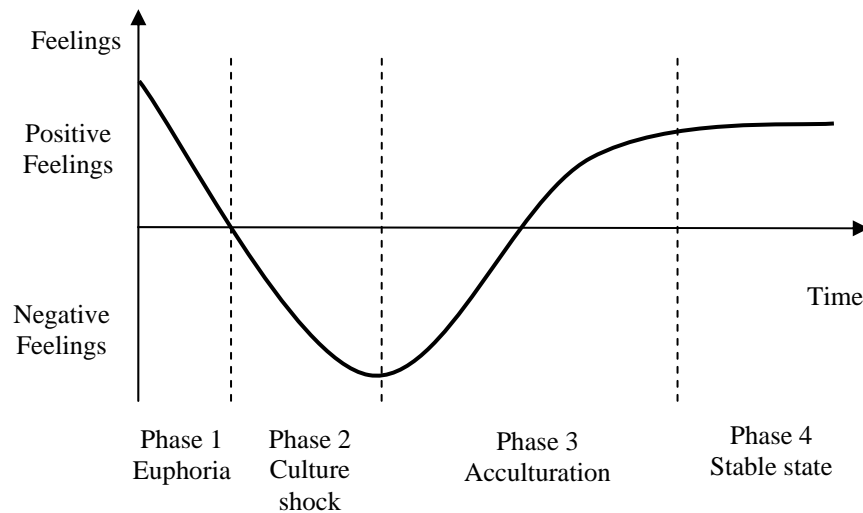


Figure 1: The Acculturation Curve
(Adapted from Hofstede and Hofstede (2005), Figure 9.2, on p.324)

It is desirable to ensure that new students reach a stable state in which feelings experienced are predominantly positive. The mentoring scheme strives to achieve this through support activities and remedial actions. In order to help students through the difficulties of the culture shock and acculturation phases, it is necessary to run the scheme until a steady state is reached. One academic semester is thought to be sufficient.

Students studying under a different university system can have some assumed knowledge gaps in certain courses. Filling some essential and identifiable gaps through bridging and remedial classes is an integral part of the mentoring scheme to achieve the objective of providing the greatest chance of academic success for students in need.

One major objective of university education is to develop in students an acceptance of individual responsibility for mastering both the content of the courses and the intellectual approaches appropriate to the profession. To this end, the purposes of the personal mentoring of the scheme are to provide academic and professional guidance, and to promote in the students a sense of belonging to the organisation and the profession. The personal contact established between each student and a member of academic staff (a mentor), such that the student has someone they can approach with questions and problems, serves well as a communication channel for students and the University.

3 Description of Strategy

The scheme was run in one engineering school as a pilot scheme. The design of the scheme began with the identification of issues faced by new international ME students that affect study. A strategy was devised for dealing with each issue. The effectiveness of the strategies was monitored throughout the academic semester by obtaining feedback from students, tutors and mentors.

The School of Electrical and Electronic Engineering at the University of Adelaide was chosen for the pilot study for several reasons. The School has experience in the study of the incorporation of inter-cultural perspectives and pedagogy in specific disciplines for undergraduate degree programs (Lim, 2001). The School has a sufficient number of

international masters students to conduct a meaningful study, and the students are representative of the typical countries of origin. In addition, the School offers three ME programs and they are similar in program structure to those of other engineering Schools in the Faculty.

3.1 Identification of Existing Issues

Common difficulties that affect the academic performance of international students were discussed in the Background section. More specific problems for commencing students include:

- unfamiliarity with the support and facilities available in the School, Faculty and University;
- unfamiliarity with lecture and tutorial delivery methods;
- different expectations regarding learning, and incompatible learning methods brought from previous academic experience in the home country;
- lack of practice in mathematics after returning to study from employment, or unfamiliarity with mathematical terms in English;
- unfamiliarity with the teaching tools such as software packages;
- different views on what constitutes plagiarism and collusion; and
- academic problems that have arisen due to language problems with listening, writing and articulating, especially during the initial stage of study.

3.2 Method of Solution

The mentoring scheme seeks to address the aforementioned difficulties and problems through a series of activities. The approach of the scheme is to structure the activities in a cohesive, integrated manner from the time of arrival of the students. All new international students are inducted through the University International Student Orientation Program. At the earliest opportunity, students are informed about the School mentoring scheme and provided with the Masters Mentoring Handbook (Lim, 2006). The Handbook contains a schedule of activities, which are structured in three main stages.

The first stage, *initiation*, brings students up to speed with important contact information on key members of staff whom students can approach regarding academic matters and assistance regarding administration and support services provided by the School and the Faculty. This part can be most effectively covered by the Welcome events of the School and the Faculty, held during the Orientation weeks.

Attempts to fill gaps in student technical knowledge also take place in the initiation phase. A short course in mathematics and a workshop in MATLAB software were identified as suitable programs to run to help overcome some students' background technical knowledge issues.

Before the academic semester begins, an initial meeting with the program advisor and the mentors provides students with the opportunity to seek course selection advice and raise such administrative issues as timetable clashes. The School can take immediate remedial action to ensure a good start.

For most students, this initiation stage corresponds roughly to the *euphoria* and the beginning of the *culture shock* phases of the acculturation curve illustrated in Figure 1.

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The second stage is one of *adjustment*. Students commence courses and are required to study four courses in the first semester. All classes and in-term academic assessments begin and students may begin to experience difficulties in their studies. A meeting with mentors is held in Week 2 to provide the students with a forum for discussion about any issues that have arisen, and to perform early intervention when needed. A follow-up meeting is held in Week 6. For the majority of students, this stage corresponds to the *culture shock* and *acculturation* phases of the acculturation curve.

By the third stage, most students have *settled into their studies*. A final meeting with mentors is held in Week 11, in time for students to raise any problems before the examinations start. The feedback from the students also gives mentors an opportunity to evaluate the performance and academic maturity of the students. This stage usually corresponds to the *stable state* phase of the acculturation curve.

To illustrate the sequence of these events, one mentoring activity schedule for the masters students commencing in 2006 February semester is shown in Table 1.

Table 1: A mentoring activity schedule

First Semester - February 2006		
Date	Activity and Mentor	Objective
International Orientation 2nd Week: February 13-17	Mathematics Bridging Course; School Tutors as Mentors Monday-Friday 12-3pm School Welcome; Head of School to Chair Wednesday 10-11:30am Mentor Meeting; ME Program Adviser as Mentor Wednesday 11:30am-1pm MATLAB Computing Tutorial; School Tutors as Mentors Monday-Friday 3:30-5pm Faculty Welcome; Executive Dean to Chair Friday 10:30am-12pm Faculty Orientation Tour; Faculty Executive Officer as Mentor Friday 12-1pm	Become familiar with the mathematical terms required for the M.E. program. Meet core members of School (Head, course adviser, mentors, administrative staff and tutors) Obtain an overview of M.E. program and mentor scheme, consult Course Adviser on course selection Develop familiarity with School computing facilities and MATLAB. Meet core course lecturers and other masters students in the Faculty Know the facilities in the Faculty
Week 2 March 7	Student debrief on first week's experience: ME Program Adviser as Mentor; Tuesday 12-1pm	Provide written feedback to Mentor
Week 6 April 4	Student debrief on first 5 weeks' experience: ME Program Adviser as Mentor; Tuesday 12-1pm	Provide written feedback to Mentor
Week 11 May 23	Student debrief on first 10 weeks' experience: ME Program Adviser as Mentor; Tuesday 12-1pm	Provide written feedback on the mentoring scheme
Weeks 1 – 12	Email mentor if study problems have been encountered ME Program Adviser as Mentor	Seek help whenever needed

3.3 Overcoming Learning and Communication Difficulties

To manage problems that may have arisen from different expectations and communication difficulties due to language usage, the School requires all new ME international students to take the course Engineering Communication and Critical Thinking (University of Adelaide,

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2006) in the first semester. It was first introduced in the July semester of 2005 in response to problems observed in the first three cohorts of students. It provides strategies for learning and interacting effectively in an English-speaking environment and equips students with critical thinking skills such as a clear, systematic and rational approach to problem-solving. Seminars provide information about locating, analysing and evaluating appropriate sources of information, and considering the various styles and formats of documents written for different purposes.

This one-semester, credit-bearing course is not formally part of the mentoring scheme. Feedback collected during meetings with mentors from students regarding language and learning difficulties, and their (mis)understanding of plagiarism, are used in refining future Engineering Communication and Critical Thinking courses.

4 Results and Analysis

To assess the effectiveness of the scheme, students' feedback and tutors' observations are collected on the tutorial and personal mentoring activities. The academic performance of the students is analysed.

4.1 Meetings with Mentors

At the first debriefing session in Week 2 of the semester, 16 students (about three-quarters of the total) attended and filled out feedback forms about their experiences of the initiation phase and the first week of teaching. The second session in Week 6 had 14 participants, and the final meeting in Week 11 had 16. The quality of the comments was high, with many detailed responses and specific suggestions. The comments made by the students and the School's response to them are summarised below.

First Session

In the feedback forms about the initiation during the Orientation and the first week of semester, a couple of students stated that they thought that the Orientation and bridging tutorial activities were useful and had gained a lot of knowledge about the University and the different departments. A few students expressed satisfaction with the performance of their lecturers, whom they said were responsible and replied to question emails as soon as they could. The students also described their courses and projects as interesting and challenging. A couple thanked the School for listening to student feedback, and commented that academic success depends on their own individual efforts.

A considerable number of students expressed concern about one specialist course. Unfamiliarity with the terminology in English was making study difficult. In response to these comments, the School organised a weekly drop-in tutorial for this course at a time that was convenient for all students enrolled in the course. Many students found the drop-in tutorial beneficial, and this was reflected in good performance in the assignment and exam for the course at the end of the semester.

A significant number found that lecturers spoke too quickly or not clearly enough, particularly when pronouncing technical words. Some had difficulty reading lecturers' blackboard handwriting. Others had difficulty understanding sections of textbooks. One student suggested the introduction of a bridging course on academic English which focuses on engineering

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glossaries. These comments were communicated by the School to some course lecturers and the coordinator of the Engineering Communication and Critical Thinking course.

A number of students informed a mentor that the required textbooks for a course were not available in the University library. The School responded by placing an order for the required titles with the library. A couple of students had timetable clashes, which the School quickly remedied.

Second Session – First Five Weeks

A significant number of students were content and had no issues to discuss. One said that the language problem was lessening, and that he or she was getting used to the University and life in Adelaide. A couple said that all the lecturers were quite friendly, responsible, patient and helpful. One stated that the University was an excellent one, and another thanked the School for supplying pizza at meeting functions.

One student asked the School to provide more opportunities to communicate with others using English, and some tutoring about group work. One student expressed concern about the volume of required reading and unfamiliarity with the library system. The student was encouraged to explore the library system and given directions about where to find help.

Third Session – First 10 Weeks

Students were invited to provide written feedback on the mentoring scheme and their first 10 weeks of course experience. A significant proportion of the respondents said that the University environment was helpful, found the MATLAB and mathematics bridging courses useful, and felt that the mentoring scheme had helped them to adjust to the study environment here. One student suggested that Masters students should have more practical projects to develop a better understanding of what they have learnt. This shows that the students are becoming more independent workers, and reflects well on the teaching.

Another student commented that in some courses offered for both undergraduate and postgraduate students, the Masters students felt that they had not received enough attention from the lecturers. This was communicated to the lecturers concerned.

A few had suggestions for improving the bridging courses. One requested that the courses be made available during the semester to assist with problems that arise during the semester. Some asked for more MATLAB tutorial classes. Another suggested having bridging programs during vacation periods, and a third asked for more examples. These comments have been conveyed to the coordinators of the bridging courses and are being reviewed with regards to availability of School resources. Additional MATLAB classes were conducted during the mid-semester break.

There were several suggestions for improving the personal mentoring scheme. One student wanted more opportunities to talk with other students and mentors face-to-face. A couple asked for longer, more frequent and more detailed meetings. Another requested more course advice. These suggestions are being considered for refining the mentoring scheme for the future.

4.2 Bridging Courses and Tutorials

The five tutors involved in conducting the MATLAB, mathematics and drop-in tutorials were interviewed for their observations.

Mathematics Bridging Course

The bridging course was run as a series of tutorials to revise the mathematics used in undergraduate engineering courses, and to provide an opportunity for familiarisation with mathematical terminologies in English. The five daily sessions, each of three hours in duration, were attended by over 85% of the enrolled students. The evaluation forms submitted by the students at the conclusion of the course indicated that most felt that the course had refreshed their memory of the required mathematics.

MATLAB Workshop

The MATLAB course was designed with the aim of giving students an introduction to the software with hands-on experience. The mathematics bridging ran in conjunction with the workshop and they complemented each other well. Most students could produce the correct answer to each MATLAB practice problem by the end of the course and pass the test well. There are concerns expressed by the tutors that some students still seem not to be familiar with the English terms after some sessions. Overall, the MATLAB workshop has been beneficial to the students and they should be reasonably well-positioned to start the semester.

Drop-in Weekly Tutorial

The drop-in weekly tutorial was introduced in response to requests from students for assistance with one Masters course during the Week 2 mentoring session. The drop-in tutorial is a consulting hour for which no appointment is needed and students can come and go as they wish. A senior postgraduate was assigned the tutor role. The tutor observed that the drop-in tutorials were used by some 80% of the students enrolled in that course. He provided quiz questions as homework, and marked them if requested. The majority of the quiz questions he marked were of a satisfactory standard, and the tutor believes that if the students had not attended the tutorials, some would have difficulty in passing the course.

4.3 Academic Performance

The mentoring scheme was introduced in Semester 1 of 2006. The academic performance of the ME students commencing in February 2006 was monitored for a year. The academic results show that the great majority of students passed their first semester courses well on the first attempt. Of the 23 commencing students enrolled in 91 courses, 22 students passed all courses and one student failed one course. The results compare well with those in 2004 and 2005, which was before the mentoring scheme was implemented. Table 2 shows the comparison.

Table 2: Academic Performance of Commencing M.E.(Electrical) Students

Year, Semester	Total Number of Students	Total Courses Taken	Courses Passed, Number (%)	Number of Students Failing \geq Half of Enrolled Courses, Number (%)
2004, Sem 1	14	60	55 (92%)	1 (7%)
2004, Sem 2	13	47	44 (94%)	1 (8%)
2005, Sem 1	9	34	32 (94%)	1 (11%)
2005, Sem 2	9	34	33 (97%)	0 (0%)
2006, Sem 1	23	91	90 (99%)	0 (0%)
2006, Sem 2	22	86	85 (99%)	0 (0%)

The success rate for the three years has been consistently high, even when the number of students increased and their backgrounds became more diverse in 2006. The mentoring scheme introduced could be a contributing factor in maintaining the good results for that year. Anecdotal evidence based on the feedback from teaching staff, tutors and students also suggests that taking remedial bridging action and providing personal tutoring does have the significant effect of producing positive feelings in students and teaching staff.

5 Reflection and Evaluation

5.1 Implications for Teaching

As the main aim of the mentoring scheme is to support students in a way that enhances their chances of academic success, the scheme has important implications for teaching. Many international students begin their studies at the University with gaps in their background knowledge and unfamiliarity with the educational culture of the University. The mentoring scheme seeks to close these gaps through bridging courses, a credit-bearing course in communication and critical thinking, School and Faculty Welcome events, and meetings with mentors that facilitate discussion regarding academic difficulties that have arisen. With the mentoring scheme providing support for students in all aspects of their learning, lecturers are able to concentrate on achieving the main objectives of the course without having to spend an inordinate amount of time filling gaps in student knowledge due to differences in educational, language and cultural backgrounds.

5.2 Implications for Learning

The mentoring scheme helps international students to adjust to the University culture of independent learning, to be aware of what is expected of them academically and to know where to seek help if encountered difficulties. The scheme prepares students for academic studies by identifying gaps in technical and linguistic knowledge. A number of students expressed concerns regarding independent learning during meetings with mentors and in feedback forms. The mentors explained the reasons behind the design of courses, highlighting the importance of skills for lifelong learning. The Engineering Communication and Critical Thinking course is an important and heavily emphasised part of the mentoring scheme. Using student feedback collected during meetings with mentors as input for future refinements, the course seeks to enable students to better articulate and critically evaluate thoughts and ideas.

There are considerable benefits to engaging senior postgraduates as tutors. New international students find postgraduates easier to communicate with beyond the issues directly related to the ME courses. Such questions as where to obtain cheap, tasty Chinese food and about the research strength of the School were asked. Working with postgraduates also allows

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international students to start interacting and making friends with the wider community. The problems of being unable to establish friendships between international and local students are widespread and have been raised in the Overseas Students' Association Forum in Adelaide (St. John-Ives and Takeda, 2005) and in national fora such as the Australian Universities Quality Forum (King and Nair, 2005). There are no easy solutions, as developing a friendship takes time and effort, and the interest must be mutual. Our positive experience in using senior postgraduates as tutors to help newly arrived international students suggests that this strategy is one effective way to facilitate the development of these friendships.

6 Concluding Remarks

The consistently good results in academic assessments of the international ME students indicate that the mentoring scheme has been effective in helping students in the transition to studies at the University. The quality and volume of student feedback about the scheme shows that students are engaged in the process. With a considerable number of requests for more bridging tutorials and repeated praise for the lecturers and courses, students have embraced the mentoring scheme. The feedback shows signs of increased academic maturity in students and progress towards independent learning.

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