AN INTERVENTION STRATEGY TO SUPPORT FIRST YEAR ENGINEERING AND BUILT ENVIRONMENT STUDENTS THROUGH REMOTE MENTORING STRATEGIES

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ABSTRACT
First year experience is a concern to Universities in Australia for a long time. This has presented itself forcefully in Engineering Faculties which have a high student attrition rate during the first year of study. Universities and Faculties have employed many strategies to try and address this “leakage” of students. Some of the approaches adopted include student mentoring, and various programmes which provide learning support for students. All of these initiatives have had successes but the question needs to be asked about the reaction of students to such support systems and networks.
The University of Newcastle currently has a range of student support projects in operation. One introduced by the Faculty of Engineering and Built Environment will closely monitor a student’s progress and, at the first instance of problems arising, an intervention offering support and direction to students is initiated. This paper reports on the introduction of this system.

1. INTRODUCTION
Since the 1970s considerable research has been conducted on both student retention and attrition in higher education. Motivation for this research is that universities bear a financial loss if they have not put other measures in place to accommodate such losses. Much of this research confirms the negative impacts incurred as a result of student withdrawal from university prior to obtaining a degree and this is evident both nationally (Krause, Hartley, James, & McInnis, 2005; McInnis, Hartley, Polesel, & Teese, 2000) and internationally (Tinto, 1999; Yorke, 2000).
Pitkethly and Prosser (2001) echo the concern expressed by McInnis, James and Hartley (2000) that one third of all university students consider withdrawing in their first year of study. The work of McInnis and colleagues is regarded as seminal and is still relevant as first year students, according to Krause (2005), pivot between three sometimes-competing tensions. These are:
- program relevancy,
- student as client' (from the marketing and service dimensions of the institution),
- disciplinary and academic integrity' standards required by academics.

These plus other reasons have been attributed to students withdrawing from university and many models have been put forward as explanations of how student retention and attrition occurs. Countless possible means of reducing the attrition rate during first year have been explored and implemented. Strategies that have been trialed include practices that incorporate concepts such as student engagement, learning communities, and academic and social integration. These have been shown to have a positive impact on student retention (Tinto & Goodsell-Love, 1993; Zhao & Kuh, 2004).

Another issue for consideration for first year students is that they are far more attuned to the potentials of technology. The use of email, texting and the new chat room environments mean their comfort and relationship to the once considered impersonal world of written text has changed. Current students have embraced the concept of short messages and gain considerable comfort from the concept of staying in touch even though physical presence is not available. Modern students are as comfortable with a remote interaction. This shift in their idea of interaction provides an interesting mode of interaction.
2. CONSIDERATIONS UNDERPINNING THE CONCEPT

Social support theory can explain the success of student mentoring. The theory identifies that the degree of social support availability is positively correlated with the coping ability an individual has in response to stressful circumstances. If support is available, it is more likely that a student will feel the capacity to cope with the stressors compared to a student who does not perceive support, and who in turn is more likely to quit. Social support theory encompasses the concept of social integration which is a term used frequently by researchers of attrition and retention in universities (Tinto, 1998; Tinto & Goodsell-Love, 1993).

Research suggests that social support does not need to be tangible to have an effective positive influence. In other words the knowledge or perception of support availability can be enough to alleviate anxiety regarding a stressful situation (Wethington & Kessler, 1986). We argue that the potential availability of support may provide sufficient real support to encourage students to pursue their studies. For example, in a situation where a student is made aware that a mentor is available this may be enough to alleviate stressors which may otherwise overwhelm or isolate the student.

Additionally it has been suggested that the most effective ‘helpers’ are those who have successfully experienced first year studies at University, and who are able to recall the issues they were exposed to and overcame (Thoits, 1995). This can be readily applied to the concept of student mentoring as student mentors have successfully completed their first year at university.

University students arguably differ from school students with respect to both the time of day and the venue they learn best in. This suggests that adults learn better by incidental learning compared to both formal and informal learning (Lieb, 1999). Incidental learning is learning that takes place at a time and venue that best suits learners (Marsick & Watkins, 2001). This suggests that learners retain information better if they can access it at a time and place they need it most – ‘I want it and I want it now’. They want ‘at call information’ and a mentor program that offers assistance and information readily and in multiple formats would presumably fulfill this need.

2.1 How the Need for this Project was Identified

At the end of 2006, 57 students in the Faculty were required to ‘Show Cause’ (provide reasons why they should be allowed to continue at University) as a part of a Review of Progress (ROP) process. This group was identified by the fact that they had failed 50% of the courses they were enrolled in over a period of two semesters. An outcome of the ROP process may be that a student is excluded from the University for a period of 12 months. Of this group 21 students (37%) were in their first year of academic study. This group represents only those that did not ‘withdraw’ from course(s). Along with the attrition rate, coupled with the number of students reducing their workload, it has become evident that it is advantageous to engage with students before exclusion or before students withdraw themselves.

This seepage of student numbers has a significant impact on a Faculty’s planning and income. What was apparent was that all the students who met the criteria for exclusion had not availed themselves of all of the University’s support systems, (including instruction supporting areas of weakness, counseling, support from course coordinators etc.).

This situation has highlighted the need for the Faculty to implement a system which identifies those students who are at risk of failing a course before this actually occurs. It is believed that if a student can be identified and approached with an offer of, or direction to support as quickly as possible the rates at which students withdraw or fail and become excluded will decrease.

It would then be the role of support personnel to provide identified students with the guidance, tools and support necessary to maintain satisfactory progression in their courses.

2.2 The Aims of the Project

The aim of this project is to monitor, promote and support students’ early engagement with their coursework and its assessment outcomes as well as the University’s support systems. Current staff workloads and high student numbers have reduced the amount of time course lecturers have to monitor and intervene when a student fails an assignment. This project looks to support lecturers by providing direction and guidance for students through:
the creation of a role designed specifically for interact with ‘at risk’ students
strategies to remotely identify students who fail an assessment item
contact being made with students identifying that failure in an assessment item has been monitored
offers of support or direction being made by persons other than course coordinators
monitoring students who fail multiple assessment items across multiple courses
developing and maintaining a database to support programme convenors in their role of student counseling at the end of semester

3. THE GUIDANCE MENTOR

The activities described above will be achieved through the use of ‘guidance mentors’ (GM) whose role is to monitor and as appropriate make contact with students. It is envisaged that this contact will specifically take the form of early intervention, thus reducing the number of students failing assessment items. The role is a part time allows the GM to track students’ progress in assessment items. When a failure is recorded the GM sends an email to the individual student acknowledging that a failure has been noticed and, depending on the number of failures accumulated by the student or of the significance of the failure to a course (e.g. the assessment was a major assessment item) providing appropriate advice. Examples of such advice include:
- Encouraging students to obtain support from University “Student Support Services”
- Enquiring whether the student is having a particular problem
- Asking if the student needs to talk to a counselor
- Establishing if the student needs extra tutor support
- Encouraging the student to make an appointment to meet with the course coordinator and / or the programme convenor.

3.1 Role of Guidance Mentors

The GM is responsible for:
1. Monitoring courses electronically through Gradebook (the facility provided in the Blackboard learning management system which records assessment item marks) and making initial contact with students who have recorded a fail in an assessment item;
2. Sending an email to the student;
3. Monitoring students across all the courses they are enrolled in;
4. Maintaining a database of interventions;
5. Providing initial counseling for students;
6. Directing students to existing university support systems, career, counseling, tutoring, Learning Support, Program Convenor, etc; and
7. Providing statistics and reports of failure trends across a program to the Faculty and Program Convenors.

As identified by Wethington and Kessler (1986), knowledge or perception of the availability of support if needed can be enough to alleviate anxiety in stressful situations. The contact which the GM makes with students provides them with a sense of being observed and supported. The Faculty was keen to provide this support and actively sought to recruit personnel with, for example, a High School teaching background and who had worked with student support units. A person with this experience is likely to have the experience to be able to relate to the first year students appropriately.

3.2 The Implementation Strategy

The following section describes the three phases of a strategy for implementing GMs in the Faculty: Identification, Targeting and Support.
3.2.1 Identification

The Faculty of Engineering and Built Environment implemented the Blackboard learning management system in 2005/6. Part of the motivation in doing this was to provide students with early feedback on assessment items through Gradebook (a component of Blackboard which deals with assessments). The significant majority of courses in the Faculty utilise Blackboard for this purpose. This project builds on the aforementioned capacity by allowing an appropriately trained GM to monitor all students’ progression within the Faculty via Gradebook.

GMs will be able to access Gradebook to identify students who fail an assessment item so that prompt support can be provided to these students. This direct access means that there is no additional workload for Course Coordinators or Program Convenors. The implementation of this strategy includes all Faculty courses.

3.2.2 Targeting

The GMs are assigned to monitor a number of courses at critical stages of the semester. All students who fail an assessment item are identified as soon as the results are released through Gradebook. Any student who has failed an assessment item initially receives an email from the GM acknowledging the student’s failure and asking if the student would like to come for an interview.

If there are multiple failures the student receives ‘stronger’ invitations to come for an interview, including personal phone contact. The GM also maps failures across programs, providing Program Convenors with failure profiles across courses to allow strategic approaches to program management of student failures or course issues.

3.2.3 Support

The GM makes personal contact with each student who has failed an assessment item and, depending on the individual student’s failure record, provides further encouragement to attend a counseling session with the GM. In the first instance emails are sent through Blackboard but if the need occasions it, phone calls are also made to heighten the personal attention provided to the students.

Below is the first introductory email sent to all first year students in the Faculty:

Dear students,

My name is           and I am the new Mentor for first year students in the Faculty of Engineering and the Built Environment. It is my role to assist you in the successful completion of your first year of studies at Newcastle University.

As part of this role I will be monitoring your assignment and exam results and I will make contact with you should you fail an assignment. The contact will be an informal email that is aimed to initiate contact with you to discuss any problems that you may be facing.

I will be available via email or I can phone you if necessary to assist you with any areas of concern that you may have. I can assist you by linking you with services run by the university that may make your first year of study easier to cope with.

In sessions with the GM, students receive guidance and support through the offer of appropriate advice, including:

- Referral to appropriate support systems, e.g. Learning Support program, online resources
- Counseling
- Referral to relevant academic or administrative points of contact, such as Course Coordinator, Program Convenor, or Program Officer
- Extra tutorial support
3.3 Expected Outcomes of the Project

The expected outcomes of this project are:

1. Improved first year experience for FEBE students through personal contact when a failure occurs in any individual assessment item;
2. Varying degrees of intervention and support are offered;
3. Students supported in the management of their study subsequently reducing the uncertainty of their first year of study;
4. Students who exhibit problems are encouraged to increase their engagement with the University support systems and their study;
5. Students at risk are supported earlier, at their first failure in an assessment item;
6. Students receive personal and individual guidance to support their decision making about strategies to enhance their performance; and
7. An increase in number of FEBE students maintaining satisfactory progress.

The project was implemented in Semester 2, 2007, and will be assessed through an evaluation of these outcomes at the end of the year. Students participating in the scheme will be surveyed. In addition the database of interventions will be reviewed and a comparison made between the semesters “show cause” and attrition rates and data for earlier semesters.

3.4 Advantages of the Intervention

The principles underpinning this project were to devise a process that would have a major impact on student experiences and a minimal impact on academic workloads. Furthermore, this approach:

- utilizes existing IT infrastructure;
- provides early intervention;
- aligns with existing University support systems;
- provides early detection of failure profiles across courses and programs and
- provides personalised and individualised attention for students.

3.4.1 Mechanisms Planned to Ensure Project has Sustainable Outcomes:

This initiative is a long term one. It is intended that the GMs will become a standard feature of the Faculties Orientation and First Year Experience program, and also a part of the Faculty’s initiatives to improve retention and progression rates in its programs.

If the expected outcomes are achieved, the Faculty will continue to support the project with additional funding. Using the methods for evaluation outlined above, the Faculty will conduct an annual review of the Program Guidance Mentors project to facilitate continuous improvement.

Strategies for evaluating the uptake of findings by colleagues

The success of this project will be most evident in the retention of students and the increased percentage of students maintaining a full course load. This, in turn, will lead to a sustained student profile across the Faculty. It will not be possible to evaluate this initiative during the first year of its implementation using the commencing student experience in the CEQ. However, in subsequent years this will be a primary evaluation mechanism.

What was achieved in the first Semester of implementation saw a considerable deal of activity by the Mentor. This activity included sending out initial contacts to students when they failed an assessment item, follow ups etc. What also occurred was the identification of issues in the faculty that will need to be reconsidered if students are to be better supported. The mentor not only took on the task of corresponding with students the first time they failed an assessment item but also went through the previous semester’s results to identify those students at risk and contacted them using the same techniques as those who failed an assessment item. The outcome of the trial saw:

- 350 initial contacts made with students who failed an assessment item
- 200+ repeat interactions with students to offer ongoing support and advise
• Tracking from previous semester of 40 students who deemed “at risk” who had failed more than 50% of their courses for a semester, these students were also offered ongoing support and direction on how to address their problems or who they should talk to, to ensure a repeat failure did not occur
• Identification of issues
  o Assessment timing and weighting
  o Need for better networking with University Student Services
  o Potential for personal contact, especially for Int.

Often in the modern University the academic, with the large classes to service and requirements to research and the fragmentation of the role of the course coordinator it is easy to lose touch with what students are experiencing in their first year of University study. There is considerable research which identifies that first year students have a great deal to cope with and accommodate, lectures, self-directed study and the sense of isolation. But the flow of life goes on and students often experience other things which can only compound what is happening in their studies.

Following are some extracts which are drawn from the database. What is encapsulated in these student responses to an enquiry of “is everything OK” and some of the follow up:

<table>
<thead>
<tr>
<th>Date</th>
<th>Advice</th>
</tr>
</thead>
<tbody>
<tr>
<td>6.9.07</td>
<td>initiated contact. Struggling GENG1002.</td>
</tr>
<tr>
<td>25.9.07</td>
<td>Changing courses.</td>
</tr>
<tr>
<td>25.9.07</td>
<td>OS student Upset. Referred to student services support. Also tutor and tutoring.</td>
</tr>
<tr>
<td>18.9.07</td>
<td>Flu. Coping better now.</td>
</tr>
<tr>
<td>13.9.07</td>
<td>Struggling with job and Uni. Withdrawing from one course.</td>
</tr>
<tr>
<td>18.9.07</td>
<td>Aware of probs. Increasing effort.</td>
</tr>
<tr>
<td>18.9.07</td>
<td>Balancing work and study. Reducing load.</td>
</tr>
<tr>
<td>25.9.07</td>
<td>Personal issues. Funeral.</td>
</tr>
<tr>
<td>18.9.07</td>
<td>Initiated contact. Referred him to tutor. Student services OS students services</td>
</tr>
<tr>
<td>25.9.07</td>
<td>“I’ll be putting in some effort when it counts”.</td>
</tr>
<tr>
<td>25.9.07</td>
<td>OS student for one semester only.</td>
</tr>
<tr>
<td>25.9.07</td>
<td>Incorrect course selection. Wanted java not C++.</td>
</tr>
<tr>
<td>25.9.07</td>
<td>Computer problems. Stress. Late tasks. Referred to tutor.</td>
</tr>
<tr>
<td>25.9.07</td>
<td>OS Student. Working a lot and uni. Referred to OS SS. Sent follow up email.</td>
</tr>
<tr>
<td>18.9.07</td>
<td>Unwell. May need extra help.</td>
</tr>
<tr>
<td>18.9.07</td>
<td>Family Death. Homesick.</td>
</tr>
</tbody>
</table>

4. CONCLUSION

The attrition rate among engineering students in the first year of their university experience is high. Dropping out of a course or a program has a significant affect on students. Furthermore, the impacts of this attrition upon academic workload as well as loss of income to the Faculty are high. What we have experienced is a very positive response to the simple email enquiry to check that the student is OK and if they need assistance. The students never meet the mentor all interactions occur by email through the University BlackBoard system. In its first semester of implementation there has been a drop in the students who are identified as “at risk” or their place in the university withdrawn because of persistent failure. This is a significant positive outcome and the effect over the course of a full year is expected to be greater.
This initiative will be implemented in full again in the coming year but will be supported more fully with the potential for the student to meet the mentor if necessary. Initiatives have been taken to address some of the assessment issues which students experience to ensure there is time and opportunity for students to address their learning problems in a course rather than have to withdraw of fail.

The application of the IT system although implemented in the university as a means of achieving better communication has been successfully applied to supporting students in a mentoring capacity, once the domain of counselors but now achieved through strategic application of the technology support system.

REFERENCES


