Using Blackboard to Monitor and Support First Year Engineering Students

Anthony Williams
The University of Newcastle, Newcastle, Australia
tony.williams@newcastle.edu.au

Willy Sher
The University of Newcastle, Newcastle, Australia
willy.sher@newcastle.edu.au

Abstract: First year experience has been 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.

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 trialled 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).

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 (Marscick & 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 fulfil this need.

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, counselling, 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.

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 counselling at the end of semester

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 councillor
- 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.

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 counselling for students;

6. Directing students to existing university support systems, career, counselling, 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.

Summary of proposed project activity

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

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.

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.

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 counselling 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. In counselling 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
- Counselling
- Referral to relevant academic or administrative points of contact, such as Course Coordinator, Program Convenor, or Program Officer
- Extra tutorial support

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.

Advantages of Project

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.

Methods for evaluating the project:

An annual review of the project will be undertaken, involving end of semester surveys as well as informal feedback elicited from, all participants. Key data to be reviewed include:

1. the number of students asked to Show Cause as a part of Review of Progress;

2. progression rates for first year students;

3. progression rates in first year courses;

4. retention rate of first year students in programs;

5. the number of students utilizing resources;

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.

The development of an appropriate dissemination strategy for this project will include multiple levels, including Faculty, University and wider forums, including national and international. From the Faculty the results of the project will be reported at the School level as well as at Faculty Board.

The University will be holding future Forums, through the Centre for Teaching and Learning. The Faculty will commit to the presentation of the strategy and its outcomes through this forum.

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. We believe that eliminating this attrition will be a complex and difficult task that will involve a multiplicity of strategies. It is our belief that this initiative represents the start of this process.

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