Student at risk perceptions of academic weakness

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Introduction

Identifying one's own strengths and weaknesses is an integral part of self-improvement and maturity. For students struggling academically, being able to identify correctly the areas that need improvement is instrumental in achieving a reversal of weak performance.

All universities have some type of academic probation and progression process for students at risk, which usually involves some method of self-reflection by the student, and consequent voluntary support or mandatory intervention from the institution.

This paper aims to assess whether the areas that the students identify as their academic weaknesses correlate with their actual performance in assessment tasks which included the same academic skill.

It is acknowledged that students' self-reporting of academic weaknesses may not be accurate either genuinely (by not actually recognising their own weakness) or untruthfully (by not admitting to their own weaknesses, sometimes out of fear or shame); or neglectfully (by not undertaking a valid self-assessment). Regardless of the reason, the students are less likely to improve if there is no strategy to to deal with weaknesses, which must be firstly properly identified. This study aims to investigate any link between specific academic results, and the students' own reflections. It is expected that this study will lead to improved mechanisms and resources for students to more successfully engage in self-reflections, and also to provide analytic predictors for subsequent student performance which may lead to better intervention strategies.

Selected previous studies

There have been many studies on student retention. Within the scope of a short conference paper, the literature review can only be brief.

Tinto (1982, 1987, 2007, 2012) is reasonably unique as having published in this area for over 30 years (based in USA). The new strategies of many Australian universities to focus on "transition" are reflected in his observations from 1982: ".. students who discover that their expectations about the academic and social life of the institution were quite unrealistic…" He has strongly advocated that improved teaching skills are a key part of any solution, writing in 2012 ".. by employing pedagogies of engagement, such as cooperative and problem-based learning, that require students to work together in some form of collaborative groups and become active, indeed responsible, for the learning of the group and classroom peers. In this way, students share not only the experience of the curriculum, but also of learning within the curriculum …..[to] promote cognitive and social development as well as an appreciation for the many ways in which one's own knowing is enhanced when other voices are part of that learning experience."

Within the local Australian context, Lovat (2017) provides many case studies from interviews with students who dropped out (or were thinking of dropping out), and included positive scenarios when interviewees had successfully identified issues via self-reflection and overcome/managed those issues.

It is well-reported that there has been a huge increase in international students in Australian universities over the past 25 years, with the significant majority from non-English speaking

backgrounds (Department of Education 2018). In addition, the educational philosophy experienced by many of these international students in their local high school education, more than likely encouraged and rewarded rote learning techniques, rather than critical evaluation, and hence moving to the Australian tertiary system has also involved a significant cultural shift in educational philosophy. Nagi (2015) interviewed many international students on the cusp of dropping out, reporting that they had cited English communications skills as one key factor behind their decision.

Jayaprakash *et. al.* (2014) provide an excellent summary of the various techniques used in identifying students at risk, as part of assessing an open-source learning analytics package to predict students at risk.

Methodology

Policy for students at risk

At the University of Sydney, a student will trigger an "at risk" warning if their semester average is less than 50; they do not pass more than 50% of their credit points; or they fail a repeat unit of study; and they are required to meet with an academic advisor if this occurs. If the student has registered at risk for three semesters in a row, they are further required to "show good cause" that they should be allowed to continue in their studies. In the student's response they are expected to prepare a submission that includes a self-reflection identifying the issues impacting their performance (illness or misadventure) and proposing a remediation plan. Students are expected to provide evidence (eg a medical certificate or record of attendance at a remedial class). There is no formal template provided for the student submission, but the local independent student guild (The Students Representative Council, SRC) does provide thorough advice, assistance and templates to students who approach them.

Students are allowed to continue in their studies if they can substantiate that they have reasonable prospects of future academic success. The decision-maker may show discretion if warranted.

Sample demographics

The sample represented undergraduate students in the single stream (discipline) of civil engineering at The University of Sydney. The domestic entry requirement for this degree is an ATAR of 92 (or more for some combined degrees), though adjustment factors are made for certain educational disadvantaged scenarios. Students whose first language is not english are required to satisfy an IELTS equivalent of 6.5 (overall band) with at least 6 in each band.

Information has been de-identified, and some of the demographics of the sample is not being reported in this paper to ensure identities within small groups is further protected.

Thirty (30) students (out of a total undergraduate cohort of approximately 1250) were asked to show good cause why they should not be excluded, of which 22 responded. Of the 22 respondees,15 were showing cause for the first time. For the 8 non-respondees, they had either voluntarily withdrawn from their degrees (possibly to move to another degree), or had completely disengaged from contact with the University. Five (5) of the non respondees were being asked to show cause for at least the second time.

Results

Simple text based analysis of the responses

Two simple methods of text analysis were performed on the responses.

A text search function counted the number of separate submissions that contained key words that related to broad fields of health, personal issues, skills, and general. These are presented in Table 1.

Figure 1 is a word cloud generated from all the submissions. A number of both common (*eg* "the") or very generic words (*eg* "engineering") were removed prior to the text analysis.

Table 1: Percentage of submissions containing key words

Health		**Personal**	
anxiety	59%	family	45%
health	41%	relationship	18%
mental	41%	job	14%
depression	36%	money	14%
sick	9%	finance	9%
Skills		**General**	
skills	23%	improve	59%
motivation	18%	chance	36%
english	5%	adjust	27%
maths	5%	reflect	18%
communication	0%		
computing	0%		

Figure 1: Word cloud generated from a combined file of all responses

A significant proportion of students self-identified mental health issues of depression and anxiety (with a much smaller number referring to a physical illness or injury). Some respondees gave some detail of the possible underlying factors that may have caused these conditions such as social isolation in a new country, death of a family member, or perfectionism. It is not the purpose of this paper to analyse to such detail. However there is no reason to suspect that the underlying causal factors are dissimilar to those identified in major studies of university student mental health (Orygen 2017). Some (but only some) of the international students identified language and communications skills.

Analysis of student academic performance

The students' academic performance was analysed and is summarised in Table 2. Judgements were made on their performance in the following broad generic areas using the following criteria:

- Mathematics
    - Satisfactory: Passed 4/4 first year maths units
    - Below average: Passed 3/4 first year maths units
    - Weak: Passed 2/4 (or less) first year maths units
- Computing
    - Satisfactory: Score of >55% in first year core programming unit
    - Below average: Score of 45%-55% in first year core programming unit
    - Weak: Score of <45% in first year core programming unit
- English
    - Satisfactory: Passed 2/2 core first year units in first year that rely significantly on reasonably high levels of communication performance and interpretation
    - Below average: Passed 1/2 of those units
    - Weak: Passed 0/2 of those units
- Attendance (based on records of attendance in tutorial and random lectures in 2nd year core technical unit of study – not all students have attempted this unit – average attendance in this course is approximately 45%)
    - Satisfactory: 45% or more
    - Below average: 25%-45%
    - Weak: 0% – 25%

The classifications of satisfactory, below average, and weak were arbitrarily determined based on the following judgements:

- Satisfactory: Student has demonstrated suitable performance and skills in this area that would be reasonable indicators of success in subsequent subjects that required these skills.
- Below average: Student has not demonstrated suitable performance, but with appropriate self-realisation, guidance, and support would likely succeed when repeating these subjects and progressing to further years.
- Weak: Student appears to be very weak and deficient or disengaged in this skill area, and a radical improvement/change to more fundamental background knowledge or circumstances is probably required for the student to succeed when repeating this unit. It is unlikely the student could complete the degree unless there is substantial change in performance, and it is possible that remedial improvement, outside the university environment, may be required if the student wishes to stay on this career path.

Table 2: Academic analysis of student performance

Skill area	Satisfactory	Below Ave	Weak	N/A
Mathematics	68%	26%	6%	
Computing	32%	42%	26%	
English	47%	10%	42%	
Attendance	26%	42%	16%	16%

Observations

Most student responses focused on (trying to) demonstrate that their performance can be attributed to “illness or misadventure” though very few actually provided independent evidence (eg medical certificates) that might substantiate those claims, nor provided much insight into level of impact these issues on their ability to study.

Even taking into account whatever factors were impacting them, most students in the study demonstrated reasonable performance in mathematics, while a considerable number demonstrated low performance in units of study that required higher level English skills. It is therefore reasonable to assume that many of the students in the group, despite any illness or misadventure, are weak in communication skills. A key part of any student progression process involves identification and remediation of such issues. Despite this, very few students in their responses referred to any underlying academic weaknesses.

One must consider the student perceptions and feelings about this process. Those who respond naturally wish to continue with their degree, and their understandable mindset is to demonstrate a combination of a positive outlook of their success; to have an unwillingness to admit to shortcomings; and be seeking to (over?) emphasise the impact of illness or misadventure as the reason for their low performance. Often cultural reasons may be behind any unwillingness to admit to any perceived weakness, or a lack of self-reflective skills may contribute to inability to identify issues.

The current authors of this paper, as decision-makers in these cases, are often looking for the exact opposite when considering cases. We genuinely want to give motivated students, who have been through difficult circumstances, and who are open to support mechanisms to help them through and manage or resolve those circumstances, every opportunity to continue with their degree.

Prompting self-reflection

Our results suggest that few students have submitted a complete and accurate self-evaluation of their performance (though it cannot be concluded that students have not performed any self-reflection). Regardless of whether they have evaluated themselves or not, it is challenging to provide support when the student provides a less-than-complete analysis of their issues. Hence, we must be focussing on processes that promote self-evaluation in a confidential and supporting manner.

At the University of Sydney, we have recently introduced an online system which is designed to lead students through a set of 25 short simple questions with simple yes/no/maybe responses. The online system will then create a customised support recommendation document for the student, using pre-written answer text for any questions to which the student has indicated as an issue.

The questions were university wide, rather than engineering specific, and had been formulated by considering common issues and difficulties reported by students in the past. The questions are grouped into 3 broad areas:

- Study Experience and Skills
    - Sample question – “I found the assessments really hard (for example writing assignments, doing presentations or sitting exams).”
    - Response: “Getting into the rhythm of being a university student can be hard and you might encounter issues with assessments or understanding unit content. Always read the Unit of Study Outline … for details about readings and assessments, and contacts for your teaching staff including consultation hours. Speak to them, your academic adviser and any learning support staff in your faculty – they want to help you to succeed.
- Living and Social
    - Sample question – “I found it hard to get to university (for example needing to travel for a long time or difficulties using public transport).”
    - Response: “Try and make a “study buddy”, a friend who is in the same classes as you and can share lecture or tutorial notes if one of you miss a class. A study buddy can also be someone you study with close to exam time.”
- Work and Finances
    - Sample question – “I am an international student and am unsure of how to find a job in Australia (this could include being confused about study visa work requirements or working rights).”
    - Response – “You might benefit from some help with budgeting to stay on top of your finances, The University has teamed up with [link to external provider], a learning platform for people who want to get in control of their money.”

This online process is still yet to be evaluated, but it is hoped in the near future that we will be able to report on its effectiveness.

Summary

This paper has (anonymously) analysed the submissions of a small group of engineering students at risk of being excluded from their degrees. The students were required to provide evidence and explanation for their poor academic progess, and provide possible remediation pathways back to success. We analysed the academic performance of the same group of students. While the majority had shown satisfactory mathematical performance, a significant proportion performed poorly in units of study that relied heavily on interpretative communication skills. A majority appeared to demonstrate low engagement as evidenced by attendance. There was a notable misalignment between the presence of self-reflection of academic weaknesses, and our judgement of the students’ performance. Regardless of the reasons behind the students’ non-inclusion of self-reflection, previous studies emphasise its importance as a pathway to success. We have introduced an online system designed to promote improved self-reflection and support, and hope to be able to report on its effectiveness in the near future.

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