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Using 'core academic literacy' course results to create a profile for potentially 'at risk' students

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This paper suggests students who are 'at risk' might also be identified through the analysis of performance within a core academic literary unit, taken within the first semester of their course. By identifying students with a low pass score in a core academic literacy unit, and analysing these students by a range of factors, a course and/or faculty specific 'at risk' profile may be created. In an analysis of students undertaking a Health Science core academic literacy unit in Semester 1, 2010, and tracking those students over their first year of studies, three factors, when in combination, emerged to create an 'at risk' profile. Those factors were being male, using a Certificate IV to meet minimum entry requirements and being students within the Health and Physical Education program. Adequately supported, there is nothing to suggest that such students could not be successful in their studies. However, the major identified issue is that these students are reluctant to engage in support programs, and the reasons for this lack of support engagement are explored, and it is contended that the potential reasons are for the most part, not academic, but related to psychological dispositions and personal characteristics.

Introduction

There are many ways of identifying students 'at risk'. Increasing use is being made of post-entrance literacy testing (both screening and diagnostic) by higher education bodies (Murray, 2011). The use of a diagnostic assessment task, to identify students needing additional support, and providing a program for those students, allows staff to focus on vulnerable students (Huxham, 2006). The identification of equity groups and subgroups (Willems, 2010) such as non-English speaking background, low socio-economic status, rural and isolated students, can also provide opportunities for proactive support being in place. Student performance over the first year can be reviewed by tracking students from equity groups. Another way to identify students who will be potentially at risk is by profiling – where the commonly known factors for poor performance are clustered. For example, factors such as: lower entry standard qualifications, younger students on entry, working long hours outside of study commitments, travelling a considerable distance to and from university – create a potential 'risk profile' (Huxham, 2006).

This paper suggests students who are 'at risk' might also be identified through the analysis of performance within a core academic literacy unit, taken within the first semester of their course. This study looked at the lowest performing students within such a unit, and tracked their progress across their first year of study. A pilot study had been undertaken, which reviewed the results of the lowest performing students in CO115 *Academic Research and Writing in Health Sciences* in Semester One, 2009. The pilot identified that the lowest performing students

experienced difficulty in their first year of studies (McNaught & McIntyre, 2011). In Health Science courses at the University of Notre Dame (Fremantle campus) with a usual attrition rate of less than 10%, the attrition rate of the lowest performers in CO115, was close to 50%. Having this information, a more systematic and detailed analysis was undertaken in this study, of the students who completed the same unit, CO115, in Semester one, 2010.

It was hypothesised that the 'bottom' performers from CO115 needed support to be retained and to experience success within their course of study. The 'top' performers within the same units provided comparative data to test assumptions and draw comparisons. It was contended that the 'bottom' students may exhibit certain characteristics which, once known, could be used as early alert warnings, to provide better support for those student groups. It was hypothesised that these 'low performing' students commonly experience difficulty 'in general', rather than just specific to the content of a particular unit.

Analysis of performance in CO115, Academic Research and Writing in Health Sciences

CO115 is a core academic literacy unit completed by all students, in their first semester, undertaking a Health Science degree at the University of Notre Dame, Australia, Fremantle campus. Table 1 lists the specific courses, and percentage of cohort enrolment, making up the total enrolment, in Semester one, 2010.

Table 1: Percentage of students, by course, CO115, Semester 1, 2010

Course	Percentage of students in CO115, Sem 1, 2010
Bachelor of Biomedical Science	20.7%
Bachelor of Health and Physical Education	29.2%
Bachelor of Exercise and Sport Science	39%
Bachelor of Preventive Health	3%
Bachelor of Outdoor Recreation	8%

The gender distribution for the Semester 1, 2010 cohort of CO115, who completed all aspects of the audit and are considered in this research, was 46% (n= 76) male and 53% (n= 88) female. The final mark for the unit was derived from 4 separate assessment items:

- A multiple choice test on 'referencing skills' (10%),
- A writing task based on paraphrasing academic text (15%)
- The completion of a short literature review (25%)
- A multi-part exam (reading, paraphrasing, essay writing, data analysis) (50%).

The grade distribution for students in CO115 is displayed in Table 2. The overall mean score for the unit was 59 (SD = 12). It should be noted that among the 13 students who failed, 7 of those students did not complete the unit and may have only submitted one assessment item (See Table 2).

Table 2: Grade distribution for students in CO115, Semester 1, 2010

Grade	High Distinction	Distinction	Credit	Pass	Fail
# of students	2	23	94	48	13
%	1	13	52	27	7

Students in CO115 represent a range of entry pathways to university study (Table 3), and possible linkages between entry pathways needed to be considered.

Table 3: Entry pathway of students within CO115, Semester 1, 2010

Entry Pathway	Percentage of students in CO115, Sem 1, 2010
ATAR	53%
Certificate IV	22%
STAT	4%
Bridging/enabling course	8%
Other (university transfer, etc)	10%

From a cohort of 164 students undertaking CO115 in Semester 1, 2010, the 'top 20' students (12%) and 'bottom 20' students (12%) were selected on the basis of their mark for the unit. Elaborating on the data within Table 1, Table 4 sets out the comparison of students by course, within the whole cohort and within the top and bottom achievers.

Table 4: CO115 students, Semester 1, 2010, distribution in 'top 20' and 'bottom 20' by course

Course	Percentage of students in CO115, Sem 1, 2010	Percentage of students in the 'top 20'	Percentage of students in the 'bottom 20'
Bachelor of Biomedical Science	20.7%	45%	10%
Bachelor of Health and Physical Education	29.2%	40%	50%
Bachelor of Exercise and Sport Science	39%	5%	30%
Bachelor of Preventive Health	3%	5%	0%
Bachelor of Outdoor Recreation	8%	5%	10%

Again, elaborating on the data in Table 2, Table 5 compares the students in the top and bottom 20 by entry pathway.

Table 5: CO115 students, Semester 1, 2010, distribution in 'top 20' and 'bottom 20' by entry pathway

Entry Pathway	Percentage of students in CO115, Sem 1, 2010	Percentage of students in the 'top 20'	Percentage of students in the 'bottom 20'
ATAR	53%	95%	55%
Certificate IV	22%	0%	40%
STAT	4%	0%	0%
Bridging/enabling course	8%	0%	0%
Other (university transfer, etc)	10%	5%	5%

This information necessitated breaking down courses into greater detail (Table 6), in order to look for trends, patterns and linkages when analysing the highest and lowest performing students.

Table 6: CO115 by courses, entry point and gender

Course	Raw number	ATAR*	Certificate IV	STAT#	Bridging/ enabling course	Other	M	F
Bachelor of Biomedical Science	34 (20.7%)	F14 M 13 (79%)	F 0 M 0 (0%)	F 0 M 1 (3%)	F 3 M 0 (9%)	F 1 M 2 (9%)	16 (47%)	18 (53%)
Bachelor of Health and Physical Education	48 (29.2%)	F 12 M 10 (49%)	F 11 M 9 (42%)	F 0 M 0 (0%)	F 2 M 0 (4%)	F 2 M 2 (8%)	21 (44%)	27 (56%)
Bachelor of Exercise and Sport Science	64 (39%)	F 21 M 12 (52%)	F 7 M 10 (26%)	F 1 M 1 (3%)	F 0 M 7 (11%)	F 2 M 3 (8%)	33 (51%)	31 (48%)
Bachelor of Preventive Health	5 (3%)	F 2 M 0 (40%)	F 0 M 0 (0%)	F 1 M 0 (20%)	F 1 M 0 (20%)	F 1 M 0 (20%)	0 (0%)	5 (100%)
Bachelor of Outdoor Recreation	13 (8%)	F 3 M 1 (31%)	F 1 M 1 (15%)	F 2 M 1 (23%)	F 0 M 0 (0%)	F 1 M 3 (31%)	6 (46%)	7 (54%)
TOTALS	164	88 (53%) F 52 M 36	39 (22%) F 19 M20	7 (4%) F 4 M 3	13 (8%) F 6 M 7	17 (10%) F 7 M 10	76 (46%)	88 (53%)

**ATAR – Australian Tertiary Admission Ranking*
#STAT - Special Tertiary Admissions Test

That gender is an issue with the lowest achievers was immediately apparent, is as captured in Table 7.

Table 7: CO115 students, Semester 1, 2010, distribution in 'top 20' and 'bottom 20' by gender

Gender	Percentage of students in CO115, Sem 1, 2010	Percentage of students in the 'top 20'	Percentage of students in the 'bottom 20'
Male	46%	50%	90%
Female	53%	50%	10%

Analysis of essay writing confidence was conducted to examine if confidence levels differed in this cohort based on gender, current course, or entry to university. Students responded on a Likert Scale with three levels of agreement on how confident they were in writing an essay at University (1 = Not confident at all, 2 = I think I could, 3 = confident). SPSS version 17.0 was used for statistical analysis.

An independent t-test was conducted to examine if there were differences in essay writing confidence between males and females in this CO115 group. There was no significant difference in essay writing confidence for males (M=1.84, SD= .69) and females (M=1.72, SD=.61, $t(159)$=-1.23, p = .08) (Refer to Table 8).

Analysis of Variance tests were used to examine differences in essay writing in enrolment in current course and also entry to university. A one way ANOVA found no significant difference in essay writing confidence for the five different courses (Health and Physical Education, Exercise and Sport Science, Preventive Health, Outdoor Recreation and Biomedical Science) (p = .12).

However, there was a significant difference in essay writing confidence according to entry into university [$F(4, 154)$= 6.3, p <. 01]. Post hoc comparisons (using Tukey HSD) indicated the mean score of essay writing confidence for students who had entered through Cert III or IV (M =1.47, SD = .54) was significantly different from students who had entered through TEP (the *Tertiary Enabling Program*, the University's bridging course) (M = 2.33, SD = .14) and STAT (M=2.29, SD=.49) (Refer to Table 5). Effect size for these significant differences was also calculated using Eta squared (η^2) and found η^2 = .14, revealing that 14% of the variance in essay writing confidence is accounted for by an individual's entry into university. Finally, a two way between groups ANOVA was conducted to examine the interaction effect of gender and entry to university on essay writing confidence. Results indicated no significant interaction for the effect of entry to university on essay writing confidence for males and females (p = .36).

Table 8: Means scores for essay writing confidence for gender, current course and university entry

	# of sample (*n*)	Essay Writing Confidence
Males	76	1.84
Females	89	1.72
Health and Physical Education	48	1.71
Exercise and Sport Science	64	1.89
Preventive Health	5	1.54
Biomedical Science	35	1.85
Outdoor Recreation	13	1.46
ATAR	88	1.76
TEP	13	2.33*
Cert III or IV	39	1.47*
STAT	7	2.29*
Other	17	1.94

* $p \leq .05$

Discussion

A potential 'risk profile' (Huxham, 2006) can be constructed for students within CO115, Semester 1, 2010. The students at the greatest risk were males, using a Certificate IV entry pathway, in the Bachelor of Health and Physical Education (BHPE) course. There is potential merit in analysing the factors for the risk profile ('male, Cert IV, BHPE') of those students with the same profile, who have been more successful in their course over the first year. In this particular analysis, there was one male, BHPE student, from a Certificate IV background making solid course progress. In discussing his good results with the teaching staff in the School, all commented on his 'great attitude' and 'work ethic', factors which are difficult to quantify, yet of great importance. For the remaining students in this at risk group, personal characteristics and dispositions may possibly explain the difference in attitudes which are anecdotally noted by staff. Impulsivity is commonly noted, with students in this at risk group frequently engaging in modified games, adapting resources (such as a bin) to play games characterised by loosely constructed rules. Twenge and Campbell (2009) describe impulsivity "favoring short-term pleasures at the expense of long-term gains" (p. 135). Whilst many students would use the break between classes to prepare work, attend a class, or work in the library, these behaviours are all less commonly observed for the 'risk profile' group.

The gender bias towards males as lower achievers deserves investigation to ascertain if this is connected to factors such as age and maturity. Many students enter university directly from secondary school (as 53% of this CO115 cohort did) and may be, due to age and maturity, in an adolescent phase where the desire for autonomy is a strong psychological force, potentially likely to counteract a students' eagerness to accept academic support. Again, due to recognised differences in rates of maturity, this is likely to have a greater impact on males, than females (Bursik & Martin, 2006). It might be useful to have staff qualitative data which then allows discussion around impressions of male students within the Health and Physical Education and Exercise Science courses, and student data which targets their own self beliefs and self perceptions. Further investigation is necessary to ascertain if less skilled male students perhaps enrol into Health and Physical Education and Exercise Science with a misconception that these

courses are based solely on practical aspects of sport and physical activity, and are unaware and unprepared for the academic rigour within these courses.

Wimshurst and Allard (2008) have also noted that males are over-represented in failing students in the first year. The established gender divide around literacy competence shows that males within formal schooling are more likely to experience difficulty with reading and writing tasks (Jackson, 2008), central to a unit like CO115, but moreover, essential to virtually all units within a university program (Dixon, 1993; Fleischauer, 1996). Further research is needed to identify if students within these particular Health Science courses – such as the Bachelor of Health and Physical Education – are more likely to be taken by students for whom active recreational pursuits (e.g. playing sport) are more likely than sedentary pursuits (e.g. recreational reading). It may be the case that recreational reading is less commonly a pursuit enjoyed by such students, and this could impact on their capacity with literacy tasks (Hamston, 2004). Furthermore, it might be that the males within the cohort are less likely to be readers, and also more likely to have experienced literacy difficulties during their formal schooling (Jackson, 2008). Thus, a potential complication for the male students is that reading (essential to literacy) is not pursued as a recreational activity (Hamston, 2004), and not associated with pleasure; rather, these students select non-sedentary recreational activities. Such activities may reinforce psychological barriers to academic success. Further research needs to occur to ascertain the validity of these ideas, and accordingly responded to with specific programs of support, if so demonstrated.

The essay writing confidence self-assessments completed by these 'risk profile' students are of particular interest, with 54% of the lowest achievers ranking themselves in the highest bands. Contention exists that this characteristic might be linked to two of their identified profile factors – being male, and being in Health and Physical Education program. In a society where young males receive significant praise and adulation for sporting success (Drummond, 2002), it may be that their success on the sporting field, and related confidence, is inappropriately generalised to other domains (McCaughtry, 2011), including academic work. The essay writing confidence self-assessments also demonstrated that Certificate III and IV entrants were aware of their skill deficit in this area, confirmed by the testing. Given that most Certificate III and IV courses do not usually make use of extended writing tasks, in learning or assessment tasks, inexperience with essays is predictable.

It remains a constant concern at this University, and others, that those students who most need support are the least likely to seek it (Kennelly, Maldoni, & Davies, 2010; McKauge et al., 2009). Students who chose not to engage with support programs, once identified as needing such, are far more likely to fail in their studies (Huxham, 2006). None of the 'bottom 20' students had taken up any support course (such as free tutoring and optional courses, such as essay writing, critical reading and time management) during their first year. A commonly hypothesised view is that students fail to seek assistance as they are unaware of their needs (Kyprianou, 2004); in contrast, the Certificate III and IV students had correctly identified their lack of skill (in the self assessments) but still not engaged in any available support mechanism. The 'risk profile' ('male, Cert IV, BHPE') group within the 'bottom 20' had been counselled on a one-to-one basis by their course coordinator, who had strongly encouraged them to take up the free and available programs of support. In all cases, they made a verbal commitment to the course coordinator of their intention to access these programs, but none actually did.

This study suggested, for this University, that support mechanisms needed to be made compulsory. The use of 'highly encouraged' support programs proved problematic with

low attendance, which has led to plans to link attendance at required courses within the unit requirements of CO115, and, potentially, other first year units. On a superficial level, it defies logic that a student would not engage in high quality, free, support programs, when the need for such was demonstrated and addressed. Whilst universities might focus on adult learning (Kozeracki, 2002) principles (andragogy), if the students do not function as adult learners (e.g. self motivated to seek assistance), the mismatch is decidedly unhelpful to all involved. Assuming that students will display self efficacy (Bandura, 1997), perseverance and proactivity (Kyprianou, 2004), may fail to address the real needs for such students. It would seem unlikely that these students choose inappropriate dispositions deliberately or consciously, but are likely to be connected to factors such as life experience and maturity levels (Reynolds & Weigand, 2010). It may be argued that it is an ethically responsible approach for a university to require student involvement in academic support, if that is in the best interest of the learner, albeit that ultimately the person has the right to choose their level of engagement, and to accept the natural consequences of their personal decision making. There is potential benefit in future research with CO115, identifying reasons students choose not to take up support.

Students using a Certificate IV as an entry pathway represent less than 25% of this total cohort, but 40% of the bottom students, and 0% of the top students. Retention and attrition remain central issues, not only of national, but international interest:

> High attrition rates embody one of the most studied, most persistent, and most intractable problems facing postsecondary education. Despite well-intentioned institutional efforts to address this complex issue, North American postsecondary attrition rates have persisted at approximately 30%–40% over the past thirty years, with a wide range of attrition-related human and financial costs continuing to negatively affect students, institutions, and taxpayers. (Fisher & Engemann, 2009, p.2)

As Australia moves towards a diverse university cohort (Lawrence, 2005) , with national attainment goals of better representation of various equity groups, there is little merit in engaging equity groups, unless they can be successful (Candy et al., 1994). Given that equity groups are more likely to use 'non-traditional' entry pathways, this is particularly relevant (David, 2007). Most Certificate IV courses are not primarily designed to be a University entrance program. Rather, they are designed to be a program of specific vocational preparation for a student to move into employment and/or further training. However, the benefit of these courses is that they often build valuable prior knowledge that enables a student to move towards university studies. For example, a student wishing to study Exercise and Sport Science may find a Certificate IV in Personal Training, to be valuable. Many Certificate IV courses lack the use of extended reading and writing tasks as part of the teaching, learning and assessment utilised; this is where the background becomes problematic for these students if they wish to move to undergraduate study. For students who may have come to a Certificate IV course through a 'lower level' English course, and perhaps less success in such a subject in junior secondary years, this appears to be an issue for their transition to further studies (Chapman, Rodrigues, & Ryan, 2008). In response to the analysis of Certificate IV entrants over 2008, 2009 and 2010, The University of Notre Dame Australia, Fremantle campus, implemented (from Semester One, 2011) a conditional course entry requirement for Certificate IV pathway entrants, to support their progress. Students complete a week-long orientation program prior to course commencement, focused on essay writing and critical reading skills (Fike & Fike, 2008), to enhance their skills, prior to completing their 13 week first-semester discipline-specific literacy unit. The University will track the first intake of students to have completed this program to ascertain if it assists

in their undergraduate success. As this course is compulsory, by virtue of being conditional to entry, the profiled risk group are required to attend.

In courses with a usual attrition rate of less than 10% at this University, it was startling to note that of the 'bottom 20', 45% are either terminated, withdrawn or on 'leave of absence'. This represents a significant economic loss to a private institution, and more importantly, concerns about the impact of failure on these students. The *Objects* (more usually referred to an organisational mission or vision statement) of the University focus on excellence in teaching and learning, and the pastoral care of students, and are of great importance at the University. Attrition, at this University (and many others), necessitates critical review to ascertain whether a student may leave discouraged, despondent or reluctant to return to study in the future (Peelo, 2002); outcomes which are unacceptable in reference to the mission of the organisation.

Conclusion

Whilst some students will be satisfied with a pass grade, and not aspire to higher grades, a low pass grade is an indicator of poor ongoing performance (McNaught & McIntyre, 2011). In this study, the 'bottom 20' performers in a core academic literacy unit were considered for special attention, and represented close to 10% of the total group. The academic progress of these 'bottom 20' students, over their first year of studies, was a serious cause for concern. Using a percentage of students, rather than a 'number' means that this approach can be used across any sized cohort group. Reviewing the ongoing performance of the lowest 10% of performers in a core academic literacy course may be helpful in identifying those students 'at risk' academically, as their course progresses. Further, the characteristics of that particular group may lead to the identification of a 'profile' for these students and may allow for targeted support and intervention to both current and new students in courses of study.

When a mismatch exists between a student's willingness to accept support, and the need for it, a university is ethically obliged to create mechanisms for student engagement, as the lack of support has been demonstrably linked to student attrition. This can create a tension around learning principles, including andragogy and student autonomy. It could be argued that a 'duty of care' exists in much the same manner as exists for student safety, regardless of the student's age or course of study. If engagement is to be required, the implications are for creating positive teaching and learning experiences, to maximise the personal benefit to students. It is possible that students coerced or compelled to attend support programs will do so begrudgingly, and without achieving the full potential benefits, and potentially impact negatively on those students who have willingly attended a course or workshop. Accordingly, academic support staff need to be skilled in managing potentially complex situations. Future research is needed to ascertain why 'at risk' students may choose not to take up support, whether the use of required academic support programs are of benefit, and whether the risk profile created is generalisable to all 'Certificate IV male entrants', and not just those in Health and Physical Education programs.

The interrogation of the low pass students in core academic literacy units may be of value to other institutions, and may lead to the creation of specific risk profiles for particular tertiary courses. The benefit to this process is to find better ways of engaging such students as earlier as possible within a program, so that successful retention becomes a characteristic of such students.

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