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Patterns of Student Enrolment and Attrition in Australian Open Access Online Education: A Preliminary Case Study

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Abstract

Swinburne University of Technology has experienced tremendous growth in open access online learning and as such is typical of the many Australian institutions that have ventured into online tertiary education. While research in online education continues to expand, comparatively little investigates students' enrolment and attrition.

This research examines commencing enrolment and associated student withdrawal data, as well as performance scores from eight units forming a Marketing Major for an open access online undergraduate degree. Since data were collected over a five year period, trends and patterns within a substantial online undergraduate program can be explored.

The paper discusses the challenges of analysing enrolment data. Initial findings suggest that retention strategies should be designed according to the stage students are at in their studies. Furthermore, the research informs the prioritisation and development of more effective enrolment and performance data reporting capabilities, which in turn would benefit student management and retention.

Keywords: attrition; retention; open access; student management; online marketing education

Introduction

Mirroring global trends, the past decade has seen a dramatic growth in open access online education in Australia and the Asia Pacific Region (Greenland, 2011). In this paper student enrolment and attrition data from Swinburne University of Technology (SUT), a pioneer in Australia's online tertiary education sector, are used to illustrate the overall year-on-year exponential growth in online student numbers. In this regard, SUT reflects the national growth in the online education scenario and the experience of many of Australia's online tertiary providers.

While the increasing number of online students corresponds with a growing volume of related research there is a paucity of work that specifically focuses upon online student enrolment and withdrawal rates. This research therefore sets out to redress this imbalance and explores SUT student enrolment and retention rates to see if any observed patterns can be used to inform student management and / or an institutional retention strategy.

Online student enrolment growth has been exponential for SUT (Figure 1) and especially so for the Marketing Major, which is one of SUTs largest online undergraduate degree programs. However, the number of students dropping out and not completing online units of study (or subjects) has also been significant and greater than that experienced in on-campus units. For example, SUT's reported attrition rate for 2011 was 13.72% for its domestic commencing on-campus bachelor students (Australian Government Department of Industry, Higher Education Statistics, 2012a), which is substantially less than the approximate 20% attrition identified for the same period in our preliminary findings for SUT's online students. This is especially evident for the introductory or level-one subjects, which typically experience the highest attrition rates of more than 20%. Even a slight improvement in online student retention will therefore have a significant impact upon program profitability and sustained viability.
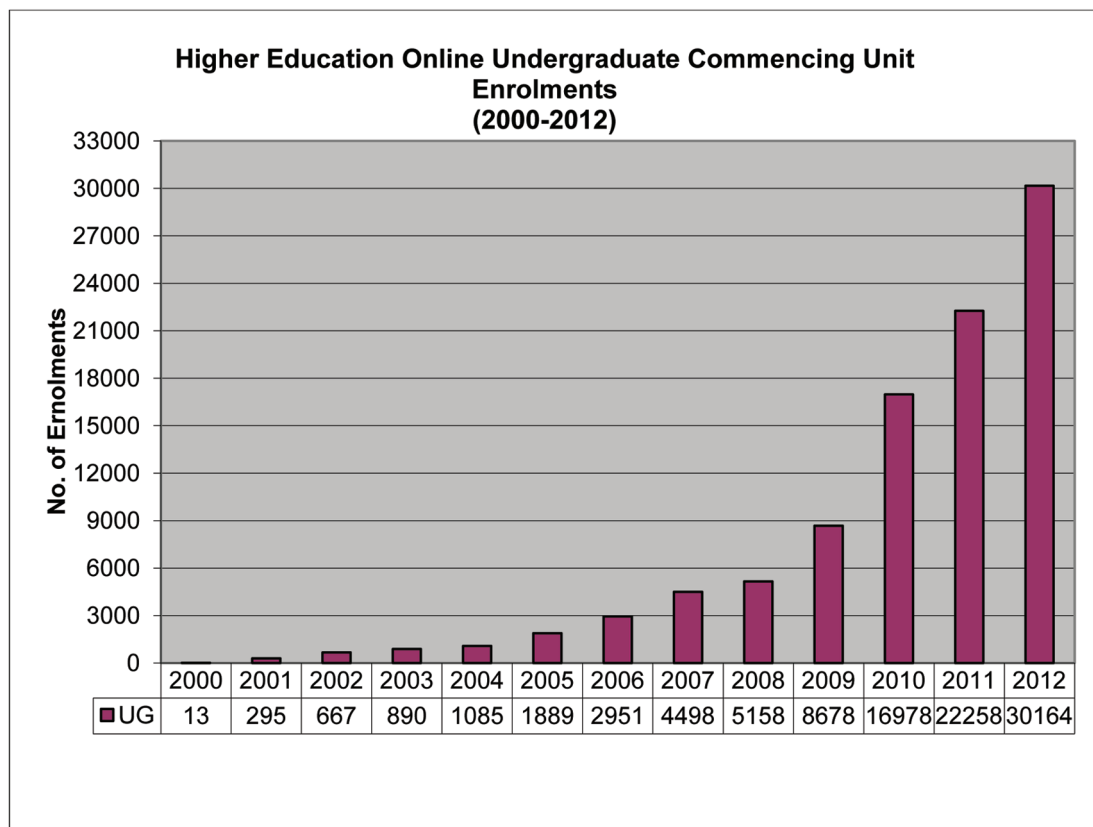
Higher Education Online Undergraduate Commencing Unit Enrolments (2000-2012)

	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
UG	13	295	667	890	1085	1889	2951	4498	5158	8678	16978	22258	30164

Figure 1: Growth of open access online education within Swinburne University of Technology (SUT), Australia

The analysis of enrolment and withdrawal data on the SUT Marketing program presented in this paper forms part of a larger funded study—another component of which is an ongoing investigation of student motives for withdrawal. This aspect of the research involves telephone depth interviews with students who dropped out and did not complete SUT units between 2012 and 2014. Combining knowledge of patterns of unit attrition with an understanding of the drivers of withdrawal facilitates effective student management and retention strategy development. Top-line findings from the ongoing study investigating motives for withdrawal are also discussed in the conclusion.

The Swinburne Context

SUT's portfolio of undergraduate unit of study commencing enrolments (CE) has grown from a tiny 13 CE back in 2000 to over 30,000 CE in 2012 (Figure 1). These numbers traverse some 60 plus units of study. A unit of study is defined as a 13 week course encapsulated into one "study period" (SP). Students may enrol in multiple units of study per study period (up to four units) in each one of four study periods per year (SP1 to SP4). In order for a student to gain candidature for an award of a Bachelor degree, they normally complete 24 units of study, over two to ten years.

Swinburne's growth in open access online education (as outlined above) was achieved in partnership with Open Universities Australia (OUA) "a national leader in online higher education" (OUA, 2013). OUA is a collaborative venture with several Australian leading universities, of which SUT is a shareholder and provider partner. Some 20 Australian higher education / tertiary providers offer online units of study and / or full award programs with OUA.

The dynamic between providers sees many award programs being delivered collaboratively, i.e. anywhere from two to sixteen providers may be contributing to one undergraduate program. In essence OUA can be described as an online educational brokerage and is therefore not the same as the Open University of the United Kingdom for example, which is a university in its own right. In 2005, SUT commenced delivery of undergraduate Marketing units in partnership with OUA as part of a Marketing Major (MM) for the online delivered Bachelor of Business degree.

In 2008 the MM comprised several units of study delivered through a combination of SUT units of study along with several other Australian university providers in the OUA stable. By 2012 the MM comprised nine units, all accredited and delivered by SUT, eight of which were taught by the Marketing teaching team, with one unit taught by the Statistics team. Over the five year period the data were collected, the MM went through several modifications and unit frequency schedules. For example, initially units of study were delivered once per year in any one of the four back-to-back 13 week study periods (in alignment with the OUA standard undergraduate schedule). In 2012, due to the significant increase in commencing enrolments (Figure 2), the level one open access introductory MM unit of study "*Introduction to Marketing*" was delivered across all four study periods. The majority of other MM units of study ran two out of the four study periods, sequenced appropriately to allow for smooth student study progression.

It is important to be familiar with the difference in enrolment requirements for SUT's open access online units of study as compared with its on-campus delivery. For example, students enrolling through "OUA" can and often enrol for individual units of study as they do not have to enrol in a whole program, i.e. degree outcome. Furthermore, provided students enrolling through OUA withdraw by the pre-census withdrawal deadline they may do so without full financial or any academic penalty. Within this scenario, students enrolling via OUA have the flexibility and freedom to be able to dip into and trial units and taste them, unlike their on-campus counterparts. In a recent longitudinal study by Boston, Ice and Burgess (2012, p. 5) one of their main conclusions was that students' enrolments in online study was found to "be more exploratory than in the traditional university." In other words students found the flexibility of online learning an enabler affording them the chance to try out study options before committing to full programs. Boston *et al.*'s (2012) conclusion may also provide some insight for the number of students we observe withdrawing from online units in our context. For example, some students appear to be sampling in the open access level-one units, prior to committing to a course of study. In addition, students studying via OUA with our University, have "open access" to all first year, level one units of study, i.e. no entry requirements or restrictions to trial. Consequently and observationally units of study delivered in partnership with OUA tend to have significantly higher official withdrawal rates compared to on-campus units where students must commit and enrol onto full degree programs.

Moore and Signor (2014, p. 366) related the importance to educational providers of how attrition rates "are often associated with quality learning outcomes" by both the Australian Government, and the sector itself. This can be evidenced in part through two perspectives: 1) the annual reporting requirements of Australian higher education providers to the government on student enrolment, attrition, retention, and progression rates; and 2) through the annual Australian publication of "The Good Universities Guide" (2013), which refers to student attrition as one of its "quality" factors in rating higher education providers. This publication is widely available to prospective students to help determine which educational provider they may wish to study with.

There are several bodies of literature within the online education space that should be highlighted in context within the discussion around attrition and retention. As a preliminary study into patterns of student online enrolments and attrition, this study does not explore engagement techniques specific for online students. However it is noted that many studies with a focus on this aspect have

been published and may shed light on attrition rates, for example "emotional intelligence" as a factor (Berenson, Boyles & Weaver, 2008); "communities of practice" (Wenger, 1998; Stacey, Barty & Smith, 2005); and "social presence" (Leong, 2011).

Despite rapid growth of research into open access online education, compared to traditional classroom teaching (accessed through selected entry i.e. universities' entry requirements) the topic remains largely under explored and there are numerous fruitful avenues for further research. One area with few studies relates to the secondary data sources of enrolment, attrition and performance data.

This research investigates the trends in these data for eight MM undergraduate units of study, delivered by the Marketing teaching team over a five year period (2008 to 2012), as well as discussing the challenges that such an analysis presents.

Contextualising the growth of online education in Australia

Open access online education in a global context has seen real growth in participation and up take by both students and educational institutions alike in response to social and political policy aspirations (Brown & Adler, 2008) and earlier demands for equity and access to quality educational opportunities (Dowd, 2003). Australia is no different in these endeavours; for example, Moore and Signor (2013) reported on the Australian Government's political agendas of both credentialing higher numbers of students within the 25–34 year-old age bracket and the government's "uncapped student demand scenario" (p. 2750). Both of these agendas have had notable impact on Universities within Australia and how they respond to fulfilling these objectives. Universities in the Australian context have limitations regarding their "bricks and mortar" investment in campus development due to funding and the paradoxical geographical placement of its students across vast states and territories. In addition the previous Australian Government (2007–September 2013) undertook to invest in a national infrastructure rollout of broadband technologies across the country to support access for business and education. As a result of these environmental shifts in the higher education sector, observationally there have been "recent and significant shifts in several Australian universities' vision and mission statements to further embrace online education in order to attract working Australians" (Moore & Signor 2013, p. 2750). Swinburne University of Technology has certainly embraced this "paradigm shift" with its 2012 private start-up venture "Swinburne Online" in parallel but distinct from its partnership with OUA.

In addition, helping to situate the Australian experience of rapid growth in online education over the last decade within the global scene is Hart's (2012) literature survey and review. Hart's (2012, p. 19) review presented clearly focused discussion on the proliferation "over the last eight years" of online educational courses within an American setting. Hart found persistency, i.e. leading to retention, on behalf of the student could be measured by many factors. It is becoming clearer therefore, that we are all in flux as the global trend in the shift to online education is gaining momentum and quality student outcomes are expected.

Contributing to this changing education environment we see and can begin to understand some of the rapid growth we have experienced in our online Marketing units' student cohorts. For example, the Australian Government Department of Industry, Higher Education Statistics (2012b) reported OUA's official number of individual students enrolling in online higher education to be well in excess of 58,000 individuals (a reported increase of 7.3% on OUA's 2011 enrolment data). Noteworthy is, that each individual is likely to be enrolling in multiple units of study across the four study periods. Unfortunately this level of granularity in the data is not available and is considered "commercial-in-confidence" at this time.

With the observed growth in the choice of online study by students comes the importance for learning institutions to both scrutinise and question their secondary data resources. We believe that these data resources hold valuable and insightful information for learning institutions to better their administrative and educational operations within the online learning environment for students.

Research objectives and methodology

The research data were extracted from records of SUT unit enrolment and withdrawal statistics, as well as the associated unit results reports. In both instances data were available for each study period. Units examined in this preliminary phase of the research ran from Study Period (SP) 1 2008 to SP2 2012 (i.e. across 18 study periods in total).

While the data examined are fairly simplistic in nature, a number of challenges were encountered in their retrieval. At SUT the annual unit enrolment and withdrawal statistics were recorded in Excel spread sheets. However, the related unit results data were recorded in Word tables compiled for each study period. Furthermore cells in these results tables contained more than one data item. Consequently the unit student performance statistics could not be simply copied and posted into the file containing the unit enrolment and withdrawal data. The incompatibility and formatting issues associated with the two different data sets meant that compiling the different statistics into one data resource required manual data entry and many hours to copy, record and back-check the various and numerous data items. The data file was initially entered into an Excel spread sheet before transferring to SPSS for analysis.

Withdrawal details comprised student numbers withdrawing before the unit census date (pre-census), which allows students to withdraw without financial or academic penalty and usually occurs in week four of a study period, as well as student numbers withdrawing after the census withdrawal deadline (post-census), which allows students to withdraw without academic penalty but losing unit fees and usually occurs in week seven of a study period. Withdrawal or attrition rates were then derived by expressing the number of attriting students as a percentage of the total number of students enrolled onto a unit. Student result or performance details comprised numbers of students attaining particular grades for each unit as well as the overall grade point average (GPA).

Findings

Student enrolment data for the SUT online Marketing Major that runs for Open Universities Australia support the widely reported global increase in online education, for example Hart (2012) and Greenland (2011) and confirm that the tremendous growth rate has also been experienced in the Marketing discipline. Between 2008 and 2012, a period when on-campus SUT Marketing student numbers have remained fairly stable, online unit enrolments experienced a more than five-fold increase (Figure 2). Please note that the 2012 data only relate to two study periods in the first half of the year and traditionally the third study period experiences the highest enrolment for each year due to OUA marketing schedules.

Unit student withdrawal rates were observed at 20.6% for the level one introductory unit and showed consistent decline with advanced unit level: a mean withdrawal rate of 13.3% for level two units and 11.4% for level three units. This finding suggests that students who progress beyond introductory stages are more likely to complete their higher-level studies, a finding consistent with research by Boston *et al*. (2012). By definition, the drop-out of less committed / capable students at early stages implies a more committed / capable student cohort in advanced stages. However further analysis of declining withdrawal rates in latter units of study forms another research
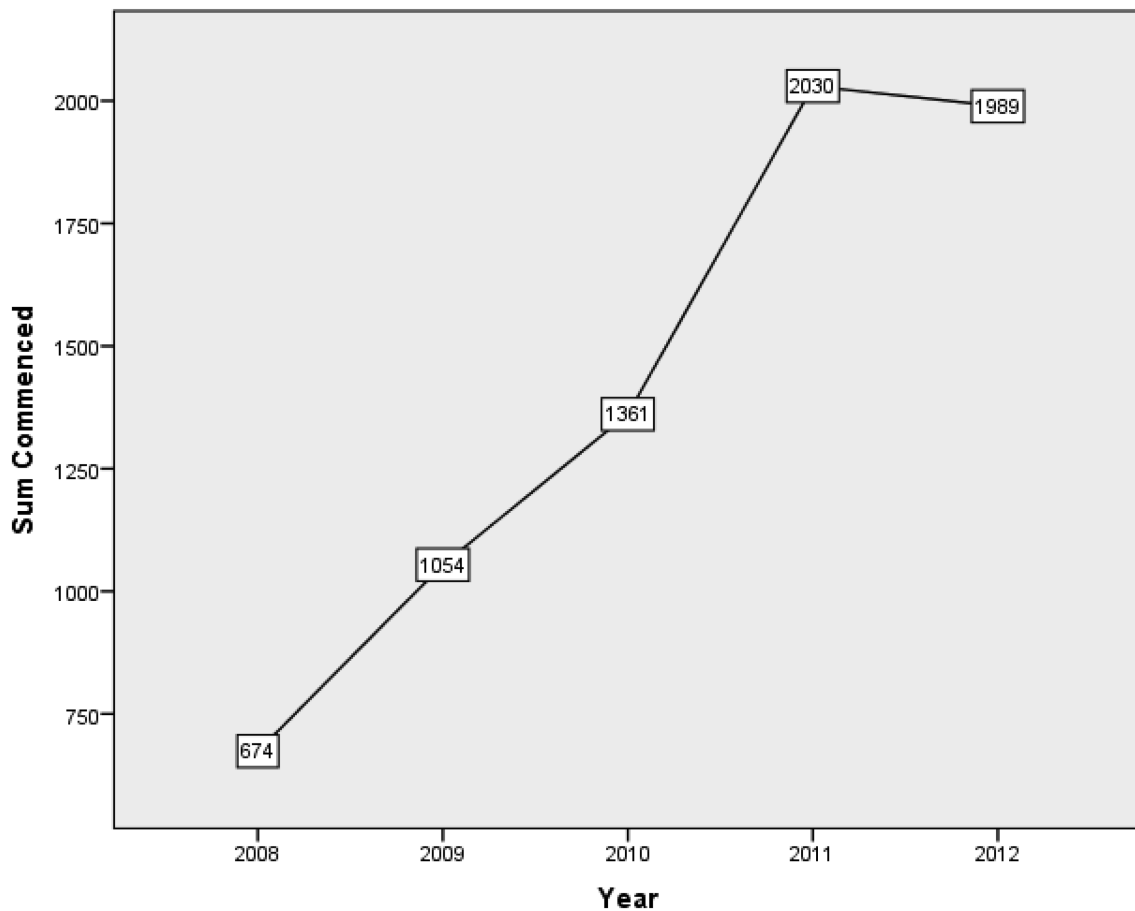
Figure 2: Overall student enrolment (commencing units) in the SUT Marketing Major from SP1 2008 to SP2 2012

Source: SUT 2008–2012 unit enrolment data.

opportunity. For example, level two and three units generally have smaller cohorts and this may also impact upon student success.

As might be anticipated, given the associated financial penalty, pre-census withdrawal rates were much higher than post-census withdrawal rates, which was fairly consistent at an average of approximately 5% across all four study periods. Pre-census withdrawal rates, however, do vary by study period and were notably higher in the second half of the year especially so in SP4 (Table 1). SP4

Table 1: Mean overall withdrawal rate (pre and post-census) for 2008–2012 Marketing units by study period of unit delivery

Study period	SP1	SP2	SP3	SP4
Pre-census mean withdrawal rate	8.2%	8.0%	9.5%	12.3%
Post-census mean overall withdrawal rate	5.5%	5.5%	5.2%	4.1%
Mean overall withdrawal rate	13.7%	13.4%	14.7%	16.4%

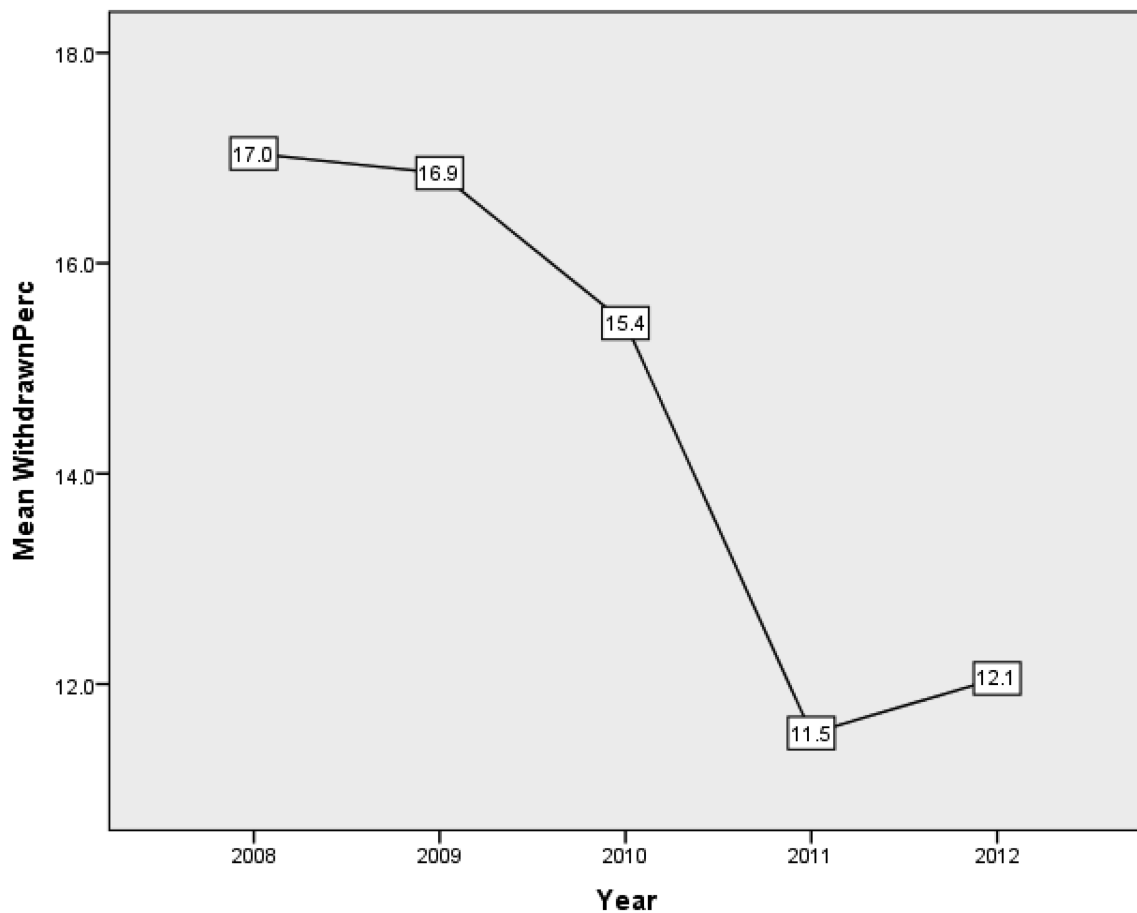*Source:* SUT 2008–2012 unit enrolment and withdrawal data.

Figure 3: Overall mean student withdrawal rate for units in the SUT Marketing Major from SP1 2008 to SP2 2012

Source: SUT 2008–2012 unit enrolment data.

commences at the end of November / start of December each year and it therefore seems likely that other personal commitments during the seasonal festive period take their toll on academic studies (this avenue of study is currently being investigated in another component of this research).

Since 2008 the overall average SUT online Marketing unit withdrawal rate showed constant decline (Figure 3). (NB. The 2012 data is inconclusive since it reflects only two out of four study periods).

The decline in withdrawal over time could be because later level two and three units did not run in 2008—by 2010 level three units were up and running so the initial high attrition rate may be because units were predominantly level one units in 2008! Nevertheless new online set ups should be aware that they may initially experience higher drop-out rates. Also retention does appear to improve as the institution becomes more familiar with and more adept at retaining students. Another plausible interpretation is that students have become increasingly savvy in their online learning capabilities during this period (2008 to 2012) and / or SUT has progressed along a learning curve in terms of its online education abilities, which has facilitated improving retention and attrition amongst its online students.

A negative correlation (-0.329) significant at the 0.05 level (2-tailed) was observed between the pre-census withdrawal rate and grade point average (GPA): A higher pre-census withdrawal rate

correlated with a significantly lower GPA. This result suggests that students are more likely to perform poorly on units with a higher proportion of drop-out at the pre-census stage. This finding in the Marketing discipline's online units also has some affinity with Boston *et al.*'s (2012, p. 5) longitudinal finding that "the ability [for students] to maintain an adequate GPA was, not surprisingly, found to be a meaningful predictor of retention."

Discussion and conclusions

The research confirms the tremendous growth in online undergraduate Marketing students over the past five years. The significant numbers of online Marketing students mean that any small reduction in attrition achieved, especially at the pre-census stage, can have a very positive impact upon student retention and thereby greatly enhance university revenues. Furthermore the apparent correlation between GPA and attrition suggests that reducing attrition rates may also have a positive impact upon student performance and therefore satisfaction. In this regard the Australian publication of "The Good Universities Guide" (2013), is correct in highlighting student attrition as one of its "quality" factors in rating higher education providers.

The exploratory analysis presented in this paper reveals that online student retention and attrition vary according to unit level. Hence retention strategies should be specifically developed and designed according to unit level and the stage that students are at in their studies. For example, open access level one units are likely to have a set of unique strategies compared to level two and level three units. This observation forms the basis for future investigation by the authors.

The findings also have implications for how online units are managed in terms of teaching resource allocation. Given the high anticipated withdrawal rates associated with online units, when allocating unit teaching resources SUT has operated with an arbitrary 10% anticipated drop in student numbers that commence online units—to date this has not varied by unit level. Clearly the anticipated withdrawal rate and associated resource allocation should vary and be adjusted by unit level and perhaps also by study period. For example, setting the anticipated drop-out rate to 20% for the level one introductory Marketing unit, compared to 13% for level two and 11% for level three units. Once the recording and management of withdrawal information systems are improved and implemented the anticipated withdrawal rate could reflect the actual rate experienced in the previous iteration of the specific unit in question.

The study may also inform e-learning teachers, as well as service providers in terms of prioritising the development of more effective enrolment and performance data reporting capabilities. To facilitate future evaluation of unit attrition rates, as well as effective unit management to optimize student retention, student records should capture and present data in a user friendly format. Such a system should capture on a unit basis for each study period not only student enrolments and withdrawals, but also student performance statistics. Monitoring these data should help to identify units with higher or lower attrition and performance rates—in doing so examples of best practice may be identified, as well as those units in need of attention. The historical records can then also provide the benchmark data by which subsequent unit attrition may be monitored and the effectiveness, or otherwise, of implemented retention strategies evaluated. Improving the manner in which both results data and withdrawal data are recorded and compiled will therefore facilitate future analysis and the design of strategies for improving student retention.

These exploratory findings provide benchmark data by which the success or otherwise of future actions that aim to improve student retention can be evaluated. They also highlight the need for further investigation into motives for withdrawal and as to why retention rates vary between units. This will help to develop best practice approaches for improving retention.

As mentioned in the introduction, the data presented in this paper form part of a larger ongoing study. Further research is currently being conducted to try to more fully appreciate factors driving pre and post-census attrition. While this data set is still being captured initial analysis of 50 in-depth telephone interviews with students who withdrew from Marketing online units (irrespective of level of study) in 2013 is proving insightful, especially for the planning and development of retention strategies. Analysis of interview data collected thus far indicates that the top five reasons for online student withdrawals in approximate order of frequency of mention are:

1. Work related factors such as being too busy with general and unexpected work commitments;
2. Personal reasons relating to health, family commitments, bereavement and relationship break up;
3. Learner technology problems relating to computer and hardware issues, as well as internet connectivity;
4. Learner contexts; student ability and competence in the online environment;
5. Poor study and time management skills;

Understanding any evolving patterns of online student attrition in conjunction with appreciating the reasons for dropping out (Angelino, Williams & Natvig, 2007) will provide SUT, and indeed other institutions, with powerful information that can be used to manage and effectively maximise student retention.

Finally, this research is specific to one online Marketing Major, but underlines the potential for, as well as some of the challenges of, using enrolment and withdrawal data to inform teaching practice. Further research involving a wider range of units, might seek to confirm or otherwise the tentative findings and patterns discussed in this exploratory study.

Acknowledgement

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