The responsibility of providing evidence to drive organisational improvement:
A case study from the University of Sydney

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Abstract

The demands on data custodians within the higher education sector have increased significantly over the past few years in order to respond to changes in legislative and internal management reporting requirements. Using the Office of Strategy Implementation & Sustainability Planning (OSISP) at the University of Sydney as a case study, this paper briefly describes the major tasks over the past four years relating to the provision and analysis of student enrolment data. A new analysis, initiated by the data custodians, describes student enrolment behaviour by semester. Most students continue enrolment in the same degree from one semester to the next, however, there is a reduced likelihood of this at year end with students more likely to change degree or not enrol at this time. The technique used allows for student enrolment behaviour details to be available at faculty and degree level so that staff can have an increased understanding of the behaviour patterns of their students and plan accordingly.

Introduction

The higher education sector, both nationally and internationally, has become increasingly interested in data as evidence of performance through the measurement of various indicators (Andrews et al., 1997) and for benchmarking activities (AUQA Review Panel, 2006). These measures alone will only reveal whether or not a particular target has been reached. If unexpected or less than optimal results are found, an understanding of what underpins these results needs to be attained in order to put improvement processes in place. The answers may lie in the considerable amount of data accumulated by Higher Education Providers (HEP) each year. The responsibility to make this data accessible, to initiate analysis and to formulate informative and relevant reports for the wider university community sits with the data custodians.

In Australia, the data collected to respond to legislative requirements, as well as other data recorded for internal administrative and management reporting requirements, forms a most comprehensive source of information available about higher education students within a HEP. Extensive legislative reporting requirements are imposed on HEPs under the Higher Education Support Act 2003. Student data is reported to the Department of Education, Science and Training (DEST) as part of the Higher Education Student Data Collection (HESDC). Primarily, student enrolment data is published by DEST in terms of total numbers by student demographic and course attributes (DEST, 2007). DEST also uses the data collected in the HESDC to calculate a number of outcome performance indicators (Access Economics, 2005).

The data accumulated by higher education institutions offers extensive but unfulfilled scope for institutional research (Yorke, 2004). Yorke argues that such research is critical to the ongoing success of some institutions. In an increasingly competitive environment, it is important for decision makers from all universities to be able to scrutinise pertinent data. Universities, however, should not restrict themselves to producing enrolment numbers and calculating performance measures in the same way as DEST, for there are limitations in doing so. For example, in a review of the methodology used by DEST to calculate higher education outcome performance indicators, Access Economics (2005) suggest that by calculating progress rates (student load passed as a proportion of the load attempted each year) on an annual basis rather than by semester, information may be lost.

Attrition, as calculated by DEST (2004), measures the proportion of students enrolled in the reference year, who neither graduate nor continue studying an award course at the HEP in the following year. The varying
patterns of student enrolment behaviour within a year or within an institution cannot be identified by this measure. In a comparison of students choosing to take a break from study after semester one and after semester two, Peel, Powell and Treacey (2004) found differences in student perspectives on their deferral and withdrawal from study. Where attitudes toward non enrolment differ between semesters, it is likely that differences in enrolment behaviour between semesters may also become apparent through appropriate analysis.

In recognition of the limitations of using performance indicators at institution level, Robinson (2004) proposes that such measures be used in conjunction with a longitudinal analysis of the pathways taken by students during all stages of a degree. Robinson’s technique uses student enrolment and unit of study completions data to categorise the pathway patterns of students each year. Significant changes occurring between semesters, however, may be lost. In contrast, by reducing the span of analysis to compare enrolment behaviour from one semester to the next, changes between semesters are identified in the current study. Such an analysis also enables the enrolment behaviour of large numbers of students to be easily monitored.

Over the past four years, the student enrolment data reported on the internet and published by OSISP has consisted of totals by faculty, attendance pattern (e.g. full-time/part-time), and student demographic details. Comparison between data across the years allows for trends in total numbers to be identified. Performance indicators, such as retention from year one to year two were also calculated. The Student Enrolment Behaviour Report, which tracks student enrolment behaviour from one semester to the next, was devised to complement existing reports, improve the understanding of student behaviour, and provide input for strategic and operational planning.

**Methodology**

The University of Sydney student enrolment details from second half year in 2001 to first half year in 2007 were obtained, as well as completion details reported to DEST relating to reference years 2002 to 2006. Students that remained enrolled past the census date in either of the two main semesters' each year were selected. Non-award course enrolments (including cross-institutional enrolments) and courses not offered solely by the University of Sydney were excluded. An aggregation was performed to ensure that there was only one record per student/degree description/degree level. The final data set contained between 35,000 and 40,000 enrolments for each semester. Each enrolment from Semester 1 2002 to Semester 2 2006 was assigned with a Current and Future Enrolment Status (see Tables 1 and 2).

**Table 1. Assigning the Current Enrolment Status**

<table>
<thead>
<tr>
<th>Commencing</th>
<th>For a student/degree enrolment, the current semester is the first main semester in which they were enrolled.³</th>
</tr>
</thead>
<tbody>
<tr>
<td>Continuing</td>
<td>The student was enrolled in a degree with the same name &amp; level in the previous semester.</td>
</tr>
<tr>
<td>Returning</td>
<td>The student was not enrolled a degree with the same name &amp; level in the previous semester, and is not commencing in the current degree.</td>
</tr>
</tbody>
</table>

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1 ‘Main semesters’ refer to the standard semester occurring each half year with a census date of 31 March or 31 August. Excludes summer/winter schools and intensives.

2 Enrolment data from degrees offered through a joint venture with the University of New South Wales, and from degrees that are now administered by Charles Sturt University were excluded.

3 The commencing definition used here is a departure from traditional definitions of commencing as it applies only to the first main semester, rather than the first year of enrolment.
Table 2. Assigning the Future Enrolment Status

<table>
<thead>
<tr>
<th>Enrolled</th>
<th>The student is enrolled in a degree with the same name &amp; level in the following semester.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Enrolled different degree</td>
<td>In the following semester, the student is enrolled in a degree with a different name and/or level without having completed the original degree.</td>
</tr>
<tr>
<td>Completed, enrolled different degree</td>
<td>The student completed a degree with the same name/level and is enrolled in another degree in the following semester.</td>
</tr>
<tr>
<td>Completed degree enrolled</td>
<td>The student completed a degree with the same name/level and is not enrolled in any degree in the following semester.</td>
</tr>
<tr>
<td>Completed different degree</td>
<td>The student completed a degree with a different name and/or level and is not enrolled in any degree in the following semester.</td>
</tr>
<tr>
<td>Not enrolled</td>
<td>The student is not enrolled in a degree with the same name/level in the following semester and has not completed any degree.</td>
</tr>
</tbody>
</table>

The Student Enrolment Behaviour Report is published on the University of Sydney website for staff to view. The data is presented in enrolment numbers, and details are available by faculty, by degree level (within a faculty) and by degree name (within a faculty). Once at the level of individual degrees, and where there is a Future Enrolment Status that involved enrolment in a different degree or the completion of a different degree, users can drill down further to find out which degree they subsequently enrolled in or completed. The tracking of students beyond their enrolment at the University of Sydney did not form part of this analysis. Thus, the not enrolled status may include students that subsequently enrolled at another university. In addition, this technique is not designed to provide comprehensive data on completions.

Results

The results below outline the general trends in student enrolment behaviour by semester. Percentages were calculated from enrolment numbers for all values of each Enrolment Status by semester and calendar year. These percentages were then averaged. Current Enrolment Status and Future Enrolment Status details by semester can be found in Table 3.

Table 3. Enrolments by Current & Future Enrolment Status and Semester*

| Semester Enrolled | Current Enrolment Status | Total | Future Enrolment Status |
|---|---|---|---|---|
|  | Commencing | Continuing | Returning | Enrolled Next Semester | Not Enrolled Next Semester |
| 1 | 33% | 60% | 7% | 100% | 86% | 2% | 0% | 6% | 1% | 6% |
| 2 | 7% | 89% | 4% | 100% | 64% | 6% | 3% | 15% | 1% | 11% |

* Percentages were calculated for each semester from 2002-2006 and then averaged.

On average, 86% of enrolments in Semester 1 will continue studying in a degree of the same name and level in the following semester. By contrast, only an average of 64% of enrolments in Semester 2 will be classified as continuing in the next semester. After a Semester 2 enrolment, 12% more will complete than after Semester 1 (includes completed degree enrolled and completed, enrolled different degree statuses). This increase in completions accounts for just over half of the decrease in continuing enrolments between the Semester 1 & Semester 2 data sets. The remaining difference relates to an increase in the number of transfers (6% up from 2%) and students not enrolling (11% up from 6%).

Future Enrolment Status as a function of Current Enrolment Status in Semester 1 and Semester 2 can be found in Figures 3 & 4 respectively.
On average, 77% of returning students, 84% of continuing students, and 89% of commencing students enrolled in Semester 1 will be enrolled in the next semester. Out of all Semester 2 enrolments, on average only 50% of returning students, 64% of continuing students and 73% of commencing students will be enrolled in the next semester. Triple the number of transfers (enrolments in different degrees) and double the number of completions and non-enrolments occurred at year end, than during the mid year transition. These increases at year end are evident in all current enrolment statuses, however returning enrolments show the greatest variation in future enrolment behaviour. They are also are more likely than commencing and continuing students to not enrol after both semesters.

**Discussion**

The majority of students enrolled will continue their enrolment in the following semester. The chances of this happening are greater in the mid year transition, than at year end. The number of completions, transfers and non-enrolments were greater at year end for commencing, continuing and returning students. An increase in completions is to be expected as the majority of courses offered, if studied full-time, will result in
completion at the end of the year. Transfers within the university will not affect attrition rates as calculated by DEST, but may affect performance indicators calculated internally, especially if transfers are to a different faculty. Where particular changes in course have been suspected or assumed in the past, access to this data will now enable faculties to easily monitor which degrees students are changing to and from. This may confirm existing suspicions, or draw attention to unanticipated changes. Non-enrolment is of even greater concern to universities because, if an absence is prolonged or indefinite, attrition and completion rates will be adversely affected.

McMillan (2005) asserts that student attrition and course transfer can be positive for they may subsequently enrol in their preferred degree, or may have already attained enough skills to obtain suitable employment. Similarly, Peel, Powell & Treacey (2004) put forward that exit from university studies does not necessarily reflect the performance of the university. They make a distinction between ‘necessary exits’ (due to external factors or inappropriate course choice) and ‘unnecessary exits’ (due to university experience). Comprehensive and quantifiable data on exit reasons may prove difficult to obtain. However, the data available through the use of this technique may identify significant non-enrolment behaviours in particular degrees. The university could then conduct targeted surveys of exiting students.

Knowledge of enrolment and completion behaviour is important for those responsible for supporting students to be able to target ‘at risk’ students (Robinson, 2004). It is generally acknowledged that early experiences at university are pivotal to re-enrolment (McInnes et al., 2000). However, the findings of this study identify returning students, and all students making the end of year transition, as being at greater risk of subsequent non-enrolment. This disparity may be in part due to differences in commencement definitions4 and to the relatively small numbers of returning students. Based on the outcomes of this study, support should be provided to all students to promote re-enrolment, particularly at year end. In a survey of seven Australian universities to identify general approaches to providing support for first year students, McInnes, James and Hartley (2000), found that although an emphasis was placed on first year students, support is actually provided throughout a student’s candidature. Support strategies should be reviewed to establish the timing and extent of support provided to continuing and returning students and to gauge their response to these initiatives.

Preliminary analysis at faculty and degree level indicates that greater variation in future enrolment behaviour exists at these levels. Field of study differences have been found in completion rates of Australian youth in higher education (Marks, 2007). It is expected that further analysis of the data will identify differences in student enrolment behaviour relating to field of study. Additional analyses can also be performed as required to follow a particular cohort of students beyond the next semester or to identify socio-demographic factors that may contribute to specific enrolment behaviours.

This analysis is a first step in adding value to the student enrolment data available. The data, which has just been released to University of Sydney staff, allows for increased monitoring of degrees and the behaviour of the students that enrol in them. Details are available at faculty level for university management to see the high level picture, and faculty staff will find the ability to drill down to the details of individual degrees invaluable. Although the analysis is limited to tracking students from one semester to the next, it will provide details of student behaviour not easily identified before. The generation of relevant and accessible information allows for an increased understanding of student behaviour. This information can in turn be used to guide organisational improvement strategies.

**Acknowledgement**

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4 The commencing definition used here is a departure from traditional definitions of commencing as it applies only to the first main semester, rather than the first year of enrolment.
References


