Improving quality of teaching is part of improving retention: A study of first year students in an Australian university.

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Published
2006

Conference Title
Proceedings of the FYHE Conference 2006

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Improving quality of teaching is part of improving retention: A study of first year students in an Australian university.

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This study validates Tinto’s theory of student departure in a population of continuing first year university students attending an Australian university. Academic and social integration were strongly related to institutional goal commitment in these students who persisted with their university studies. Good Teaching (as measured by the CEQ) showed strong correlations with academic and social integration and satisfaction. This study indicates that improving the quality of teaching should be one element of approaches to improving first year student retention. The relationships between these dimensions of the student experience warrant further attention, particularly in cross institutional studies and in relation to those who leave study.

First year retention rates remain a priority for Australian universities as the Commonwealth Government has included retention and progression rates and student experience data on its list of indicators for funding of higher education. “The consequences of the massive and continuing exodus from higher education are not trivial, either for the individuals who leave, or their institutions” (Vincent Tinto, 1993, p. 1). Over the last three decades attrition rates have remained largely unchanged at 23% -25% across the higher education sector in Australia (DEST, 1999), though there are significant differences in retention rates among different institutions. The first year of higher education is of great importance since nearly one third of first year students in Australia indicate serious intentions of leaving study within their first year (Krause, Hartley, James, & McInnis, 2005) and this is where the majority of departures occur (Price, Harte, & Cole, 1991; Yorke, 1999). First year has been recognised as the key to many students’ experiences of and later success in higher education (McInnis, 2001; Pargetter et al., 1998; Vincent Tinto, 1993).

Three national Australian studies have explored the experiences of first year students at university (Krause, Hartley, James, & McInnis, 2005; McInnis & James, 1995; McInnis, James, & Hartley, 2000). These studies have been largely descriptive and have not explored relationships amongst different dimensions of the student experience, or correlations with academic performance or continuing enrolment. However, they have been useful in illustrating trends in the first year experience such as increasing diversity of the student body, greater non-study commitments and the influence of learning technologies. The data can be used to inform institutions about areas of concern in first year, but the specific effects of any university responses to enhancing engagement are unlikely to be evident in the overall data set. Ozga & Sukhnandan (1998) and McInnis, James and Hartley (2000) also caution that results of such retention research are too general to be applied to any institution. Each university needs to consider developing its own range of sustainable strategies to explore and address issues of first-year student engagement and retention.

Tinto’s Model of student attrition

There are three broad models of student attrition, but the sociological model of student
retention theorised by Tinto (1993: Figure 1) is the most influential around the world as a basis for understanding student departure from higher education (McInnis & James, 2004; Yorke, 1999, p. 8). Tinto proposes that students enter higher education with a ‘history’, that is, certain characteristics, expectations, skills, goals and commitments that are constantly re-evaluated over time in response to their ability to integrate socially and academically into the institution. For Tinto, students’ negative experiences on campus lead to failure of integration and subsequent departure. Tinto’s theory has enjoyed a high profile but it has not been without criticism since the model was originally formulated over two decades ago to explain retention behaviour in a North American context significantly different from that in many other countries. To date Tinto’s model has had limited exploration within Australian university contexts.

Figure 1. A simplified Tinto model of institutional departure (Tinto, 1993; p.114)

Key to Tinto’s theory are the concepts of academic and social integration and goal commitment that have formed the backbone of many US studies. Academic performance and staff interactions are viewed as formal and informal indicators of academic integration, whilst extracurricular activities and peer group interactions are formal and informal indicators (respectively) of social integration. These concepts are embedded in the Institutional Integration Scales (IIS) survey instrument developed by Pascarella and Terenzini (1980). Based on studies involving multi-institution research, Braxton et al (1997, p. 112) reported not all core elements of Tinto’s theory withstand empirical examination. However, there is broad support for aspects of Tinto’s theory. The holistic validity of his model and its applicability beyond America is not certain.

The Australian Context

There is a significant body of research exploring different factors affecting student departure in Australian institutions that provides empirical support for different elements of Tinto’s model. It is important to note that there are few studies that examine relationships between the different elements of student experiences and their intentions. In one Australian study using the IIS, Muckert (2002) validated Tinto’s model in a School of Psychology, reporting that peer-mentoring programs enhanced students’ institutional goal commitment and decreased attrition. Sharma and Burgess (1994) reported that poor academic performance was an important reason for student withdrawal. Price et al (1991) indicate that student dissatisfaction with their academic experiences was an important reason for withdrawing from studies. West et al (1986) reported that peer support and peer relationships enhanced student persistence. Abbott-Chapman et al (1992) found that student motivation was a significant predictor of academic success. Hartley & McInnis (2002) point to changes in paid employment as one factor affecting academic engagement and continuation of study. A decade of research by Krause and colleagues (Krause, Hartley, James, & McInnis, 2005) has shown that in 2004
first year students have greater sense of purpose and commitment to their studies at university as part of a process of achieving career goals, at the same time noting a significant decrease in the proportion of students considering discontinuing their studies.

The importance of good teaching

Seven principles for good practice in undergraduate education that broadly define good teaching were derived from empirical studies in a project sponsored by the American Association for Higher Education. These seven principles are: (a) student-faculty contact, (b) cooperation among students, (c) active learning, (d) prompt feedback to students, (e) time on task, (f) high expectations, and (g) respect for diverse students and diverse ways of knowing (Chickering & Gamson, 1987). Quality teaching and teaching and learning environments on campus are both important to student persistence. Tinto (1997) argues that academic and social integration are mediated through curriculum design and interactive classroom activities. Nora, Cabrera, Hagedorn and Pascarella (Nora, 1996) reported the direct influence of classroom academic experiences on students’ intentions to discontinue study. The active engagement in activities is also reported as a key element of generating student intrinsic motivation and persistence at study (J.M Braxton, Milem, & Sullivan, 2000). Braxton, Bray and Berger (2000) reported positive relationships between two measures of student perceptions of faculty teaching skills and social integration, subsequent institutional commitment, and enrolment intentions. The relationship between classroom teaching and student learning activities warrants further attention.

In Australia, the national First Year Experience surveys show changes in students’ perceptions of various dimensions of their first year at university. From 1994-2000, 30% of students responded negatively about the quality teaching, equivalent to the same proportion of students that were seriously considering leaving their studies (McInnis & James, 1995). Many students perceived staff to be unapproachable, unavailable, disinterested in their work and not helpful in providing feedback on their work. In 2004, students were more positive about teaching than in the previous decade, with improvements in staff enthusiasm and approachability (Krause, Hartley, James, & McInnis, 2005). There were still areas of concern though e.g. unavailability of staff and poor feedback. Concomitant with these enhanced perceptions of quality of teaching, there were fewer students considering leaving their studies despite increasing time spent off campus engaged in paid employment.

Goals of this study

Despite the widespread support for Tinto’s model using US-derived empirical research, there is no research directly testing Tinto’s theory across a single, or multiple, higher education institutions in Australia. The primary aim of this study was to examine the application of Tinto’s theory of student retention using a cross-disciplinary first year population attending and continuing their enrolment at an multi-campus Australian university for 12 months. The secondary aim was to examine relationships between aspects of Tinto’s model with good teaching and student satisfaction.

Methods

The data for this research was drawn from first year students at a metropolitan, multi-campus Australian university who had continued their enrolment at that institution for 12 months. All commencing students in 2004 were invited to participate in this study. The students were...
drawn from across the five campuses and across the range of disciplines taught at the university. Students were asked to complete the survey based upon the Institutional Integration Scales developed by Pascarella & Terenzini (1980). The survey contained also the CEQ Good Teaching Scale (GTS) and a satisfaction scale (SAT) of three items. Additional information (e.g. academic GPA and enrolment status etc) was drawn from university databases in accordance with the ethical guidelines approved for this research.

Measurement scales

The Institutional Integration Scales (IIS), developed by Pascarella & Terenzini (1980) to test Tinto’s model of student attrition (1975) have psychometric validity i.e. reliable scales, construct and predictive validity (Bers & Smith, 1991). Briefly, the IIS uses a five point Likert rating response scale with 30 items grouped into five scales, as labelled by Pascarella and Terenzini: (a) peer group interactions PGI; (b) interactions with faculty IWF; (c) faculty concern for student development and teaching FCS; (d) academic and intellectual development AID; and (e) institutional and goal commitments IGC. The most commonly used measures of students’ academic integration are the AID and FCS scales (J. M. Braxton, Vesper, & Hossler, 1995; Fox, 1986; Pascarella & Chapman, 1983), whilst the most commonly used measures of students’ social integration are the PGI and IWF scales (Hatcher, Kryter, Prus, & Fitzgerald, 1992). Terminology in the questions was changed to reflect the Australian context. Two questions not highly relevant to Australia were omitted – one each from the AID and IGC scales, leaving at total of 28 items.

The CEQ Good Teaching Scale (Wilson, Lizzio, & Ramsden, 1997) consists of 8 items exploring different aspects of students’ experiences of teaching. The satisfaction scale consists of three items: “Overall, I am enjoying my studies at this institution”, “Overall, I am satisfied with my experiences at this university” and Overall, my studies at university have been worthwhile”.

Data Analysis

Items from the IIS and other questions were examined for missing values, normality and outliers using the criteria of Tabachnick & Fidell (2001) using SPSS (Version 12.0). Cases where data was missing from five or more questions were deleted from the analysis. Single missing values in cases were replaced by mean substitution. Case outliers identified by low z-scores across five or more items were deleted from the analysis. This left a total of 1293 cases for analysis which exceeded the minimum sample size required, with each variable exceeding the five case lower limit (Tabachnick & Fidell, 2001). Negatively worded items were reverse scored so that all items in a scale were consistent. Statistical significance in this report is based upon $p<0.01$.

Correlations amongst items in each IIS scale generally ranged from 0.2 to 0.55 indicating consistent with the ability to examine factorisation. The internal consistency reliability of the IIS, GTS and SAT scales were evaluated using Reliability Analysis within SPSS. Where reliability analysis indicated deletion of items from the scale, testing was undertaken to reassess reliability after deletion of the items. A principal components analysis with quartimax rotation was undertaken to identify underlying dimensions present in the data. Examination of the data revealed a Kaiser-Meyer-Olkin Measure of Sampling Adequacy of 0.893 with Bartlett’s Test of Sphericity ($p<0.01$). These measures indicate the data was suitable for factoring. Only factors with Eigenvalues greater than one were returned. The
lower cut-off for interpreting factor loading was set at 0.30 (Alpha=0.05; power=80%) (Hair, Anderson, Tatham, & Black, 1998). Correlation analyses were used to examine relationships between the IIS factors and good teaching and student satisfaction.

Results

Overall, student responses to the questions were generally positive resulting in a slight skewing of data. These findings are consistent with other Australian studies, and so data were not transformed. The mean scores (+SD) for the five factors were: PGI = 3.49±0.68, IWF = 3.05±0.71, FCS =3.22±0.56, AID = 3.16±0.48 and IGC = 4.19±0.58. After cleaning the data, the internal reliability of the GTS, SAT and IIS subscales was assessed using Chronbach alpha scores. The coefficient alphas for GTS and SAT were 0.89 and 0.92 respectively. Initial coefficient alphas for the IIS were PGI = 0.83, IWF = 0.83, FCS = 0.59, AID = 0.76 and IGC = 0.71. Deletion of specific items could improve the coefficient alphas. The reliability of the scale, FCS, was significantly increased to 0.73 by deletion of the two items “Most of teaching staff interested in helping students grow” and “Most of teaching staff are generally interested in teaching”. Deletion of the item “Getting good grades is important to me” increased the reliability of the IGC scale to 0.73. Similarly, removal of the item “Most of students at the university have values and attitudes similar to my own” increased the reliability of the PGI scale to 0.88. These items were removed from the scales, leaving a total of 24 items for factor analysis.

The factor analysis of the original 28 items yielded a five-factor solution after varimax rotation that accounted for 56% of the variance. Factor analysis of the revised 24 item IIS (Table 1) yielded a five factor solution after varimax rotation that accounted for 60% of the variance. Most questions loaded substantially on only one component, indicating that the analysis confirmed relationships consistent with the IIS design. Inter-correlations between the five scales, GTS and SAT (Table 2) show limited collinearity and were suitable for regression analysis.

The results of regression analyses indicated that GTS contributed significantly to academic and social integration. For academic integration, GTS alone could account for 31% of the variation in AID ($\beta = .56$, $sr^2 = 31\%$), but only 1% of the variation in FCS ($\beta = .09$, $sr^2 = 1\%$). In total, GTS accounted for, or predicted, 15% of academic integration ($\beta = .39$, $sr^2 = 15\%$). For social integration, GTS alone could account for 10% of the variation in PGI ($\beta = .31$, $sr^2 = 10\%$) and 30% of the variance in IWF ($\beta = .55$, $sr^2 = 31\%$). Overall, GTS contributed significantly, predicting 26% of social integration ($\beta = .52$, $sr^2 = 26\%$). GTS contributed significantly to SAT, accounting for 29% of the variation in SAT ($\beta = .54$, $sr^2 = 29\%$).

Discussion

This cross-disciplinary study, conducted in a population of first year students who have persisted in their studies for 12 months an Australian university reports two significant findings. First, Tinto’s model of student departure, as assessed by the IIS, was found to be robust, valid and reliable. Second, there were significant positive correlations between good teaching, student satisfaction and different aspects of the IIS.
Table 1. Factor analysis of the 24 item Institutional Integration Scales.

<table>
<thead>
<tr>
<th>Scale Name</th>
<th>Factor</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Academic and Intellectual Development (AID)</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I am satisfied with my own intellectual development since coming to this university.</td>
<td></td>
<td>.756</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>In class experiences have had a positive influence on intellectual growth.</td>
<td></td>
<td>.572</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I am satisfied with my academic experience at this university.</td>
<td></td>
<td>.722</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Most of my courses this year have been intellectually stimulating.</td>
<td></td>
<td>.693</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>My interest in ideas and intellectual matters has increased since enrolling at this university</td>
<td></td>
<td>.444</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I have performed academically as well as anticipated.</td>
<td></td>
<td>.632</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Peer Group Interactions (PGI)</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Since coming to this university I have developed close personal relationships with other students.</td>
<td></td>
<td>.857</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Student friendships have been personally satisfying.</td>
<td></td>
<td>.824</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>My interpersonal relationships with other students have had a positive influence on my personal growth.</td>
<td></td>
<td>.786</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Inter-personal relationships with students have had a positive influence on my intellectual development.</td>
<td></td>
<td>.741</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>It has been easy to make friends. (RV)</td>
<td></td>
<td>.700</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Most of the students I know would be willing to listen to me and help if I had a personal problem.</td>
<td></td>
<td>.655</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Interaction with Academic Staff (IWF)</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Out of class interactions with teaching staff have had a positive influence on my personal growth.</td>
<td></td>
<td>.734</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Out of class interactions with teaching staff have had a positive influence on my intellectual growth.</td>
<td></td>
<td>.831</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Out of class interactions with teaching staff have had a positive influence on my career goals.</td>
<td></td>
<td>.798</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I have established a close personal relationship with at least one teaching staff member.</td>
<td></td>
<td>.752</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I am satisfied with opportunities to meet and interact with teaching staff.</td>
<td></td>
<td>.603</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Institutional Goal Commitment (IGC)</strong></td>
<td></td>
<td></td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>It is important I leave university with a degree.</td>
<td></td>
<td>.600</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I am confident I made the right decision coming to this university.</td>
<td></td>
<td>.619</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I will likely re-enrol at this university next year.</td>
<td></td>
<td>.753</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
It is important that I graduate from this university.

**Faculty Concern for Students (FCS)**

| Most of the teaching staff I have had contact with are generally interested in students. (RV) | .755 |
| Most teaching staff are outstanding or superior teachers. (RV) | .810 |
| Most teaching staff are willing to spend time out of class to discuss issues with students. (RV) | .797 |
| | .791 |


**Table 2. Correlations amongst the Institutional Integration Subscales, Good Teaching and Student Satisfaction.**

<table>
<thead>
<tr>
<th></th>
<th>AID</th>
<th>PGI</th>
<th>IWF</th>
<th>IGC</th>
<th>FCS</th>
<th>GTS</th>
<th>SAT</th>
</tr>
</thead>
<tbody>
<tr>
<td>AID</td>
<td>1</td>
<td>.474*</td>
<td>.471*</td>
<td>.495*</td>
<td>.051</td>
<td>.560*</td>
<td>.705*</td>
</tr>
<tr>
<td>PGI</td>
<td></td>
<td>1</td>
<td>.432*</td>
<td>.309*</td>
<td>-.067</td>
<td>.316*</td>
<td>.441*</td>
</tr>
<tr>
<td>IWF</td>
<td></td>
<td></td>
<td>1</td>
<td>.280*</td>
<td>-.025</td>
<td>.555*</td>
<td>.431*</td>
</tr>
<tr>
<td>IGC</td>
<td></td>
<td></td>
<td></td>
<td>1</td>
<td>-.003</td>
<td>.345*</td>
<td>.535*</td>
</tr>
<tr>
<td>FCS</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>1</td>
<td>.095*</td>
<td>.034</td>
</tr>
<tr>
<td>GTS</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>1</td>
<td>.540*</td>
</tr>
<tr>
<td>SAT</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>1</td>
</tr>
</tbody>
</table>

*Correlation is significant at the 0.01 level

Overall, first years students in this survey who have continued their studies for 12 months reported positive adjustment. Student ratings were generally positive, since mean scores on most of the 24 items were above 3.0 on the 5-point scale. Mean scores for the scales were also greater than 3.0 on a 5-point scale. Scores on the IWF scale were lowest, suggesting students were least likely to consider interactions with academic staff members may have been limited, and less than desirable from the students’ perspectives.

The reliability of the final five scales reported here are similar to those reported by Terenzini and Pascarella (1980), Bers and Smith (1991) and Muckert (2002). The reliability of the PGI, IWF, AID and IGC scales was equal or better than that reported by Terenzini and Pascarella (1980), whilst the reliability of the FCS scale was lower ($\alpha=0.73$ cf 0.82). The items removed from the analysis during the process of enhancing reliability were similar to those removed by Muckert (2002), indicating that there are some similarities between the two studies conducted in the same institution. The factor analysis confirmed a five-factor structure for the IIS, consistent with the original report by Pascarella and Terenzini (1980) and a replication study by Bers and Smith (1991). The inter-correlations between the five factors are modest (Table 3) indicating that they appear to measure independent aspects of the student experience at university. The data reported in this study, provide support for the use of Tinto’s model in an Australian context.

This study confirms relationships between students’ perceptions of good teaching, their overall satisfaction and elements of Tinto’s model that are related to retention. The strongest
correlations (Table 3) were seen between good teaching and staff interactions (IWF), peer group interactions (PGI) and intentions to remain at the institutions (IGC), and between good teaching and satisfaction. Some aspects of good teaching measured by the CEQ do reflect teacher-student interactions (e.g. teachers are approachable, available to discuss work), so a correlation with WIF is not unexpected. Braxton et al (2000) reported positive correlations between two aspects of GTS (organisation of material and clarity of expression) and IWF, PGI, and IGC. It could be argued that good teaching will both involve building peer interaction and facilitate active engagement with the subject matter, hence relationships with PGI are consistent with our view of good teaching and appropriate curriculum design. Other aspects of good teaching (e.g. making the course interesting and enthusiasm for teaching), can act to motivate students and could increase their commitment to their studies. These data support the proposition that the more positively students perceive teaching in their courses, the more likely they will become socially integrated, develop commitment to the institution, and continue their studies. As universities move to respond to improving retention through new mechanisms, the importance of improving curriculum design and teaching should not be overlooked.

Implications

Together these findings offer those teaching first year students the possibility of using Tinto’s framework as part of a strategy for curriculum design and teaching. The five dimensions of the IIS model could be used to orchestrate teaching and learning activities in the critical first half of the first semester. One could conceive of a “Five steps in Five Weeks of First Year” curriculum design that sees elements of peer interaction and collaboration, career orientation, social engagement with teaching staff, reflection on personal growth and academic development, and opportunities for meaningful feedback on progress underpinning the philosophy informing learning and teaching activities. These principles of social and academic integration are also incorporated in the Common Time (Fowler & Zimitat, 2006) innovation at Griffith.

Limitations

This study enrolled students from across all campuses and disciplines at the institution and appears characteristically representative of the student population at large. The data presented in this study derives from students who had persisted with their studies for 12 months, with continuous enrolment. The data defines characteristics of students who are retained, rather than those who discontinue their studies. It would be useful to enrol a broader group of students to test the predictive power of the model and undertake a cross institutional study to further assess and develop the model.

This study has explored Tinto’s model with a group of students who have persisted in higher education. Hence it was not possible to determine the predictive power of the model. Tinto (1993) has made changes to the original model to include two new variables: intention to persist and external commitments. Though little attention has been given to the increasing complexity of students’ lives which spreads their commitments across more activities. Given the apparent importance of intentions, and the increasing proportions of students engaged in work in Australia (Krause et al, 2005), Tinto’s model may be of some value if adapted and tested more broadly in the Australian context.
References


different ethnic and gender groups at four-year institutions. Research in Higher Education, 37, 427-452.