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# **An economic case for systematic student monitoring and intervention in the first year in higher education**

Andrew D. Marrington  
Academic Liaison, Student Success Program  
Office of Teaching Quality  
Queensland University of Technology

Karen J. Nelson  
Director, First Year Experience  
Office of Teaching Quality  
Queensland University of Technology

John A. Clarke  
Senior Research Officer, First Year Experience  
Office of Teaching Quality  
Queensland University of Technology

## **Abstract**

*Previous work has established the effectiveness of systematically monitoring first year higher education students and intervening with those identified as at-risk of attrition. This nuts-and-bolts paper establishes an economic case for a systematic monitoring and intervention program, identifying the visible costs and benefits of such a program at a major Australian university. The benefit of such a program is measured in savings to the institution which would otherwise be lost revenue, in the form of retained equivalent full-time student load (EFTSL). The session will present an economic model based on a number of assumptions. These assumptions are explored along with the applicability of the model to other institutions.*

## **Introduction**

On average, Queensland University of Technology (QUT) derives approximately \$15,300 in revenue from each equivalent full-time student load (EFTSL) from all Commonwealth supported students. Assuming these rates remain constant, QUT's total income derived from the enrolment of an average full-time student across a three-year bachelor degree course would be approximately \$45,900. If the same average full-time student withdrew (or deferred and did not return to QUT) from their three-year bachelor degree course after the completion of their first year, QUT would not receive the further \$30,600 it would obtain as income over the next two years of the student's enrolment. A systematic monitoring and intervention program which identified that same student as being at-risk of leaving QUT and prevented their attrition at the end of their first year, would in so doing therefore retain \$30,600 of revenue for the University.

Nelson, Duncan and Clarke (2009) described just such an intervention program, the Student Success Project (SSP), for the systematic monitoring of first year undergraduate university

students and intervening with those identified as at-risk of attrition. In semester 1 2008, the SSP monitored 1,524 students, 608 of whom were designated as at-risk based on the non-submission or failure of their first assignment. Three hundred and twenty-seven were successfully contacted by phone and received academic, social and personal advice and, if necessary, referral to specialist services while 287 were not able to be contacted. The contacted group persisted—completed the unit—and achieved significantly more than the non-contacted group. A follow up study (Nelson, Duncan, Marrington, & Clarke, In Press) of the enrolment status of the same students at the end of semester 1 2009 found that the at-risk contacted students persisted in their university studies—still enrolled at the end of semester 1 2009—at a significantly higher rate than the non-contacted at-risk students (76.9% compared to 45.8%). That finding, along with supporting qualitative data based on interviews with a sample of the at-risk contacted students carried out in semester 2 2009, led the authors to the conclusion that while “unable to conclude categorically that a causal relationship exists between the sustained influence of the SSP intervention and the enrolment status or progression of students, the evidence—both quantitative and qualitative—is somewhat compelling” (p. 5).

In sum, the SSP seems to be an effective intervention as far as its effect on attrition is concerned. But is it economically viable? This discussion paper examines the economic case for a systematic first year student monitoring and intervention program, comparing the visible costs of the SSP at QUT to the revenue retained for the University through the impact of the Project.

### **A more detailed analysis of the SSP data**

The Nelson, Duncan and Clarke (2009) study was conducted in one faculty at QUT, monitoring the 1,524 student enrolments<sup>1</sup> in five units. In three out of five units (units 1, 2 and 4), the SSP intervention with at-risk students had a statistically significant impact upon their achievement<sup>2</sup> and persistence of students. By way of an example, Table 1 shows the impact of the SSP on achievement and persistence in unit 1 in which a total of 236 students were identified as at-risk.

**Table 1 An example of the impact of the SSP in unit 1**

<b>Group</b>	<b>n/N</b>	<b>Achievement [M (SD)]</b>	<b>Persistence</b>
At-risk contacted	97/123	4.16 (2.26)	78.9%
At-risk not contacted	46/113	2.30 (1.46)	40.7%

Adapted from Nelson, Duncan and Clarke (2009).

In the follow up study (Nelson et al., In Press), across units 1, 2 and 4, 76.9% of the at-risk contacted group persisted to the end of semester 1 2009 compared to just 45.8% of the at-risk not contacted group. As there were no identifiable differences between the at-risk contacted group and the at-risk not contacted group, it seems reasonable to assume that the persistence of the at-risk contacted students would have been the same as their at-risk not contacted

<sup>1</sup> There was some overlap between enrolments in these units, but as the study examined student behaviour in discrete units, this discussion will refer to discrete student unit enrolments as students.

<sup>2</sup> Achievement is the mean final grade on a seven point scale of all students in the group who completed the unit.

colleagues if not for the SSP intervention. Table 2 shows a combined projection of the persistence of all at-risk students (from both groups) if **no** SSP intervention had taken place. This hypothetical projection is obtained by applying the persistence rate of the at-risk not contacted group (45.8%) to the at-risk contacted group and combining the two groups (fractions over .5 have been rounded up to the nearest whole number). This indicates that, if the SSP had not been operating, 75 (254-179) more students would have left QUT.

**Table 2 Projected longitudinal persistence across all at-risk students in the absence of the SSP**

<b>Group</b>	<b>Total</b>	<b>Enrolled</b>	<b>Not Enrolled</b>	<b>Persistence</b>
At-risk Contacted	242	186	56	76.9%
At-risk Not Contacted	227	104	123	45.8%
At-risk Combined (Actual)	469	290	179	61.8%
<i>At-risk Combined (Projection)</i>	<i>469</i>	<i>215</i>	<i>254</i>	<i>45.8%</i>

### **Financial benefit of the Student Success Project**

In order to estimate the financial benefit to QUT of the SSP, a number of assumptions are necessary. The following assumptions underpin the formula given here:

- The At-risk Combined Projection as given in Table 2 is an accurate indicator of the persistence of first year students to second year at QUT in the absence of the SSP.
- The longitudinal impact of the SSP persists across the entirety of a three year course of study, that is to say, that the persistence of the at-risk contacted group and the at-risk not contacted group remain constant to the end of the final year of study.
- As the exact pattern of attrition for students contacted during the single faculty case study is unknown, it is necessary to model the attrition pattern in order to estimate retained revenue. McMillan’s (2005) analysis of attrition patterns was used to create a simplified model of the pattern of attrition for at-risk students. In this simplified model, 58% of student attrition occurred at the end of the first year of study (and contributed one EFTSL in revenue), and 42% of attrition occurred during the second year (and contributed two EFTSL in revenue). The estimated EFTSL of revenue contributed is conservative in that it likely over-estimates the income obtained from students who did not persist, because it estimates revenue only in full years.

Given these assumptions, it is possible to calculate the financial benefit of the SSP for the single faculty first year cohort case study. This benefit is in the form of retained revenue which would otherwise be lost through student attrition. According to the projection given in Table 2, the SSP’s intervention caused 75 students in the single faculty to be enrolled by the end of second year who would otherwise not be enrolled. By the end of second year, this represents 43.5 EFTSL retained in this faculty (58% of 75), or \$665,550 (at an average income of \$15,300 per undergraduate EFTSL). If there is no further attrition in the at-risk contacted group, then by the end of third year, a cumulative total of 118.5 EFTSL will be retained in this faculty out of the first year cohort which was monitored in the case study. This represents retained revenue in this faculty from the SSP’s activities monitoring and

intervening in a single first year cohort of \$1,813,050 (at an average income of \$15,300 per undergraduate EFTSL).

The visible costs of the Student Success Project during the course single faculty case study consisted of the salaries of the project officers involved in designing and implementing the pilot study, and the salaries of the peer advisors employed to make contact with at-risk students. At the time of the pilot study described in (Nelson et al., 2009), this amounted to \$71,285.70. Given the conservative estimate of revenue retained in this faculty as a result of the Student Success Project intervention, it can be seen that the intervention was extremely cost effective, retaining a total of \$1,741,764.30 in revenue in excess of the intervention cost over a period of three years.

Since the time of the pilot study described in (Nelson et al., 2009), the Student Success Project has been expanded and interventions have occurred in every faculty across QUT, as described in (Nelson et al., In Press). As yet, no investigation of the longitudinal persistence of at-risk students contacted in the follow-up study has been possible. Consequently, any estimate of the revenue retained as a result of the university-wide intervention would be based on incomplete data. No estimate of this retained revenue is, therefore, offered here, however, given the revenue retained as a result of the single faculty intervention, it is likely that the university-wide retained revenue would be considerable.

### **Session Plan**

- Presenters (5 mins): Introduction to the Student Success Project at QUT
- Whole group discussion (5 mins):
  - Are the assumptions underlying the cost/benefit analysis presented here reasonable? If not, why not? Are there possible alternatives?
  - How do you consider invisible costs in a cost/benefit analysis such as this?
- Break-out group discussion (15 mins):
  - Does QUT have any special characteristics which make the Student Success Project intervention more effective than it would be at other institutions?
  - Speaking generally, what characteristics are desirable for an institution seeking to implement an SSP-like initiative? For example, pre-existing support services to which “at-risk” students can be referred?
  - Can a similar model be applied to your institution? Why? Why not?
  - To what extent do student demographics influence the size of the “at-risk” cohort?
  - Could a systematic program of monitoring and intervention similar to the Student Success Project scale to a student body which was more or less “at-risk” than QUT’s student cohort?
- Whole group discussion (5 mins): Sharing thoughts from break-out group discussion

## References

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