This is the published version:

Von Treuer, Kathryn and Marr David 2013, *Tracking student success: who is falling through the cracks?* Australian Government, Office for Learning and Teaching, Sydney, NSW.

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Tracking Student Success: who is falling through the cracks?

Final Report 2013

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Australasian Association for Institutional Research

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Support for the production of this report has been provided by the Australian Government Office for Learning and Teaching. The views expressed in this report do not necessarily reflect the views of the Australian Government Office for Learning and Teaching.

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2013

ISBN 978-1-925092-07-3 print

ISBN 978-1-925092-08-0 online
<table>
<thead>
<tr>
<th>Acronym</th>
<th>Description</th>
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<tbody>
<tr>
<td>AAIR</td>
<td>Australasian Association for Institutional Research</td>
</tr>
<tr>
<td>DU</td>
<td>Deakin University</td>
</tr>
<tr>
<td>OLT</td>
<td>Office for Learning and Teaching</td>
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<td>SCU</td>
<td>Southern Cross University</td>
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Executive summary

Literature on student retention in higher education abounds with case studies that demonstrate successful retention rates in single institutions. However, what remains unclear is how generalisable these programmes are to other universities. As stated by Keeton, Clagett and Engelberg (1998), ‘by linking theory and institutional research to planning, we can have greater confidence that our decisions will be good ones and will serve the needs of diverse students’ (p.18). They recommended that theoretical literature and national research should be consulted to guide institutional research and possible intervention models and that campus researchers should conduct sophisticated, institution-specific research based on their institution’s needs and characteristics. This advice embodies our approach to this research.

We used an action research methodology to guide our understanding of student retention, focusing on at-risk students. We conducted two systematic reviews: one targeting student retention frameworks and the other targeting literature on student cohort tracking. These reviews informed the first study.

Study one was ‘Institutional research: Improving student preparedness and retention—the view of staff at two universities’. Its aim was to collect information from two universities (Deakin University [DU] and Southern Cross University [SCU]) to gain a better understanding of their intervention programmes, philosophical approaches to attrition and cohort tracking systems used to identify, support and track at-risk student cohorts. Key informant interviews with academic staff at both universities (N = 16) were thematically analysed and compared.

Our recommendations for institutional practice across Australia arising from this comparison and analysis included, but are not limited to, the following:

1. the need to ensure a healthy university culture that embraces diversity and nurtures the structures and systems that foster it
2. the need to maintain appropriate resourcing for academic staff (especially for casual tutors) to support the kinds of programmes that make a difference
3. to commence intervention programs early, e.g. during secondary school and prior to students entering university
4. for intervention programs to target all students in order to capture any students who may not be obviously at risk.

The usefulness of student tracking systems was not supported by all informants. We then focused on the strength of the various interventions used to retain students.

A second study was then formulated that drew heavily on the systematic reviews’ search methodology. This study was ‘A comparison of social and academic interventions to assist student retention in university settings: A meta-analytic study’. It used meta-analytic techniques to test the general effectiveness of interventions designed to increase student retention. Our first meta-analysis demonstrated that the intervention group was 2.3 times more likely to stay enrolled than the control group. Having used a random effects model,
our findings are generalisable to the larger population and strongly support intervention as a means of reducing attrition. Our second exploratory analysis, though underpowered because the number of cases were small, was also positive, with academic and social interventions forming distinct groups with non-overlapping confidence intervals. Remarkably, social intervention improved retention 12 to 24 fold and academic interventions less so. However, a small sample size suggests caution in interpreting this finding. Nonetheless, there is no doubt that social interventions are at least as effective as academic interventions and very probably more effective when student retention is the outcome.

The recommendation from study two was that interventions that improve student retention are generally successful and should continue. Our study findings also suggested that priority should be given to social interventions (e.g. peer support, mentoring, orientation and providing networking opportunities), since they are more successful compared with interventions that focus on improving academic skills.

Over the year of the project, many deliverables were achieved, including six formal minuted meetings, several university workshops, three conference presentations, one keynote address, one published article (in Journal of Institutional Research), one submitted article (to Higher Education Studies), and two in preparation.
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Chapter One: Introduction

Background

Higher education is frequently perceived as an opportunity to improve one’s life and plays a fundamental role in improving the SES of individuals, their families and the community (Valentine, Hirschy, Bremer, Novillo, Castellano & Banister, 2009). However, the dream of university education is not equally realised for everyone. For example, the enrolment and completion patterns of lower SES students do not reflect this ideal. Student attrition is high among this specific cohort. Student attrition is defined as reduced student enrolment due to university transfers or ‘dropouts’, and has been a long-standing problem for universities (Willcoxson, Cotter & Joy, 2011).

Australian higher education lags behind that of other Western countries in relation to access and attainment for equity groups (Organisation for Economic Co-operation and Development [OECD], 2010). This is despite major policy reforms in the last two decades targeting better educational outcomes for students from disadvantaged backgrounds. The Australian Labor Government’s Higher Education Participation and Partnerships Program (HEPPP) creates a new demand for evaluation methods that can establish whether interventions funded under the HEPPP contribute to the Commonwealth’s policy goal of increasing SES students’ university participation to 20 per cent by 2020.

Prior to the 1970s, student attrition was considered confirmation of an institution’s demanding curriculum (Thelin, 2010). However, the financial losses incurred due to student attrition started to affect educational institutions budgets. In addition, it resulted in social costs to individuals and society. Consequently, academic leaders were urged to review their institutional data, administrative procedures and institutional culture to understand better why so many students failed to complete their courses (Armstrong et al., 2009; Conner, 2009; Hawley & Harris, 2005; Lillibridge, 2008; Schurr et al., 1997).

Tracking student models

Developing student retention models and tracking and prediction methodologies has been followed by extensively implementing intervention programmes, with most strategies designed to assist those students identified as at risk of dropping out of university. However, a comprehensive theory of student attrition and retention is lacking. This deficit has created considerable difficulties when comparing empirical studies in this area. There is also a significant knowledge gap concerning the effect that interventions have on students’ aspirations and attainment of success.

This project describes the first phase of a longitudinal study designed to effectively monitor outcomes related to student cohorts at the institutional level and gain a better understanding of the root causes of disadvantage, as well as tracking the enablers of access, retention and success for students from diverse backgrounds. Tracking students in their day-to-day activities is an empirical process by which we can identify factors that hinder that progress. A process for monitoring and reporting on the educational progress of student cohorts (a cohort tracking system) would enable a large-scale impact assessment of current learning and teaching activities employed to improve underprepared students’ higher
education success and completion rates, such as inclusive pedagogy, bridging courses, mentoring and scholarships. Student cohort tracking enables robust evaluations of university participation activities under the HEPPP and complements university evaluations. Student cohort tracking methodology is ideally underpinned by the theoretical frameworks that inform which student characteristics should be measured.

A brief review of student retention frameworks

Previous research in student tracking, retention, attrition and success appears to be fraught with methodological issues such as lack of comparison groups and longitudinal data collection (Valentine et al., 2009). Consequently, there no directly informed robust approach to improving student retention in order to understand its predictors and establish managing strategies. In this study, we explored various models that have been proposed to explain student retention.

Figure 1 summarises the evolution of student retention frameworks. Thirty-two different frameworks have been published, and are grouped according to their broader orientation. The arrows denote which frameworks have been extended or built upon. The model shows a temporal development of the various proposed models. While there is some overlap between conceptual elements within these frameworks, there is no consistently used student retention framework that maps completely onto successful interventions. Many proposed frameworks are complex and few have been empirically tested.
Figure 1: The evolution of student retention frameworks. Source: Authors
The next stage of the project was to examine these frameworks with the intention of identifying which student characteristics were consistently reported and could therefore be tracked. Within his four broad domains, Bean (1981) identified a number of sub-factors relating to student characteristics. We have included in this model (see Table 1 below) a ‘social’ domain with characteristics relating to peer support, relationships with others and student engagement. The main characteristics measured across many of the studies were background-oriented, organisational, environmental and attitudinal.

The higher education sector has grappled with developing student cohort systems that bring together people, processes and technologies. Universities are rich in data; however, data warehousing and business intelligence systems are often naïve and unsophisticated. This results in limited access to the institutional data required to identify and track student cohorts and reduces the capacity to analyse such data and apply predictive analytics to at-risk target groups.

This project’s aim is to inform university student tracking systems to enable measuring the effects of teaching and learning activities and therefore improve the participation, progress and study completion of students from low SES, low income and academically underprepared backgrounds. We commenced by systematically examining the literature on student retention frameworks (as per Figure 1). We then examined the frameworks to understand the potential scope of characteristics that could be measured (see Table 1).

Table 1: The five domains of tracking student characteristics

<table>
<thead>
<tr>
<th>Background</th>
<th>Organisational</th>
<th>Environmental</th>
<th>Social</th>
<th>Attitudinal</th>
</tr>
</thead>
<tbody>
<tr>
<td>Parents’ education and income</td>
<td>Communication of policies</td>
<td>Employment-related opportunities</td>
<td>Relationships with other members</td>
<td>Perceived institutional quality</td>
</tr>
<tr>
<td>High school grades (GPA)</td>
<td>Helpful advisors</td>
<td>Family approval</td>
<td>Peer support</td>
<td>Extent of self-development</td>
</tr>
<tr>
<td>Home town size</td>
<td>Campus memberships or affiliations</td>
<td>Family responsibilities such as marriage</td>
<td>Student engagement</td>
<td>Institutional commitment</td>
</tr>
<tr>
<td>Distance from home</td>
<td>Curriculum availability</td>
<td>Student’s financial status</td>
<td></td>
<td>Level of confidence</td>
</tr>
<tr>
<td>Religion</td>
<td>Leisure activities</td>
<td></td>
<td></td>
<td>Certainty of choice</td>
</tr>
<tr>
<td></td>
<td>Financial aid</td>
<td></td>
<td></td>
<td>Level of boredom</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Loyalty</td>
</tr>
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<td></td>
<td></td>
<td></td>
<td></td>
<td>Extent of absenteeism</td>
</tr>
</tbody>
</table>
The aim of study one was to collect information from both universities to gain a better understanding of their intervention programs and experience with cohort tracking systems they use to identify, support and track at-risk student cohorts. The case study outcomes can inform approaches and policies related to increasing access, participation and retention rates for low SES, low income and academically underprepared students, and assisting with modifying and improving current data warehousing and tracking systems.

The aim of study two was to explore the strength of the relationship between student retention interventions and student retention outcomes. A meta-analysis of previous sound research was used to achieve this. The differential effects of intervention strategies (academic and social) on student retention outcomes were also investigated.
Chapter Two: Approach and Method

Approach

The study involved conducting comparative case studies across two universities focusing on processes and technologies required to track student cohorts. Partner sites included DU, which has campuses in Victoria, and SCU, which is based in northern New South Wales (NSW).

This study used action learning methodology (Patton, 1997) with teams within the two institutions that have been involved with designing and implementing student cohort tracking (over five years) as they learn from international and shared practice and document their own learning. Action learning is defined as a strategy by which people learn with and from each other as they attempt to identify and then implement solutions to their problems or developmental issues. This is achieved using evaluation cycles that involve planning, action, observation and reflection (see Figure 2). ‘Action research takes its cues—its questions, puzzles and problems—from the perceptions of practitioners within particular, local practice contexts.’ (Argyris & Schon, 1991, as cited in Dickens & Watkins, 2006, p. 187).

Three essential features must be present for an activity to be legitimately considered part of an action learning programme. These are as follows:

1. There must be action in the real world rather than simulated action.

2. The activity must be conducted in a way that involves others, particularly other participants who are working on the same or different projects.

3. The emphasis must be on learning; not taking action; this is what distinguishes action learning from project team membership (Patton, 1997).

![Figure 2: Kurt Lewin’s Spiral Model, Action Research Cycle (Lewin, 1946)]
Method

Literature reviews and meta-analysis

The literature reviews entailed a systematic database search using keywords, and covered papers identified between 1994 and 2013. The following keywords were entered into the EBSCOHost database: student attrition, student retention and student success. Hand searches were also conducted and expert recommendations solicited from researchers in Higher Education. The search identified 299 unique papers, many of which were theoretical articles. Inclusion criteria included articles that were empirical and blind-refereed papers, which reduced the number of articles to 27.

Regarding the meta-analysis, further articles were excluded from the 27 identified papers if the study did not include a control group and did not include before and after intervention statistics. From the 27 records, seven articles met the review criteria in the following three ways: where student attrition intervention was the primary focus, where student attrition was the focus of broader retention models and where retention was a component of student success models. Seven articles described eight studies of two main intervention types. The majority of these were either academic interventions (for example, assistance with referencing), or social-oriented interventions (for example, peer mentoring and orientation activities).

Case study methodology

Eighteen participants (eight male and 10 female) were recruited from DU’s Diverse Student Cohort Tracking Committee (DSCTC; n = 12) and SCU’s i-OnTrack Committee (n = 6) by email invitation. They were invited to participate in the study because they were key informants from multidisciplinary teams comprising teaching and learning academics and data warehousing and analysis experts. In addition, institutional researchers within the faculties, schools and equity and planning units involved in the various interventions or tracking projects were also interviewed.

The study authors then developed a 16-item semi-structured interview schedule partially informed by the systematic reviews, and interviews were conducted across both universities. The interview questions clustered around issues for the people, processes and technologies required to monitor groups of students as they entered the higher education system and during their subsequent progression. Examples of sample questions are, ‘How do you assess academic and/or social preparedness?’ and ‘What new technologies could assist you in tracking?’ Face-to-face interviews of approximately one hour’s duration were held with each participant. Interview participation was completely voluntary and consent was obtained at the time of interview. Participants were encouraged to discuss their experiences and opinions in relation to university intervention projects, structures, policies and governance in which they were involved rather simply responding to the questions provided (a semi-structured approach). Interviews were audio-recorded and later transcribed. The transcripts were returned to the participants within six to eight weeks, giving them the opportunity to verify the transcripts’ accuracy.

The qualitative analysis of the interview transcripts was adapted from Braun and Clarke (2006). They defined two valid thematic analysis methods: (1) developing the themes as the
analysis is being undertaken, with these themes being grouped later into broader categories and (2) developing the themes in advance of the analysis and coding the transcripts according to these predefined themes. The latter method allows additional themes to be added while the analysis is being undertaken and for modifying some of the prescribed themes when (or if) required. The interview transcripts were thematically coded using the second method due to the exploratory nature of this study. Initial thematic coding was done by one coder, with a second verifying the codes. Any discrepancies were discussed and a decision then made as to the final code. NVivo 10 software was used for the final thematic analysis.
Chapter Three: Outcomes

Case study findings

The data revealed five main themes surrounding student retention. These were preparedness, at-risk students, intervention types, governance and technology. Quotations given are participants’ verbatim comments (those prefixed with a ‘D’ are from DU staff; those prefixed with ‘S’ are from SCU staff).

Preparedness and readiness

Student preparedness and readiness was a commonly mentioned theme, and its sub-themes are presented in Table 2.

Table 2: Sub-themes of preparedness/readiness which emerged at DU and SCU

<table>
<thead>
<tr>
<th>Deakin University</th>
<th>Southern Cross University</th>
</tr>
</thead>
<tbody>
<tr>
<td>Academic</td>
<td>Academic</td>
</tr>
<tr>
<td>ATAR/GPA</td>
<td>ATAR/GPA</td>
</tr>
<tr>
<td>Goals and values</td>
<td>Goals and values</td>
</tr>
<tr>
<td>Career and employment</td>
<td>Career and employment</td>
</tr>
<tr>
<td>Partnering with schools/TAFEs</td>
<td>Numeracy</td>
</tr>
<tr>
<td>Social</td>
<td>Partnering with schools/TAFEs</td>
</tr>
<tr>
<td>University Assessments</td>
<td>Social</td>
</tr>
<tr>
<td>Unpreparedness/low support</td>
<td>University Assessments</td>
</tr>
<tr>
<td></td>
<td>Unpreparedness/low support</td>
</tr>
</tbody>
</table>

The participants from both DU and SCU stressed lack of support as having a huge effect on students entering university. They believed that students might lack engagement when they feel isolated, overwhelmed or inconsequential. One DU interviewee made the following comment:

‘One of the mentees ... was saying, “I went to a medium-size school but this [DU] is scary as hell”. And I asked, “what is the big difference”, and she said, “no one is hounding you about your assignments, nobody is checking up on you, nobody cares about you”.’ [D01]

Similarly, an SCU interviewee relayed this experience:

‘I went to ... university from [a small town] high [school], where there [were] 1,100 students in the school, 3,000 in the town. And in my first lecture in psychology I had 1,500 students in the ... auditorium and it was like, “ahhh”, it was the saddest year of my whole life ... nobody knew who I was, nobody cared.’ [S46]
In addition, simple matters of which the institution might not have been aware or responsible—and had few ways of controlling—could have caused students to feel that they were not coping or not fitting into university life:

‘Eighty-five per cent of those students who dropped out in the first year ... [were] because of events that were short term and could be resolved quite easily ... things like transport, the house ... like the kids got sick.’ [D13]

Although there were many similarities between the universities, numeracy seemed to be a concern only at SCU. Staff noted that students had high levels of mathematics-related anxiety, and that it was imperative to improve student numeracy levels, particularly since so many students were studying to be teachers and thus would soon be responsible for teaching mathematics themselves. In fields such as nursing, numeracy shortcomings were particularly concerning:

‘Some of the nursing students, they get it wrong, because they get sort of, instead of 0.05, they have 0.5 and they have said, “but it is only one space from the dot, what does that matter?” Well actually if you are administering it, a dose of some medicine to a baby, based on their body weight, it actually matters a fair bit. The difference between 0.05 and 0.5 can kill them.’

SCU has employed a Mathematics Support Officer dedicated solely to numeracy. However, participants noted that funding and resources were insufficient to combat effectively students’ numeracy shortcomings. Participants speculated that this problem stemmed from the secondary school system:

‘They could get an ATAR [Australian Tertiary Admission Rank] of 99 studying no maths and so they would get this ATAR of 99, after studying no maths come into physiotherapy and the first thing they are confronted with is the basic maths in order to do mechanics.’ [S50]

At-risk students

The at-risk theme encapsulates targeting students with particular characteristics or circumstances that might cause unpreparedness and ultimately attrition. Table 3 presents the sub-themes of these at-risk students.
Despite the many sub-themes identified, a common theme at both DU and SCU was that actually identifying at-risk students was challenging. Rather than purely identifying at-risk students and targeting intervention programs at these students, it was considered preferable for the two universities to implement an inclusive approach that addressed the issues encountered by the at-risk group. One DU interviewee made the following comment:

‘It is a bit like heart attacks ... the high-risk people are much more likely to have one, but they are relatively small in numbers so the bulk of heart attacks happen from the low-risk population. It is harder to predict, so we actually need those universal preventions to try to ... stop people falling through the cracks ... because often they are not the identified high-risk group.’ [D01]

One way that institutions have dealt with at-risk students is by offering several alternative pathways for degree program entry (see Table 3 above). These pathways can prepare students academically and socially for the kind of experience they might encounter once they commence undergraduate study:

‘To start thinking about a university as another stepping stone ... that each step was a valuable experience to getting you there.’ [D09]

For example, DU has an articulation arrangement with the Melbourne Institute of Business and Technology (MIBT, see Appendix A) whereby students commence studies with a private provider and obtain credit for studies undertaken towards a business degree. This creates a viable degree pathway to a degree at DU for low SES students. In addition, DU is exploring ways to help struggling students return to the TAFE system.

‘One of the DUPPP [Deakin University Participation and Partnership Program] projects is to try to identify, if a student doesn’t succeed at university, can we create, almost a backward credit scenario, where they can actually go back to

<table>
<thead>
<tr>
<th>Deakin University</th>
<th>Southern Cross University</th>
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<tr>
<td>Aboriginal and Torres-strait Island students</td>
<td>Aboriginal and Torres-strait Island students</td>
</tr>
<tr>
<td>Alternative pathways to university</td>
<td>Alternative pathways to university</td>
</tr>
<tr>
<td>Community</td>
<td>Community</td>
</tr>
<tr>
<td>First-in-family (to attend university)</td>
<td>First-in-family (to attend university)</td>
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<tr>
<td>International</td>
<td>International</td>
</tr>
<tr>
<td>IT issues</td>
<td>IT issues</td>
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<tr>
<td>Low SES</td>
<td>Low SES</td>
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<tr>
<td>Mature age</td>
<td>Mature age</td>
</tr>
<tr>
<td>Non-English speaking background</td>
<td>Personal factors</td>
</tr>
<tr>
<td>Personal factors</td>
<td>Postgraduate entry</td>
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<td>Postgraduate entry</td>
<td>Rural/isolated students</td>
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<tr>
<td>Rural/isolated students</td>
<td>School leavers</td>
</tr>
<tr>
<td>School leavers</td>
<td>Study mode (on/off-campus)</td>
</tr>
<tr>
<td>Study mode (on/off-campus)</td>
<td>Travel/location</td>
</tr>
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<td>Travel/location</td>
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</tbody>
</table>
one of our TAFE partners ... and they might come back to Deakin or they might not.’ [D13]

SCU also offers a number of alternative pathways into their undergraduate courses. Preparation for Success is an enabling course that provides basic study skills and develops research and writing skills in the arts, business or sciences. Alternatively, SCU offers two-year Associate Degree courses in allied health, the arts and business for students who could not otherwise meet Bachelor degree entry requirements. Students complete a TAFE Certificate IV as part of their first year of allied health and arts courses, and are thus given several exit points if they do not choose to pursue undergraduate studies. As one interviewee remarked, ‘[t]his gives a more supportive environment that will give them more confidence in doing university-level study’. [S38]

Some universities, such as SCU, act as ‘feeder’ institutions. They can provide access to tertiary studies for low-performing or underprepared students, giving them basic learning and content skills that will allow them to transfer to higher-entry courses elsewhere. From an institutional perspective, this would be characterised as attrition; however, in these cases, it is ‘good’ attrition, since these students are progressing along their educational path:

‘You have got to fail to succeed ...[students from] more privileged backgrounds ... don’t know how to fail. And failure is not an option to them; “you have to fail first, to try and achieve anything” philosophy. Some regional universities act as feeder education providers, so they appear to be attrition but it is “planned”. They can play an important preparation role.’ [S42]

Regarding at-risk students, there was a difference between DU and SCU: DU recognised the importance, and set up interventions, targeting students from non-English speaking backgrounds. One of Deakin’s DUPPP projects targeted those from a non-English speaking background by implementing a mandatory English and literacy screen at enrolment. The purpose of this was to identify students who might need help and to refer them to relevant support services. SCU is yet to implement this sort of screening test.

Sometimes the circumstances that lead students to being at risk might be very basic. One participant stated the following:

‘Students have real issues like poor diets, don’t know how to cook, poor finances [and] therefore cannot afford text books, access to communication, broadband etc.’

Programmes addressing at-risk student needs should embrace many aspects of their higher education.

Interventions

The third theme that emerged from the data was interventions. Both universities implemented multiple strategies and interventions because of HEPPP funding (for specific examples see Appendix A). The sub-themes that emerged from this analysis are presented in Table 4.
Table 4: Sub-themes of intervention which emerged at DU and SCU

<table>
<thead>
<tr>
<th>Deakin University</th>
<th>Southern Cross University</th>
</tr>
</thead>
<tbody>
<tr>
<td>Communication post-alert trigger</td>
<td>Communication post-alert trigger</td>
</tr>
<tr>
<td>Electronic communication</td>
<td>Electronic communication</td>
</tr>
<tr>
<td>Embedding academic skills</td>
<td>Embedding academic skills</td>
</tr>
<tr>
<td>Engaging parents/students</td>
<td>Engaging parents/students</td>
</tr>
<tr>
<td>Financial support</td>
<td>Financial support</td>
</tr>
<tr>
<td>Generic</td>
<td>Generic</td>
</tr>
<tr>
<td>Individual assistance</td>
<td>Individual assistance</td>
</tr>
<tr>
<td>Peers and mentoring</td>
<td>Peers and mentoring</td>
</tr>
<tr>
<td>Orientation program</td>
<td>Orientation program</td>
</tr>
<tr>
<td>Scholarships</td>
<td>Staff feedback</td>
</tr>
<tr>
<td>Staff feedback</td>
<td>Transition (in and out)</td>
</tr>
<tr>
<td>Transition (in and out)</td>
<td>Workplace relevance</td>
</tr>
<tr>
<td>Workplace relevance</td>
<td></td>
</tr>
</tbody>
</table>

One of the issues facing DU students was their lack of referencing skills. Accordingly, one intervention involved embedding academic skills into the standard first year curriculum across all courses. This was designed to assist underprepared students with the necessary skills for academic success. Of course, they could be underprepared for various reasons: coming from a rural or regional area, transitioning from a vocational training background or being mature age and perhaps not having written an essay since high school. However, not all new students from these cohorts would have difficulty with referencing; hence, a better approach would be to target the issue of poor referencing skills rather than a particular cohort. DU is taking a proactive approach to referencing skills and embedding referencing into the curriculum rather than running a service in which students can choose to participate.

Similarly, at SCU, despite the first year mentoring program being available to all students, the equity unit’s participation analysis showed that students with low SES and from regional areas were participating of their own volition. As one SCU interviewee commented, ‘monitor cohorts, but don’t target them’. [SS0]

Another strong view raised in the interviews was the need for the institution to adapt to the changing needs of its diverse student body. For past generations, strategies focused on ways to encourage and support these students to fit the ‘norms’ represented within each institution; these were mostly middle class and, on the whole, privileged. With a push in Australia for greater access and participation from low SES students, institution administrators need to reconsider how they can engage these students. One way to achieve this is by thinking more laterally and adopt policies and practices that meet this generation of students’ differing needs. One DU interviewee made this point:

‘They [students] need a really good reason to come on to campus, and often, going to the lectures isn’t a good enough reason. Especially if you can then view it online ... we really need to be very flexible.’ [D05]
Another interviewee commented that adjusting assessment as well as curricula might be considered to meet current student needs:

‘How draconian do we have to be … “You will be deducted 10 points for every minute you are late!” It is ridiculous. It is like a penal servitude system. I don’t know why it has to be that way.’ [D28]

A SCU academic interviewee made this comment:

‘The new generation expects everything to be flexible. We are kind of being adversely affected by the very thing that we are promoting … flexibility. Better outcome for the individual; poorer outcome for the institution based on the current indicators that we are using.’ [S38]

The importance of orientation programs to student attrition also emerged within the data. One anecdote from a DU academic seemed to resonate with these findings:

‘I went to a freshers’ camp … there were a hundred of us … sitting up at the café every single day, and when I left Honours four years later, there were still 30 or 40 of us having lunch together every day … and out of that group only one of us failed first year.’ [D01]

DU’s u.life programme was piloted in 2011 and was aimed at Year 9 school students with the intention of demystifying university and tertiary study. In 2012, the Widening Horizons programme was designed to build on u.life by opening up different pathways for students who are also young parents:

‘I feel quite strongly about the need to engage with low SES communities at a very early age. One Year 9 girl … was going to work in childcare. On her follow-up questionnaire … she was talking about early childhood development. She picked up some of that insider language.’ [D02]

Participants spoke often about making the notion of university and tertiary studies more accessible, relevant and meaningful in a language that today’s students understand.

The importance of peer mentoring in relation to attrition was discussed at both universities:

‘[There are] stories of students who have been so full of praise for their mentor … [saying] “they helped me and I would have left if it wasn’t for them”.’ [S42]

Finally, some differences were noted between DU and SCU. Firstly, only DU participants mentioned the importance of scholarships. Secondly, regarding the maturity of the HEPPP projects, DU projects appeared to be slightly more entrenched and better understood than the less mature SCU equivalents. The purpose of the projects and their interrelationships were better communicated at DU, perhaps due to their complex nature. The longer period over which the projects had been running also allowed a stronger and more mature communication strategy to be developed than was observed at SCU.
Responsibility and governance

This fourth theme involved all aspects related to leaders and those responsible for interventions and other university issues. Table 5 presents the sub-themes that emerged.

**Table 5: Sub-themes of responsibility and governance which emerged at DU and SCU**

<table>
<thead>
<tr>
<th>Deakin University</th>
<th>Southern Cross University</th>
</tr>
</thead>
<tbody>
<tr>
<td>Attrition</td>
<td>Attrition</td>
</tr>
<tr>
<td>Curriculum issues</td>
<td>Curriculum issues</td>
</tr>
<tr>
<td>Diagnostic tools</td>
<td>Diagnostic tools</td>
</tr>
<tr>
<td>Funding</td>
<td>Funding</td>
</tr>
<tr>
<td>Philosophy and culture</td>
<td>Philosophy and culture</td>
</tr>
<tr>
<td>Targeting issues</td>
<td>Targeting issues</td>
</tr>
<tr>
<td>Tracking issues</td>
<td>Tracking issues</td>
</tr>
<tr>
<td>University staff</td>
<td>University staff</td>
</tr>
</tbody>
</table>

Culture change could be necessary to improve attrition rates. If students are continually dropping out, universities and colleges might need to re-evaluate their current standards and shift towards change:

‘It is also about a combination of a shifting culture. About going, ”well hold on, we are talking about the long term, not the short term”. What we actually want to know is three years down the track.’ [D15]

A common theme present in the interviews was the need for the institutions to be more cognisant of students’ needs and listen to the students’ voices. The universities would thus be prepared to change their culture and perhaps philosophy to be more ‘student-centred’ and inclusive of the different cultures represented in the student body:

‘Actually [we’ve stopped] listening to the students’ voice ... and giving them a voice ... is really valuable. The multiple ways in which we describe the same process ... we talk about credit transfer, advanced standing, articulation ... and all of that must be incredibly confusing. So it is really a matter for the whole institution to be thinking about working collaboratively. We don’t recognise that low SES isn’t just a socio-economic status ... there are cultural differences as well ... those are actually rich, cultural experiences.’ [S38]

There was considerable concern among several interviewees from both DU and SCU that higher education in Australia is not currently resourced adequately enough to allow academic staff to build these kinds of relationships. Tensions between teaching and research, promotion criteria biased towards producing a certain quantity of research papers and earning competitive grant income left little time for these meaningful teacher-student interactions that could assist students’ transition to university. Some interviewees believed that the casualisation of teaching staff only added to this dilemma:

‘The research indicates, and my experience indicates, [that] students benefit from contact with their teachers ... but we are not funded to give contact.’ [D28]
‘[If you want] better retention rates from low SES [students] ... and if you [want to] make a difference to students, it is in your own time. You don’t get paid. With increased levels of casualisation, you get paid for the tutorial; you get paid for two hours of consultation. If you spend another hour or two with students, because they are facing a crisis, [then] that is [in] your [own] time ... to me, those two things are in stark contrast.’ [S39]

‘Being an expert is important, but you need to be able to relate, show empathy and be human. That’s missing in the professional teaching and learning courses. Changes over the past 15 years [include] increased class sizes, more casual teaching staff, a more diverse student population. These leave the teacher-student relationship vulnerable.’ [S39]

Cohort tracking issues were also raised by both DU and SCU staff. Although the perceived value of tracking student cohorts varied a little, both groups acknowledged that more than raw numbers should be collected: ‘to focus on cohort measures ... because you want the complete picture about the cohort’ [D22] was one example from DU, and another was, ‘what we are also trying to do is also capture the stories rather than just collect the data. We actually want the stories from the people’ [D13]. A third staff member made this comment:

‘What do I want to do with that data? What do I need it for, and also ... how is it collected and how is it connected to what I do? Kind of collecting data just for the sake of it ... I think to me it is much more about the dialogue with students.’ [S39]

Technology

Technology was the fifth theme and was considered of utmost importance to student retention. Table 6 presents the sub-themes that emerged from the data.

Table 6: Sub-themes of technology which emerged at DU and SCU

<table>
<thead>
<tr>
<th>Deakin University</th>
<th>Southern Cross University</th>
</tr>
</thead>
<tbody>
<tr>
<td>Data-warehouse repository</td>
<td>Data-warehouse repository</td>
</tr>
<tr>
<td>Emerging technologies</td>
<td>Emerging technologies</td>
</tr>
<tr>
<td>External data sources</td>
<td>External data sources</td>
</tr>
<tr>
<td>Predictive modelling</td>
<td>Predictive modelling</td>
</tr>
<tr>
<td>Use of online applications</td>
<td>Use of online applications</td>
</tr>
</tbody>
</table>

With ever-increasing opportunities to implement technological solutions, it is not surprising that institutions such as DU and SCU are exploring greater use of information and communications technology to assist in detecting and supporting at-risk students. DU has begun implementing alert triggers based on usage of the Blackboard online learning management system and grades. These triggers provide students with an on-demand, objective and non-human assessment of their own performance against an anonymous summary of their peers. Knowing where they stand relative to their peers is intended to motivate them to seek and accept academic support. The tool is explained as follows:
‘It monitors DSO [Deakin Studies Online] at linkage … and you get an SMS. “Hi [name], how is your first two weeks going?” Nothing more. And it only goes to those students who haven’t logged onto DSO. Or haven’t been in class. So it is a gentler version and it builds up to phone calls, etc. So that is operating through university as a general way of trying to find individuals who are not engaging … successfully.’ [D01]

Conclusion

Both DU and SCU have adopted a range of actions and activities to raise low SES student retention. The case study outcomes will further inform approaches and policies related to increasing the access, participation and retention of low SES, low income and academically underprepared students, and assist in modifying current data warehousing and tracking systems. How successful these initiatives will be in increasing retention and completion rates is yet to be seen. This study focused on the early stages of what will be a long process, and so far reports positive findings. The efficacy of these initiatives will not be known without undertaking a more intensive longitudinal study.

Study two: Outcomes from the meta-analysis

The data from each study were arranged into a 2x2 contingency table. As these data were binary and categorical, the appropriate metric for the effect size was the odds ratio (Ried, 2006). This metric has another important advantage in that it provides an intuitive interpretation of the analysis. The odds ratios were calculated in Excel using formulae provided by Motulsky (1995) and were independently tested using two online statistical calculators: the Practical Meta-Analysis Effect Size Calculator (Wilson) and MedCalc Version 12.4.0. The odds ratios, along with their 95 per cent confidence intervals, were analysed using Comprehensive Meta-Analysis software. The basic statistics results are presented below in Table 7 and Figure 3.

**Table 7:** Summary statistics for both fixed effects and random effects models for the first Meta-analysis of intervention and student retention.
Figure 3: Summary statistics (odds ratios, 95% confidence intervals and Z values/significance) for individual studies and both fixed effects and random effects models for the first Meta-analysis.

All eight studies demonstrated that the interventions yielded positive results. A significant q-value of 56.367 and an I-squared value of 87.798 support the conclusion that a random effects model fits these data. The point estimate for the effect size (e.g. the odds ratio) for the random effects model is 3.491 with 95 per cent confidence intervals from 2.148 to 5.674.

However, before drawing conclusions from the results presented here, some publication bias diagnostics are reviewed. Funnel plots of the standard error by the log of the odds ratio and of precision by the log of the odds ratio are presented in Figures 4 and 5.

Figure 4: Funnel plot of the Standard error by the log of the Odds Ratio for the first Meta-analysis
Both of these plots demonstrate that the distributions are not symmetrical, and this non-symmetry could be accounted for by publication bias. Some diagnostics were used to evaluate the likely effect of this possible problem—one method was to explore the effect of replacing potentially missing cases. Both of the previous funnel plots are presented with the missing data imputed (see Figures 6 and 7).

**Figure 5:** Funnel plot of the precision by the log of the Odds Ratio for the first meta-analysis.

**Figure 6:** Funnel plot of the Standard error by the log of the Odds Ratio for the first Meta-analysis, with imputed data added.
As the above figures show, the imputed data appears to restore the symmetry expected to be associated with these distributions. A suite of formal analyses provided further insight into the issue of publication bias. A classic fail-safe N (Rosenthal, 1979) and Orwin’s (1983) fail-safe N were used. The classic fail-safe N revealed that there would need to be 258 studies with no difference between the intervention and control groups added to our analysis to nullify the study findings presented (see Tables 8 and 9 below). This means that we would need to locate and include 258 ‘null’ studies for the combined two-tailed p-value to exceed 0.050. An assumption of this analysis is that intervention effects are not counter-productive—they do not actually decrease retention or increase attrition rates in this case. We argue that this is a reasonable assumption for this study to make.

Orwin’s fail-safe N radically assumes that there is potential for the intervention to be counter-productive. In our analysis, we set the odds ratio to 0.8, e.g. number of studies in which the intervention group demonstrated a deterioration of 20 per cent would be added to our analysis to nullify the effect. In this case, eight studies that demonstrated a 20 per cent success reduction for the intervention group over the control group would be needed. These two analyses provided an intuitive feel to this analysis. It would seem very unlikely that either scenario would be realised; consequently, we concluded that there is a real effect size.
Table 8: Summary statistics for Rosenthal’s classic fail safe N in the first meta-analysis.

<table>
<thead>
<tr>
<th>Classic fail-safe N</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Z-value for observed studies</td>
<td>11.28715</td>
</tr>
<tr>
<td>P-value for observed studies</td>
<td>0.00000</td>
</tr>
<tr>
<td>Alpha</td>
<td>0.05000</td>
</tr>
<tr>
<td>Tails</td>
<td>2.00000</td>
</tr>
<tr>
<td>Z for alpha</td>
<td>1.95996</td>
</tr>
<tr>
<td>Number of observed studies</td>
<td>8.00000</td>
</tr>
<tr>
<td>Number of missing studies that would bring p-value to &gt; alpha</td>
<td>258.00000</td>
</tr>
</tbody>
</table>

Table 9: Summary statistics for Orwin’s fail safe N in the first Meta-analysis.

<table>
<thead>
<tr>
<th>Orwin’s fail-safe N</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Odds ratio in observed studies</td>
<td>1.70081</td>
</tr>
<tr>
<td>Criterion for a ‘trivial’ odds ratio</td>
<td>1.00000</td>
</tr>
<tr>
<td>Mean odds ratio in missing studies</td>
<td>0.80000</td>
</tr>
<tr>
<td>Number missing studies needed to bring odds ratio under 1</td>
<td>20.00000</td>
</tr>
</tbody>
</table>

The Begg and Mazumdar (1994) rank correlation test can also identify the presence of publication bias. A significant correlation suggests the presence of publication bias. Our analysis demonstrated a Kendall’s Tau-b (corrected for ties, if any) of 0.53571, with a one-tailed p-value (recommended) of 0.03174. This suggests that there is at least some element of publication bias present.

One of the problems with these findings is that they fail to indicate the potential effects on overall effect size. Duval and Tweedie’s (2000) Trim and Fill is a final analysis discussed here that addresses this important issue. As noted earlier, if all studies were presented, funnel plots would be expected to be symmetrical. With publication bias, there would appear to be a number of studies missing on the left side of the plot. Trim and Fill determines where the missing studies are likely to fall, adds them to the analysis and then re-computes the combined effect. The imputed studies are then used to recalculate the meta-analysis. Using a random effects model, this method suggests that two studies are missing. Under the random effects model, the point estimate and 95 per cent confidence interval for the combined studies is 3.49078 (2.14775 and 5.67364). Using Trim and Fill, the imputed point estimate is 2.33650 (1.37269 and 3.97702). The funnel plots for these imputed studies have already been presented. These finding demonstrate that even though publication bias exists, there is still a strong positive (favourable) and unequivocal effect size demonstrated in this study.

One last possibility is now examined. From the funnel plots, it would appear that there are two separate results clusters. Consequently, we reviewed these studies to determine whether there might be something different about these two sub-groups. The sub-group on the right side of the plot demonstrated very high effect sizes. Although the number of studies was small, both groups seemed to cluster, suggesting that they might be tapping into two different features. It also suggested that some of the heterogeneity exhibited might be accounted for by a moderating variable—the type of intervention used. We had
thought that the difference between the studies was that they were targeting at-risk groups; surprisingly, this was not the case. The difference appeared to be in the content or orientation of the interventions. The interventions on the left appeared to be those that focused on imparting academic aptitude or skill acquisition. Those on the right focused on social aspects, such as helping students’ adjust to their environment. To examine this finding, we created a moderating variable and identified whether each study’s intervention was an academic or social intervention. The study classifications of the studies are tabulated below (see Table 10).

Table 10: Studies used in the meta-analyses, together with their academic/social classification.

<table>
<thead>
<tr>
<th>Study name</th>
<th>Classification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Oliver (1993)</td>
<td>Academic</td>
</tr>
<tr>
<td>Keeton, Clagget &amp; Engleberg (1998)</td>
<td>Academic</td>
</tr>
<tr>
<td>Blanc, DeBuhr &amp; Martin (1983) (Cohort A)</td>
<td>Academic</td>
</tr>
<tr>
<td>Blanc, DeBuhr &amp; Martin (1983) (Cohort B)</td>
<td>Academic</td>
</tr>
<tr>
<td>Mansfield, O’Leary &amp; Webb (2011)</td>
<td>Social</td>
</tr>
<tr>
<td>Salinitri (2005)</td>
<td>Social</td>
</tr>
<tr>
<td>House &amp; Wohlt (1991)</td>
<td>Academic</td>
</tr>
</tbody>
</table>

The modified database was then re-analysed, and summary statistics are presented overleaf. This analysis estimated the effect sizes and 95 per cent confidence intervals for fixed and for random models and for a mixed-effects analysis (see Figure 8 below). In all presentations, the 95 per cent confidence intervals for the two groups did not overlap, suggesting that they are independent samples. When tested, the academic and social groups were found to be significantly different ($p < 0.0001$). The q-values for both the academic and social groups were both under 10, although neither was significant. The total between groups’ q-value was 48.09, demonstrating that much of the previous heterogeneity was accounted for by the moderating variable of the intervention type. However, there was a moderate I-squared statistic for the academic group, suggesting that this group exhibited some heterogeneity and that a random effects model was suited to those studies.

As previously demonstrated, the point estimate of the odds ratio for the academic intervention group was around 1.65, and the lower 95 per cent confidence interval was 1.35. The point estimate for the odds ratio within the social intervention group was 27.88, with the lowest 95 per cent confidence interval 12.54.
<table>
<thead>
<tr>
<th>Groups</th>
<th>Effect size and 95% interval</th>
<th>Test of null (Z-Tail)</th>
<th>Heterogeneity</th>
<th>Tau squared</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Number Studies</td>
<td>Point estimate</td>
<td>Lower limit</td>
<td>Upper limit</td>
</tr>
<tr>
<td>Fixed effect analysis</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Academic</td>
<td>5</td>
<td>1.632</td>
<td>1.426</td>
<td>1.801</td>
</tr>
<tr>
<td>Social</td>
<td>3</td>
<td>27.888</td>
<td>12.344</td>
<td>61.992</td>
</tr>
<tr>
<td>Total within</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total between</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Overall</td>
<td>8</td>
<td>1.701</td>
<td>1.515</td>
<td>1.903</td>
</tr>
<tr>
<td>Mixed effects analysis</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Academic</td>
<td>5</td>
<td>1.654</td>
<td>1.363</td>
<td>2.021</td>
</tr>
<tr>
<td>Social</td>
<td>3</td>
<td>27.888</td>
<td>12.344</td>
<td>61.992</td>
</tr>
<tr>
<td>Total between</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Overall</td>
<td>8</td>
<td>1.955</td>
<td>1.610</td>
<td>2.375</td>
</tr>
</tbody>
</table>

**Figure 8:** Summary statistics for both fixed effects and mixed effects models for the second meta-analysis of intervention and student retention.
Discussion of the meta-analysis

The purpose of this analysis was to determine whether interventions are effective in ameliorating student attrition. Although this is not a large meta-analysis, the answer to the research question is an unequivocal yes.

The first suite of analyses demonstrated that despite the presence of publication bias, there was a positive effect from the interventions. The best estimate was the point estimate for the random effect model, which was an odds ratio of 2.34, and the lower end of the 95 per cent confidence interval was an odds ratio of 1.37. The intervention group was estimated to be 2.3 times more likely to be retained than the control group. Even at the lowest estimate, the intervention group was about 34 per cent more likely to be retained than the control group. Because the model was a random effects model, these data can be generalised to the larger population, strongly supporting the conclusion that interventions are effective in reducing attrition rates.

The second suite of analyses, although underpowered, still provided surprising insights into understanding how intervention affected attrition. Overall, the results were very positive. For the academic intervention group, the point estimate of the odds ratio suggests that this type of intervention is associated with around a 65 per cent retention increase. Further, the lower 95 per cent estimate is 1.35, suggesting at worst that an academic intervention would likely result in a 35 per cent retention increase when compared with the control group. The academic intervention and social intervention groups appeared to be distinct, with non-overlapping confidence intervals. The social intervention groups particularly appeared to benefit, with retention improving 12 to 24 fold. However, this particular group had the lowest numbers in the study; some caution should thus be taken in interpreting these results. Nonetheless, there is no doubt that social interventions are at least as effective as academic interventions and probably more effective. Interestingly, there does not appear to be any indication that social interventions are more helpful for at-risk students—in our study, the effect seemed to apply to the entire student population.

It appears that interventions do positively assist student retention, and that the effect is distributed across the entire student body. Although both types of interventions are effective, it appears that social interventions are especially helpful. However, this area requires ongoing investigation, and any intervention programs established should be monitored. Further, these evaluations, whether positive or negative, should be published with sufficient detail to contribute meaningfully to the growing body of evidence that supports the notion that interventions assist student retention.
Project Outcomes compared against deliverables

The following table indicates those proposed outcomes outlined in the original research proposal with corresponding comments of the outcomes achieved alongside.

<table>
<thead>
<tr>
<th>Proposed outcome/deliverable</th>
<th>Outcomes achieved</th>
</tr>
</thead>
<tbody>
<tr>
<td>Recommendations for the structures (including partnerships), processes and technologies</td>
<td>An article has been written and submitted for publication which outlines the key points found as a result of the comparative case study. The recommendations include improvements to the process generally.</td>
</tr>
<tr>
<td>required to enable the tracking of student cohorts based on the comparative case study.</td>
<td></td>
</tr>
<tr>
<td>A report on preliminary findings of the comparative case study which particularly focuses on</td>
<td>This information is embedded in the paper above outlining the key points found as a result of the explorative case study. This paper has been submitted to a journal.</td>
</tr>
<tr>
<td>points of learning across the two institutions that will provide benchmarks for other</td>
<td></td>
</tr>
<tr>
<td>institutions related to the design of their monitoring systems and the measures used to</td>
<td></td>
</tr>
<tr>
<td>identify students at risk.</td>
<td></td>
</tr>
<tr>
<td>Recommendations for other institutions wanting to establish student tracking projects.</td>
<td>It was intended to prepare a brief guidelines document but the results at this stage do not lend themselves to such a publication. The data had already been collected by the time the new project leader took over and the information sourced from the two case studies was not enough to provide generalisable advice. Further case study analysis would be required.</td>
</tr>
<tr>
<td>A workshop conducted at the AAIR Annual Forum in November 2011 that explores student cohort</td>
<td>A workshop was completed at the AAIR SIG Forum in August 2011. Presentation on the research approach was presented at the 2011 AAIR Annual Forum (see outcomes).</td>
</tr>
<tr>
<td>tracking across institutions within the sector.</td>
<td></td>
</tr>
</tbody>
</table>
Enable a better understanding of where teaching and learning interventions could be best placed to assist under-prepared students’ success and completion in higher education.

The literature reviews, the empirical exploratory case study, and the findings from the meta-analysis revealed that a number of successful intervention strategies have been identified that would be useful to institutions who are interested in assisting under-prepared students achieving better educational outcomes.

It will also tell us which life course conditions may need to be tracked (such as high levels of student mobility) so that students at risk can best be identified early and assisted to achieve successful outcomes.

The completed literature review has provided a number of key factors, some pre-tertiary, personal characteristics and some institutional derived factors that were used in the exploratory case study.

Will inform approaches and policies related to increasing the participation rate of particularly low SES, low income and academically under-prepared backgrounds students.

The results lend themselves to policy development such as identifying the types of characteristics that should be tracked and the demonstration of social interventions being very effective to student retention generally.

Modifications to current data warehousing and record system currently in use.

As a result of this study, there is only limited additional knowledge gained in regard to the development of data warehouse and student record systems.

The more tangible outcomes from the project have been the publications achieved to date and the intended further publications that should ensue over the early months of 2013.
Chapter Four: Recommendations

The project findings present rich data concerning the utility of various HEPPP interventions for increasing student preparedness and reducing student attrition. The staff perceptions advocated for intervention programs that targeted all students, in order to capture students who may not be obviously at risk. Therefore, parallel interventions would ideally target both at-risk student populations along with retention programs for students in general.

The findings also suggested that interventions should start as early as possible, depending on the type of intervention being observed. Orientation programs for high school students have historically focused on senior students more as a marketing exercise to attract the “brightest and best” to a particular institution. With government campaigns to increase participation from non-traditional student cohorts, orientation programs started to focus more on raising aspirations and providing programs that would allow these new cohorts to transition successfully. Both DU and SCU had orientation programs involving Year 9 secondary school students, but were considering targeting groups as young as Year 6.

Further resources are needed to assist with institutional culture change. Institutional leaders could take a more “student-centred” approach, one that listens to what current students say they need. They also must recognise the different cultures that a more diverse student population encapsulates and respond appropriately to those. The results of the meta-analysis clearly demonstrated that social interventions where highly successful and the student centred approach would possibly enhance this.

Another emerging theme from the interviews was that having first year classes taught by casual academic staff may be a cheap alternative, but may also pose a risk in terms of providing under-prepared students with limited access to their regular tutors and lecturers. In this day and age, with the advancements in technology, universities have greater opportunities to be clever in the ways they interact with and support their students. Through alert triggers and targeted correspondence, students can receive positive feedback and useful advice and information in a friendly, 24/7 format.

Conclusion

Both DU and SCU have adopted a range of actions and activities to raise the retention of students from lower SES backgrounds. The outcomes from this case study will further inform approaches and policies related to increasing the access, participation and retention of low SES, low income, and academically under-prepared students, as well as assisting in the modification of current data warehousing and tracking systems. How successful these initiatives will be in increasing retention and completion rates is yet to be seen. This study has focused on the early stages of what will be a long process, and so far, reports positive findings. The efficacy of these initiatives will not be known without a more intensive longitudinal study being undertaken.

This study will be enhanced with a more longitudinal approach to see the outcomes of both DU and SCU’s initiatives. It could also be enhanced by the inclusion of one or two other institutions which have been attempting to develop initiatives around under-prepared students and lowering attrition rates for these cohorts e.g. Edith Cowan University and Charles Sturt University.
Chapter Five: Dissemination

In addition to the current report, we have published an article, submitted an article and have two further articles in preparation. Findings of the report have been presented formally via three conference presentations and have also been shared during internal forums.

Published journal article:

Submitted journal articles:

Journal articles under preparation:

Conference presentations:
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Appendix A

Commonwealth funded Higher Education Participation and Partnership Program (HEPPP) projects concerned with identifying and affecting attrition rates of under-prepared students.

<table>
<thead>
<tr>
<th>Intervention type</th>
<th>Deakin University</th>
<th>Southern Cross University</th>
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<tbody>
<tr>
<td>HEPPP Committee</td>
<td>Diverse Student Cohort Tracking Committee (DSCTC). Responsible for the implementation of HEPPP projects (known as Deakin University Participation and Partnership Program (DUPPP) at Deakin).</td>
<td>i-OnTrack Committee. Responsible for the implementation of HEPPP projects.</td>
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<tr>
<td>Technology</td>
<td>Deakin at Your Doorstep. Online courses accessible via local regional community centre or Technical and Further Education (TAFE) college at a time that suits them, to meet with other students and to create their own study groups.</td>
<td>i-Ontrack project. A diagnostic tool that will endeavour to distinguish those students likely to be most ‘at-risk’ of withdrawal or failure based on LMS activity usage. In addition, other data such as low SES background, parent's education etc. will be used as an indicator of ‘at-risk’.</td>
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<td>Support</td>
<td>Succeed At Deakin. Deakin University is utilising five triggers such as not attending orientation, not attending tutorials, not logging into the LMS (Blackboard), not submitting the first assessment task etc. Each of these activates an intervention which may be a contact through a text message, a telephone call, an email, with the aim at prompting students to take up support.</td>
<td>Peer-mentoring. SCU’s School of Arts and Social Sciences is developing a peer mentoring program based on experiences of final year students which best enabled them to progress through their course and the barriers they encountered and presumably overcame. These experiences are then passed onto first year mentees.</td>
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<td></td>
<td>Peer-mentoring. This involves senior students supporting small groups of new students for six weeks with no expectation beyond that. However, communication between mentors and mentees often continues beyond the six weeks.</td>
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<td></td>
<td>Curricula embedding. To combat a lack of ‘referencing’ skills amongst Deakin students, academic skills are embedded into the standard first year curriculum across all courses. This is designed to assist under-prepared students with necessary skills.</td>
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<td><strong>The ‘drop-in’ program.</strong> Mentors are available in a physical space at particular times and new students can ask whatever ‘stupid’ questions they like. Mentors refer difficult questions to the relevant student support services.</td>
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<tr>
<td><strong>Unpreparedness</strong></td>
<td><strong>Preparation for Success.</strong> An alternative pathway to undergraduate courses. ‘Preparation for Success’ is an enabling course that provides basic study skills as well as developing research and writing skills in the arts and business or the sciences.</td>
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<tr>
<td><strong>Melbourne Institute of Business and Technology (MIBT).</strong> Deakin University has an articulation arrangement with the MIBT whereby students commence studies with the private provider and obtain credit for studies undertaken towards a business degree. Initially international students utilised this arrangement. But now low SES students or other underprepared students are seeing this as a viable pathway to a degree at Deakin.</td>
<td><strong>Articulation arrangements.</strong> In addition to the MIBT pathway, there are articulation arrangements between Deakin and a number of TAFE Colleges in Victoria. Deakin is also exploring ways to assist those students struggling at university to return to the TAFE system.</td>
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<td><strong>Articulation arrangements.</strong></td>
<td><strong>Articulation arrangements.</strong> SCU offers two-year Associate Degrees in Allied Health, Arts and Business for students who could not meet entry requirements to bachelor degrees. Students complete a TAFE Certificate IV as part of the first year of the Allied Health and Arts courses thus providing a range of exit points if students do not choose to go onto undergraduate studies.</td>
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<td><strong>Future Students</strong></td>
<td><strong>Unibound Outreach program.</strong> One of a number of pre-tertiary orientation programs designed to change aspirations in year 7-9 students enrolled at 15 schools. Ie. Indigenous professors speaking to indigenous students about their success at university.</td>
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<td><strong>u.life.</strong> A Deakin pilot program which targets Year 9 students and aims to demystify university and study.</td>
<td><strong>Widening Horizons.</strong> A program which was designed to build on the u.life program by opening up different pathways for students who are young parents.</td>
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<td><strong>Head Start Scheme.</strong> Aims to enrol the ‘best and brightest’ local school children in university units through and providing credit for those units when they are admitted to an SCU undergraduate course.</td>
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