Case Study 5
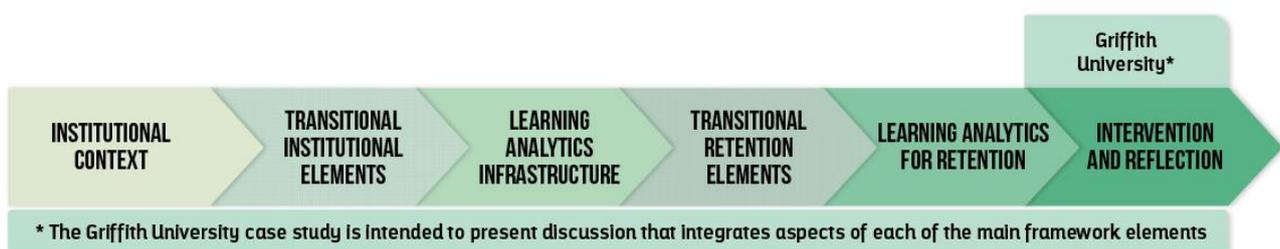
Griffith University

This case study presents an overview of the use of learning analytics for retention purposes at Griffith University. In the context of the framework this case study highlights a relatively mature and sophisticated analytics implementation, and in doing so, explores factors across all levels of the framework. More specifically, the Griffith case study helps describe how learnings derived from analytics informed interventions can be reflected on and used to drive iterative improvements to the system. This is the Intervention and Reflection section of the framework.

In a practical sense the Griffith case study explores the use of predictive analytics and how these compliment and guide more traditional ways of responding to students at-risk. One of the key messages provided by participants in the project was that a modern university generally does not lack for data. Rather, for them, the challenge was often expressed in terms of actually doing something with the data. This case study spends considerable time focusing on the intersection between people and data, which helps illustrate the types of expertise and organisational structures that are pivotal when learning analytics are being deployed to assist with retention.

Overall, The Griffith case study provides a thorough explanation of the iterative development of a retention strategy and accompanying actions that are underpinned by the use of analytics.

The figure below illustrates where the Griffith University case study fits in relation to the *Let's Talk Learning Analytics and Retention* framework.

INSTITUTIONAL CONTEXT → TRANSITIONAL INSTITUTIONAL ELEMENTS → LEARNING ANALYTICS INFRASTRUCTURE → TRANSITIONAL RETENTION ELEMENTS → LEARNING ANALYTICS FOR RETENTION → INTERVENTION AND REFLECTION — Griffith University*

* The Griffith University case study is intended to present discussion that integrates aspects of each of the main framework elements

Institutional Background

Griffith is a large multi-campus metropolitan public university located in South-East Queensland across five campuses (Southbank, Mt Gravatt, Nathan, Logan and Gold Coast). The University hosts approximately 44,000 students (80% domestic and 20% international). About 70% of students are school-leavers and the balance enter the University from other pathways. A significant proportion (60%) of Griffith student are the first in their family to attend university. Approximately 90% of students study in on-campus mode and the balance in online/distance mode. The University learning management system is *Blackboard* and the student administration system is *Peoplesoft*.
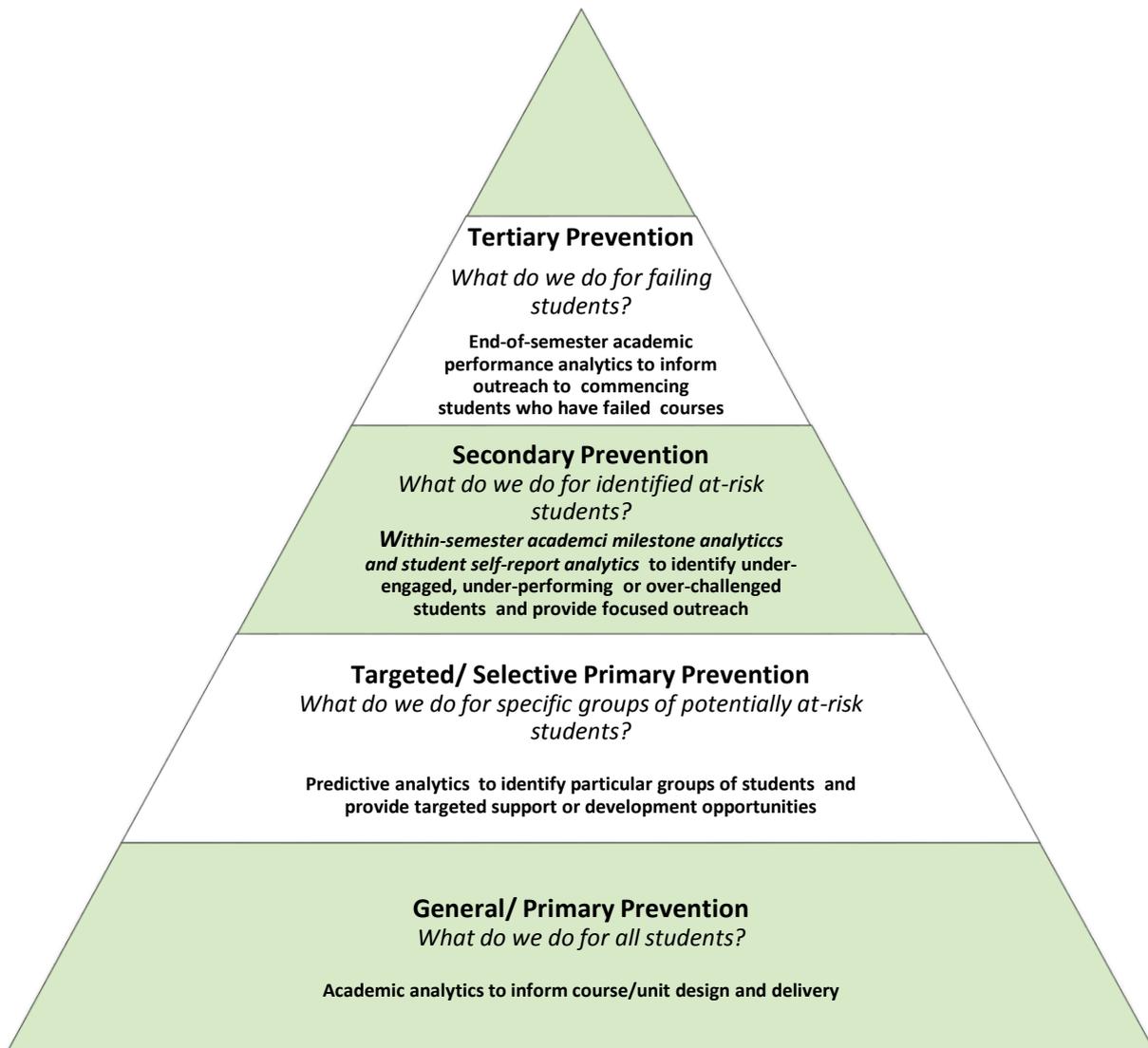
Analytics Strategy

The Griffith Student Retention Strategy proposes a whole-of-institution approach to facilitating the success, progression and graduation of our students. The strategy is informed by four key principles: the use of evidence-based interventions, the use of the student lifecycle to inform practice, the involvement of all University staff (everybody's business) and communicating the criticality of the retention agenda to the core business of the University.

Clarifying our *ideas about student risk* is a necessary starting point in designing analytics-based strategies to prevent or reduce academic failure. At Griffith, our understanding of student risk, and our related analytics strategy, is informed by three propositions. Firstly, *academic risk is not an inherent characteristic or inevitable outcome of group membership* (e.g., first in family students, students from low SES backgrounds). Group membership is often a proxy indicator of the potential increased likelihood of underlying risk factors (e.g., access to resources). While there is great value in predictive early-alerts based on student information at enrolment, *we are mindful in our approach of not creating self-fulfilling, and potentially disempowering, expectations that 'uni will be difficult' for various student populations.*

Generally speaking, *proximal factors* (i.e., things that are closer in time and place to university) are more controllable, empowering and predictive of success than distal factors (i.e., group membership/demographic background). Thus, for example, the time students spend studying (time-on-task) is a reliably stronger predictor of their academic success than their demographic characteristics. *Our analytics strategy therefore places emphasise on factors which are within our own and our student's control or are amenable to our influence.*

Finally, risk is not necessarily *an inherent quality of individual students* (as in the term 'at-risk student'), but rather it can be a function of the *interaction between a student and the university*. Thus, a fuller understanding of 'student risk' requires us to consider how the design and conduct of our learning environments and assessment practices may inadvertently increase commencing students' risk of academic failure or impede their engagement. In this sense, risk can be defined as a *mismatch* of the demands of a course and the resources of commencing student (the knowledge, attitudes and capabilities we assume they possess). In this sense, risk is reduced when courses are designed based on an explicit understanding of students' capabilities. This does not necessarily imply 'dumbing down' or 'reduction of standards', but rather, making conscious design choices about where and how to start the learning and teaching process to optimise learning based on students' entry capabilities. Conscious course design is an investment in prevention and is the ultimate risk management strategy. Importantly, 'good design' reduces the need for co-curricular support and can result in a significant saving of time, effort and finances. *Therefore, our analytics strategy seeks to provide insight as to how we might optimize the 'transition enabling' qualities of our learning environments for our commencing students.*

We have accordingly conceptualised our evolving retention-focused analytics strategy in terms of responding to the needs of different student populations (See Figure 1).

Tertiary Prevention

What do we do for failing students?

End-of-semester academic performance analytics to inform outreach to commencing students who have failed courses

Secondary Prevention

What do we do for identified at-risk students?

***Within-semester academci milestone analyticcs and student self-report analytics* to identify under-engaged, under-performing or over-challenged students and provide focused outreach**

Targeted/ Selective Primary Prevention

What do we do for specific groups of potentially at-risk students?

Predictive analytics to identify particular groups of students and provide targeted support or development opportunities

General/ Primary Prevention

What do we do for all students?

Academic analytics to inform course/unit design and delivery

Figure 1: Levels of analytics and intervention with various student risk populations

Given the above we are currently employing the following complementary modes of analytics to develop related forms of actionable knowledge about our students:

- *Predictive analytics* to provide insight into the influence of demographic or historical factors on student success

- *Within-semester analytics* to provide insight into the influence of promixal or current context factors on student success

- *Student self-report analytics* to provide insight into students' experience and concerns

- *Academic analytics* to provide insight into the transition-enabling features of our first-semester courses

Predictive Analytics

What methodology are we using to predict students at-risk of discontinuation?

The University is committed to an *evidence-based approach* to supporting student success and retention. As part of this strategy we have modelled the behaviour and outcomes of our past undergraduate students to identify patterns of success and attrition. We are now using these insights to predict the *likelihood of attrition* of our current students and to provide targeted early-intervention to increase their chances of persistence, success and graduation. This process of data optimization or predictive analytics is increasingly becoming 'best practice' in higher education. Predictive analytics is based on the working assumption that the factors which can be linked to students who have left the university in the past, are likely to also impact on current students. We seek to discover patterns of student success and failure (i.e., predictive algorithms) by modeling the behavior of our past students. We apply these statistical models to analyse what we know about our current students to predict their likelihood of attrition. We then use this information to identify our 'at-risk' students and provide targeted early intervention to increase their chances of success. As we learn more about our students and the types of strategies that support their success we are able to improve our capacity for proactive outreach and prevention. This can be thought of as a self-improving or virtuous cycle (See Figure 2)
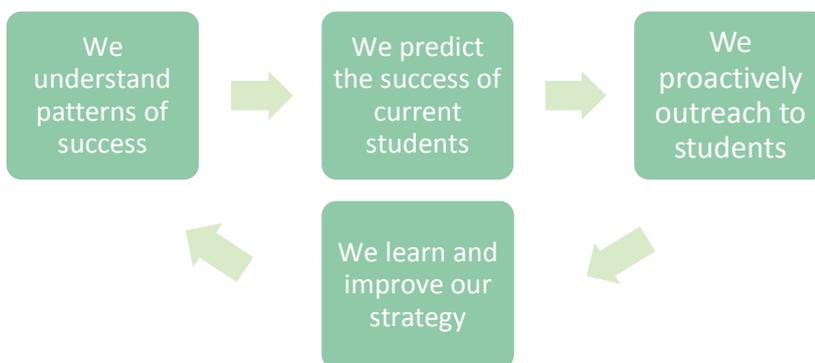
Figure 2: The Predictive Analytic Cycle at Griffith University

In developing our predictive algorithms we draw student data from a *range of administrative sources*, including student administration systems (PeopleSoft), tertiary admissions data, and university financial databases. The *types of student data* we analyse includes demographic information, entrance rank and degree preference, financial data relating to engagement and ease of access to the university (e.g., On-Campus accommodation and parking fees), study area, load undertaken and grades received. We have understandably primarily focused on information that can be automatically collected from established databases, and in this sense our algorithms are based on relatively non-intrusive observations or measurements of our students.

 In *modelling historic student data* to predict current behaviour it is important to appreciate that Griffith students are a dynamic population, and the further back one looks in time the less likely it is that the same factors are influencing student behaviour and decision-making. While in some cases data back to 2006 has been used, particularly for supporting analysis and for looking at longer-term trends, the primary data is sourced from students who commenced a study career from 2010 onwards. We use a combination of *statistical procedures* to generate predictions about our current

students. We have generally found logistic regression models to be the most accurate so these are used as the primary analysis. CHAID (decision tree) models are robust to missing data, which affects a significant number of students, so these are essentially used as a backup procedure.

Our approach has been to develop *predictive models for specific cohorts of students across the lifecycle*. For example we have developed *commencing student models (*e.g., first year-first semester domestic commencing students and commencing first year-second semester students) and *continuing student models* (e.g., second semester continuing students).

Analyses provide an *estimated or predicted level of risk of attrition* for each student compared to the rest of their cohort. This is organised into five *risk categories*: the top 5% of students are classified as Extreme risk, then the next 10% are Very High risk, the next 25% are High risk, the next 30% are Medium risk, and the bottom 30% are Low risk. These risk categories are based on our understanding of the probability of students persisting with their studies. For example, in general terms, students identified as *Extreme Risk* (the 'riskiest' 5% of students with the highest estimated risk) have less than 50% chance of returning for their second year of study and students identified as *High Risk* have less than 70% chance of returning for their second year.

What factors predict the success of commencing students?

Predicting student risk is an inherently complex task with many possible contributing factors varying in the type, combination and strength in the way they influence individual students. However, generally speaking, the major factors which have been shown to influence the success and persistence of our students include: their prior and current academic performance, degree preference, socio economic status, first-in-family to attend university status, entry pathway and study load. Some of the main predictive factors are summarised in Table 1.

We have *tested the predictive validity of our current algorithm* against actual first-semester attrition and the findings generally support the validity of our predictive model with more commencing students identified as high risk failing to return in Semester 2. For example, 93% of students identified as 'low risk' return to study, compared to 75% of students identified as being at extreme risk of attrition. We can safely conclude that we have established a sound empirical basis for identifying our at-risk commencing students.

The process of data optimization is dynamic and we are actively engaged in enhancing the predictive power of our algorithms. We are continuing to refine our predictive algorithms for commencing students and developing additional models to predict the risk of first year international and second year domestic students leaving. The University is commencing a major project incorporating more proximal or real time data into our models with the intention of providing more timely and individualised support to students. Data sources that have been identified as candidates for modelling include library borrowing history and in-semester course enrolments, along with Learning Management System (LMS) data on class attendance/participation, on-line activity and early assessment submission and outcomes.

How do we use this information?

A key component of our retention strategy has been to establish a network of Student Success Advisors (SSA) across the University with an SSA allocated to each degree program. Success Advisors provide advice and support to commencing students, conduct academic skills development and work with academic and professional staff in establishing the conditions for student success in degree programs. Success Advisors are provided with analytics *Risk Reports* detailing the students

who are identified as high risk or above in each degree program. Each student is 'risk profiled' (i.e., patterns of weighted contributing factors for each student is provided) to provide SSAs with enhanced knowledge on why a student is considered at-risk of attrition. Success Advisors proactively outreach to students identified at-risk by our predictive analytics process and through this process have conducted academic planning interviews with around 22% of the commencing student population.

It is important to understand that while some predictive variable (e.g., study load) are clearly statistically important, they are not necessarily readily amenable in themselves to meaningful interpretation or suggestive of intervention. In this sense our 'risk reports' are a point-of-departure or triggers for exploratory outreach which may lead to the identification of underlying issues, strengthen engagement or build capability or resilience through the development of *Student Success Action Plans*. In cases where the predictor variable is both important and suggestive of action (e.g., degree preference) a targeted cohort or group-level intervention may be undertaken (e.g., call campaign, offering of specific resources/opportunities).

Student Success Advisors are engaging a significant proportion of our student population through a range of channels: face-to-face sessions, phone consultations, email conversations and social media. In 2013 our SSA network reported 10,265 consultations (9,317 with first-year and 948 with later-year students) and in 2014 SSAs have conducted 13,830 consultations (10,681 with first-year and 3,149 with later-year students).

It is important to emphasise that student risk is a complex issue with many possible contributing factors. Our aim is to sensitively and positively outreach to students, offering assistance with planning for their educational success. Success Advisors do not label students or tell them that they have been identified as 'at-risk' by the University. Clearly, for reasons of confidentiality, only SSAs have access to information about these individual students. This work is guided by a set of student-centred practice principles that serve to empower our students and position us as active partners in their success:

- *Evidence* We seek to better understand our students so that we can help them acquire the tools and keys to success.

- *Proactive Focus* We positively outreach to our students to 'optimise success' rather than 'wait for failure'

- *Success Focus* We approach students with open-ended invitations to 'plan for their success', we do not label or categorize students.

- *Empowerment* We respect students' choices at all times. We do not 'do things' to students but rather we 'work for and with' them.

- *Privacy* We maintain the strictest level of confidentiality with the information we gather and use

We also have experimented with delivering aggregated (non-identifiable) summary *Students At Risk* reports to academic managers (e.g., Deans, Heads of School) with the aim of providing them with strategic information to support their ongoing leadership of the student success and retention agenda in their School.

Table 1: Summary of some of the main factors influencing the attrition of Griffith commencing students

What factors influence attrition?	How is this measured?	How does it influence attrition?
Prior Academic Performance	Tertiary Entrance rank score	Students who achieve a better rank are more likely to persist in their studies.
University Academic Performance	Grade Point Average (GPA) and number of courses failed.	Students who do better academically' at university are more likely to persist in their studies.
Degree Preference	Degree preference rank	Students who are enrolled in a more preferred degree program are more likely to persist in their studies.
Entry Pathway	Alternative bases for admission (e.g. Mature Age Entry or via VET Award Courses)	Students who enter Griffith through pathways other than Secondary Education are more likely to persist to the second year of study. Students awarded prior credit into their current academic career are more likely to succeed.
Study Load	Number of credit points enrolled	Part-time students more likely to leave university
Campus of study	Host campus for degree program	There is variation in attrition across Campuses. Part, if not most, of this variability can be explained by the other factors in this table.
School of study	Host School for degree program	There is variation in attrition across Schools. Part, if not most, of this variability can be explained by the other factors in this table.
Residency on Campus	University financial records	Students who live on campus have a lower level of attrition
Non-English home language	Student self-report	Students who speak a language other than English at home have a lower level of attrition
First in Family (FiF) to attend university	Student self-report	Students whose parents didn't undertake tertiary study (or whose parents' educational background is unknown) are more likely to attrite.
Socio-Economic status	Postcode of home address	Both low and high SES students are more likely to leave than medium SES

(low to high)		students.
Distance	Postcode of home address	Students from states other than Queensland and NSW have been more likely to attrite
Engagement	Completion of course evaluation	Students who complete at least one course evaluation survey are less likely to attrite.

Some general points of note:

- While all of the above factors make some contribution to predicting attrition they vary in their relative strength or predictive capacity. In this sense each student's level of relative risk is predicted by a unique cluster of factors.

- The relative contribution of these predictive factors varies across the student lifecycle, and in particular, they differentially predict end of first semester and end of first year attrition.

- The level of attrition does *vary across the student lifecycle*, with higher levels of attrition occurring at the front-end. Thus, in general, more students attrite before the first semester of the second year than between the first semesters of second and third year.

- It is important to note that there is a *'revolving door' pattern* with student engagement with university. Thus, there are fairly high numbers of students who don't return for their second or third semester of study, but do return to university at some later point. For example, over 1 in 3 students who commenced a program in semester 1 of 2006 or 2007 and didn't return for their second semester have subsequently returned to Griffith. We are currently analysing which 'departing students' are most likely to return to Griffith in an effort to identify differentiating characteristics of students who could potentially return to Griffith. This could inform an ongoing relationship management strategy.

Academic Milestones Analytics and Interventions

While the predictive algorithm for commencing students is primarily based on distal or demographic factors and provides a measure of *baseline risk*, we also employ a complementary set of proximal markers that provide a measure of *emerging or cumulative risk* over the semester.

Based on the premise that 'early engagement is a good predictor of later success' and the corollary 'early non-engagement is a good predictor of risk of failure', we can identify a number of points and tasks across the early student lifecycle that offer the potential for relatively efficient monitoring of student engagement and performance. This reflects our commitment to a 'front-loading' lifecycle approach to monitoring and outreach.

Based on the criteria of effectiveness, feasibility and sustainability, the following five 'risk and success markers', representing key milestones across first-semester, are utilised:

- *Readiness:* as represented through attendance at orientation or completion of online orientation

- *Early engagement:* as represented through class attendance or online participation

- *Early performance:* as represented through submission of first or early assessment

- *Early outcomes:* as represented through passing of first or early assessment

- *Cumulative outcomes:* as represented through passing of first-semester first year courses

The rationale for each of these milestone markers is presented in Table 2.

Table 2: Within-Semester Student Attrition Risk and Protective Markers

Risk Marker	Rationale
1. Early readiness markers Non-attendance at on-campus degree program orientation *and/or* Non-use of online orientation	Both attendance at, and satisfaction with, orientation predict early student satisfaction with their degree program. Students' expectations and (mis)conceptions of university study are related to their invested 'time on task' (i.e., the amount of time they invest in study-related activity) Signalling 'missed orientation' provides an assertive signal to students regarding the importance we attach to the depth of their early engagement, developing accurate expectations of university study and ensuring their 'time on task'.
2. Early engagement markers Non-attendance at class (especially tutorials/labs in weeks 1 to 4)(prior to census date) in a first-semester first year course, *and/or* Non-use of online environment (e.g., logging on to LMS) in a first-semester first year course	Early attendance at class or engagement with online learning modes (time on task) predicts subsequent outcomes (learning and persistence). Students' capacity to navigate our online learning environment is foundational to their ability to find the information and help they need. Attendance at class (especially small classes such as tutorials), facilitate relationships between students, which is both worthwhile in itself, and a protective factor for loneliness and attrition. Identifying and advising students who have enrolled but who do not intend to continue (disengaged/non-starters) before census date, enables them to avoid an unnecessary HECS debt and the University to proactively manage attrition KPIs.
3. Early performance marker Non-submission of first/early assessment in a first-semester first year course	Commencing students may 'fall at the first hurdle' for a wide range of reasons (some out of their control), and are routinely not aware of the capacity of the system to respond flexibly to genuine concerns (e.g., extensions, special considerations, study support). Student commonly do not seek timely help. This provides an early chance to problem solve and recover.
4. Early outcome marker Fail or poor result on first/early assessment in a first-semester first year course	Commencing students imbue their performance on early assessment with great personal significance (e.g., am I smart enough to be at uni?), and this can negatively impact on their self-efficacy and persistence. Performance on early assessment can be predictive of later outcomes. So a timely response is strategic and can aid academic recovery. Offers probably the first practical test of, and opportunity to discuss, students' progress (helps and hindrances) towards the goal of self-regulating/self-managing in an academic environment.

	High payoff point for intervention as this is the first risk marker which involves actual material consequences for students. Therefore we are more likely to have their attention.
5. Cumulative outcome marker Failure on a first semester first-year course	Failure on one or more courses (particularly core course) can require students to reconsider their progression plans in the current degree, or re-evaluate their sense of purpose or 'fit' overall with the degree or university more generally. Timely opportunity to review 'how they went' and to consider 'what they might do differently' in second semester.

Students' performance on each of these academic milestones has demonstrated their efficacy as predictive markers of success or failure.

Orientation
We have found non-attendance at orientation to be an early indicator of low engagement and subsequent risk of attrition. We have undertaken significant work to increase student attendance/participation, better outreach to those not attending and to improve the quality of the orientation experience. Overall 70% of our 2014 first-semester commencing students attended orientation, but a much lower proportion of mid-year commencing students (40%) do so. Providing an 'online orientation' process appears to be a viable alternative for a number of 'time-poor' students.

Non-submission of early assessment
While we may expect our commencing students to be mature and independent, many require early support and scaffolding to achieve an adequate level of self-regulation. Overall 8% of our 2014 commencing student cohort submitted their first/early piece of assessment after the due date, and more critically, a greater proportion (15%) of students identified as high risk of attrition late-submitted their initial piece assessment. This not only clearly demonstrates the value of this academic performance risk marker but also that the seeds of academic disengagement and failure are sown early!

Early Assessment Failure
Overall 10% of our commencing cohort fail their first/early piece of university assessment and, similar to the pattern of late submission, there is higher failure rate (15%) of students identified as being at high risk of attrition. Given the established critical importance of early success to student's academic efficacy, the *University Assessment Policy* has been modified so that Course Convenors have the discretion to allow students to resubmit their first assessment piece for a passing grade.

The utility of the *academic performance risk markers* (non-submission and failure of first/early assessment) in ameliorating attrition risk depends strongly on the design (relevance, stakes and timing) of assessment in first year courses. In courses where the assessment regime is less transition-sensitive (e.g., later in semester, too high weighting or too close together) there is reduced capacity for Success Advisors to outreach effectively to struggling students. In a very real sense, the efficacy of advising to support students directly depends on course design and culture.

Course Failure
We have found that, not surprisingly, the number of courses that a student fails in their first semester of university study is the strongest equal predictor (with overall GPA) of their subsequent attrition. A significant number of our commencing students trigger this risk marker, with approximately 8-10% of the commencing cohort, and a greater proportion (12-15%) of students

predictively identified as at-risk, failing two or more courses in their first semester of university study.

Student Success Advisors are tasked with outreaching to all commencing students who fail two or more of their first semester courses to offer the opportunity of an academic recovery planning interview (*Get Back On Track*). There are, however, significant challenges with engaging students who have had a failure experience (many experience feelings of shame and a sizeable number have already given up) and only 1 in 5 students offered the opportunity actually accept the offer and participate in the process. These late-stage tertiary interventions, while necessary, can only produce limited engagement and success. This reinforces the need to invest even more conscientiously in primary and secondary prevention activities (such as transition-sensitive assessment design, academic skills development and classroom engagement).

Enrolment Call Campaigns

Students often do not progress in a predictable and orderly fashion through their degrees and their progression is interrupted for a range of reasons. Academic administration data inform a series of call campaigns to target students at predictable key 'touch points' or 'crunch points' in the lifecycle (e.g., returning from leave of absence, non-returning students from previous semester). Analyses show these outreach campaigns help students to better navigate their progression and manage the related administrative procedures.

Self-Report Analytics to Scaffold Student Help-Seeking

It is clear that students are able to accurately self-identify when they are having problems or experiencing challenges that will negatively affect their academic success. For example, commencing students who indicate around week 6 that they are 'not doing as well as they hoped' on our Starting@Griffith survey subsequently attrite at significantly higher rates (27%) than students who say that they are 'doing well' or 'doing okay' (20%). Most critically, a number of these students may not be identified by our commencing predictive analytics protocol (based as it is on demographic profiling) simply because their academic challenges are the result of emerging 'proximal and personal' factors (e.g., life circumstances and cumulative stressors). This suggests that institutional retention strategies might optimally combine intrusive academic advising with a just-in-time student self-referral approach.

We survey our commencing students early in first semester (*Starting@Griffith survey*) with the aim of better understanding their early needs and concerns. The survey is distributed through our institutional Client Relationship Management (CRM) system which then enables us to initiate targeted email outreach to students. The process involves assigning 'response threshold' values to survey items and students who provide a rating 'just above' the nominated threshold receive a customised automated email (high-tech and low-touch) with embedded hot links to resources or referral contacts, and students self-rating 'significantly above' the threshold are referred to a Success Advisor (low-tech high-touch). We employ four categories of items to inform our self-report analytics process:

- *Students enrolment intentions* (continue, internal transfer, external transfer, exit);

- *Students experienced or anticipated challenges to academic success* (e.g., financial issues, competing demands and life-study-work balance, personal, family and health Issues, study strategies and habits, poor home study environment, disengagement and low motivation);

- *Students expressed request for help* (e.g., no need: I'm doing well and don't need to talk to anyone, un-met minor need: I'm doing okay but it would probably be useful to talk to someone about one or two things, un-met major need: I'm not doing as well as I hoped and I think it might be useful to talk with someone about ways to get back on track, currently met need: I'm not doing as well as I hoped and I am already getting the help I need, undeclared need: I'm not doing as well as I hoped but I don't want to talk to anyone at the moment); and,

- *Students dispositional self-evaluations* (e.g., academic efficacy, sense of purpose).

Once again, any discussion of facilitating students' help seeking must also appreciate that a significant minority of our students (between 10 and 15%) experience problems but actively reject any offer of help or outreach (I'm not doing well but I don't want to talk to anyone). Not surprisingly, this group of 'help rejectors' has a comparatively higher attrition rate. As has been often noted, one of the fundamental ironies of student support, an inherent challenge for any retention strategy, is that those who are most in need are often least likely to accept it. In a similar vein, our capacity to identify risk and need far exceeds our capacity to effectively respond.

Griffith students, probably similar to most Australian students, lead complex lives with a significant number of challenges to their academic success. The majority of issues self-nominated by our students relate to the challenges of managing their life circumstances: one in three identify financial difficulties, one in four identify competing demands from family, carer, or work responsibilities and one in five identify personal and family issues as significant challenges to their success at university. The highest factor self-nominated by Griffith commencing students as likely to negatively impact on their success is 'financial challenges'. Over 30% of our students rate finance related issues (and the related need to work longer hours and have less time for study) as a significant negative factor. Not surprisingly, our low SES students report financial challenges at a higher level (35%). Student poverty is likely to be a significant underlying contributor to attrition, and a proactive approach to student support and welfare is an essential aspect of any student retention strategy.

Interestingly around one in five students identify disengagement with their current degree (lack of interest, change of direction, lack of career prospects) as a potential reason for dropping-out of university. Such early questioning and ambivalence is consistent with the significant pattern of internal movement across our degree programs. For example, in 2013 around 12% of commencing students transferred from their program of initial enrolment. In this period of transition, students, based on very early experience of University adjust their expectations and appreciations of particular disciplines. Helping our students find the right match and making an informed choice about what to study is not only relevant to the student recruitment phase of the student lifecycle, but also critical in its contribution to subsequent student engagement and retention. From a lifecycle perspective there is significant value in better coordinating recruitment activities with 'future students' to achieve better alignment with retention goals for 'commencing students'.

Academic Analytics to Enhance Course Design and Delivery

A particularly strategic application of analytics in support of student retention is to facilitate general or primary prevention strategies which benefit all our students. These approaches function to reduce the types of risk that result from a mismatch or misappraisal of course demands and student resources. Critical among these universal capacity-building strategies is the design of first-year

semester courses (and related assessment practices) to effectively enable successful transition to university study. The most useful form of help for students is a well-judged, well-paced and well-aligned curriculum. A course that is 'crammed' or 'content heavy', and that 'moves forward' each week without checking if students are 'keeping up' is the antithesis of a student-centred self-adjusting learning system. Programs and courses that strengthen students' sense of purpose and build a sense of connection also reduce the risk of failure or non-persistence. Analytics which provide actionable knowledge to staff enables the iterative loop of course design and delivery quality improvement, which may consequently positively impact on both student retention and the success and satisfaction of all students.

Commencing students are invited (about week s 4-6) to *nominate one course or unit* that they are finding 'most challenging' and to respond to a series of questions about 'what makes it challenging'. Students' early experience of their identified 'challenging course' is considered to be the most salient data for this application of academic analytics since commencing students' early academic experiences can influence their subsequent success. There is a well-established relationship between students' academic self-efficacy and their subsequent academic achievement, persistence and aspiration. Students who 'get off to a good start' are more likely to experience enhanced self-efficacy, and those who 'struggle early' are more likely to experience a loss of personal and academic confidence.

Students provide both qualitative and quantitative feedback on a range of course/unit-level factors that are likely to influence their sense of efficacy (e.g., match between their starting baseline and the assumed knowledge of the course, feedback on the experienced cognitive load as a function of the content (what is taught) and process (how it is taught) (pace, organisation, relevance, etc). A summary *Challenging Course Profile* is produced when a 'sufficient threshold' (usually around 30% of a class) of students identify a course/unit as their 'most challenging'.. Approximately 50 reports have been produced, evenly distributed across disciplines, for both 2013 and 2014. The report is provided to the teaching team and framed as a *starting point for further discussion*. AS with identifying whether or not a student is at-risk of attrition, identifying a course as challenging is complex-careful interpretation of underlying factors is critical, and in should in no way reflect a negative perspective. Just because students nominate a course as 'most challenging' doesn't mean that it is a poorly-designed course or that poor teaching is involved. Often quite the opposite may be the case. Quite commonly, challenging courses are often those that contain the 'hard knowledge' of a discipline and/or require mastery of threshold ideas or professional practices that lay the foundation for later student success. In any scenario, it is the impact on students' academic efficacy that is the focal point of the analytics process.

Key Lessons and Findings

Over the past few years we have learnt or reaffirmed a number working principles in relation to implementing analytics-informed strategies in the service of student retention:

Mutual responsibility

There will be predictable limits to the level to which we can intervene in the lives of students to positively reduce academic failure. Some factors may be out of our or students' control, and ultimately, 'academic success' is the responsibility of individual students. However, this should not preclude an assertive approach to enhancing the early academic success of our commencing students and our active outreach to those potentially experiencing difficulties.

Students also do not necessarily seek timely help for a range of personal and systemic reasons. Reactive coping processes, under-developed problem-solving skills, frustratingly siloed systems and feelings of shame and inadequacy impede students in seeking and finding help in a timely manner. Students benefit from clear, predictable and active scaffolding of their efforts to succeed.

On the one hand, it is our responsibility to design and provide appropriate help systems and to facilitate students' access to these. On the other hand, it is our students' responsibility to make effective use of the resources we offer.

Transparency

The reduction of risk of academic failure is simply the other side of the coin of 'enabling academic success.' All of our commencing students, irrespective of group membership or academic pathway, will benefit from being systematically informed and educated about the factors within their control that will help or hinder their success at university. Being clear and frank with our commencing students about 'what it takes to succeed' and 'what we will do to help you' positions them as active and responsible partners in the learning process. Thus, if our 'at risk strategy' and our associated 'analytics processes' are transparent to students and a normalised aspect our overall explicit contract with them about 'studying at Griffith', then they may be less likely to be 'surprised' or 'offended' when someone contacts them about 'how they are going' after they trigger a risk marker. Thus, we actively communicate our at-risk strategy to all our students. Any analytics-informed strategy needs to be partnered with a transparent user-friendly help-finding framework which informs students as to 'the best way to help yourself' and staff as to 'the best way to offer help'.

Authentic Culture

Managing student risk involves a number of stakeholders with range of expectations. Our response to students is a function of both regulatory obligations and helpful intentions. In seeking to satisfy both of these agendas simultaneously we need to be careful not to confuse compliance with regulatory or institutional obligations (e.g., sending automated emails), with actions that may be of more help to individual students (e.g., contact by a tutor). *We need to be mindful of the related but distinct purposes of compliance and authentic help, and design our strategies accordingly.*

Staff beliefs and attitudes regarding the way 'a university should function' and their 'expectation of student independence' are key moderators of the extent to which analytic data about student experience or performance will be both seen as legitimate and acted upon. While it can be argued that the meta-goal of early university education is purposefully scaffolding students' capacity for independence and self-regulation, we cannot safely assume that students arrive at university with the ability and willingness to be independent learners. Facilitating student independence is a valid meta-educational goal, which is, however, not incompatible with identifying potential risk and providing and encouraging students to seek appropriate assistance. Students who are helped to recognize when they need help or assistance to 'go to the next level', and who feel empowered to do so, are more likely to succeed and feel good about themselves. *In this sense the implementation educational analytics needs to be sensitive to the implied 'staff-student contract' implicit in the established academic culture of a School or university.*

Local ownership

Analytics –informed help-rich learning environments do not necessarily create dependence, and indeed, high levels of student help-seeking may equally indicate poorly designed curriculum and assessment as much as limitations in student ability or motivation. Well-designed help systems have facilitating student self-regulation as their meta-goal, and, while providing multiple sources and flexible modes of help, emphasize as their foundation, purposefully facilitating self-help. It is also important to recognize that facilitating students to make use of self-help strategies is not the same as not offering little if any help. The former is a process of strategic scaffolding; the latter is a

process of premature insistence on independence. *Importantly, the more that we are able to integrate disciplinary-relevant data-informed help-systems into the local design of programs and courses the less we will need to invest in broad-brush university-wide mechanisms. Local data and help is always best!*

Students are not so much 'at-risk of not succeeding at uni', but rather of 'not succeeding in their degree'. Students are likely to respond best to help provided by staff they know within the context of their particular degree program. Thus our analytics and intervention strategies should preference the 'local and relational'. Technology-based mechanisms may be effectively employed to identify students who have triggered risk markers, and to initially communicate with or invite contact from them. However, in almost all circumstances, 'effective responding' will involve a focused and supportive conversation between staff member and student. *Thus, degree program should develop and implement locally relevant approaches to supporting their at-risk students which are consistent with university minimum standards.*

Any strategy for identifying and supporting at-risk students is necessarily multi-layered. Some individuals may need higher level intervention or support, relating to personal, mental health or other issues. For some this may be on one occasion – for others there may be patterns of being unable to cope. *Staff working with students on a daily basis need to feel both informed about and empowered to refer students to appropriate services.*

University-wide coordination and partnership

Both staff and students are best served by consistency and predictability. There is a need for a consistent university-wide minimum standard for both the identified markers of risk (What will we monitor?) and the minimum level of response with degree programs (How will we help?). Adopting a university-wide benchmark does not proscribe Schools implementing additional good practices above and beyond the agreed minimum standards. Adopting a 'shared rubric' across the university has the value of facilitating strategy coherence and a common language between staff.

There is a need for ongoing coordination between school/program-based responses and central university strategies. Low-level coordination simply involves boundary management strategies such as avoiding redundancy or not 'stepping on each other's toes'. This aids efficiency. High-level coordination involves boundary spanning strategies such as the active exploration of complementary activities. This builds effectiveness. Thus governance and coordination across silos and stakeholders around a common purpose is fundamental.

Supporting student success and reducing academic risk necessitates that we develop new and creative partnerships between academic, administrative and professional staff. Thus, supporting student success in the present context involves shifts in our traditional strategies, skills and roles, and is genuinely everyone's business.

Information management

The availability of information often motivates people, often simply out of curiosity or a need to 'be in the know', to seek access to it. Thus, for example, academic staff, seeing that student advisors have access to the 'risk profiles' of individual students, may argue that they are entitled to 'equal access'. In some cases expectations of access to information can be conflated with questions of relative status and authority. *Clear principles for access to identifying data are critical for maintaining student trust and protecting university integrity.*

Monitoring of effectiveness

The efficiency and effectiveness of strategies should be systematically monitored and evaluated at the granular level of degree program. What works in one degree context, curriculum and culture may not be so effective in another. Schools and disciplines differ, in particular, in their willingness and capacity to engage identified students in the process of academic recovery.

Sustainability

It is particularly imperative that we do not design strategies that are reliant on the 'energy of enthusiasts', these are almost always short-lived, and result in staff burnout and impede genuine systemic responses to students' needs. Thus, we need to design strategies that are both effective (what works?) and sustainable (What can we feasibly continue to do?), and embed these as owned and ongoing core business in university systems and degree programs.

The Griffith Team

The Griffith retention analytics strategy is a partnership across a number of university elements and roles each making complementary contributions:

Learning Futures

Professor Alf Lizzio (Dean Learning Futures), Professor Keithia Wilson (Portfolio Leader, Student Success and Retention), Dr Sakinah Alhadad (Learning Consultant, Research and Evaluation), Mr Louis Albert (Senior Project Officer): Developing intervention frameworks and analytics-informed protocols, coordinating the Student Success Advisor network and evaluating the efficacy of interventions.

Office of Planning Services

Mr Andre Easom (Senior Statistical Consultant), Mr Leo Shenqu (Planning Consultant: Developing our predictive algorithms and at-risk reports for Success Advisors and partnering in the ongoing development of evidence-based models and intervention strategies.

Student Success Unit

Ms Michelle O Brien (Manager, Student Transition and Leadership Team), Mr Chris Dell (Manager CRM Team), Mr Joel Moller (CRM Support Officer): Developing and maintaining our Client Relationship Management (CRM) system which both hosts student risk and intervention data and drives targeted outreach campaigns.

Blackboard LMS Team

Mr Leigh Stevenson (Manager Academic Enterprise System Services), Mr Paul Brown (Team Leader Learning@Griffith) and Blended Learning Advisors: Managing and developing our Learning Management System (LMS) and facilitating data queries related to LMS-based risk markers. Supporting staff in the configuration and extraction of data.

Faculty Staff

Deans (Learning and Teaching) and our Student Success Advisor network: Undertaking front-line support of at-risk students based on provided analytics and local knowledge and relationships.