What co-curricular interventions contribute to the academic success and retention of non-traditional commencing undergraduate students identified to be at risk of academic failure or early attrition from university when taking into account distal and proximal factors?
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appreciate the value of hard work. Sophie, you show positivity, strength and courage in facing your own significant challenges, which continues to inspire many, none more than me. Christina you show compassion and understanding beyond your years. I love you all very much.
Abstract

The extent to which three specific co-curricular interventions contributed to the academic success and retention of non-traditional first year undergraduate business students who were identified as being at risk of academic failure or early attrition in their university studies, when taking into account relevant distal and proximal factors is evaluated in this thesis.

Three specific co-curricular interventions introduced across the at-risk students’ first semester at university were tested individually and cumulatively to assess their impact on academic success and/or retention. These interventions were:

(1) semi-structured consultations with Student Success Advisors (SSAs) which began before start of the semester, during which time the SSAs proactively contacted at-risk students to address their requirements and responsibilities, but also in an attempt to have students commit to a plan of follow-up sessions throughout that semester;
(2) Academic Skills (AS) Sessions run from Week 4 of semester by Student Success Advisors (SSAs) and other university staff; and
(3) ongoing Peer-Assisted Study Sessions (PASS), for numeracy-based courses, coordinated by later year students (who had previously excelled in the course), in addition to their regular tutorials.

This thesis uses an Australian model, Lizzio’s Five Senses Model to ‘make sense’ of the experience of the encounter between students who are not just new to university, but often derive from backgrounds where they have no family university heritage to draw upon, in tackling university study and its often-foreign environment (a lack of academic and social capital). Universities up until most recent decades faced a largely homogenous student body. A case study approach was taken to this research, to determine the impact of the three co-curricular interventions when also taking into account distal and proximal factors. Part of this involved an examination of the validity of the Lizzio Model on two separate cohorts of students identified to be a possible risk of academic failure and attrition from their studies.

Two separate cohorts of commencing domestic first year students with similar distal characteristics, (i.e. factors: traditionally ‘fixed’ to individual students and are part of their antecedents prior to entering higher education), for example, pre-entry individual characteristics such as tertiary entrance (TE) scores and family demographics, are examined
within this thesis. These studies, for brevity referred to as Study 1 and Study 2, examine the relationships between early risk factors identified by the literature, the co-curricular interventions applied, and later consequences in terms of student retention, academic performance and satisfaction while also considering the impact of distal and proximal factors. The distal factors were used by the case-study University to deem these students at risk of academic failure and attrition. While a focus on proximal characteristics, (i.e. factors closer in time and place to the university encapsulate the way students behave and perform within the university setting), for example, their attendance and engagement at class, was used by the university to try to improve their academic success and retention rates.

Using learning analytics before the commencement of semester, students were identified as being potentially at risk on entry to university using selected ‘primary risk filters’ based on student’s individual distal characteristics. This included the at-risk students having a combination of: a low TE score (in the OP11+ range); a low preference for studying business as a degree program (third preference or lower); low socio-economic status (LSES); and a language other than English (LOTE) spoken at home.

To assess the effect of the co-curricular interventions, at-risk students were monitored using proximal ‘ongoing engagement’ indicators. These identified the number and percentage of at-risk students who attended at least one SSA Consultation, an AS Session and PASS. Academic success was defined in terms of whether a student passed courses in which they enrolled at the commencement of their first semester, as well as whether the student had a passing (i.e. > 4.0) grade point average (GPA). It was then re-tested at the end of the student’s following semester, to assess whether the student had a passing (i.e. > 4.0) GPA at the end of their first year of study and whether this corresponded with overall retention of these students.

Retention was defined in terms of whether the student re-enrolled in second semester, and the first semester of the following year for each cohort. Additionally, graduation rates were reviewed up until the end of 2017 for both cohorts (2012 and 2014 commencing students). Because of the ‘originality’ of the SSA Program at the case-study University, and it being the center-point of its co-curricular initiatives, a strong focus of the research revolved around the use of learning advisors, known as Student Success Advisors (SSAs). The SSAs were specifically appointed to the Business School to help improve the academic success and retention rates of students considered to be at risk of failure and/or attrition.
In Study 1, the quantitative analysis was undertaken to test whether attendance and participation in co-curricular activities had a statistically positive significant effect on academic success, in addition to the effect of distal and proximal variables, including five proximal lifecycle risk markers known to predict student engagement and retention (Wilson & Lizzio, 2011). The results of this study were then tested on a similar cohort of students (Study 2), for which a prospective model was formulated. For Study 2, thematic qualitative analysis was undertaken of extended semi-structured interviews with 25 at-risk students at the start of Semester 2, 2014 soon after the students had completed their first semester at university and involvement in the co-curricular interventions. The thematic qualitative analysis was used to gain a deeper understanding of the students’ first semester (first year) experience, and of their perceptions of the effectiveness of the interventions on their academic success and re-enrolment in second semester.

Collectively these studies enable exploration of a much larger set of variables that are grounded in student success and retention, thus further enabling analysis of student characteristics and perceptions with subsequent retention and performance. The results suggest that the interventions such as the Student Success Advisor (SSA) Program are part of a range of resources that students can draw on to improve their success. Collectively, the studies show the value of the SSA and PASS interventions, however, both distal and proximal factors impact dissipate resulting in student failure and attrition over time if the students have not built their own senses of success. As such, the Five Senses Model maps against the student experience in terms of helping to predict outcomes by providing an education model to educate all parties about students working towards finding their own sense of connection, capacity, resourcefulness, purpose and student identity. Primarily, the results suggest that student sense of ‘mission’ (purpose) is most important on entering the university. The sense of purpose appears to be associated with FiF status, which is predictive of retention (but not GPA performance). The thesis does recommend an augmented model that synthesises the combined work of Lizzio (2006, 2009) Tinto (1975, 1993) and Kerby (2015), in addition to recommending the inclusion of a sense of support and a sense of (having personal) resources, to encompass proximal and distal factors.

While there is no single panacea to cure attrition, the results of the case studies suggest that interventions such as those investigated within this thesis (i.e. the use of SSAs and programs such as PASS and AS Sessions), help students build their five senses of success, in addition to
developing a sense of support and the sense of having personal resources. In particular, interventions developed as part of a first-year co-curriculum suite of activities, such as those fore-mentioned, are likely to help first-in-family students whose family background may not provide students the academic and social capital required to easily adjust to their new learning and social (university) environment. Evidence further suggests that if these students are given this support then they are able to graduate at the same rates or better, as their second-generation peers, as found within this thesis. This is of great importance to other institutions similar to the case-study university, where being the first-in-family to study in higher education is more common. Thus, the results of the case studies suggest that the interventions could indeed help universities improve their retention rates if implemented; albeit, the significant time and costs of such must be taken into account, and thus government policies and funding that support such activities are also strongly encouraged. This in turn should help universities achieve stated government objectives such as improved retention and graduation rates.
Declaration of Originality

This work has not previously been submitted for a degree or diploma in any university. To the best of my knowledge and belief, the thesis contains no material previously published or written by another person except where due reference is made in the thesis itself.

Brendan (Ben) French

Date: January 2018
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</tr>
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<tbody>
<tr>
<td>AACSB</td>
<td>Association for the Advancement of Collegiate Schools of Business</td>
</tr>
<tr>
<td>ABS</td>
<td>Australian Bureau of Statistics</td>
</tr>
<tr>
<td>AS Sessions</td>
<td>Academic Skills Sessions</td>
</tr>
<tr>
<td>ATAR</td>
<td>Australian Tertiary Entrance Score</td>
</tr>
<tr>
<td>ATSI</td>
<td>Aboriginal and Torres Strait Islander</td>
</tr>
<tr>
<td>CDET</td>
<td>Commonwealth Department of Education and Training</td>
</tr>
<tr>
<td>CHESN</td>
<td>Commonwealth Higher Education Student Support Number</td>
</tr>
<tr>
<td>ENTER</td>
<td>Equivalent National Tertiary Entrance Rank</td>
</tr>
<tr>
<td>FIF</td>
<td>First-in-Family</td>
</tr>
<tr>
<td>G08</td>
<td>Group of Eight</td>
</tr>
<tr>
<td>GPA</td>
<td>Grade Point Average</td>
</tr>
<tr>
<td>HECS</td>
<td>Higher Education Contribution Scheme</td>
</tr>
<tr>
<td>HELP</td>
<td>Higher Education Loan Program</td>
</tr>
<tr>
<td>LOTE</td>
<td>Language Other Than English</td>
</tr>
<tr>
<td>LSES</td>
<td>Low Socio-Economic Status</td>
</tr>
<tr>
<td>OECD</td>
<td>Organisation for Economic Cooperation and Development</td>
</tr>
<tr>
<td>OLS</td>
<td>Ordinary Least Squares</td>
</tr>
<tr>
<td>OP</td>
<td>Overall Position (Score used in Queensland)</td>
</tr>
<tr>
<td>PASS</td>
<td>Peer-Assisted Study Sessions</td>
</tr>
<tr>
<td>QTAC</td>
<td>Queensland Tertiary Admissions Centre</td>
</tr>
<tr>
<td>Abbreviation</td>
<td>Full Form</td>
</tr>
<tr>
<td>--------------</td>
<td>-----------</td>
</tr>
<tr>
<td>SES</td>
<td>Socio-Economic Status</td>
</tr>
<tr>
<td>SSA</td>
<td>Student Success Advisor</td>
</tr>
<tr>
<td>TAFE</td>
<td>Technical and Further Education (Institution)</td>
</tr>
<tr>
<td>TEQSA</td>
<td>Tertiary Education Quality and Standards Agency</td>
</tr>
<tr>
<td>TE Score</td>
<td>Tertiary Entrance Score</td>
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</tbody>
</table>
Glossary

Association for the Advancement of Collegiate Schools of Business (AACSB):

Academic Skills (AS) Sessions: Cocurricular Sessions literacy skills sessions run at the case-study University.

Academic Success: A (passing) grade point average (GPA) at university greater or equal to 4 (out of 7).

Australian Tertiary Admission Rank (ATAR): ATAR is a percentile score given between "less than 30" up to 99.95 (in a minimum increment of 0.05) which denotes a student's ranking relative to their peers upon completion of their secondary education.

At-risk students: At-risk students were defined for the purpose of this thesis with reference to proximal risk filters, viz., they had a relatively poor tertiary entrance (TE) score, their preference for the degree study program they were pursuing was low, their socioeconomic background was low, and they typically spoke a language other than English outside the university.

Aboriginal and Torres Strait Islander (ATSI): a person of Aboriginal or Torres Strait Islander descent who identifies as Aboriginal or Torres Strait Islander and is accepted as such by the community in which he or she lives.

Co-curriculum: free activities, programs, and learning experiences that are separate to the academic courses but complement students learning in the business school attached to the academic curriculum.

Commonwealth Higher Education Student Support Number (CHESSN): A Commonwealth Higher Education Student Support Number is a unique student identifier/identifying number that enables the Australian Government provide students with information about any Commonwealth assistance (scholarships, HELP loans or VET Student Loans) and track student retention and graduation rates.

Distal Factors: are those that are traditionally ‘fixed’ to individual students and are part of their antecedents prior to entering higher education (e.g., pre-entry individual characteristics such as educational backgrounds and family demographics).
Equivalent National Tertiary Entrance Rank (ENTER): Entrance score for university normally based on high school studies.

First-in-family (FIF): Those students who are the first in their family to attend post high school education (typically university – i.e., no parent/s (step), guardians, grandparent/s siblings and offspring have previously have attended higher education.

Group of Eight’ Universities (GO8): Otherwise known as ‘Sandstone Universities’, these are Australia’s older and more elite universities: the Australian National University; the Universities of Melbourne, Sydney, New South Wales, Adelaide, Western Australia, and Queensland; and Monash University.

Grade Point Average (GPA): This is a standard measure of achievement used to grade a student’s performance in each university subject on a seven-point scale: a High Distinction is scored 7, Distinction 6, Credit 5, Pass 4 and a Fail equalling 1.5 The GPA is calculated using a numerator containing the sum of the numerical grades for each subject multiplied by the number of credit points for that degree program, and a denominator containing the total number of credit points for the subjects undertaken.

Higher Education: For this thesis, higher education means education at a (post-secondary/high school) university or colleges in Australia or overseas.

Higher Education Loan Program (HELP): At undergraduate level it is an income-contingent loan scheme (formerly known as the Higher Education Contribution Scheme (HECS), an acronym that has held to this day. Under the HELP scheme, the Commonwealth (Federal) Government provides loans to Commonwealth-supported higher education students via the Commonwealth Department of Education and Training (CDET), and the scheme is administered by the Australian Tax Office.

Language Other Than English (LOTE): For the purpose of this thesis, students are domestic rather than international students, with a language other than English spoken at home.

Low socio-economic status (low SES): The case-study University recognises as having low SES, those students who come from an area officially classified to be in the lowest 25 per cent of SES, as per the official definition (i.e., the lowest quartile of socioeconomic distribution).
Non-traditional students: Students attending university who due to their historical disadvantage, are often referred to, somewhat confusingly, as non-traditional students. Among these are students who have historically low tertiary entry scores (OPs’ ATARs); LOTE and low SES family backgrounds, accepted entry into a degree program other than their first or second preference, and FiF with no family university experience to draw on.

Ordinary Least Squares (OLS): a type of linear least squares method for estimating the unknown parameters in a linear regression model.

Peer-Assisted Study Sessions (PASS): are free, weekly, structured study sessions held to support core first year courses, including for the purpose of this thesis: Accounting, Economics and Statistics.

Proximal factors: those factors closer in time and place to the university and encapsulate the way students behave and perform within the university setting, such as their attendance and engagement at class.

Student Success Advisor (SSA): A learning advisor placed within the Business School to specifically help students deemed by the case-study University to be at risk of failure and attrition.

Tertiary Entrance (TE) Score: Also known in Australia as ATAR and OP in different parts of Australia. A general term used to indicate a Queensland Year 12 student’s state-wide rank order based on overall achievement in Queensland Curriculum and Assessment Authority subjects to access eligibility for entry to undergraduate degree programs (also known as degree course). The highest OP is 1, the lowest is around 25 (which is dependent on year of entry).

Second or third-generation students: Those with previous post high school (typically higher education) experience within the family including parent/s (Step), guardians, grandparent/s siblings and offspring.
Chapter 1 - Introduction

1.1 An introduction to student success and retention

This thesis examines the academic success and retention of non-traditional commencing university students identified to be at risk of academic failure or early attrition. The students were enrolled in the University’s Bachelor of Business degree program and because the university had identified them to be at risk, it had provided them with extra co-curricular learning support through tailor-made intervention programs. The programs were designed to enhance the learning capacity, overall university experience, and by extension the retention of these students. The thesis evaluates these interventions, in the context of any possible impact from distal (pre-university, more distant factors) and proximal (malleable university, post enrolment, closer to time at university) factors. Student success was defined as a passing GPA at the end of the first and second semesters. Multiple time points were used to define, record and analyse retention of the at-risk students. As such, retention was defined in terms of whether the student re-enrolled in second semester, and the first semester of the following year for each year cohort. Additionally, graduation rates were reviewed up until the end of 2017, for both commencing student cohorts.

This research was conducted within the context of a large Australian university. The University identified students to be ‘at-risk’ of academic failure in (or early attrition from) their degree program on the basis of up to four of their distal factors, including primarily the student’s tertiary entrance (TE) score, a measure of academic ability usually based on high school performance; a low preference for studying the degree program into which they had enrolled (third preference or lower); having a language other than English (LOTE); or having a low socio-economic status (LSES) family background. The learning interventions offered to these students were a mentoring Student Success Advisor (SSA) Program; Academic Skills (AS) Sessions, which covered basic research and writing skills; and Peer Assisted Study Sessions (PASS), which involved peer tutoring by later year students who had excelled in accounting, economics and statistics.

In this chapter the context for the following chapters is set out, which analyse and discuss the empirical work undertaken to address the question. It first presents historical background on how higher education institutions in Australia and internationally have attempted to maintain
learning standards and at the same time student retention. Second, the chapter narrows the lens to the case-study University where this research was undertaken, providing an overview of the particular interventions used to support first-year student success and retention. Third, the chapter outlines both institutional and individual variables that have been found to affect first-year student success and retention, to enable better informed understanding of the plethora of challenges that universities internationally and domestically continue to face within this area. This chapter then explains the purpose, data, methodology and scope of the thesis. Finally, it outlines the structure of the remainder of the thesis.

1.1.1 University support for student success and retention: an historical overview

For over half a century, universities and their researchers have faced a classic dilemma: how to best support first-year students’ successful transition into, and to a lesser extent out of university studies (hopefully graduation). Consequently, there is a great depth of international and domestic literature that focusses on first-year student success and retention in post-secondary (tertiary) education. In North America, since the 1800s research has investigated frameworks to support student retention. The focus of this research was in earlier times on persistence and retention inside higher education rather than on transitioning into it. For example, see Thelin (2011) who discusses history of American higher education. Prominent Australian higher education researcher Krause (2005b, p. 55) observed that the North American government chartered research in this field “[a]s far back as 1937, [when] the US Office of Education commissioned a study of factors contributing to college student retention and attrition.” Nevertheless, it was not until the 1970s that the first-year experience and transitioning to university drew focussed attention in the academic literature.

Eminent North American researcher Tinto (2006) claims student retention is one of the most researched areas in higher education. Earliest research typically viewed this issue through the lens of psychology, emphasising the correlation between student attrition and the lack of academic attributes in individual students. Rather than attributing responsibility to the institution for the loss of students, the ‘loss’ was commonly presented as the student’s failure for not being able to stay the course; those who left were seen as being simply less capable and/or less motivated to reap the rewards of tertiary education than those who completed their degree programs (Tinto, 2006). By the early 1970s, this view began to shift, largely in response
to Spady (1970, 1971) whose work was soon further developed and refined by the seminal works of Tinto (1975) and other notable North American authors in the field such as Astin (1977, 1985), Bean (1980, 1983) and Bean and Metzner (1985).

With a new understanding of the importance of the relationship between the student and their environment, in particular their study institution, research in North America began to explore why students decided to stay or leave university, developing a new focus on student success and retention initiatives. This new focus sought to make “explicit connections between the environment, the academic and social systems of the institution and the individuals who shaped those systems, and student retention over different periods of time (Tinto, 2006, p. 2).” Nonetheless, it was several decades later before this research genuinely began to influence researchers and their studies across the globe. Nelson, Clarke, Kift and Creagh (2011) note that not so long ago it was unusual for research on the first-year experience to extend beyond the geographic limits of the United States, with research beyond this region sporadic at best. Nevertheless, they identify that in Australia, Don Anderson (1970) from the University of Melbourne authored one of the first systematic and coherent pieces of research into the first-year experience nearly 50 years ago. This research having built on Anderson’s previous work in the mid 1960’s, for example see ‘Problems and performance of university students’, in Wheelwright (ed.), in Higher Education in Australia (Melbourne, 1965). Other studies around this time include that of Fensham’s (1970) “Rights and Inequality in Australian Education and Dow, Jones and Osman’s (1972) “The social composition of students entering the University of Melbourne in 1969 and 1970”.

In the Australian context, research in this field was originally small studies by practitioners exploring a student’s transition into university and first-year experience. Baumgart and Johnstone (1977) from Macquarie University published their case-study of attrition at an Australian university just over a decade after the university opened. The article’s acknowledgement notes the study was funded by “the university, not through regular internal research funding, but through initiative of the Vice-Chancellor” to encourage the university’s “own processes and performance” (p. 533). However, this approach was rare; very little other research on the first-year experience was conducted systematically and coherently until the mid-1990s (Nelson et al., 2011). Tinto (2006) identifies that although North America led the way with early work in this field, the scholarship lacked detail and complexity, with much of it informed by quantitative studies of students from traditional backgrounds, without
appreciating the array of challenges for students from more non-traditional backgrounds. This perhaps reflects not only the relative infancy of these studies, but also the homogeneity of the student population in North America at that time.

In Australia, in line with international research, over the past couple of decades larger national studies have been published such as the report, *Enhancing the First Year Experience*, by McInnis, James, Beattie et al., (1995). Published studies also reveal increased emphasis on a student’s transition throughout the whole of their first-year experience, and more recently a transition pedagogy to scaffold and enhance the first-year learning experience (Kift, 2009; Kift, 2008) and a third-generation whole-of-institution pedagogy approach (Clark et al., 2015; Kift, Nelson & Clarke, 2010; Kift, 2009; Kift & Nelson, 2005; Krause 2011; Wilson 2009), as research on the first-year experience has matured. As part of their 20-year review of the first-year experience in Australian universities, James, Krause and Jennings (2010, p. 6) contended “there is perhaps no greater challenge facing the sector than that of identifying and monitoring the students who are ‘at risk’ of attrition or poor academic progress”, and lamented that “limited inroads have been made into this problem.” These apprehensions have not been limited to Australia, with similar concerns echoed internationally.

Substantial gains in student retention have been hard to come by. Though some institutions have been able to make some improvement in the rate of retention, this has not been universal across the sector (CDET, 2017b; TEQSA, 2017) with some being more successful than others at retaining their students (CDET, 2017b, CDET, 2017c; TEQSA, 2017). Data suggests that it is the private and smaller universities that have been able to produce better retention rates (CDET, 2017c). With this data trend in mind, the strategies and approaches of the more successful institutions “should be of interest to the entire higher education community (CDET, 2017b, p. 4).” This view echoes the current calls in the literature for studies that specifically focus on translating research and theory into effective practice, which are discussed in more detail later in the thesis.

Notably there is significant differences in attrition rates across the Australia States and Territories, with the State of New South Wales having the least attrition of students (12.69%) and the State of Tasmania having the worst (33.64%) (CDET, 2017c). Meanwhile, the State in which this study took place (Queensland) had an average attrition rate of 15.72 percent (CDET, 2017c). Over 30 percent (12 out of 39) of higher education institutions in Australia had an attrition rate above 20 percent (CDET, 2017a). Indeed, the national rate of student persistence...
and graduation has shown little change over the past decade, with retention remaining relatively stable at best “…with a persistent level of attrition in the sector (TEQSA, 2017).” The most recent data calculated over the past 6-year timeframe (2012 commencing cohort), reviewed as part of this thesis, indicates that the percentage of graduating students has in fact reduced as outlined below (See: 2.3 Academic Success and Student Retention Challenges). Of greatest concern is the slump in the graduation rates of students who derive from a LSES background. The data indicates that this group is the most likely to not graduate and has the most significant decline in graduation rates of all SES groups (High, Mid and Low) over the past decade as evidenced in the CDET’s Higher education attrition, success and retention rate tables for the 2016 full year Report (CDET, 2017c). Indeed, the national rate of student persistence and graduation has shown disappointingly little change over the past decade. The fact is that despite our many years of work on this issue, there is still much we do not know and have yet to explore. More importantly, there is much that we have not yet done to translate our research and theory into effective practice.

In the United Kingdom, higher levels of retention have been reported, but in 2012 the National Audit Office noted there was still opportunity for further improvements (Nelson, Quinn, Marrington & Clarke, 2012). White (2014) advocated that university teaching and support staff need to actively intervene with those students who exhibit signs of disengagement, and possible subsequent attrition from their studies, while universities also need to engage all students academically, socially and personally with their new environment (Nelson et al., 2012), and in particular during a student’s first year of studies.

Although students leave university at many stages of the university cycle, as noted over a decade ago by Krause (2005a, p. 9) “the one constant [is that] the first year of studies remains arguably the most critical time for engaging students with their learning community and equipping them with the requisite skills to not only persist but to be successful and independent in their learning throughout the undergraduate years and beyond.” Arguably, this remains the case (Tinto, 2017), with a significant body of students, in particular non-traditional students dropping out of their university program during the first year. This is despite the implementation of support systems that universities have continued to develop to foster improved success and retention of all commencing students. With the universal broadening of the higher education sector and the subsequent rapid increase in non-traditional student
enrolments over the past decade, both within Australia and overseas, many challenges lie ahead for educational institutions around the world.

1.1.2 Overview of interventions to support student success and retention

Over the past decade plus, Australian universities have invested heavily in institution-wide, program-wide or individually focussed early engagement interventions that monitor and mentor first-year students as they settle into and engage with the university experience and tertiary study (Kahu & Nelson, 2018; Tinto, 2017; West et al., 2015; Creagh, Nelson & Clarke, 2013; Nelson et al., 2012; Purnell, McCarthy & McLeod, 2010; Wilson, 2009b; Potts & Schultz, 2008). A wide range of co-curricular and curricular strategies have been adopted in the higher education sector, including academic advising and support, career counselling and learning communities (Whannell, 2013), but many of these interventions are atheoretical, based on a priori assumptions that are largely empirically untested.

Indeed, the weight of the empirical evidence on the efficacy of different interventions at the start of this decade was embryonic and mixed, with much of it based on anecdotal evidence (Burnett & Larmar, 2011; Thomas, 2012), broad statistical reviews (DeAngelo, Franke, Hurtado, Pryor & Tran, 2011), or on the American or European higher education sectors (Habley & McClanahan, 2004; Smith, Szelest & Downey, 2004; Topping, 1996), which may have limited relevance in the Australian context. Much of the literature highlighted a need for interventions, without empirically assessing the effectiveness of specific types of interventions (Armstrong, Campbell & Brogan, 2009; Johnston, Ford, Mitchell & Myles, 2011; Ryan & Kemlo, 2012). Other literature focuses not on co-curricular interventions, but on factors correlated with students becoming at risk of attrition or failure, such as students’ inability to finance their studies, excessive work responsibilities, or balancing (in the case of mature-age students) home and work responsibilities (Whannell, 2013). Others take a similarly focused approach to intra-university factors, such as the strength of relationships between students and teaching staff (Raciti, 2012). As recently as 2017, Tinto suggested that although there has been much research about why students drop-out of university, comparatively there has been less research focussing on developing strategies to mitigate such attrition from the student perspective (Tinto, 2017).

There is some limited evidence on the effectiveness of specific interventions in other fields such nursing, e.g., using risk markers (Tower, Walker, Wilson, Watson and Tronoff, 2015).
psychology, e.g., the use of reflective workbooks with follow-up tutor consultations (Lizzio & Wilson, 2013), and in secondary education (Lamb & Rice, 2008). However, in relation to the case under investigation in this thesis, the effectiveness of multiple embedded co-curricular interventions for at-risk, first-year business students in the context of large Australian universities, there is limited peer-reviewed empirical evidence from Australia, either cross-sectional or longitudinal. Extant studies on academic success and retention of business students in Australia do not address the effectiveness of specific multiple co-curricular interventions targeting at-risk students, addressing instead variables such as students’ choice of major and career (Willcoxson & Wynder, 2010) or student expectations of service quality (Ong & Nankervis, 2012). More recently, esteemed researchers, Luckman and Harvey et al., (2019) state that while there is a broad range of factors linked to degree non-completion and extensive research, the Commonwealth Department of Education and Training (CDET) (2017) found that these factors only accounted for “12% of the total variation in student completion (p. 5)”, and as such comparatively little explanation is known about the why students attrite before completion of their degree, with it remain a complex area to comprehend due to multiple competing factors. The CDET Higher Education Standards Panel Final Report – ‘Improving retention, completion and success in higher education’ states that after using regression analysis it was found that “the institution is a more important factor than the basis of admission, the student’s ATAR score, type of attendance or age in explaining attrition (CDET, 2017a). While Kahu and Nelson (2018) suggested that the widening of participation in higher education and the lower completion rates of non-traditional students highlights the need for a greater “understanding of the student experience to ground policy and practice”, further suggesting that “more longitudinal data is required to monitor the outcomes of students irrespective of whether they were graduates or partial completers (p. 13).” It is against this backdrop that any advancement into this black-box (unknown) of student success (failure) and retention (attrition) is a welcome addition to the literature.

1.1.3 Institutional and individual variables affecting student success and retention

The academic performance of students at university has been linked to a number of institutional variables with Tinto’s (1982) influential study, using the ‘persistence’ model focusing attention on the effect of macro institutional factors on student retention, a research stream later complemented by a smaller literature exploring variables on the fit between students and
institutions, including the oft-cited article, ‘How college affects students, a third decade of research’ (Pascarella & Terenzini, 2005) and in more recent times, the work of Kahu and Nelson (2018) which highlights the “the complex interactions between students and institutions (p. 58)”, in addition to trans-national studies such as Rubin & Wright (2018), Australian-American study. Early research, however, focused on individual predictors of student performance, such as Binet and Simon’s (1916) seminal work on intelligence. In the ensuing century, substantial research clusters emerged around a much greater variety of individual factors. These include emotional variables (Brooks & DuBois, 1995; Pritchard & Wilson, 2003), cognitive confidence such as sense of self efficacy (Tinto, 2017; Chemers, Hu & Garcia, 2001; Odaci, 2011), personality characteristics such as adaptive perfectionism (Rice & Mirzadeh, 2000), clarity of career direction (Olsen, 2008; Willcoxson & Wynder, 2010), and personal experiences and circumstances (Christie, Munro & Fisher, 2004; Long, Ferrier & Heagney, 2006). Less reliable links have been drawn with standard population demographics, including gender (Olsen, 2008), age (Long et al., 2006; Murtaugh, Burns & Schuster, 1999) and ethnic origin (Kirby, White & Aruguete, 2007).

Primary amongst the individual factors, however, has been a single variable close to Binet and Simon’s (1916) original work: high school performance. Several researchers argue that it remains the best single predictor of academic performance at tertiary levels (Klomegah, 2007a; McKenzie & Schweitzer, 2001b; Richardson, Abraham & Bond, 2012), at least amongst school leavers rather than mature-age students (Power, Robertson & Baker, 1987). The correlations between academic performance at high school and university levels are surprisingly modest despite their strong conceptual relationship. Meta-analyses put the influence of high school performance on tertiary-level performance at around 25 percent (Peers & Johnston, 1994; Robbins et al., 2004), while others argue that high school performance perhaps accounts for as much as half the variance of university grade point average (GPA) (McKenzie & Schweitzer, 2001b).

GPA is the most widely studied measure of academic performance (Richardson, Abraham et al., 2012). However, for counsellors and administrators, retention is often regarded as an even more fundamental indicator of success (Kern, Fagley & Miller, 1998). Cone and Owens (1991), for example, found that students participating in study-skills courses experienced a ‘value add’ on performance relative to what would be predicted on prior academic performance alone.
Farsides and Woodfield (2003) used seminar (tutorial) attendance to operationalise students’ application to task, in their study exploring individual difference and predictors of GPA.

Worthy of note, the relatively recent meta-analysis by Richardson, Abraham et al., (2012) identified that amongst the highest correlates with students’ GPA were students’ grade goals. Goal theory suggests goals need to be both clearly defined and challenging (Locke, 1996), with the student involved in setting the outcomes. These outcomes should involve a blend of short- and long-term goals (Latham & Brown, 2006), as they were in the current study.

However, another explanation of why high school has been only a relatively modest predictor of university performance is that universities differentially select students who are high performers, creating narrow variance in new student cohorts (Furnham, Chamorro-Premuzic & McDougall, 2002). Nevertheless, there is increasing diversity in university student intakes in Australia, and this study is a good example of this trend, reducing this statistical effect. The present study suggests that looking at capacities students have developed at high school not purely as a predictor, but also as a resource that interventions need to take into account, may be a more fruitful approach. Richardson, Abraham et al., (2012) argue that performance-focused interventions are more likely to enhance performance-related outcomes than welfare-focused interventions, which take a more holistic view of student behaviour. Nevertheless, student academic performance is likely to be closely related to academic self-concept, which is a student’s self-perception and evaluation of their self-regulation, general intellectual abilities, motivation and creativity. A longitudinal study reported by Skaalvik and Valas (2000), for example, showed that achievement at time 1 had a significant impact on self-concept at time 2, but self-concept at time 1 had little impact in subsequent achievement.

With the drivers of student performance being one of the most fundamental questions in education, the literature in this field represents one of the largest and oldest bodies of formal research. In ‘The Scientific Study of College Students’, a 1917 monograph on educational psychology, Kitson (1917) opens with a call for students to be tested at entry for early warnings of possible trouble ahead, not just in academic competence, but also in determination to succeed, learning style and social tendencies, through a comprehensive testing program that would by mid-20th century “prevail as widely as it is now lacking” and would “determine largely the career of the student (p. 2)”. Although it is now widely accepted that at least on attrition, students are at their most vulnerable during their first year at university (Kuh & Nelson, 2018; Tinto, 2017; Wilson, 2013; James et al., 2010; Grebennikov & Skaines, 2008;
Krause, Hartley, James & McInnis, 2005), a century later, Kitson’s dreams of pre-commencement testing and personalised guidance of students is the exception rather than the rule in higher education.

The intervening century has, however, seen the accumulation of impressive evidence on the multiplicity of causes of early student failure in higher education. As to factors concerning the student, a number of largely individual variables have been identified as predictors, including a student’s personality (Davidson & Beck, 2006; Wintre, Bowers, Gordner & Lange, 2006), but prime amongst these remains the student’s high school GPA (Klomegah, 2007a). Other factors that have been found to influence student performance, largely related to the institution, include course characteristics (Willcoxson & Wynder, 2010). Titus’s (2006) study of four-year colleges and universities in the US considers how a sense of connection between the student and the institution helps predict success, perhaps controversially, it found that the percentage of an institution’s revenue derived from tuition fees partly determined student persistence, suggesting the financial investment by students or their families may be a reason for students to persist in their studies.

For high school graduates, the first year of university represents a distinct break in pattern of both social and academic behaviour, with studies identifying isolation as a major challenge for new students (Burns, 1991; Kahu & Nelson, 2017). This isolation has implications for student health (e.g., Walton & Cohen, 2011), retention (Loo & Rolison, 1986; Tinto, 1975) and, more tenuously, performance (Clark & Crawford, 1992). Difficulties for the new student in both social and academic domains are related to the very autonomy that is characteristic of university, as opposed to high school life (Peel, 2000), and pose a complex challenge of remediation to educators and administrators.

Successful transition from secondary school to university depends at least in part on students’ access to information to inform their choices, even before they enter a tertiary institution (Burnett, 2007). Students enter university anticipating an adjustment process. Peel (2000) found that prior to their entry to university, students had developed expectations of poor support based on messages from mentors at high school. Yet despite their trepidation about being left to cope with minimal support, students enter university seeking relationships based on trust and guidance, as well as on being heard (Bowman, 2009; Kahu & Nelson, 2016).
Perhaps students’ low expectations of access to social support inside the university are fortuitous. Misalignment between student expectations about the nature of the university experience and reality has itself been linked to attrition (Charlton, Barrow & Hornby-Atkinson, 2006; Davidson, Beck & Milligan, 2009; Gabb, Milne & Cao, 2006), and to poorer academic performance (Metzner & Bean, 1987). In fact, Walton and Cohen (2011) demonstrated that by intervening directly with these expectations, some of the negative corollaries of social isolation, including health and GPA, could be minimised.

There is a tendency in the literature to attribute student outcomes, both performance and retention, to either student characteristics or institutional characteristics (Habley & McClanahan, 2004) with some justification in so far as one of the clues to both retention and performance at a particular institution is the degree of fit between student and institution as noted above (Tinto, 1975; Pascarella & Terenzini, 2005). The influences and associated outcomes of interventions to improve ‘goodness-of-fit’ cannot be identified easily due to the multitude of factors involved, and there is not, and cannot be, a single or off-the-shelf solution, even though some observers advocate mentoring to alleviate some of the ‘goodness-of-fit’ challenges.

Diversity in itself will continue to challenge interventions seeking to improve fit between institution and student. An Australian study shows that domestic students are more likely than international students to be satisfied with support services provided by the university (Grebennikov & Skaines, 2007). However, a sense of community among students may also be harder to achieve in pedagogical contexts without in-person contact such as online degree programs (Achilles, Byrd, Felder-Strauss, Franklin & Janowich, 2011), and where institutions run first-year courses (subjects) with particularly large enrolments, perhaps providing students less access to academic staff and more difficulty in forming a network with like-minded students.

The literature on student retention in higher education ranks orientation programs for beginning students, provision of student advising, and other ongoing academic support as the three most effective strategies for student success (Oertel, n.d.). As to provision of academic advice, since the study does not identify clearly what constitutes effective academic advising and support, this finding has limited practical utility for practitioners. Academic advising has been widely linked to student retention, even without much well-controlled empirical evidence (e.g., Heisserer & Parette, 2002; Varney, 2007). Clearly, more research is needed to unpack the
active ingredients of the adviser–student relationship that help to build success into the student’s university experience.

A number of studies highlight the importance of student–faculty relations to students’ level of satisfaction and willingness to continue with their studies. Over 40 years ago, in a major American study involving over 300 institutions, Astin (1977) found student satisfaction to be usually associated with the quality of interaction between student and faculty, concluding that this interaction has a “stronger relationship to student satisfaction … than any other variable (Astin, 1977, p. 233)”. In a more recent Australian study, Raciti (2012) found that not only students’ perception of barriers to switching to another institution, but also the strength of relationships between students and staff can strongly shape students’ willingness to stick with their university of first entrance. Incidentally, Marks (2007) found that those students who changed to a second degree after already having started university, attrited in greater numbers and thus had lower graduation rates, with expected completion rates for those who changed courses “calculated to be between 63 and 71 per cent (p V11) compared to completion rate for those who did not switch from their first course being in the range from 71 to 74 per cent.” Sung (2012) found the student–staff relationship outweighed the influence of academic skills such as language proficiency in students choosing to continue with their university studies. Two decades earlier, Frost (1991) argued that it is the intellectual content that university students valued most in their relationships with their teachers.

There are considerable differences in approach to student advising among student advisers (De Sawal, 2007), institutions and, indeed, nations. For example, in the US where student advising by faculty is considered to be integral to the academic role (Myers & Dyer, 2003), advisers tend to view their ‘advising’ role as helping the student to meet course requirements, including course-specific counselling. Many faculties are not trained specifically for this advising task. Both peer advising and academic-staff advising of students have been described as ways to “connect [students] to the campus and help them feel that someone is looking out for them” (Campbell & Nutt, 2008, p. 19). While the observation seems likely to be true, demonstrating the causal link in both cases of ‘advising’ is problematic, since the nature and quality of such advising are difficult to evaluate, and the quanta of such interactions are difficult to measure. Furthermore, what Lizzio (2006) calls a ‘sense of connectedness’ does not pertain simply to student relationships with their academic advisors and/or peer mentors. It can also refer to the student’s attachment to an institution, to a particular reference peer group (Hausmann,
Schofield & Woods, 2007), or to their engagement in campus life (Pascarella & Terenzini, 2005). Because ‘advising’ and ‘connectedness’ entail personal relationships, their influences on student performance outcomes are more difficult to identify than is the quantifiable relationship of GPA to student performance/outcomes, and so researchers often nuance these terms to suit the kind of data they have collected.

Christenson’s study (2011) in the US defined socially at-risk students as those who indicated early that they had no intention to attend student functions, hold a position or otherwise participate in student organisations, or volunteer in university causes; over 50 percent of such students withdrew after their first semester (Christenson, 2011). Cuseo (2003) noted a number of studies that reported students’ satisfaction with their experience at a tertiary institution predicts the likelihood of at least one of the key markers of student success and university retention. However, with student satisfaction scores upon exit from their courses now used in domestic and international university rankings, student satisfaction has been made a marketing tool for attracting new students to institutions in a globally competitive higher-education market (Bolsmann & Miller, 2008).

1.2 Purpose of Thesis

Drawing from the literature for its explanatory framework, this research seeks to identify and evaluate what factors are associated with at-risk university students’ academic success and retention, through case studies of at-risk first-year students enrolled in a Business degree in an Australian university, who the university had identified to be ‘at risk’ of academic failure and/or attrition. To help these students, the university made available to them three co-curricular interventions: AS Sessions which offered support in basic research and writing skills, PASS, which involved peer tutoring by later year students who had excelled in accounting, economics and statistics; and the mentoring SSA Program. The thesis therefore considers the effect of these interventions on the at-risk students’ interactions with the SSAs, AS Sessions and PASS. It also uses pre-contact and post-contact data on two cohorts of at-risk students before and after their involvement in the intervention program to provide some insights into the drivers of early student performance and retention, and into how this driving process may impact on overall retention and graduation. It also seeks to evaluate the impact of distal variables such as high-school performance and proximal variables such as attendance at orientation sessions on the academic success and retention of these identified at-risk students.
during their first year of university study. Finally, this thesis examines interventions created to map onto a particular theoretical model of student success, Lizzio’s (2006) Five Senses model, and explores the impact of these interventions in relation to the five senses of success that the model identifies: identity, connection, purpose, capability and resourcefulness.

In evaluating the extent to which specific distal and proximal variables contribute to the academic success and retention of identified at-risk first-year business students, this study responds to recent calls for more empirical testing in the field of university retention and attrition. Specifically, calls have sought further empirical research to identify the effectiveness of particular interventions on specific student populations (Hein, Smerdon & Sambolt, 2013). Others have called for more solidly evidence-based research (Nelson et al., 2011) that uses a robust theoretical framework. As recently as 2016, De Clercq, Galand and Frenay (2016) argued that even though there are extensive studies concerning the factors associated with students’ achievement in higher education, very few studies have examined how these factors combine and interrelate. Tinto recently pointed out the need to include student perspectives in research (Tinto, 2017). Further, because higher education requires substantial public and private investment, it is imperative for universities to continue investing in research to deepen understanding of the interplay of factors associated with students completing their degree programs.

This study contributes to the literature on success and retention of students in higher education in four main ways. First, it provides detailed evidence of the distal and proximal variables most closely associated with the academic success and retention of at-risk first-year business students in the context of a large Australian university business school. Second, it does so in the context of a robust theoretical framework to help explain and predict student transition, this study in turn tests the effectiveness of multiple embedded interventions provided by the university to support such at-risk students. More systematic and comprehensive understanding of the effectiveness of such interventions can help strategically guide university approaches to providing timely support structures, including early and ‘just-in-time’ or ‘just for me’ (Kift, 2015) co-curricular programs, to improve students’ successful transitioning into higher education and universities’ student retention rates (Lizzio & Wilson, 2013; Wilson, 2009b; Tower et al., 2015).

Third, by venturing into the less researched area of student perceptions (Tinto, 2017), this study helps deepen understanding of the at-risk first-year students’ own perceptions of their
experiences at the case-study University, relative to these students’ personal characteristics and motivations. Fourth through these distinctive features the study enables examination of a broad range of variables, some hitherto unexamined, that have *a priori* impact on the student experience at university. In this way the study extends knowledge about some relatively new and important aspects of the field, such as the FiF status of a significant portion of the students drawn into the university sector in recent decades who are ‘non-traditional’ and seen to be at-risk, but whose success/completion has particular importance for the message it sends to others in their community, including family members and others who may follow the first family member into university.

### 1.3 Data and Methodology in Brief

This research comprised two case-studies. Study 1 is purely quantitative, leveraging secondary data collected by the researcher and the university to examine the academic success and retention of at-risk students. Study 2 entailed in-depth, semi-structured interviews with 25 of the similarly defined at-risk students in addition to leveraging secondary data from university databases to allow a companion to previous results.

Distal/static data from Queensland Tertiary Admissions Centre (QTAC) were used as risk filters to identify students potentially ‘at risk’ on entry to university. Two primary characteristics of the students were the student having (1) a low TE score (in the OP11+ range), and (2) identified a low preference for studying business as a degree program at the case-study University (third preference or lower/poorer). Two secondary characteristics of the students were also monitored: (1) a low socio-economic status identified by postcode and (2) if the student spoke a language other than English (LOTE) at home. Academic success/failure of the identified ‘at risk’ students was identified by whether the students passed/failed courses in which they enrolled at the start of Semester 1, 2012. Re-testing was conducted at the end of Semester 2, 2012 to assess whether the students had a pass/fail GPA (fail is < 4.0) at the end of their first year of study. Student retention/attrition was identified in terms of their re-enrolment in second semester and at the start of the second year of study and final graduation status.

As part of Study 1, at-risk students were tracked during first semester, 2012 using ‘early engagement’ risk markers: whether they had (1) attended orientation workshops in the week preceding the start of Semester 1; (2) accessed online class materials by the end of the second
week of semester; (3) attended most tutorials by the end of the third week of semester; (4) submitted their first assessment item; and (5) as an ‘early outcome’ marker, passed or failed this first assessment item. Through this time, the students were monitored using proximal ‘ongoing engagement risk’ indicators: the number and percentage of these students who attended SSA Consultations, AS Sessions and ongoing PASS (Figure 1).

<table>
<thead>
<tr>
<th>Risk Filters</th>
<th>Early Engagement Risk Markers</th>
<th>Ongoing Engagement Indicators</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. TE Score</td>
<td>1. Attended Orientation session</td>
<td>Early Outcome Risk Marker</td>
</tr>
<tr>
<td>2. Low Preference</td>
<td>2. Engaged with online materials by end Week 2</td>
<td>- Failed 1st assessment item</td>
</tr>
<tr>
<td>3. Low SES</td>
<td>3. Attended most tutes by end Week 3</td>
<td></td>
</tr>
<tr>
<td>4. LOTE</td>
<td>4. Submitted 1st assessment item</td>
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**Figure 1: Intervention Process and Nomenclature**

As part of Study 2, the semi-structured interviews generated new qualitative data that was linked with objective quantitative (secondary) data collected by the institution. The data from these sources enabled the researcher to explore relationships between the interviewed students and their own university outcomes from Semester 1, 2014, including retention and academic performance. In Study 2, the students’ perceptions of the effectiveness of the interventions on their academic success, as well as their re-enrolment in second semester, were drawn from in-depth interviews of 25 commencing at-risk students from the 2014 cohort. These data were evaluated using thematic analysis to gain a deeper understanding of the first semester (first year) experience for the at-risk students, in addition to longitudinally testing academic success and retention of these students, using the same criteria as Study 1 (i.e. passing GPA, and graduation).
1.4 Scope and Limitations of Thesis

This thesis investigates the effectiveness of particular co-curricular interventions on commencing first-year at-risk undergraduate business students enrolled in the same program, and how the characteristics and perceptions of these students may influence the student’s university/study experience over a period of four to six years from their first enrolment. As such, the scope of the thesis is limited in six key ways.

First, each of students were enrolled in a single degree program. While this enhances intra-program comparability, it may also limit the generalisability of the results to other university degree programs and other year levels. Second, all students participating in the study were domestic students, so the findings may well not apply to international students. Third, the study is limited to one school (faculty) at one institution. This is beneficial insofar as a study involving multiple institutions could generate inter-institutional differences that may confound the results, but it may also limit the results’ generalisability. The results may not apply even to other universities in Australia with significantly different student cohorts. Fourth, because the study was limited to university students, its findings may well not apply to interventions in colleges or secondary education, which occupy much of the literature.

Fifth, use of the data and methodology in the thesis were limited to evaluating the effectiveness of particular co-curricular learning interventions and possible effect of distal and proximal factors on the university results of at-risk students in the same semester. Particular cohorts may differ from other cohorts in systematic ways due to changes in intake dictated by, for example, economic conditions or government policy. Sixth, because of constraints upon data, the investigation was unable to examine the effects of some variables such as highlighted in the literature as potentially significant predictors of students’ academic success and retention. This limitation also applies to larger scale studies of retention, where institutional limitations on data gathering impacts on researcher ability to address variables. Some factors that could not be included in Study 1 but were included in Study 2 through its qualitative approach, concerned the student’s personal characteristics such as whether the students were FiF to attend university, from rural/remote area (within the quantitative study) and self-identified as Indigenous. Other factors concerned the student’s university experience and also the response to the university opportunity provided to them, such as the extent to which they spent ‘time on task’ for learning and assessment, were dependent on paid employment while pursuing their study, had family
or carer responsibilities, and their prospects for employment in their field of study upon graduation.

Finally, it needs to be noted that in recent years, there has been a growing body of international and Australian literature focussing on student success and retention during later years of university studies (e.g., Lawson, 2015; O'Donnell, Wallace, Melano, Lawson & Leinonen, 2015). These include students’ second year slump and capstone experiences (Kift, 2015, 2017) Clearly, like the first-year experience of university as researched in this thesis, the later years of students’ university studies also have important impact on success and retention. While the later-years experiences require further exploration, they are, however, beyond the scope of this thesis.

1.5 Structure of Thesis

The remainder of this thesis is structured as follows. Chapter 2 reviews relevant theoretical and empirical literature and identifies relevant gaps. Chapter 3 develops the hypotheses and the model to be tested and explains the data and the methodology used in hypothesis testing. Chapter 4 sets out the base case for analysis (2011, with no co-curricular interventions) and outlines the results of Study 1’s quantitative analysis for the years 2012–2017. Chapter 5 first outlines the findings of Study 2’s thematic analysis of interviews with students in 2014 on how they perceived the effectiveness of the co-curricular interventions, then outlines its quantitative analysis of the students’ experiences over the years 2014–2017. Chapter 6 discusses results and findings from the data presented in the preceding two chapters, and possible implications of this data. It considers how the proximal and distal factors identified in the literature as most closely associated with the academic success and retention of non-traditional commencing university students relate to the quantitative and qualitative data from studies 1 and 2 respectively. Finally, the main conclusions and implications of this thesis research are summarised in Chapter 7, together with recommendations for universities, governments, schools and students and avenues for further fruitful research in this area.

1.6 Summary

This thesis is an investigation of issues that have been examined as a matter of research for over 100 years without unabridged answers, while in part, also exploring new and emerging issues. It acknowledges that there is no single one size fits all solution to creating academic
success and retention for all at-risk first year students. This is in part due to the evolving nature of the higher education system and because, more so today than ever before, students are not a homogeneous group, with students coming to university from increasingly diverse backgrounds with a multitude of experiences. Nonetheless, rather than taking a deficit view (Kift, 2015) of student failure and attrition, this thesis seeks to isolate these issues to focus on finding positive solutions from, in part, the end-user’s (i.e. student) viewpoint, recently noted by Tinto (2017) as being an important part of the research. As Professor Kift (2015, p. 51) points out it is important to focus “on what students have in common—their learning experiences mediated through curriculum—rather than problematising their diversity and difference.” As such the co-curriculum initiatives were used by the case-study University to mediate the learning experiences of at-risk students, because as Lizzio (2015) emphasises proximal factors are in most cases more likely to empower students and be managed by universities than a student’s distal factor, including for example, prior learning, such as requisite numeracy skills that are not a pre-requisite to enrolment at the case-study University.

This thesis does however suggest that distal and proximal factors commonly used to determine students as being at risk of academic failure and attrition, in addition to proximal factors that may impact on student success and retention, are likely to fade to statistical insignificance over time. However, a positive attitude does not appear to fade over time. That is, in most cases students will more likely be able to adapt to their new environment, have academic success and be retained by the university through to graduation when they have a sense of purpose. Part of building a sense of purpose includes those students being provided with appropriate support in the form of both academic rigour and words of encouragement, as well as an environment that enables a positive learning environment, including for example, scaffolded learning support, in addition to user-friendly facilities, services and other resources (e.g. sufficient parking making it less stressful to attend lectures). Access without support is not opportunity (Tinto, 2004).
Chapter 2 - Student retention and performance in higher education: literature and theory

2.1 Introduction

This chapter discusses current theory and research on the academic success and retention of at-risk non-traditional university students during their first year of studies. First, it provides a brief overview of the higher education sector in Australia to set the context for this thesis. It points briefly to the myriad of government changes to the higher education sector since the 1970s, which is seen as a revolutionary time in the history of the Australian Higher Education sector. It points to the legislative impact of equity initiatives introduced over this period including ‘participation benchmarks’, and the effect of these initiatives on the rapidly expanding Australian higher education sector during a period when government funding cuts have effectively forced marketisation of this sector; noting that this is similar to what has occurred in many OECD countries (for example, the United Kingdom).

Second, this chapter presents a review of the relevant literature that considers the extensive range of distal and proximal factors associated with students being potentially at risk of academic failure or early attrition from their university studies. In particular, this review focuses on factors, issues and themes identified in the literature that are most pertinent to at-risk non-traditional students during their first year of studies, to inform the analytical framework and models used for the research in this thesis.

Finally, this chapter examines application of the theory to university student success and retention. Particularly it explores and links this to use of intervention strategies with students more generally, but also cognisant of how these strategies are being applied to non-traditional, at-risk students. In discussing the higher education literature, this chapter seeks to synthesise the key determinants of university student success and retention, with interventions that have been used most effectively to promote the success and retention of students completing their first year of studies at university. This discussion thus reveals how lessons from extant research, as discussed in the literature, have both informed and been incorporated into the theoretical framework used in this thesis to explore the challenges that effect first-year student success and university's ability to retain these students. Since these issues are of universal concern, after presenting background to the Australian higher education context, this chapter considers these
issues through the lens of Australian and international viewpoints to deepen our understanding of the variables and interventions that impact on student success and retention as explored in the present study.

2.2 The Australian Higher Education Context

2.2.1 Introduction

As Ramsay (2005, p. 1) points out, “any consideration of higher education equity must acknowledge the wider legislative, strategic, and theoretical contexts within which each has originated, evolved and been articulated and implemented over time.” With this in mind, a brief background is provided here on the legislative changes to the higher education sector since the 1970s, a period that is as seen as a critical juncture in Australia’s higher education history (Kaiser et al., 2014). The most salient points to consider in the light of this thesis are the legislative decisions whose impact has expanded and changed the diversity of the student population. This background provides the context to help the reader understand the current state of the higher education sector in Australia today, and how different government policies, in particular since the 1970’s, have transformed the Australian higher education system. Of greatest affect have been the government reforms that relate to equity measures, and those that affect funding. Both equity initiatives and fiscal policies have led to fundamental changes in the demographic characteristics of the Australian student body. As a result of changes to the funding regime universities have not only had to turn to the international student market for funding, as outlined below, but have also needed to relax entry requirements to cater for new student demand as a source of revenue. Fiscal policy and the increase in student numbers has meant that university staff have had to teach students who have been ill-prepared for higher education studies (Australian Productivity Commission Report, p. 2). The 1970s are often identified as a turning point in the higher education sector in Australia, due to changes induced by federal government legislation and policy that transformed the sector, in part by altering the demographic makeup of the student body. Transformation of the student demographic resulted from both equity measures and implications of government funding. The Grattan Institute’s research paper, Mapping Australian Higher Education 2013 (Norton, 2012, p. 2) contends that “funding entitlements reflect the sector’s history more than consistent policy principles”. Marginson (2013) notes that in Australia, public funding of higher education continued as a driver of diversity among the student population, but as a proportion of gross domestic product
it has followed a downward trend that by 2013 had been reduced to only two thirds of the OECD average. Although Australia experienced an approximate 30% increase in domestic enrolments between 2009 and 2015, universities continue to compete for their share of a centrally regulated quasi-market, where student funding is in a form of state-subsidised tuition fees which differs across fields of study but not across universities (Czarnecki, 2018).

Furthermore, with Australia pursuing higher education as an export service to international students, its student population is much more internationalised than any of its near competitors (OECD, 2012). This has inevitably shifted significant funding of the sector to full-fee paying international students, and responsibility for securing this funding to individual universities that must compete with each other to attract and retain full-fee paying students from abroad. The government’s review of the Australian higher education published in 2015 (Australian Government, 2015) states that the challenge for successive governments has long been the same: how to fund a high quality, fair and equitable system that is affordable to both individuals and taxpayers, while at the same time enabling a greater number of students to enjoy the benefits tertiary education can provide, including better employment prospects, higher salaries and better cultural and social opportunities.

Continual transformation has been a fundamental character of the Australian higher education system since the early 1970s when university fees were abolished and education was made free of charge for the small number of domestic students who qualified for university over the next decade plus (Marginson, 2013). Around that time, only 3 percent of the Australian workforce had a higher education qualification (Norton, 2012). To contextualise that figure in terms of growth since that time, it is reported that in 2016 approximately 43 percent of the Australian workforce had a higher education qualification (OECD, 2017). This massification of the tertiary education sector has caused greater institutional accountability with there being a greater demand for the sector to respond to market needs for student places and the government’s funding responses (Krause, 2017).

Objective evidence attests to labour productivity gains in Australian universities during the same period: the country’s performance on prestigious ‘league tables’ is impressive, relative to gross domestic product (GDP) (Rowbotham, 2012) and survey data on first-year university student experiences show sharp increases in perceptions of teaching quality (James et al., 2010). Among the significant players in the global higher education market, Australia has the most internationalised enrolment (OECD, 2012), but with the increase in numbers of
international students largely borne without a corresponding increase in academic teaching staff. Between 1989 and 2007, average Australian university student/staff ratios increased greatly from 13.4 students to each academic to 21.7 (Coates & Goedegebuure, 2010). The result is a high performing sector under significant strain.

2.2.2 Early 1970s to Late 1980s

Although Australia’s university sector had experienced a number of reforms since 1945, from the 1970s, the pace of change escalated as the federal government took over full funding of State universities that until then were partially funded at the State level (Abbott & Doucouliagos, 2003). During the 1960s and 1970s, the Australian higher education system had a two-tiered structure comprised of universities on the upper tier and other institutions like Colleges of Advanced Education (CAEs) and Institutes of Technology effectively providing what was seen as sub-university level tertiary training such as teaching and training for trades on a lower tier. Institutions on the lower tier were distinguished from universities primarily by their applied approach to teaching and their relatively low level of research activity. In the coming decade, this structure would be changed fundamentally.

In 1972 the Australian Labor Government led by social reformist Gough Whitlam was elected to power, quickly ushering in an ambitious social agenda platform. During this time, higher education fees were abolished for a limited number of students. With demand for university places exceeding supply, the government placed funding caps on student enrolment numbers. According to Vicki Thomson, Chief Executive of Australia’s Group of Eight (GO8) Universities, during the final year when Australia’s higher education was ‘free’ (1989):

Only 382,725 undergraduate students were enrolled in universities because that was all for which the federal government was willing to pay. With funding capped, universities tended to ‘cherry pick’ the ablest and ‘brightest’ students for their small allowable intake, which tended to favour students who were high performers in high school, and students coming from a narrow socioeconomic band (Thomson, 2015).

Arguing that public funding of the nation’s ‘free’ higher education system was not sustainable, a new Labor government during the 1980s and early 1990s implemented a series of major reforms. These included re-introducing university fees, making available income-contingent
student loans, and opening up the Australian university system to international students, with the government pledging to double university enrolments by the turn of the century. The new era also saw universities re-cast as something for the masses. However, from 1983 to 1991, federal government funding per universities’ student places was reduced by around 12 percent (Kaiser et al., 2014).

Towards the end of this period, the Labor Government headed by Prime Minister Bob Hawke commissioned a review of the higher education system to consider its long-term expansion, economic capacity, and efficiency in producing capability to efficiently produce qualified graduates at the rate of higher education systems in other OECD countries. This resulted in the 1988 release of Higher Education: A Policy Statement (commonly known as ‘The Dawkins White Paper’, named after the then education minister), which has been a key feature underpinning the Australian tertiary education landscape ever since. The ‘Dawkins White Paper’ led to major systemic changes. One was the return of fee paying by Australian students to financially contribute to the cost of their university studies. Another was significant expansion of the higher education sector, including allowing full-fee paying international students to attend university in Australia.

Faced with increasing demand for university places, the federal government undertook a reform process in the period 1987–1989 that significantly transformed the Australian higher education system (Poole, Harman, Snell, Deden & Murray, 2000). The two-level system was abandoned and almost all CAEs and Institutes of Technology were given university status, with CAEs mostly incorporated into existing universities. The institutional restructuring coincided with opening up of the Australian higher education sector to full-fee paying international students, as the sector’s institutions now needed to generate additional sources of funding beyond the federal government. Describing the exponential sector-wide growth, Krause (2017) states that over a quarter of a decade since the time of the Dawkins reforms student numbers in Australia’s higher education system have risen from “just under 400,000 to over 1.22million—an increase of 200% (p. 53).”

2.2.3 Post-1989: The Higher Education Contribution Scheme

Soon after release of ‘The Dawkins White Paper’, the Australian government commissioned a further review to consider expanding the higher education sector, with primary focus on how this should best be funded. These moves culminated in the committee led by former NSW
Premier Neville Wran recommending that Australian university students contribute to the cost of their education via an income-contingent loan scheme. Consequently, from 1 January 1989, domestic student enrolments in the Australian higher education sector have been subsidised by the Commonwealth government, becoming the first income contingent loan scheme in the world (Cardak and Ryan, 2014). Students enrolled in these institutions have been required to contribute to their higher education expenses, up-front or via an income-contingent government-funded loan scheme known as the Higher Education Loan Program (HELP). The program was introduced by the Australian Labour government in 1989 as the Higher Education Contribution Scheme (HECS), an acronym that has held to this day (Government, 2017).

Under the HELP scheme, the Commonwealth (Federal) Government provides loans to Commonwealth-supported higher education undergraduate students via the Department of Education (CDET), and the scheme is administered by the Australian Tax Office for approximately 75% of students in Australia (OECD, 2017). As part of the conditions of the loan scheme, Australian students can postpone payment of their university tuition fees until they have reached specified indexed taxable earnings. Currently this means that for most students’ repayment occurs post-graduation as most students choose this path. According to James (2007, p. 5), “The Higher Education Contribution Scheme (HECS) has been a powerful equity device. The effect of HECS has been twofold: as an income contingent loan it has removed the obstacle of upfront fees, while the revenue from HECS has funded expansion in the number of places available”. Nonetheless, Altbach, Reisberg and Rumbley (2009) argue that tangible and intangible expenses continue to remain as obstacles to students from lower socio-economic backgrounds gaining post-secondary education in Australia. Although Cardak and Ryan’s more recent 2014 suggests that HECS-HELP and AUSTUDY support “are relatively successful in relaxing any credit constraints that disadvantage students may face when making decisions to attend university (p. 22).”

There is compelling evidence universally that holding a post-secondary qualification provides individuals with increased employment opportunities and enables them to obtain greater prosperity and socio-economic status (OECD, 2016; Daly, Lewis, Corliss & Heaslip, 2015). Recent studies on the earnings of Australian higher-education graduates have found that there is however a diminishing return since the expansion of the tertiary sector (Luckman & Harvey, 2019; Graduate Careers Australia, 2015) and that there is at best modest global rankings or
institutional effect on post-graduation earnings (Carroll, 2014), and a negligible (negative) effect with regard to regional universities (Koshy, Seymour & Dockery, 2016),

Transition in the sector continued through the 1990s, in part as universities sought to adapt to the new economic realities arising from systemic changes instituted in the name of reform. The start of that decade saw the promulgation and discussion of the landmark discussion paper, ‘A Fair Chance for All’ (Dawkins, 1990). The paper’s twin focal points are social justice and equity, working on the principle that higher education is within everyone’s reach. That discussion paper includes a formal definition that sets down the place and purpose of equity in Australia’s higher education system:

The overall objective for equity in higher education is to ensure that Australians from all groups in society have the opportunity to participate successfully in higher education. This will be achieved by changing the balance of the student population to reflect more closely the composition of the society as a whole (Dawkins, 1990, p. 2).

The emphasis in this landmark discussion paper on ‘changing the balance of the student population’ drove a shift to collecting data with particular focus on six identified groups of people who had been comparatively disadvantaged historically in gaining access to, attending, and graduating from tertiary education (Ferguson, 2006). These identified groups are still the focus of the commonwealth government’s education equity initiatives and so refer to students from socio-economically disadvantaged backgrounds, LOTE backgrounds, Australian Indigenous backgrounds, rural and isolated areas, and students with disabilities. Women are also an identified group, with a particular focus on professions that used to be considered non-traditional areas of study for females. Due to their historical disadvantage, people in these six identified groups are often referred to, somewhat confusingly, as non-traditional students. Among them are students who are the first in their families to study at a tertiary level. The Policy focus on these equity groups saw federal government funding provided to universities on the basis of equity indicators, particularly access, participation, success and retention of identified ‘non-traditional’ students. At the same time, the federal government’s shift to deregulate higher education opened access to Australia’s universities to potential students who had previously been a very small minority in Australian education: international students. During these years the first half of the 1990s, Australia emerged as one of the world’s top five countries supplying education services globally, but according to Krause (2017) there were
only pockets of good practice in regard to institutional support for students. During the mid to late 1990s government policy galvanised the sectors focus on first year retention (Krause, 2017).

2.2.4 The Howard Years (1996–2007)

The Liberal/National government of John Howard took office in 1996 and remained in power until 2007. Across these years, the Howard government cut operating funds provided to universities by close to 5 percent and did not fund the normal increase to academic salaries and any increases to HECS funding. Universities sought to make up for the funding shortfall mostly through pursuing continued growth in the ‘business’ of supplying the world demand for tertiary education. HECS was also playing a role as a source of university funding, by students. For example, during the single financial year 2004–2005, the federal government reduced direct contribution to higher education revenue by 41 percent of the previous year, with universities topping up their resources by attempting to meet the funding shortfall through a range of student fees and other charges (Nelson, 2005).

The new requirement that universities seek their own alternative funding sources made universities competitors against each other for international students and other sources of income. The sector had to abandon its relatively collegial, genteel disinterest in the commercial world since its institutions were transformed into ‘enterprise universities’ (Marginson & Considine, 2000), now exposed to a far greater level of competition (Marginson, 1997). In 2002 over 253,780 international students were enrolled within these institutions, contributing around $5.2 billion to the Australian economy (Birch, Kenyon, Koshy & Wills-Johnson, 2003; Carrington, Meek & Wood, 2007). By 2006, provision of international higher education services saw higher education ranked as the nation’s third fastest growing export industry after coal and metal ores (IDP, 2006). The sources of the majority of new students were China/Hong Kong and Southeast Asia, particularly Singapore, Malaysia and Indonesia (Technology and Industry Advisory Council, 2000). Attracted by competitively high international rankings and Australia’s reputation as a safe destination also saw the nation’s tertiary sector attract students from Europe and the Americas as a source of revenue. By 2015 tertiary education of international students had become Australia’s largest service and third largest export (Australian Bureau of Statistics, 2015), with revenue from providing international tertiary education collectively worth $19.7 billion to the Australian economy.
2.2.5 Rudd/Gillard/Rudd Labor Years (2007–2013)

In November 2007, the Labor Party led by Kevin Rudd formed government with the stated intention of (further) transforming Australia’s higher education system, a transformation the then Deputy Prime Minister and Federal Education Minister Julia Gillard called ‘the education revolution’ (Gillard, 2008). This government commissioned a new review of the Australian higher education system by an independent panel chaired by Professor Denise Bradley, culminating in the Bradley Report released in December 2008. The government responded to the review in its 2009–2010 budget, and as outlined in its response, Transforming Australia’s Higher Education System (DEEWR, 2009), supported many of the recommendations in the Report, including new retention targets and deregulation of the higher education system incrementally from that year (2009) onwards.

With publication of the Bradley Report, a general consensus emerged, at least at government and policy level, that Australia’s economic prosperity, social progress and well-being depend on the quality and performance of the nation’s higher education system, requiring the sector to be able to meet forecasted labour market demands. Subsequently it was also acknowledged that the sector must be internationally competitive (Bradley, Noonan, Nugent & Scales, 2008). To remain internationally competitive, as a source of revenue Australia needed to look to international student demand for higher education, but also ensure it produced a skilled labour force to meet domestic needs (Bradley et al., 2008).

Moves by the federal government over the past decade to increase participation rates of the Australian population in the nation’s universities have been undertaken in pursuit of both an economic agenda (Access Economics, 2008; Adams, Banks, Davis & Dickson, 2010; Bradley et al., 2008) and a social inclusion agenda (Bradley et al., 2008; Shah, Lewis & Fitzgerald, 2011). The demand driven system rewarded universities for the number of students enrolled rather than a fixed sum of money (Productivity Commission Report, p. 3). The move to a demand driven system entailed shifting the higher education system from an elite model to a mass model (Clarke, Stoodley & Nelson, 2013). This shift dramatically changed the profile of the ‘typical’ university student in Australia. The emphasis in recent years on socio-equality in education and regenerating the ageing workforce, has been primarily focussed on the 25–34-year-old bracket. In the decade preceding the 2008 Bradley Report, Australia had become less internationally competitive, slipping in the OECD rankings from seventh place to ninth place on share of 25–34 year olds holding a bachelor degree or equivalent (OECD, 2016). This drop
in Australia’s ranking helped to prompt successive federal governments from both sides of the political divide to take steps to increase participation rates at universities in Australia over the past decade. Simultaneous with universities using the new mass model to pursue the government policy of greater social inclusion while operating on lower levels of government funding, the federal government also tied university performance funding partially to student retention percentages. It was expected that universities would also make arrangements towards meeting clear, and even more ambitious, future retention targets (Clarke et al., 2013; Kemp, 2014; Kift, Nelson, Smith, McKay & Devlin, 2012). These targets were designed to support the government’s long-term goal of increasing the proportion of Australians aged 25–34 with a bachelor degree to 40 percent by 2025 as per the Bradley Report (Bradley et al., 2008). The government also locked in the requirement that universities increase by 20 percent the proportion of their undergraduate students from homes suffering economic disadvantage (i.e., students with low socio-economic status) by 2020.

The higher education sector has been deregulated in a number of OECD countries, including Australia as a response to the Bradley Report, in moves to increase the number of continuing enrolments and of graduations in higher education in these countries. Such deregulations have been undertaken using a demand-driven approach and incrementally uncapping the number of student places available (Go8, n.d.), but without increased funding in 2018 (Commonwealth Government, 2017). Between 2010 and 2011, the Australian government allowed universities to have an ‘over enrolment’ cap of 10 percent (an increase of 5 percent on the previous year). In 2012, when the research at hand began, higher education became a ‘demand driven’ system with a new funding system for undergraduate places in public universities, and the majority of earlier limits on university and degree program student places lifted. To a greater extent than ever before, universities became independent institutions. Public universities for the first time were able to offer as many, or as few, places in each degree program as they chose (Norton, 2012). Now tuition fees were set by individual institutions and were subsidised by the federal government for a potentially uncapped number of places.

Norton (2012, p. 7) argued this means “more applicants are offered places in their preferred field of education … responding to skills shortages in the economy”. For Stokes and Wright (2012, p. 441), however, moving to the deregulated system has serious consequences that may not be in the best interests of students or society. They argue “an increase in government funding in a course can generally be achieved by lowering university entry scores” to increase
enrolment numbers and consequently government funding (Stokes & Wright, 2012, p. 441). The authors provided evidence of lower TE scores since deregulation of the sector, suggesting that deregulation had opened the floodgates to higher education. In fact, addressing the National Press Club in 2012, Professor Glyn Davis as chair of Universities Australia, the peak body representing Australian universities, stated “almost every candidate who applied anywhere in Australia was offered a chance to study” (Davis, 2012). Predictive analysis from the Australian Bureau of Statistics (ABS) suggests that Australia is on track to meet its set target of 40 percent of individuals aged 25–34 having a bachelor’s degree or above by 2025, with an increase from 25–37 percent in 2012 (ABS, 2013).

Nonetheless, there have also been concerns that although participation in higher education has increased rapidly during the past few decades, the increase is not uniform across all social groups, with overall only a small increase in the population of students from disadvantaged groups (James et al., 2008). Progress in attracting so-called non-traditional students has been modest. Between 2006 and 2014, for example, the share of commencing undergraduate enrolments coming from low socioeconomic status backgrounds rose from 16.8 percent to 18.9 percent, while the percentage of those from regional and remote areas actually fell, from a high of 21 percent to 20.5 percent (Universities Australia, 2015).

This demand-driven approach to increase participation has been an explicit agenda towards widening participation, which not only seeks to increase participation and graduation rates of those from disadvantaged backgrounds as part of a social inclusion agenda (Bradley et al., 2008; White, 2014), but also provides financial incentives from government to institutions for doing so. This is in addition to economic pressures upon higher education institutions to generate extra revenue, within the context of a ‘new’ deregulated system that not only allows but effectively promotes competition in what is now a ‘higher-education market’ (Altbach et al., 2009), in an increasingly borderless society (Marginson, 2006).

2.2.6 The Changing Face of the Higher Education Sector

Over a decade has passed since Krause (2005a) drew attention to how the first-year university experience had changed dramatically over the previous decade, and noted the likelihood of change continuing into the foreseeable future. The diversity of student characteristics in 2005 can be seen in Table 1 below, which provides a linear regression analysis (full model and bivariate linear regressions by student characteristics) for nine-year completion rates for the
2005 and 2006 cohorts of commencing domestic bachelor-degree students. Previous reports on *Completion Rates of Higher Education Students* by the CDET revealed that among bachelor-degree students, particular demographic groups were less likely than others to complete the degree program, as evident in Table 1 below. The recent iteration of the *Completion Rates* Report, released in January 2017, reveals the student characteristics that appear to have had the most significant impact on retention and subsequent graduation for this cohort were type and mode of attendance, age group, ATAR (Australian Tertiary Admission Rank, referred to as TE Score in this thesis), and field of study, rather than the diversity of student backgrounds.

**Table 1: Completion Rates of Australian Higher Education Students – Cohort Analysis 2005–2014**

<table>
<thead>
<tr>
<th>Student Characteristic</th>
<th>Adjusted R² (variation explained), %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Type of attendance (full-time, part-time)</td>
<td>6.31</td>
</tr>
<tr>
<td>Age group</td>
<td>3.87</td>
</tr>
<tr>
<td>ATAR decile band versus other basis of admission</td>
<td>3.86</td>
</tr>
<tr>
<td>Mode of attendance (internal/external/multi-modal)</td>
<td>3.65</td>
</tr>
<tr>
<td>Field of education</td>
<td>2.08</td>
</tr>
<tr>
<td>Socio-economic status (SES)</td>
<td>0.57</td>
</tr>
<tr>
<td>Indigenous</td>
<td>0.45</td>
</tr>
<tr>
<td>Regional classification (metropolitan/regional/remote)</td>
<td>0.36</td>
</tr>
<tr>
<td>Gender</td>
<td>0.25</td>
</tr>
<tr>
<td>Non-English-speaking background</td>
<td>0.05</td>
</tr>
<tr>
<td><strong>Full model including above variables</strong></td>
<td><strong>12.16</strong></td>
</tr>
</tbody>
</table>

*Source: CDET, 2017).*

The January 2017 *Completion Rates* Report (p. 6) acknowledges that “given the relatively low proportion of variance explained, this suggests there are likely to be many other factors not captured by the model that might account for completion. For example, student traits such as motivation and resilience, not measured by the model, might be thought to contribute to the likelihood of completing studies.” Furthermore, the pertinence of these factors for explaining retention and completion rates will need to be re-examined annually over the next couple of decades, to capture the effect of the rapid expansion in the diversity and number of university enrolments on completion rates since the sector was deregulated. Already, however, first-year adjusted retention rates (i.e., allowing for transfers to other higher education institutions) have
shown a downward trend between 2009 (87.23) and 2013 (84.83). The element of continuous change resonates with messages within the literature, with Nelson et al., (2011) emphasising the growing diversity of commencing students and suggesting that the next 10–20 years will see universal transformation of the higher education sector, changing not only the character of first-year participation and diversity, but also student motives and expectations.

Legislative change and political mandates have seen greater diversity in the student body and focus on shrinking government budgets. Indeed, as discussed earlier in this chapter, the Australian government has become more explicit over the past few decades about ensuring universities generate their own revenue, beyond government research grants (Altbach et al., 2009). Some commentators have argued that this has created a subsequent imperative for higher education institutions to do more for less, and to generate income from less traditional sources (Gallagher, 2000; Marginson, 2013; May, Strachan, Broadbent & Peetz, 2011), which is often difficult where emphasis is often placed on research and takes precedence over teaching (Coates, 2014). Part of this new revenue stream now includes non-traditional domestic students in addition to an increase in the number of full-fee paying international students as a substantial source of income, though it is noted that international student numbers decreased during the global financial crisis in 2009 (Marginson, 2013).

The post-crisis decrease in international student numbers coincided with the start of deregulating the Australian higher education sector, which created greater demand for domestic student numbers and subsequent enrolments. Until then there was no financial incentive for universities to enrol a greater number of students as the system was capped, meaning that the government would fund only an allocated number of students at each university. However, deregulation of the sector effectively opened the floodgates such that the sector saw a 25 percent increase in student enrolments between 2009 and 2014. Consequently, the government’s new participation benchmarks, coupled with deregulation of the higher education sector, have caused not only massification of the sector, also witnessed in other OECD countries (Krause, 2017) but also a more diverse university student population. Norton and Cakitaki (2016) contend that as the sector has grown in response to the shift in government policy, the logical result is that equity and attrition statistics are also likely to increase because of more students entering the sector who would not have had the opportunity if the system was not deregulated. Since 2009, the national university adjusted attrition rate for domestic
commencing bachelor-degree students has increased from 12.77 percent to 15.17 percent in 2013.

Australia’s new demand-driven system and diversification of the student population have compelled universities to sharpen their focus on student retention (Czarnecki, 2018; Krause, 2017; Coates, 2010; Lawrence, 2003; McKenzie & Schweitzer, 2001a; Zepke & Leach, 2005b). The negative term that the literature often uses here is attrition. Out of necessity, this ‘higher education revolution’ caused a new ‘participation revolution’. Such students are the focus of this thesis.

To varying degrees, universities have sought to increase student enrolments in line with government policy by enrolling non-traditional students who might normally not have gained entry to university programs if ‘traditional’ long-standing, more restrictive academic entry standards were applied. Typically, non-Go8 universities have shouldered the increased load of non-traditional students (Hughes, 2015; Southgate & Bennett, 2014). This is particularly the case for the non-Go8 universities (Harvey & Luckman, 2013), which are more likely to enrol non-traditional students who are often at greater risk of attrition for the broad range of reasons mentioned above (Czarnecki, 2018). At the same time, the more powerful, established ‘elite’ institutions have continued to attract a higher percentage of full-time students drawn from recent school leavers with higher TE scores (ATARs), gaining entry to their first or second course preferences, and who are typically from higher SES backgrounds (Czarnecki, 2018). These traditional students often have family history attached to the institution, or at a minimum are often second-generation university students who have greater cultural and social resources to draw on for success at university (Grebennikov & Shah, 2012) than the ‘non-traditional’ students.

Traditional students are those who historically have been admitted to university degree programs with some combination of the following characteristics. They have tended to be from mid-to-high socioeconomic backgrounds, with relatively high TE scores; they are second or third generation of their family to study at university; and they have tended to study full-time on-campus. By contrast, over recent years many students enrolled in university degree programs are increasingly ‘non-traditional’ and tend to have a combination of the following distal factors: lower socioeconomic backgrounds and lower TE scores; they are first in their families to attend university (i.e., neither parents nor sibling/s went to university); they often study part-time, or even full-time, while working full-time; they are not on campus as often or
as much as previous generations of students; they have regular home-care responsibilities; they are from rural or remote areas, and may be of indigenous or international origin; and they are often from non-English speaking backgrounds (LOTE), including refugees. There is of course considerable overlap between the categories that define non-traditional students, and many of them fall into multiple categories. Insofar as they may on entry be seen as lacking the academic skills, capabilities, resources and background necessary for successful course completion or degree program graduation. Many though not all of these non-traditional students may be at greater risk of early attrition or failure in their university studies (see, e.g., Wilson, 2012).

The literature emphasises that non-traditional students are at noticeably higher risk than traditional students of failing courses and of attrition, in particular during their first year of university. The literature suggests that typically, these students require access to additional and timely co-curricular learning interventions to scaffold their own learning efforts and succeed during their first year of university studies. According to Bradley et al., (2008), if they take advantage of these interventions they are likely to succeed in their studies at rates similar to those of traditional students. Based on this evidence, Spiegler and Bednarek (2013) suggest that universities need to move away from a ‘deficit thinking’ attitude towards the ‘new’ student.

The need to move towards a more positive view of diversity in the student population is an increasingly common theme in the literature (O’Shea, May & Stone, 2014). Equally important in this context is recognition that degree programs need to be designed to be more pro-active than reactive, and anticipate the needs of a new generation of students (Krause, 2005c; Yorke, 2006).

A major demographic change has been under way in the first-year university cohort for well over a decade. Krause (2005a) observed the changes were likely to be ongoing, and indeed they have been to date. Yet as Tinto (2004) observed, “to extend the university experience to such a new ‘audience’, without the concomitant support to ensure their success and retention, for example by the university introducing new support strategies and interventions, is to be complicit in any student failure (French, Muurlink & Wilson, 2014, p. 1).” Similarly, the International Association of Universities (2008) advocated that “… access without a reasonable chance of success is an empty promise”, as also observed by Sharma (2015). A similar guiding social-justice principle is articulated by James et al., (2008, p. 1), “ … access to higher education and success in higher education should not be determined by class, ethnicity, geographical location or other personal characteristics”. This exposes universities to the
necessity of taking into account the support needs of non-traditional students, not just on entry, but as they transition into their tertiary studies, if the federal government’s wider participation agenda is to be successful. In particular, it imposes the need upon those universities that enrol large numbers of non-traditional students to provide institutional support and resources not only to students, but also to academic and general staff to accommodate these challenges.

As discussed throughout this chapter thus far, one of the major issues that backgrounds this study is the added pressure that the demand driven system has placed on university staff. Student numbers, both domestic and international have increased exponentially over the past decade. For example, “overall, between 2009 and 2017, the number of domestic bachelor degree students increased by one third” (Australian Productivity Commission Report, 2019, p. 5). Between 2010 and 2016, there was a seven percent increase in the number of students attending university by the age of 22 with “… the most rapid growth in the system from enrolments by students who had been out of school for a period into courses at non-Group of Eight universities (Australian Productivity Commission Report 2019, p. 8).” During this time students were more likely to enrol in education, information technology, management and commerce degrees, which had lower entry levels, but provided significant revenue to universities during this time. Despite the increase in the number of students and the pressures of the demand driven system, because of ill prepared students (Australian Productivity Commission Report, 2019), staff-student ratios decreased over this time (CDET, 2018). Furthermore, as a result of the significant increase in enrolments, expenditure (including deferred student contributions) by the Australian Government “increased in real terms from $6.4 billion in 2009 to $9.3 billion in 2017 (Australian Productivity Commission Report 2019, p. 6).

Notwithstanding the expansion of higher education, and policy aims partly being achieved, with more people from LSES backgrounds and FiF students attending university, those who attended university because of the demand driven system were much less likely to attend a GO8 University and were also less likely to graduate than their peers. Furthermore, the participation gaps continue to widen for some groups, such as those from rural areas and indigenous backgrounds. (Australian Productivity Commission Report, 2019). Concerns have also been raised by the Australian Productivity Commission that with the proliferation of students in higher education, schools have arguably not adapted “… to the role needed of it to prepare young people to succeed at university (p. 2)” with more students entering universities.
poorly prepared. The Australian Productivity Commission Report concludes that our school system had needed to prepare larger numbers of young people for university, and many university students who were offered places as a result of the demand driven system need greater academic support to succeed.

2.2.7 Abbott/Turnbull/Morrison Liberal/National Years (2013–present)

With the return of the Liberal/National government into power it can be seen that a neoliberal reorganisation of higher education is underway in Australia, similar to other parts of the OECD. Under the Abbott/Turnbull/Morrison Liberal/National government, costs have shifted to students and universities. The current Morrison led government has frozen at 2017 levels the Commonwealth Grant Scheme (CGS) funding it is to provide to subsidise tuition costs for bachelor-level students in 2018 and 2019. This measure is fiscal rather than legislative so does not have to pass through parliament; a requirement that has made some government moves in higher education unachievable over recent years. Consequent to the CGS funding freeze, the government will not increase revenue for universities providing places for any additional bachelor’s degree students or for increased costs as a result of inflation (Gardner, 2018) and have indicated moves to linking funding closer to retention and graduation data. According to the Universities Australia press release on their website (2018) “linking funding to attrition may have a perverse impact on access and opportunity, by driving universities to play it safe and limit opportunities for non-traditional students.” While at the same time it appears that the change in government policy, (i.e. funding caps on student numbers), has driven the higher education sector to turn back to the international student market to offset the lack of government funding of domestic students. According to Larkins (2018) this “has seen international student numbers having again increased with numbers having peaked in 2009, then declined until 2012, before recovering strongly in recent years (p. 2).”

2.3 Academic Success and Student Retention Challenges

Academic success and student retention present significant challenges for all Australian universities, and for most, if not all, universities internationally. Attrition figures vary among institutions (for example, public compared to private universities, and metropolitan compared to rural universities), and among delivery modes (for example, on-campus and off-campus). However, there is a clear challenge for universities in retaining students, as made clear in the consistent pattern of attrition in reported data for more than the past decade.
Statistics published in January 2017 in the CDET Report, *Completion Rates of Higher Education Students Cohort Analysis 2005–2014*, reveal that less than half of all domestic undergraduate bachelor-degree students completed their degree programs within four years. The 2010 cohort completion rate was 45.1 percent, compared with an average of 46.6 percent for the 2005 to 2009 cohorts. Through a more longitudinal lens, approximately one-third (33 percent and 33.2 respectively) of all commencing students enrolled in a bachelor’s degree during 2005 and 2006 failed to graduate (from any degree program) within six years, and more than a quarter of this cohort failed to graduate within nine years (26.4 percent and 26.5 percent respectively) (CDET, 2017a). The most recent six-year data tracking by the CDET reveals that 35.6 percent of domestic students who commenced their studies in 2012 had failed to complete their studies within six years of commencement of their bachelor degrees, while the most recent 9-year tracking data (2009 commencing cohort) reveals that non-completion rates within a nine-year timeframe remains relatively the same at 26.1% (CDET, 2019a).

The most recent CDET (2019a) completion rate data further indicates that there is a consistent pattern of decreasing retention and degree completion rates, within 4 years, for Australian domestic bachelor students commencing a degree over the past decade (2005-2014). For example, 47.4% completion rates for the group of students who commenced their degrees in 2005 compared to 42.0% who commenced their degrees in 2014; a 52.6% and 58% non-completion rate respectively. It is evident that students are spacing out their degree completion over longer time periods as the increase in non-completion rates is not as significant over a 6 and 9-year timeframe (CDET, 2019a). The increase in non-completion rates is less significant over 6 years (33.0% for the group of students who commenced their degrees in 2005 compared to 35.6% for those students who commenced their degrees in in 2012; which is the most recent data available). The complete rates are relatively stable over 9 years (around 26-27%), with students are staying enrolled and completing their degrees over longer time periods. The effect on this on students stretching out their degree over longer periods of time is an area of further research, in particular for government agencies, as it is likely that government debt and repayment of government subsidised loans such as HELP are delayed as students take longer to complete their degrees and earn an income higher enough to repay the loan. It is noted that completion/non-completion rates vary according to different categories of students, for example SES status as discussed below.

Table 2: Enrolment and Completion Rates of Bachelor Students in Australia (2005-2014)
<table>
<thead>
<tr>
<th>Domestic students commencing studies</th>
<th>Completion rate (%)</th>
<th>Still enrolled (%)</th>
<th>Re-enrolled but dropped out (%)</th>
<th>Never came back (%)</th>
<th>Non-completion rate (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2005</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>After 4 years</td>
<td>47.4</td>
<td>30.1</td>
<td>11.5</td>
<td>11.0</td>
<td>52.6</td>
</tr>
<tr>
<td>After 6 years</td>
<td>67.0</td>
<td>11.0</td>
<td>12.9</td>
<td>9.1</td>
<td>33.0</td>
</tr>
<tr>
<td>After 9 years</td>
<td>73.6</td>
<td>4.2</td>
<td>14.0</td>
<td>8.2</td>
<td>26.4</td>
</tr>
<tr>
<td>2006</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>After 4 years</td>
<td>46.8</td>
<td>32.7</td>
<td>10.5</td>
<td>10.0</td>
<td>53.2</td>
</tr>
<tr>
<td>After 6 years</td>
<td>66.8</td>
<td>11.0</td>
<td>13.4</td>
<td>8.8</td>
<td>33.2</td>
</tr>
<tr>
<td>After 9 years</td>
<td>73.5</td>
<td>4.2</td>
<td>14.5</td>
<td>7.8</td>
<td>26.5</td>
</tr>
<tr>
<td>2007</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>After 4 years</td>
<td>46.0</td>
<td>33.7</td>
<td>10.4</td>
<td>9.8</td>
<td>54.0</td>
</tr>
<tr>
<td>After 6 years</td>
<td>66.6</td>
<td>11.4</td>
<td>13.4</td>
<td>8.6</td>
<td>33.4</td>
</tr>
<tr>
<td>After 9 years</td>
<td>73.6</td>
<td>4.2</td>
<td>14.5</td>
<td>7.8</td>
<td>26.4</td>
</tr>
<tr>
<td>2008</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>After 4 years</td>
<td>46.8</td>
<td>33.4</td>
<td>10.9</td>
<td>8.9</td>
<td>53.2</td>
</tr>
<tr>
<td>After 6 years</td>
<td>67.2</td>
<td>11.2</td>
<td>13.7</td>
<td>7.9</td>
<td>32.8</td>
</tr>
<tr>
<td>Year</td>
<td>After 4 years</td>
<td>After 6 years</td>
<td>After 9 years</td>
<td>After 4 years</td>
<td>After 6 years</td>
</tr>
<tr>
<td>------------</td>
<td>---------------</td>
<td>---------------</td>
<td>---------------</td>
<td>---------------</td>
<td>---------------</td>
</tr>
<tr>
<td>2009</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>After 9 years</td>
<td>74.0</td>
<td>4.0</td>
<td>14.8</td>
<td>7.2</td>
<td>36.0</td>
</tr>
<tr>
<td><strong>2010</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>After 4 years</td>
<td>46.2</td>
<td>34.2</td>
<td>11.1</td>
<td>8.5</td>
<td>53.8</td>
</tr>
<tr>
<td>After 6 years</td>
<td>66.8</td>
<td>11.8</td>
<td>14.4</td>
<td>7.9</td>
<td>33.2</td>
</tr>
<tr>
<td>After 9 years</td>
<td>73.9</td>
<td>4.3</td>
<td>15.2</td>
<td>6.7</td>
<td>26.1</td>
</tr>
<tr>
<td><strong>2011</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>After 4 years</td>
<td>45.3</td>
<td>34.6</td>
<td>11.1</td>
<td>9.0</td>
<td>56.7</td>
</tr>
<tr>
<td>After 6 years</td>
<td>66.0</td>
<td>11.8</td>
<td>14.4</td>
<td>7.9</td>
<td>34.0</td>
</tr>
<tr>
<td>After 9 years</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
</tr>
<tr>
<td><strong>2012</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>After 4 years</td>
<td>45.1</td>
<td>34.5</td>
<td>11.7</td>
<td>8.7</td>
<td>54.9</td>
</tr>
<tr>
<td>After 6 years</td>
<td>65.7</td>
<td>11.8</td>
<td>14.7</td>
<td>7.7</td>
<td>34.3</td>
</tr>
<tr>
<td>After 9 years</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
</tr>
<tr>
<td><strong>2012</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>After 4 years</td>
<td>44.2</td>
<td>34.2</td>
<td>12.1</td>
<td>9.4</td>
<td>55.8</td>
</tr>
<tr>
<td>After 6 years</td>
<td>64.4</td>
<td>11.9</td>
<td>15.3</td>
<td>8.3</td>
<td>35.6</td>
</tr>
<tr>
<td>After 9 years</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
</tr>
<tr>
<td><strong>2013</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>2014 (most recent available for 4-year completions)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>----------------</td>
<td>---------------------------------------------------</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>After 4 years</strong></td>
<td>42.0    34.6  12.5    10.9    58.0</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>After 6 years</strong></td>
<td>N/A     N/A    N/A     N/A     N/A</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>After 9 years</strong></td>
<td>N/A     N/A    N/A     N/A     N/A</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

N/A = Not Applicable
Source: CDET: Completion Rates of Higher Education Students (2018)

Of greater concern is the completion rates of students among key equity groups such as low SES, which were below the national average over the same six and nine-year periods. Furthermore, based on the most recent data, the completion rates of LSES students appears to be decreasing as illustrated in Table 3. This data is contrary to earlier research including that by Marks (2007), the Centre for the Study of Higher Education (CSHE, 2008) and the Bradley Report (2008), completed before the education revolution which indicated that the likelihood of LSES students completing tertiary studies, once admitted, was similar to that of their higher SES peers. Furthermore, a significantly higher percentage of students from Low SES re-enrolled but then dropped out compared to High SES as evidenced in Table 3 below.

These figures take into account and include internal and external transfers (stop-outs), and therefore the completion rates do not necessarily imply that the students graduated from the degree program in which they initially enrolled. For example, a student may have started a Bachelor of Business in 2005 but graduated with a Bachelor of Nursing at the same or a different institution or may have started a Bachelor of Business at one university and completed it at a different university. These figures include students who also completed an honours program as complement to their bachelor’s degree and is why the federal government’s data collection has used a four-year minimum period. Previously it was expected that most undergraduate students in Australia would traditionally take three years to complete an
undergraduate bachelor’s degree program at university when enrolled full-time (Australian Government, 2015).

Significantly, the figures cited above reportedly exclude data on the very high proportion of students dropping out from or failing some online courses during their degree programs. In studies from around the world Lynch (2001) cites 50 percent, Diaz (2002) cites 20–50 percent, and Flood (2002) cites one in eight students dropping out from or failing some online courses during their degree programs. In their preliminary findings on an Australian example, Greenland and Moore (2014) report the attrition of more than 20 percent of the student cohort for first-year programs at Swinburne University of Technology in Melbourne and double that (40%) for external courses. A Senate Estimates Committee on Education and Employment 2015–2016 reported:

Progression (retention) rate for Swinburne domestic students commencing a bachelor course externally in 2012 is 59.9 per cent. This compares to the progression rate of 79 per cent for Swinburne domestic students commencing a bachelor course internally in 2012. Progression and completions rates for Open Universities Australia (OUA) cannot be calculated because OUA does not report course completions (Hansard, 3 June 2015, p. 120).

The extensive literature examining student retention and attrition in Australia and internationally broadly accepts that university students are most vulnerable to attrition during their first year of study (Grebennikov & Skaines, 2008; James et al., 2010; Krause, Hartley, James & McInnis, 2005; Long et al., 2006). According to ABS statistics (2009a), one in five domestic students in Australia leaves the university where they were first enrolled, during their first year. Since introducing a Commonwealth Higher Education Student Support Number (CHESSN), an identifier issued to every student studying in a Commonwealth-supported Place or using a Higher Education Loan Program (HELP) loan, the Australian government has been able to track Commonwealth-supported student places and thus institutional attrition and sectoral attrition (Commonwealth Government, 2017). This further enables the government to allow for an ‘adjusted’ attrition/retention rate across all years. Data reveals that when the (transfer) ‘adjustment rate’ is included, approximately one in six undergraduates who commence studies in Australia fails to complete their first year or to re-enrol in the following year.
The period with greatest risk of attrition is recognised to be the first few weeks of first semester of first year, with students struggling to find a sense of fit having concerns about establishing peer relationships; balancing commitments between university, family and work; identifying how to access resources; and trying to understand the academic standards required of them for early assessment and group tasks (Tinto, 1998; Tower et al., 2015; Wilson et al., 2014). Wilson et al., (2014, p. 3) explain that this time as “a ‘window of maximal risk’ for non-traditional, first generation students because of their low levels of academic capital, resulting in the ‘outsider within phenomenon’ and limited engagement with the role of the university student.” These challenges can result in the students’ non-engagement at orientation sessions, online and in class. Tower et al., (2015) therefore, advocate for monitoring these behaviours as indicators of the likelihood of attrition.

2.3.1 Academic Success and Retention of At-Risk Students

More than 40 years ago, research based primarily on North American studies led Australian researchers Baumgart and Johnstone (1977) to suggest that in higher education the problem of first-year university attrition, and attrition more generally, could be approached by taking into account four key areas. These were selection procedures for student admission (essentially TE scores), individual characteristics of specific student subgroups that influenced how these students interacted with the institutional environment (the university experience and sense of fit), the role of administrative support for students experiencing problems, and the administrative and education processes used to govern student progression. The authors’ research article was then one of the few Australian publications dealing with attrition of first-year students from higher education at the same time. Today, those fundamental themes are still a key focus of both domestic and international literature on what is now seen, in positive terms that connote gains rather than losses, as student success and university retention.

Students leave university studies for many reasons, ideally upon graduation. Unfortunately, however, too many leave before completing their degree, with a student debt and no qualification. Often, students leave their studies before they have had a true opportunity to fully appreciate university life and recognise its long-term benefits, many of them attriting within the first few weeks or months after beginning (Nelson, 2014). According to the Australian Bureau of Statistics (2016), approximately one million Australian have an uncompleted bachelor’s degree qualification but have completed a separate post high school education. Furthermore, according to Harvey et al., (2017) approximately 50 percent will return to studies
within eight years. As discussed above, it is important to recognise the diversity of reasons why students withdraw from university beyond simply poor grades and course/subject failure, which is why student success and university retention are not necessarily the same thing.

Students who withdraw from the degree program in which they enrolled originally may be categorised as drop-outs, internal transfers, external transfers (stop-outs) or dismissals, depending upon their reason for withdrawal. They are in a different category from those who defer their studies via an official leave of absence. Those referred to in the literature as ‘drop-outs’ or sometimes as ‘system departures’ (Racchini, 2005) enrol for one or more semesters and then fail to re-enrol at any institution to continue their studies. The sub-categories of this group are ‘defaulters’ who drop out voluntarily while subjects are under way and do not attend final exams, and ‘no-shows’ who successfully complete the subjects they are enrolled in for the semester, but do not attend (show up) the following semester. ‘Transfers’ refers to students who transfer internally (to a different department or degree program) within the institution where they have been studying and usually enrolled initially. ‘Stop-outs’, sometimes termed ‘institutional departures’ are those who leave the institution where they are enrolled to study at another institution, sometimes as a result of upgrading their university entrance scores on the basis of their performance during their first enrolment (Racchini, 2005; Luckman & Harvey, 2019). Luckman and Harvey (2019) stress the importance of understanding the trajectory of stop-outs and partial completers and the importance of policy in regulating these processes, including making admission processes transparent and incentivising the re-enrolment and completion of degrees, with such initiatives recently introduced in the United States. ‘Dismissals’ have been dismissed from an institution due to their poor academic performance or misconduct.

Krause and Coates (2008, p. 495) state that “understanding the first-year experience plays a critical role in managing transitions to tertiary study, in retaining students, and in setting up the educational foundations for academic success”. A review of relevant literature suggests a broad range of factors are associated with students being at risk of academic failure and of early attrition during their university studies. These will be discussed in the following section. As noted above, however, attrition is not necessarily related to ‘absolute’ academic failure, as students leave university for a wide range of reasons. It is therefore necessary to distinguish between the risk factors associated with academic failure, and those associated with student attrition, i.e., not re-enrolling in subsequent semesters (James et al., 2010). Although it is
necessary to distinguish between the risk factors associated with academic success (or put inversely failure) and retention (or put inversely attrition), some reasons can be the same for both success and retention. Hence, to avoid repetition, where the factors affect both variables, they will be discussed under the same heading throughout the literature review, with the key points of difference highlighted.

2.4 Distal and Proximal Factors Influencing Academic Success and Retention

The factors commonly associated with students’ academic success and retention can be intuitively clustered into two broad categories, ‘distal’ and ‘proximal’ (Wilson, 2012; 2014; West et al., 2015).

Distal factors are those that are traditionally ‘fixed’ to individual students and are part of their antecedents prior to entering higher education (e.g., pre-entry individual characteristics such as educational backgrounds and family demographics) (Wilson, 2012; 2014). Wilson (2012) identifies key distal factors to include personal characteristics (e.g. age, sex, culture); life experience and history (social and family academic capital, previous educational experiences, and related achievement capital, in addition to personal and cultural resources); life circumstances (e.g., socio-economic standing and social capital including family support and other support networks); time and energy capital (family roles and responsibilities); financial capital (economic circumstances); personal beliefs (family academic capital and grasp of university expectations); motivational capital (aspirations and preferences); personal academic capital (academic efficacy and self-belief in success); and personal capabilities (including academic skills and academic capital).

Proximal factors are those that “are closer in time and place to the university (Wilson, 2014, p. 18; West et al., 2015, p. 38) and encapsulate the way students behave and perform within the university setting, such as their attendance and engagement at class (Wilson, 2014, p. 18). According to Lizzio (2006; 2009; 2015) and to Wilson (2012; 2014), the key proximal predictors of academic success and retention include spending weekly time on task (the strongest predictor), regularly attending lectures and tutorials to develop academic self-belief and in turn building a sense of capability; developing a sense of purpose by creating clear goals for studying at university, which is a strong predictor of academic success and retention into the second year of study; developing a sense of resourcefulness by engaging with the online
environment and having a balance in study-work-life obligations; and developing a sense of connection by building social networks, which is a protective factor against dropping out. Lizzio (2011) argues each of these four senses (capability, purpose, resourcefulness and connection) contributes to the ‘core sense’ of a positive student identity, providing students with a sense of personal-fit and worth in being a university student.

Membership of a particular group, such as being from a low socio-economic background, should not of itself make a student feel at risk or less capable than others, and it is important that universities and governments do not label students merely on the basis of their background (Kahu, Nelson & Picton, 2017). Nonetheless, distal and proximal factors can be used as early indicators of students being at risk of possible academic failure and attrition during their first year at university. However, as Wilson (2014, p. 18) cautions, “group membership is at best a proxy indicator of the potential increased likelihood of some risk factors”. It is therefore important to ensure that using individual characteristics to predict student performance does not degenerate into a labelling exercise (Wilson, 2012). Lizzio (2015, p. 2) helpfully points out that “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” (Wilson, 2014).

As West et al., (2015) and Wilson (2014) acknowledge, a student’s proximal factors are generally more likely to be empowering and able to be managed and provide a useful predictor of academic success than a student’s distal factors. It is difficult for universities to control distal factors such as demographic variables, but universities are in a position to encourage the development of at least some of a student’s five senses of success, such as capability and resourcefulness, by providing academic services and encouraging students to spend time on task. Lizzio (2015, p. 38) and Wilson (2014, p. 18) offer time on task as an example because they advocate that the time students spend studying (i.e., time on task) is a “reliably stronger predictor of their students’ academic success than their demographic characteristics.” Furthermore, proximal factors are commonly influenced by interactions between the university and its students and vice versa, in developing a sense of student identity. Additionally, proximal factors can be expanded to include other non-curricular-based strategies used to develop a student’s sense of identity.
2.4.1 Distal Empirical Indicators of Academic Success and Failure, Retention and Attrition

Empirically, academic success and retention, including during a student’s first year at university but also more generally, is on average positively correlated with a number of factors. Factors concerning the student include high intelligence; TE scores and first semester grade point average (GPA); being enrolled at the institution, and in the degree program, that was a student’s first or second preference rather than their third, fourth or lower preference; higher socioeconomic background; mature age; and sense of personal integration or “fit” with the university. Factors concerning the university include providing facilities such as parking and transport, provision of support and services for individual programs of study; institutional attempts to develop a sense of fit for students by providing adjustment programs and services; engaging students academically and socially; and catering for students’ different preferred learning styles, including having smaller class sizes.

Conversely, a number of factors have emerged as empirically linked to a lack of academic success and retention. Factors concerning the student include poor TE scores; not studying at their preferred (first or second choice) university, or in their preferred (first or second choice) degree program; being the FiF to attend university and having low socioeconomic background (although the reasons for this are complex and the premise is caveated on the basis that this factor generally applies only during the first year of university); use of a LOTE as first language in the home or family environment (at least at universities in English-speaking countries); and a lack of sense of personal integration or “fit” with the university or program of study. Factors concerning the university include institution and large class sizes. These empirical indicators of academic success and failure are now discussed in more detail in the following section.

2.4.2 Academic Intelligence, Tertiary Entrance (TE) Scores and First Semester Grade Point Average (GPA)

Although there is no one agreed definition of intelligence (Neisser et al., 1996), cognitive intelligence can generally be viewed as one’s overall intellectual ability, taking into account wide-ranging skills for comprehending complex ideas; making sense of our environments; learning from experience; and having ability to think abstractly, plan and problem solve to make sense of things and figure out what to do (Banai & Perin, 2016; Gottfredson, 1997; Neisser et al., 1996; Olsen, Spain & Wright, 2008). Gottfredson (1997) explains that what
intelligence does not reflect is a set of narrow academic skills, while Neisser et al., (1996, p. 81) claim that the correlation between intelligence and academic success “account(s) for only about 25 percent of the overall variance” because other proximal (personal) factors such as persistence, interest, willingness to learn, curriculum and co-curricular activities also need to be taken into account. This is in addition to the importance of distal (environmental) factors such as socio-economic status, parental educational levels, and cultures that encourage student support from family, teachers, peers and government. Nevertheless, for more than a century intelligence and testing thereof, has been cited as a best distal predictor of academic success at school and university (Binet & Simon, 1916), with multiple researchers since the 1916 study claiming a positive correlation between intelligence/academic ability and academic success (Banai & Perin, 2016; Clark, Kusevskis-Hayes, Lui & Andreacchio, 2016; Kaufman, Reynolds, Liu, Kaufman & McGrew, 2012; Marks, 2014; Olsen, 1957; Richardson, Abraham et al., 2012; Rohde & Thompson, 2007; Sewell & Shah, 1968).

Intelligence is often linked to high TE scores, and for that reason another linked distal best predictor of university success remains secondary school grades (Gale & Parker, 2013; Kaiser et al., 2014). Numerous researchers have used TE scores to predict academic success at university (Astin, 1971; Cantwell, Archer & Bourke, 2001; Clark & Ramsay, 1990; Gerdes & Mallinckrodt, 1994; Klomegah, 2007a; McKenzie & Schweitzer, 2001a; Pitman, 2014; Sanders, 1958; Scott, 1959). Scott (1959, p. 141) agreed with Sanders (1958) that “intelligence (or ability) tests seem to be most valuable in the initial screening of scholastically heterogeneous populations”, but asserted that such tests “have generally failed to demonstrate a close relationship to success in university examinations”. McKenzie and Schweitzer (2001a) and (Pitman, 2014), however, found that students entering university with high TE scores have a greater chance of achieving academic success, i.e., good grades. Echoing this view is Klomegah (2007b), who contends that high school grades remain a better predictor of academic performance at tertiary level than alternative models. In a similar vein, Cantwell et al., (2001) found that after discounting for mature age and female demographic backgrounds, students who entered university based on a traditional TE background (high school certificate) performed slightly better that those matriculating to university via a university-enabling program.

Studies conducted in Australia (McKenzie & Schweitzer, 2001b) and in many other OECD countries including New Zealand (Engler, 2010) and the United States (Astin, 1972; Sawyer,
have revealed positive correlations between TE scores and success at university. Consistent with this finding, a high-school student’s academic result is traditionally used as a mechanism to assess both their eligibility for university admission and their preferences for institutions and degree programs. It is therefore possible that high-school performance, or initial grades at university for that matter, may also determine the nature of the cognitions (e.g., expectations, self-concept, personal norms) of students at university (Bank, Biddle & Slavings, 1994). Similarly, Olsen (1957) argued more than 60 years ago that scholastic attainment has a positive correlation with the personality traits required for higher education studies.

As discussed in greater detail later in this thesis, TE scores and thus choice of institution and degree program are also linked to students’ socio-economic status. Findings in Gemici, Lim and Karmel (2013) that private high schools have higher TE scores than public (government) high schools suggest that the type of school, i.e., public or private, and student diversity within the school, account for almost 20 percent of the variation in students’ TE scores. This is consistent with research by Teese and Polesel (2003) that also found students’ high school grades were influenced by students’ socio-economic background and type of school (public or private), with higher scores favouring those with private-school education, from families with higher socio-economic levels. Gale (2012) states that high-school grade is more indicative of a student’s socio-economic background than it is of their academic potential.


> a regression analysis was performed for the first time to assess the relative influence of different student characteristics on the likelihood of completing a degree. The analysis found that type of attendance (full-time/part-time) and the age of a student had a greater (positive) influence on (degree program) completion than a student’s Australian Tertiary Admission Rank (ATAR) (TE) score.

In terms of university grades, first semester GPA has long been recognised as a key proximal indicator of a student’s longer-term success and retention (Bradburn, 2002; Pascarella, Duby, Miller & Rasher, 1981; Ripple & Luthar, 2000; Sugimoto, 1966; Tinto, 1995; Williams & Pepe, 1982). A higher GPA is seen as an indicator of greater probability of long-term academic success and retention, while a poor GPA is seen to indicate higher risk of attrition.
Conversely, a lack of academic success and retention at university is on average positively correlated with low (poor) TE scores, which reduce students’ choices of institution and courses. Multivariate regression analysis by the Australian Productivity Commission (2019) indicates that those students whose attendance can be ascribed to the expansion of the system … typically had lower literacy and numeracy and a lower Australian Tertiary Admission Rank (most had an ATAR less than 70) (p. 3)” drop out at higher rates. Nevertheless, some research suggests that equity and access programs run by universities can provide students who would generally be considered to be at-risk, with the opportunity to enhance their chances of success at university (Clark et al., 2016). Furthermore, while Engler's (2010) New Zealand study found that high-school achievement was a best predictor of student success at university, it also found that not all students with high university-entrance standards performed to the same standards at university, and in fact, some with lower high-school achievement out-performed those with strong high-school achievement.

In recent years the relevance of TE scores has come into question. According to the 2018 report, ‘Crunching the number: Exploring the use and usefulness of the Australian Tertiary Admission Rank (ATAR)’ (Pilcher and Torii, 2018), only one in four undergraduate students is admitted to Australian higher education institutions on the basis of their TE score. The authors claim that in many cases instead of ATAR (TE) scores, universities are using a broad range of criteria such as aptitude tests, interviews, essays, portfolios, various bridging courses and bonus point schemes when considering the eligibility of prospective students. The authors argue that to a significant extent, this shift towards considering other eligibility criteria “is consistent with policy goals to increase overall levels of tertiary education participation and attainment, and to facilitate access for students from non-traditional backgrounds” (Pilcher & Torii, 2018, p. 8.).

2.4.3 First-in-Family (FiF) Status

A 2012 OECD report noted that amongst its member states, the FiF phenomenon observed in Australia has international echoes, with those from second or third-generation higher-educated origins (i.e., those with previous post high-school education experience within the family) almost twice as likely as FiF students to attend university (OECD, 2012). Referring to the Australian university student population, the report claims that when FiF statistics are based on parental educational levels, approximately half the number of students (51 percent) have an FiF background (OECD, 2012; Spiegler & Bednarek, 2013). Other studies of the Australian experience (e.g., Grebennikov & Shah, 2012; Wheelahan, 2009) have found that FiF students
tend to be accepted at lower and mid-ranked universities rather than Go8 universities, which may suggest these students have lower TE scores that reduce their choice of preferred institution or degree program. If so, it may mean these students are more likely to perform poorly during their enrolment in higher education or may use their academic standing after completing subjects in first year (their GPA) to transfer internally to another degree program, or to ‘stop-out’ to another university degree program, consequently affecting university and faculty retention rates. Alternatively, a FiF student may live in a low-income socio-economic area and chooses to attend a lower-ranked university situated in a low socio-economic area simply because that university is closer to home than other universities.

‘Cultural capital’ as coined by Bourdieu and Passeron (1977) is sometimes used to refer to what students who are first in their families to enter university are missing relative to students with family experience of higher education (e.g., Hosken, Land, Goldingay, Barnes & Murphy, 2013; James et al., 2010; Krause et al., 2005; OECD, 2006; Schuetze & Slowey, 2002). As Yorke (2006) observed, FiF students “… do not have a family background that can pass on knowledge and understanding accrued from previous generations, and hence face a more challenging transition [in their first year of university] than peers who are advantaged in respect of cultural capital”. Gerdes and Mallinckrodt (1994) describe a student’s transition to university as a time of academic adjustment that encompasses much more than a student’s academic potential and includes a sense of efficacy, purpose, and overall satisfaction with the academic environment and adjustment to such. For FiF students, the adjustment to university may be more difficult because they lack sufficient cultural or social capital. It is perhaps not surprising, then, that Chesters and Watson (2013), Marks (2007) and McMillian (2005) found that having a parent education had a direct effect on a student’s likelihood of success in higher education.

In considering students’ higher education, parental impact, through their own educational attainment, occupation and other influence, is most often viewed through a lens concerned with whether a student is the first in their family to attend university. However, parental impact is also usually connected to a student’s socio-economic status. Students with a higher socio-economic status are more likely than students with low socio-economic status to have a family member who has attended university before them, and students with low socio-economic status are more likely to be the first in their family to undertake tertiary studies (Anderson & Verboorn, 1983; Tranter, 2012). Parental educational attainment is taken as an indicator of
success and retention at university, with FiF status positively correlated to attrition in a number of studies (Jeffreys, 2007; McMillan, 2005; Yorke & Thomas, 2003).

The research report by Marks on Longitudinal Surveys of Australian Youth, *Completing University: Characteristics and Outcomes of Completing and Non-completing Students*, found that “students whose parents had not completed school show[ed] a substantially lower expected completion rate (72 percent compared to 81 percent overall)” (Marks, 2007, p. 19). Similarly, over 50 years ago, Congdon (1964) identified that students who persisted in higher education were more likely to be from second or third generation higher-educated families, these students valued family relationships, and they were influenced by parental expectations about their levels of educational attainment. Tinto (1975) pointed to earlier literature that suggested those who persisted with studies were more likely to have parents who not only provided them with advice and approval, and conveyed interest in their studies (Trent & Ruyle, 1965), but also had parental expectations of further education for their offspring (Hackman & Dysinger, 1970). Tinto (1975) further claimed that it appeared that those who persisted with their studies (i.e., retention) were more likely to be from families where the parents were more educated and affluent. Over four decades later, a recent iteration of *The First Year Experience Report* states that less than 40 percent of domestic students cited parental expectations as a significant motivator for undertaking study, compared to 68 percent of international students (Baik, Naylor & Arkoudis, 2015). Although parental expectations may have reduced, the Mapping Australian Higher Education Report by the Grattan Institute (Norton & Cherastidham, 2018) suggests that the influence of a parents’ profession is still a significant factor in influencing the choice of young people to study at university, in particular for those students deriving from Asian cultures. Norton & Cherastidham (2018) state that “the number of young people studying at university is much higher for those whose parents work in professional occupations or speak an Asian language at home (p. 3).”

Coates and Ransom (2011) cite data showing 26 percent of FiF students consider leaving university during the critical first year, with this figure rising to 34 percent for subsequent years of enrolment. These students may lack access to social or cultural capital, or they may lack an ‘educational memory’ within their immediate family to draw on what Ball, Davies, David, and Reay (2002) refer to as ‘transgenerational family scripts’ or ‘inheritance codes’. An Australian study (Hayes, 1974) conducted at the University of New South Wales in 1971, found that students’ father’s education did not affect attrition rates. However, the lower level of
education attainment of students’ mothers was significant for influencing the number of students who dropped out of studies, compared to those who persisted, whose mothers had achieved some level of tertiary education. The study explained the implications of these results:

… affecting both the pre-university experience of dropouts, and the pressures encountered at university. Dropouts may have experienced less understanding at home with respect to study requirements whilst at school and university, or there may have been less parental pressure to attend and persevere with university. Family stability appeared similar for both groups, [with] over three-quarters of respondents indicating that parents were not deceased, divorced, or separated. Fewer dropouts lived at home, however, a greater percentage residing (sic) in flats, implying that dropouts were under less parental supervision and influence ...

[M]ore specifically, they were subject to less parental pressure to obtain a university degree (Hayes, 1974, p. 140).

While the author (Hayes, 1974) did not hypothesise about why there is specifically a difference in the influence of having a tertiary educated father or mother on attrition, there are a variety of possible hypothesis to explain this effect; although, it is unclear which drives this result. It is hypothesised that national culture is likely to be relevant to families whose parents are both tertiary educated, or families where the mother has a tertiary qualification as found by Hayes (1974). It is noted that Hayes’ (1974) research does not suggest that a mother’s education has a positive effect on reducing attrition from university, specifically of males or females. However, it is hypothesised that a mother’s tertiary qualifications may provide positive role modelling to younger females (in particular), within the same family, knowing that someone else of the same gender has been able to successfully complete a degree at university. A tertiary educated mother may appear to children as a dominant career role model, inspiring her own female children, in particular, to achieve similar goals, while those with a lower level of educational attainment may not have the same role model influence in terms of higher levels of study and professional career aspirations. Similarly, second generation students may be more likely to be influenced to complete a university qualification because of a stronger ‘sense of connection’ with a mother who has traversed similar grounds before them. Also, these students may be more likely to attend university, because there is stronger acceptance within the family (with at least one tertiary educated parent, and the possibility of both parents being tertiary educated) that higher education studies are considered to be a normal/traditional vocational
pathway, and thus there is likely to be greater parental expectations about enrolment at university, completion of such degrees, and greater parental interest in their children’s studies. Furthermore, if more than one family member is tertiary educated there is likely to be greater academic and social capital within the family unit. As such, if multiple parents have higher degree qualifications, the effect of this may be stronger than only one parent within the family unit having university qualifications, where often in the past such as when Hayes completed her research in the 1970’s, it would have been more likely to have be a male with post high school qualifications. Further investigation is required to determine whether the impact of being more likely to graduate is because of having two family members with tertiary qualifications or it is because of the mother having an education.

As discussed below, data indicates that FiF students are more likely to have low-socio-economic backgrounds, be from rural or indigenous families, and have LOTE backgrounds. That is why FiF students, similar to students in the other aforementioned equity categories, are often subsumed under the umbrella of low socio-economic status. Because of this economic status, students in these categories are more likely to work full or part-time while completing their studies (McInnis & Hartley, 2002).

2.4.4 Family Socio-Economic Status (SES): An Overview

Another predictive factor for academic success at university is a student’s family SES. Gale and Parker (2013, p. 19), referring to low SES students in higher education who are the target group of the Australian government’s widening participation policy “has increasingly focussed on the representation on this target group, often ignoring or subsuming other groups under a low SES umbrella”. In government terminology, ‘low socio-economic status’ refers to the poorest 25 percent of the nation’s population. While there is debate about the definition of ‘low socio-economic status’, the most common way to identify those who are attributed this status is by postcode of residence. The Australian Bureau of Statistics (2016) uses the term ‘Socio-Economic Indexes for Areas (SEIFA)’ that broadly defines socio-economic status in terms of “people’s access to material and social resources as well as their ability to participate in society.” While SEIFA represents an average of all people living in an area, SEIFA does not represent the individual situation of each person. Larger areas are more likely to have greater diversity of people and households. This thesis uses the Commonwealth Department of Education’s following definition of LSES: “The low socio-economic status (low SES) postcode measure is based on the students’ postcode of permanent home residence, with the
SES value derived from the Australian Bureau of Statistics' Socio-Economic Indexes for Areas (SEIFA) Index of Education and Occupation for postal areas. Postal areas in the bottom 25% of the population aged 15-64 are classified as low SES (the middle 50% are classified as medium SES and the top 25% are classified as high SES). An estimate of the number of low SES students is made by counting the number of students whose postcode of permanent home location is in a low SES area (Commonwealth Department of Education, 2019b).”Having financial ability to participate in post-secondary education is one significant example of a societal domain that is affected by a person’s socio-economic status (Jardine, 2012). Most often, low socio-economic status on average correlates negatively with admission to university. As discussed below, research indicates that low socio-economic status acts as a barrier to post-secondary studies, with those students who have low socio-economic backgrounds more likely to receive lower TE scores than their wealthier peers. Consequently, students from poor SES backgrounds are less likely to attend university (Jardine, 2012; Gale & Parker, 2013). Importantlly, having said this, if students from low socioeconomic backgrounds are admitted to university, they achieve academic success rates comparable to their peers from higher socioeconomic brackets (Bradley et al., 2008; Cantwell et al., 2001; James et al., 2008), suggesting a possible ‘unfounded deficit view’ of low socio-economic students (Gale & Parker, 2013). Based on this critical research, arguably Olsen (1957, p. 185) was correct 60 years ago in postulating that “the student who is confident of his (sic) ability, and is prepared to meet the demands made upon his (sic) time and energy, will generally rise above those personal and socio-economical disabilities which will contribute to failure in less well prepared students.”

2.4.5 Family Socio-Economic Status and Admission to University

Over the past few decades, researchers have continued to report that Australian students with lower socio-economic backgrounds are under-represented in higher education (e.g., Bradley et al., 2008; Chesters & Watson, 2013; Harvey, Burnheim & Brett, 2016; James et al., 2008; McMillan & Western, 2000; Scull & Cuthill, 2010). Those from regional and indigenous backgrounds have been recognised as most likely to be affected (Harvey, Andrewartha & Burnheim, 2016; Koshy, 2016). A 2008 report by the Australian Centre for the Study of Higher Education claims that students from lower SES backgrounds are only around one third as likely as their higher SES counterparts to undertake tertiary education studies (James et al., 2008). Furthermore, almost a third of students from low SES backgrounds are enrolled in programs that are relatively low on their list of study preferences (James et al., 2010) due to these
students’ low TE scores. This may mean these students are harder to retain at the institution or within higher education more generally, due to their low preference for studying in the degree program for which they first enrolled, unless they are able to change programs to one they find more satisfying at a later stage.

Of concern in this context are the recent Australian university admission statistics that suggest while overall low-SES university participation rates have increased markedly since the policy shift, their share in the overall student population (Koshy, 2016; Marginson, 2016) and participation in high-status institutions (Gore et al., 2017) which typically have high TE scores, have hardly changed, maintaining intergenerational status maintenance. The most recent data brings to light the extent of the challenges facing students from economically poorer, and often less-educated, backgrounds. It also highlights the social and equity challenges ahead for the federal government to meet its 2020 ‘widening participation’ targets. These challenges appear to be nothing new in the Australian higher education system. Peter Scott (1959) from the University of Tasmania examined the effect of geographic origins and socio-economic diversity on the success of university students in their first degree program courses. In examining the University’s records from 1928 to 1957, he found a marked difference in selection and performance in favour of students who lived in metropolitan areas.

Researchers have identified various reasons why students with low-socio economic backgrounds are less likely to undertake or succeed in tertiary studies. These include a lack of financial resources (Mullainathan and Shafir, 2013), being more likely to be FiF students and therefore lacking the required social and cultural capital to make informed decisions about university (James et al., 2010), lower family educational expectations and aspirations (Chesters & Watson, 2013; James et al., 2010), and generally having lower TE scores (Cardak & Ryan, 2006, 2009). Nonetheless, research also suggests that once low SES students have commenced their studies they are less likely to consider dropping (Krause & Armitage, 2014).

Sociological research provides sustained evidence of the correlation between family socio-economic status and the academic success of students of all ages (Chesters & Watson, 2013; Considine & Zappalà, 2002; Noël & de Broucker, 2001; Perry & McConney, 2010). It is perhaps therefore unsurprising that there is a suggested nexus between economic status, family/parental occupation and education, with Marginson (2006, p. 6) claiming “… wealthy families invest in high value education to maintain their social and professional leadership.” He also makes the link between degree programs at more elite institutions, TE scores and socio-
economic status, arguing that choice of degree program and place of study favours “bright students [who] tend to be students from affluent and powerful families.” (Marginson, 2006, p. 6). Tranter (2012) echoes this view, arguing that “the secondary curriculum orders young people into a social hierarchy of post-secondary options where the success of more privileged students comes at the cost of students from low socio-economic backgrounds.” Students from low SES backgrounds are less likely to be enrolled in a degree program that is their first preference, which can present high risk for universities in retaining these disadvantaged students in subsequent semesters (Baik et al., 2015; James et al., 2010), and degree/university preference is assumed to be a ‘problem’ in relation to both GPA performance and retention at university (Harvey & Luckman, 2014). Tranter (2012) explains that another limitation to university admission for students from low socio-economic secondary schools is that their schools may be poorly resourced to self-manage educational strategies facilitating their students’ entry to university, as these schools may not have the necessary social and cultural capital, similar to students from a FiF background, who are often, but not always, deemed a sub-category of low socio-economic status.

However, Cardak and Ryan (2009) indicates that when school achievement (TE score) is taken into account, students from a low socio-economic background are just as likely to attend university as their privileged higher socio-economic peers. More importantly the authors found “… it is the acquisition of an ENTER [Equivalent National Tertiary Entrance Rank] score and its value, even among those who complete Year 12, that drives a wedge between university participation rates of students from rich and poor family backgrounds” (p. 433). In common with analysis from their earlier, related study (Cardak & Ryan, 2006), the authors found that inequality exists because students from low SES backgrounds are more likely to achieve significantly lower ENTER scores than their more privileged SES counterparts. Furthermore, this category of students is less likely to have an ENTER score, making them ineligible to apply for entry to university straight out of high school.

Perhaps most worryingly in this context, Cardak and Ryan (2009, p. 433) claim, “many low SES students are poor candidates for university study by the time they reach year 9”, already having low levels of achievement in earlier schooling. The author’s 2014 research supports this claim suggesting that “policies targeting the SES gradient … appear early in childhood, certainly before the age of 15” (p. 22). This is further supported by the research of (Archer, DeWitt, & Wong, 2014; Gore et al., 2015; Whitty et al., 2015) who argue that despite an
increasing appreciation of the need to invest in both outreach activities and careers counselling, the literature suggests that focussing on later secondary years of schooling may be leaving it too late, considering the “cumulative impacts of prior achievement and the influences of social and cultural capital” (Gore et al., 2017, p. 1384). Cardak and Ryan (2014, p. 433) argue that the most important factor affecting university attendance is therefore high school achievement and thus the need to improve educational levels of students living in low socio-economic catchments at the at the early stages of schooling allowing greater access to university.

Nonetheless, Gore et al., (2015) also lament that “the discursive emphasis on ‘raising’ aspirations may be missing the mark if the under-representation of low SES students in higher education is more about factors such as the financial implications of attending university, perceptions of longer-term debt, and potential constraints on capacity to navigate (Appadurai, 2004; Bok, 2010) pathways to university than SES alone (p. 2).” Instead the authors suggest that there needs to be more focus on “nurture rather than raising aspirations” with “more detailed and meaningful information that provides students with tailored advice about what is needed for specific careers (p. 2)” to increase the percentage of low SES students attending university. In the context of the government’s widening participation agenda, the implications of this lack of cultural capital by many low SES students, in addition to concerns about a lack of financial resources are profound. A related issue is the completion rates of low SES as discussed below. This is compounded by other factors including these students often being from indigenous backgrounds or having lower entry scores and studying part-time (Marks, 2007; CSHE, 2008; Kahu, Nelson, & Picton, 2017). Nonetheless, the authors caution implying pre-existing (distal) factors as a measure of success, citing Kemp and Norton’s 2014 research which found that TE scores as not being able to provide an accurate measure of academic potential or success.

2.4.6 Family Socio-Economic Status and Success and Retention at University

Students’ ongoing academic success after the first semester of first-year university has been positively correlated with all levels of socio-economic status (low, medium and higher) (Bexley, Daroesman, Arkoudis & James, 2013; Gale & Parker, 2013). However, the literature reveals very little evidence of an effect of socio-economic status on graduation (long-term retention) rates. Although students with low socioeconomic backgrounds often face greater
challenges while undertaking higher education, their graduation (retention) rates are comparable with those of their peers from higher socioeconomic brackets (Carpenter, Hayden & Long, 1998; Devlin & O'Shea, 2012; Gary Marks, 2007). In fact, the federal government’s commissioned Bradley Report (2008) states the academic success rates (passing courses) of students with low socio-economic backgrounds, who are often ‘first in family’ at university, are 97 percent of the pass rates of their peers from higher SES peers, and these figures were stable over the five years preceding the Bradley Report. More recently, Gale and Parker (2013) reported in their Australian study of retention that the success rates for low SES students were at 96–98 per cent of the rates for all students, while the Completion Rates of Higher Education Students by the CDET suggest figures of less than one percent difference.

The figures cited above indicate that being from a low SES origin is not itself a great predictor of university attrition. However, some evidence, for example the study commissioned by Universities Australia, University Student Finances in 2012: A Study of the Financial Circumstances of Domestic and International Students in Australia’s Universities (Bexley et al., 2013), claims students with low SES backgrounds are more likely to be concerned about their finances and more likely to withdraw from university for financial reasons. Furthermore, originating from a low-socio economic circumstances is recognised as one of the contextual factors that cause students to economise to the detriment of their well-being (Watson, Barber & Dziurawiec, 2015). As well, many of these students need to work more hours than other students to pay for living expenses, which can affect their academic and social integration at university (Richardson, King, Garrett & Wrench, 2012), and thus their success and retention rates.

Beyond financial adversity, low SES overlaps with other risk factors so on average is positively correlated with a raft of challenges that students face in undertaking studies. The reasons are complex and numerous (Devlin & O'Shea, 2012; Scull & Cuthill, 2010), but are often categorised under the same low SES umbrella (Gale & Parker, 2013). The most commonly cited risk factors that appear to act synergistically to match low SES with lack of success and high rates of attrition include the two factors considered above, being first in family to study at university, and weaker student performance at school (i.e., TE score). As well, there are other factors discussed later in this thesis, including being from a non-English speaking background (i.e., LOTE), which may but does not necessarily include indigenous (first) Australians; having a rural, including those with indigenous background; being a mature-age student; and being
from a weaker performing school (typically government rather than private schools). All of these factors may impact on students’ institution and degree-program preferences, or lack thereof.

As a result of these risk factors impacting on students with low socio-economic backgrounds, the university success rate and retention of these students are premised on university providing, and students engaging in, a range of support systems. These can include academic support, peer mentoring, study groups, learning support and counselling services, designed to build the students’ ‘academic capital’ more quickly than if they were left to their own resources (Gale & Parker, 2014; Wilson et al., 2014; Coats, 2014). ‘Academic capital’ is defined as the knowledge and understanding of key academic skills that it was traditionally assumed students acquire from secondary school, home environment or other experience. These include not only skills for daily life such as reading, written and oral communication numeracy, and in more recent times information and computer literacy. They also include critical thinking skills; and the independent learning skills, behaviours and self-discipline necessary. That students generally need to spend focussed time-on-task and in self-study, and for managing time effectively to achieve successful university–work–life balance (Wilson, 2009a).

Similar to the overall whole cohort degree completion statistics over the past decade outlined above, there is a consistent pattern of decreasing retention and degree completion within 4-years of commencement of a bachelor’s degree by domestic students in Australia of all SES categories. However, of concern is the overall non-completion rate of students who derive from the LSES category, which is significantly lower than their HSES and MSES peers over all (4, 6 and 9-year) timeframes. The LSES category has consistently the lowest completion rate of all categories and shows a significant drop over the past decade, and larger decrease in a 4-year completion rate compared to others (LSES drop from 45.6 to 38.0 (-7.6%) compared to HSES to 47.4 to 42.0 (-5.4) over the past decade.

The increase in the non-completion rate is less significant over 6 years, and relatively stable over 9 years, as students are staying enrolled for longer. However, consistent with the 4-year non-completion rates, the data indicates that evidence an increase in non-completers over the 6 and 9-year periods is greater for students from a LSES background. For example, 6-Year: (LSES drop from 62.9 to 58.4 (-4.5%) compared to HSES to 70.9 to 69.3 (-1.6) over the past 8 years). 9-Year: (LSES drop from 69.0 to 68.4 (-0.6%) compared to HSES whose completion rate has progressively increased from 77.7 to 78.4 (0.7) over the past 9 years) as per Table 3.
Table 3: Completion Rates based on high, medium and Low SES categories

<table>
<thead>
<tr>
<th>Domestic students commencing studies</th>
<th>Completion rate of all students</th>
<th>Completion rate of High SES students (HSES)</th>
<th>Completion rate of Medium SES students (MSES)</th>
<th>Completion rate of Low SES students (LSES)</th>
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<tbody>
<tr>
<td><strong>2005</strong></td>
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<tr>
<td>After 4 years</td>
<td>47.4</td>
<td>48.8</td>
<td>47.2</td>
<td>45.6</td>
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<tr>
<td>After 6 years</td>
<td>67.0</td>
<td>70.9</td>
<td>66.0</td>
<td>62.9</td>
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<tr>
<td>After 9 years</td>
<td>73.6</td>
<td>77.7</td>
<td>72.7</td>
<td>69.0</td>
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<tr>
<td><strong>2006</strong></td>
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<td>After 4 years</td>
<td>46.8</td>
<td>48.4</td>
<td>46.5</td>
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<td>After 6 years</td>
<td>66.8</td>
<td>70.7</td>
<td>65.8</td>
<td>61.9</td>
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<tr>
<td>After 9 years</td>
<td>73.5</td>
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<td><strong>2007</strong></td>
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<td>After 9 years</td>
<td>73.6</td>
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<td>2009</td>
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<td><strong>2009 (most recent available for 9-year completions)</strong></td>
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<td>46.2</td>
<td>48.3</td>
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<td><strong>2012 (most recent data for 6-year completions)</strong></td>
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<td>After 4 years</td>
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<td>42.0</td>
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<td>38.0</td>
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N/A = Not Applicable


It is also noted that a significantly higher percentage of students from Low SES re-enrolled but then dropped out compared to their High SES counterparts. For example, of those students who commenced their studies in 2005, over a 6-year time-frame, the number of Low SES re-enrolled but then dropped out was 15% compared to 11.1% who had a HSES background; and the most recent data for the 6-year period states that in 2012 the number of Low SES re-enrolled but then dropped out was 18.1% compared to 12.9% for the HSES students (which is also a 3.1 (LSES) compared to a 1.8% (HSES) increase in non-completers).
2.4.7 Language Other Than English (LOTE) Backgrounds

Research at universities in English-speaking countries has found that first generation students who use a LOTE as a first language in the home or family environment are likely to have academic outcomes poorer than those whose home/family language is English (Messinis, Sheehan & Miholcic, 2009). Consistent with that finding, the LOTE-background students have also been found less likely than their peers to be enrolled in their program of first preference (James et al., 2010). Nonetheless, analysis of the Commonwealth Department of Education and Training’s long-term data (2017) on graduation (long-term retention) rates of the LOTE cohorts from 2005 and 2006 (78 percent and 78.2 percent respectively) reveals these students have retention rates higher than those of their peers from other equity groups (see Table 1 above). However most of this difference appears to be subsumed within the first-year dropout rates, rather than at later stages of degree-program completion.

Those who are of non-English speaking background (NESB students, also known as LOTE students) offer a challenge to researchers attempting to tease apart causal factors to identify why these students are more likely to be retained by universities, than their peer students, particularly those from other equity groups. Reasons may be associated with family cultures and strong parental influence, which may be stronger even than the students’ expectations of themselves. Another influence is likely to be the parental educational levels as LOTE students tend to have parents with higher levels of formal education, albeit in non-English speaking backgrounds (Krause et al., 2005). Another reason may be that in Australia over 40 percent of LOTE students are from higher SES backgrounds (James, Baldwin, Coates, Krause & McInnis, 2004).

Much of the literature dealing with students of LOTE backgrounds focuses on international students. However, the literature establishes that similar to international students, domestic LOTE students also benefit from English language support provided by universities (McInnis, James & Hartley, 2000), since English is the main medium of their learning in the Australian university system (Leung, Davison & Mohan, 2014). As a general principle, education systems play a critical role in integrating immigrants into their new communities and into the host country’s labour market. But LOTE advantage applies to some domestic LOTE students who are not immigrant and whose families have lived in Australia for generations. These are indigenous students, who are also likely to be disadvantaged because of linguistic and cultural backgrounds different from what is seen to be dominant in Australia (Abbott-Chapman,
Hughes & Wyld, 1992; McClelland & Kruger, 1993). This is one of the reasons why universities offer the opportunity to LOTE students and indigenous students to engage in additional interventions for language and cultural support at many universities. According to the most recent data available from the Department of Education and Training: Completion Rates of Higher Education Students (2018) online database, LOTE students are graduating in greater numbers than those who speak English as their native tongue.

### 2.4.8 Rural and Indigenous Students

According to the most recent long-term data analysis of the graduation (long-term retention) rates of Australian universities, eight out of the nine poorest performing universities are located in rural areas, with Murdoch University in Perth (and campuses also in Singapore and Dubai) the only university in that group located in a major metropolitan city (Commonwealth Department of Education and Training, 2017). But for universities in rural areas seeking to retain students, the problem is not just an apparently broad concern across the country about the quality of universities outside major capital cities. In many cases attrition from these universities is related to the personal challenges facing rural and indigenous students, such as having a low SES background.

A mountain of compiled evidence has found participation in tertiary studies for rural and indigenous students living in isolated areas is more likely to be marginalised as a result of socio-economic circumstances and social environment rather than by the distance students must travel to university campuses (particularly Richard James and his co-authors, e.g., James et al., 1999; James et al., 2004; James et al., 2008; James et al., 2010; but also others such as Bradley et al. (2008); Elsworth & Day, 1983; McClelland & Kruger, 1993). These studies have also indicated that rural students may or experience less family encouragement and support to attend university than city students due to difficulty in meeting expenses and a belief that university may not offer them a fulfilling experience and rewarding career. These studies further acknowledge that these students themselves are more likely than their city counterparts to consider the factors that inhibit furthering their education, such as the financial cost of living away from home in addition to personal costs such as being away from family and friends and missing their immediate support and friendship. Those living in rural or remote areas including indigenous students, may have fewer resources and opportunities to be as successful as their largely non-indigenous counterparts living and studying in urban areas. Additionally, when rural students have to live away from home to attend university, they are more likely than their
city counterparts to need to work more hours to pay for expenses. Furthermore, due to physical distances involved, they do not automatically have the immediate support of family and friends (Richardson, King et al., 2012).

Carter, Hollinsworth, Raciti and Gilbey (2018) describe ‘place’ as “a concept used to explore how people ascribe meaning to their physical and social surrounds, and their emotional affects (p. 243).” The authors’ research discusses a ‘sense of place’ in the context of indigenous students. Their research contends that universities need to enable academics to be able to ‘make’ a sense of ‘place’ in their pedagogies and mentoring roles, by recognising this “pedagogical caring as a legitimate and valued element of their work (p. 243).” Concerns about a sense of place and students moving from rural hometowns is also borne out more recently in the research by Turner (2018), reflecting the challenges these students face, including distance, appropriate accommodation and money, suggesting that “university is not just a yes or no decision (p. 104)”, as also borne out in the studies of Robinson (2012). Maeorg (2014) found that students who were able to live in student accommodation were more likely to build their sense of connection. While the Australian Government currently provides a living away from home allowance but only if it takes longer than 90 minutes to travel from your parents’ home to your place of study by public transport. Unlike colleges and universities in the United States, most universities in Australia supply limited accommodation with most students finding alternative accommodation.

2.4.9 Age of students
Interestingly, the empirical evidence on whether students’ age per se correlates with their academic success and retention positively or negatively is somewhat mixed (Long et al., 2006; Murtaugh et al., 1999; Olsen, 2008; Scott & Smart, 2005) (cf. West et al., 1986 arguing no, and Clark and Ramsay, 1990; Marks, 2007; arguing yes, for most institutions and courses). Some evidence supports the probability that program completion depends on the student’s age at commencement, and that 20-year-old commencing students have the highest probability of completion (Shah and Burke, 1996). Arguments that it is better for prospective students to defer university studies for a year after secondary school have been based on such findings (Linke, Barton & Cannon, 1985). Moreover, for mature-age students with no formal academic qualifications, there is a slightly negative correlation between their academic performance at university and their TE score, which was recorded years’ earlier (McClelland & Kruger, 1993). McClelland and Kruger (1993) also found that compared with regular school-entry students, students with previous post-secondary qualifications,
particularly from tertiary institutions other than the Technical and Further Education (TAFE) institutions, were more academically successful at university. However, mature-age students previously excluded from tertiary institutions were less successful than the overall student cohort.

More recent research indicates that there is a fairly strong correlation between attrition and the age of the student, with the younger the student more likely to continue their degree (CDET, 2017b) although this may be after a break from their studies. According to the most recent data available from the Department of Education and Training: Completion Rates of Higher Education Students online database, commencing students in the 19 years and under age group were more likely to have completed their studies after 6- and 9-year timeframes, although those students in the 20 to 24-year age group were more likely to complete their studies over a 4-year timeframe. Mature-aged students, those over the age of 25) were less likely to complete their degree across any time frame. The mature-aged students were also more likely to re-enrol after dropping out before dropping out again and not returning (CDET, 2019a).

Cherastidtham & Norton (2018) point out that attrition from higher education can arise from a range of inter-linked variables, including “a pool of lower-ATAR school students who do not go to university soon after finishing Year 12, but subsequently enrol at university as mature-age students (p. 38).” James et al. (2010) and CDET (2017b) both found that mature-aged students, were more likely to have work and family responsibilities that may impact on attrition, which according to Jevons and Lindsay (2018) can result in these students feeling pressure to choose between time on their university studies and outside commitments, often making “difficult choices about their priorities that other students do not have to make (CDET, 2017b, p. 24).” A similar theme was echoed by the Deputy Chief Executive of Universities Australia, Catriona Jackson a few year earlier, writing in the Weekend Australian: “students cited health or stress, work-life balance, the need to do paid work, overall workload and financial difficulties among the top reasons for considering not completing. So it’s not surprising that mature-age and part-time students have higher attrition rates … These students are much more likely to be juggling university study with jobs, children or caring for elderly parents (Jackson, 2016, n.p.).”
Although individual universities do provide some career advice to prospective students, for example at Open Days, it has been pointed out more recently by Cherastidtham and Norton (2018) that potential mature-age students do not have the same access to course and career guidance. For these prospective students, any personalised government-funded career advice is normally only available if they are unemployed at the time, and as such the choice of degree and lack of career guidance may also impact on the attrition rate of mature age students. 2.5 Proximal Empirical Indicators of Academic Success and Failure, Retention and Attrition

2.5.1 A Students’ Sense of Personal ‘Integration’ or ‘Fit’

A considerable portion of the first-year experience literature is focussed around the transition of first-year students from high school to tertiary level education. This period in a student’s life is marked by great change not just academically in becoming an independent learner (Richardson, King et al., 2012; Wilson et al., 2014), but also emotionally and socially (Gerdes & Mallinckrodt, 1994). For many it is a momentous step towards adulthood and independence that will determine their future career and goals (Richardson, King et al., 2012). As part of developing the (Australian) Monash University Transition Program, Monash academic Mark Peel surveyed a cohort of year 12 students about their expectations of university life and the learning that would take place they would undertake and experience. As part of the study, Peel assessed the students pre-first semester, repeated the survey after students’ completion of their first semester, and repeated it again towards the end of their studies. His work, which culminated in a visual documentation ‘Making the Move’ (1999), revealed that before entering university, students were generally somewhat naive about what would lie ahead during their university life (Kantanis, 2000b).

A students’ sense of personal ‘integration’ or ‘fit’ with the university or program of study (degree) in which they are enrolled has been positively correlated with their academic success
and retention, ever since the seminal work of Spady (1970), Spady (1971) and Tinto (1975). This includes informal interpersonal skills, habits, manners, linguistics, educational credentials and lifestyle preferences (Berger, 2000); conceptual knowledge, particular speech patterns and culturally specific learning tools (Sanchez, 2000); and involvement with, and commitment to, the institution, including “forming a support network and managing new social freedoms” (Gerdes & Mallinckrodt, 1994, p. 281). With the opportunity of new-found freedoms and independence, however, comes new challenges, including dealing with anxieties and one’s own insecurities related to adjusting to the new academic and social environment (Peel, 2000).

While some students thrive, others struggle to survive. Many students find it difficult to cope with the significant change in their lives. They may feel overwhelmed, unable to balance the competing demands of study, work and personal commitments (Richardson, King et al., 2012; Wilson et al., 2014).

Students who ‘fit’ better and fully integrate academically and socially with their university’s institutional culture are less likely to feel like a “fish out of water” (Thomas, 2002, p. 431) and more likely to achieve academic as well as social success. Those unable to fully integrate because their frame of reference is just too different from the institutional habitus and the habitus of the dominant peer group on campus may be less likely to do so (Berger, 2000). As Peel (2000) puts it, some become ‘isolated learners’. For some, it is a sense of ‘not belonging’, with Palmer, O’Kane, and Owens (2009) suggesting that the transitioning between one place (e.g., home, or school) and another (e.g., university) can lead to a feeling of ‘in-between-ness’, which the authors have termed, a ‘betwixt space’. Students who do not socially integrate are more likely to feel less commitment to the institution than other students and thus are more subject to voluntary dropout (Hayes, 1974; Racchini, 2005).

Sixty years ago, in seeking to make a case for junior colleges, Wyeth (1958, p. 26) offered an account of the adjustment to university life of the first-year student in Australia (in a cohort then predominantly male and much smaller than today). Wyeth did not refer to ‘personal fit’, but articulates the adjustment difficulty along those lines even at that time:

From his familiar school where he had achieved some measure of importance, where he was well known and usually had ready access to staff members, he comes to the university to find himself one of several hundreds, where he is unknown and where the warm interpersonal relations with staff are replaced, generally, by distant and impersonal ones. There are not within the university the guides, philosophers...
and friends that he knew among his teachers. For the first time in his life his academic success is almost entirely his responsibility as the pressures of the school have been removed … something must be done to make transition from school to university much less hazardous, and this, as things stand, should be the business of both the school and the university.

These sentiments still apply to today’s transitioning students, perhaps even more so today than ever before. As detailed in this chapter, student demographics in the sector have changed considerably over the past few decades, with more FiF students who may lack the academic and social capital to adjust smoothly into university life. It is therefore critical that university programs provide ‘adjustment support’ for students especially in their first year. Worthy of note here, as Harvey, Drew, and Smith (2006, p. 135) identify, “although it is still possible to refer to the ‘first-year experience’ it is likely to become increasingly difficult to do so”. The authors acknowledge that first year of university life is no longer a homogeneous experience because of the increasing diversity of students over the past few decades. This in turn can create a multitude of experiences depending on the institution and students, making the provision of ‘adjustment support’ by universities ever more challenging. Nevertheless, as Peel (2000, p. 1) observes, “while most students expect to become isolated learners in tertiary institutions where ‘you’re just a number, nobody cares’, post-enrolment experiences can play a major role in committing students to particular courses and institutions”. Similarly, Radloff and Coates (2010), advocate that a feeling of being supported and belonging to an institution is influential on students’ decision to persist with their studies.

2.5.2 University Responsibility for Goodness-of-Fit

As highlighted analysis above, responsibility for students’ goodness-of-fit in transition to tertiary studies lies not only with the student but also with the university. High schools are also responsible for preparing students to enter higher education. Focussing on 250 first-year students at the University of Queensland during the latter half of the 1950, Olsen (1957, p. 176) suggested the need for “close and continual contacts between the university and secondary schools” to better prepare students for university examinations. Kantanis (2000b, p. 1) also explains the value of involving outside parties as stakeholders, including students’ families as well as secondary schools, to obtain a holistic view of transition to university, thus enabling “students to be enculturated into the practices and life of the institution”.
Within Australia’s higher education sector there has been growing realisation over the past decade that the first-year student experience is “a complex and multifaceted process, involving transition and adjustment, as well as integration, into the higher education system and culture” (McPhail, French & Wilson, 2015, p. 4). There has also been a growing awareness that initial experiences are tremendously important for university students (Bowles, Fisher, McPhail, Rosenstreich & Dobson, 2014; Kift et al., 2010; Kift 2008; Kift & Nelson, 2005; James, Krause & Jennings (2010); Krause, Hartley et al. (2005); Lizzio, Wilson & Simons, 2002b; McInnis, James et al., 2000; McInnis, James & McNaught, 1995; McPhail et al., 2015; Pitkethly & Prosser, 2001; Wilson et al., 2014). Importantly, students’ perceptions of university life formed during their first-semester transition period from secondary school to university (Kantanis, 2000a; McPhail, Fisher & McConachie, 2009) influence their persistence (Tinto, 2017), and thus their retention in higher education (Jardine, 2012).

The first-semester transition period for students is therefore usually symbolic of what lies ahead; success or failure, and retention or attrition. Many institutional responses have sought to facilitate the student transition from secondary to tertiary education, to help better enable the process of student adjustment and achieving goodness-of-fit. These responses have included pre-university preparatory programs embedded in secondary schools; mentoring programs; early bird workshops before semester and orientation programs to help students to be university ready; early-negotiated early-engagement interviews using the notion of psychological contracts; negotiated engagement via success contracts with late engagers and those who have not attempted to engage early with their studies; school/program mail-outs; specifically tailored enrolment days to balance academic numeracy and literacy loads; events for family and friends, building peer networks, and social networking, to mention a few. Many of these programs are generic across universities globally. However, Pitkethly and Prosser (2001) argued that each institution must appreciate the varied experiences of its own students, a notion put forward several decades earlier by Baumgart and Johnstone (1977) in one of the rare Australian scholarly pieces dealing with university student attrition in the 20th century.

Today many types of pre-university preparatory programs are provided by post-secondary education institutions to help prepare students for tertiary studies generally, and as an introduction to their particular institution. A range of programs is often embedded into secondary schools, some enabling students in higher years (primarily years 10–12) to spend varying amounts of time on campus (McPhail, 2015; McPhail et al., 2009; and internationally,
Some pre-university preparatory programs include ‘early-bird’ sessions that focus primarily on basic, non-discipline-specific literacy skills that have long been a concern to educators of first-year students. Almost 100 years ago, MacPhail (1926, pp. 659-660) claimed “… we find many students in our classes who still do not know when sentences begin and end, and commit numerous other offenses in their use of English … satisfactory habits in the use of English should have been acquired before they graduated from high school”. This author continues, “[S]uch students must learn that their work is so far below college level that they must serve a probationary period in a sub-Freshman class for which no credit is given. It is, as has been pointed out, unfair to retard the progress of the students who are adequately prepared by turning the class period into coaching work for lag-gards.”

McInnis, Hartley, Polesel, and Teese (2000) observed that at the turn of the millennium, mentoring was probably the most prevalent strategy developed and implemented by Australian universities to improve students’ personal fit, integration and the overall first-year academic and social experience. Mentoring is of course not unique to Australia, with many examples referred to in studies cited internationally and domestically. Case studies cited in the literature include examples of provision of useful information and practical support and understanding by later-year student volunteers (James & McInnis, 1996); providing peer-led learning communities (Jaffee, Carle, Phillips & Paltoo, 2008; Zhao & Kuh, 2004); and pairing domestic and international students for the benefit of both parties (Collings, Swanson & Watkins, 2014; Quintrell & Westwood, 1994). All of these mentoring-styled programs were designed to lead students to higher levels of engagement and overall satisfaction with their higher education experience.

There is also evidence that student engagement in orientation or induction programs prior to the first week of classes assists students’ academic integration and improves their academic performance and socialisation (Lizzio, 2006; McPhail et al., 2015; Zepke & Leach, 2005a). Nonetheless Krause et al., (2005) remind readers that it is an interesting pervasive paradox that orientation may or may not be highly effective in assisting transition and retention, as it is often dependant on the structure and outreach of the orientation program. As Krause et al., (2005, p. 35 ) reported some students “did not play a role in helping them to feel that they belonged at university.” The literature underscores the need for programs to cover many issues and themes (e.g., Harvey et al., 2006), engaging group-based, student-centred methods while focusing on learning styles and skills, while Crosling, Heagney and Thomas (2009) suggest that with
changing student demographics orientation programs need to be “longer and thinner” (2009, p. 12) and extended beyond the first few weeks of semester

The Orientation Program, in Australian universities usually run in Orientation Week before teaching begins is most often new students’ first encounter with the university and its staff, both academic and administrative. This introduction to student life is an important phase in the student journey, but orientation remains under-researched in studies seeking to address retention (McPhail et al., 2015), where there has been minimal concern for what Nelson et al., (2011, p. 37) term students’ “interest in orientation”. McPhail et al., (2009) claimed student expectations were often overlooked in traditional orientation programs. However, as this thesis makes clear, the current climate makes it essential to align student expectations with reality, equip students with information, skills and other knowhow so they can have a well-informed and considered understanding of what lies ahead. As Tinto (2012a, p. 7) observed of experience in the US, it is not in the “freshman (orientation) seminar itself or in the many dedicated and talented faculty and staff who teach those seminars, but in the integration of the freshman seminar and the important concepts that underlie it into the very fabric of the first year”. It needs to be noted, however, that there is some limited evidence of no significant correlation between a first-year orientation seminar and student retention. In Hendel’s (2007, p. 1) American study:

results indicated statistically significant differences at $p \leq .05$ for 15 of the 92 satisfaction items; more positive responses came from students enrolled in a first-year seminar. Results of the logistic regression analysis indicated that participation did not increase the probability of retention; only high school rank was a significant contributor to the prediction of freshman-to-sophomore retention.

Some researchers have suggested that to help students cope with the transitioning period, universities need to develop non-academic skills sessions that help students build interpersonal skills and social relationships, and stress-management and organisational skills (Nicpon et al., 2006; Shim & Ryan, 2012). Based on experience and intuition, these skills are often taught via student counselling services and the like. Yet due to competing interests such as family commitments and employment, these non-credit sessions are often not well attended by those who need them most. Nonetheless, over time the majority of students find that the challenges of university are not insurmountable, and they are able to adjust to university life, some more
quickly than others. This usually involves developing what Lizzio (2006) identifies as having a sense of identity.

2.5.3 Student Engagement

Luckman and Harvey (2019) use the term ‘black box’ to describe the complexities of student engagement, suggesting that, like Bryson (2014) and Astin (1984) before them that it is not possible to “measure or map all of its properties (p. 61).” While Krause and Armitage (2014) state that literature synthesis conceptualises student engagement, belonging, retention and success as integrated parts of a complex structure rather than a linear process (page 4).” Consistent with intuition and experience, generally academic success is positively correlated with student engagement. Hu and Kuh (2002, p. 3) see student engagement as “the quality of effort students themselves devote to educationally purposeful activities that contribute directly to desired outcomes”. For Nelson et al., (2012, p. 2) the concept of student engagement “underpins student learning in terms of persistence, achievement and retention …. [and is] the linchpin of student success and retention”. Krause and Coates (2008) emphasise that this concept includes responsibilities to be undertaken by both students and their institutions, essentially making it an interdependent relationship between these parties. First, the academic institution must take responsibility for creating an environment that enables learning to be possible, thus affording opportunities for students to learn. To be engaged, students must then accept responsibility for their learning, committing themselves to their studies and making full use of the resources provided to them. Central to this concept is quality of effort, which in effect determines the degree and type of learning that takes place. As Marginson (2013, p. 8) stresses “unless students are engaged and learning, tertiary participation has little value except to reduce unemployment numbers”.

Student engagement covers a broad spectrum of possibilities in the literature. Predictably, time spent regularly (e.g., each week) spent on task is often cites as especially important to academic success (Kackar, Shumow, Schmidt & Grzetich, 2011; Schmitz & Skinner, 1993). Here the empirical evidence is mixed (Cooper, Lindsay, Nye & Greathouse, 1998) reflecting differences in student ability and the internal validity of the methodologies used in some of the empirical investigations citing contrary results. A further category of student engagement is regular attendance and engagement in opportunities for learning, whether through physical attendance at lectures, workshops or tutorials (Massingham & Herrington, 2006; Rodgers, 2002; Stanca, 2006); regular engagement with the online environment (DeNeui & Dodge, 2006; Krentler &
Willis-Flurry, 2005); or engagement in co-curricular activities such as peer-mentoring and learning communities (Wilson et al., 2014), and peer-assisted study sessions (Ryan & Kemlo, 2012). Students are more likely to be successful and retained if they have a sense of connection to the institution and peer groups, and engagement in campus life. Nonetheless, surveys of student engagement conducted by the Grattan Institute (Norton, 2012) suggest that that while students’ satisfaction with teaching in higher education is improving, student–academic staff engagement is below par with other countries, which may decrease student learning and success overall.

The First Year Experience in Australian Universities: Findings from Two Decades 1994-2014, published in 2015 by the Melbourne Centre for the Study of Higher Education (CSHE) states that the first-year students enrolled in 2014 had a greater sense of purpose and an easier transition to university life than those students previously surveyed. The Report suggests this may be because of better transitioning programs by the universities, in keeping with greater recognition of the importance of such programs over the past decade. However, the authors also found that the same students “were less socially engaged in the university community, spent less time on campus, and more students tended to keep to themselves. For a significant proportion of students (approximately 30 percent), getting motivated and coping with university study remains challenging” (Baik et al., 2015, p. 1). Lack of motivation may result at least partly from lack of connection. Pascarella and Terenzini (2005), (Krause et al., 2010) and more recently Krause and Armitage (2014) have noted that university students are more likely to be successful and retained if they have a sense of connection to the institution, spend time on campus, peer groups, and importantly, engagement in campus life. In a similar vein, a student’s clarity about career direction is also relevant to their university engagement, success, and retention (Christie et al., 2004; Long, Ferrier & Heagney, 2006; Olsen et al., 2008; Sandler, 2000; Willcoxson & Wynder, 2010). So too are other individual factors such as sense of self-efficacy (Chemers et al., 2001); gender (Olsen, 2008); personality (Davidson & Beck, 2006; Rayle, Kurpius & Arredondo, 2006; Wintre et al., 2006), and personal experiences and circumstances (Authority, 2004; Christie et al., 2004; Long et al., 2006).

2.5.4 Institution and Degree Program of Choice

A concept closely linked to the compatibility of fit between the student and the institution, and thus the student’s engagement, is a student’s choice of institution and degree program (Wilcox, Winn & Fyvie-Gaul, 2005). These are normally determined or at least influenced by a student’s
French et al., (2014) found that students with lower TE scores often are provided admission offers, and then accept, courses that are not their first or even second preference, or not at their university of choice, which can affect success and retention (see also Harvey & Luckman, 2014, p. 19). Research suggests that enrolment not at the student’s first or second choice of university, and/or not in their first or second choice of degree program can have a negative effect on student success. Of interest, Lizzio and Wilson (2010) found that in this context an important factor is students’ perception that they themselves know what is best for them. Conversely, and seemingly consistently, many studies have found enrolment in the student’s first or second preference degree program is positively correlated to their success and retention (Martinez & Munday, 1998; McClelland & Kruger, 1993; McInnis, Hartley et al., 2000; McInnis, James et al., 2000; Pascarella et al., 1981; Yorke, 1999). As part of his Longitudinal Surveys of Australian Youth (LSAY) Marks (2007) found that those students who changed to a second course after already starting in another, graduated in lower numbers. He reports that at that time, the expected completion rate for those who switched to “… a second course was calculated to be between 63 and 71 per cent (p V11.”From empirical work in the United Kingdom, Wilcox et al., (2005, p. 708), suggested that while compatibility between student and course to some extent depends on pre-admission information, it is “… more concerned with students’ experience once they begin their degree”. In the Australian context, the three reports, First Year Experience in Australian University Findings (Baik et al., 2015; James et al., 2010; Krause et al., 2005) repeatedly found poor alignment between students’ overall study objectives and their course enrolment. Hayes’s (1974, p. 141) results from research more than 30 years earlier were similar: “five times as many dropouts as persisters indicated that they now felt they should have definitely chosen another course p< - 01)”. Hayes observed that that those in her study who attrited appeared to lack a strong sense of long-term goals. Interestingly, she postulated that “perhaps the fact that many unexpectedly gained entrance to University meant that they had not carefully considered which course they wished to take, and why” (Hayes, 1974, p. 141). This suggests that poor alignment between the preferences that prospective students indicate in their application for admission and their actual choice of course upon admission can inspire students to feel a lack of personal integration or “fit” with the university or program of study. It may cause or induce a lack of academic and social integration in terms of structural support from the university to the student, and/or social support from relationships built at university with peers.
As stated clearly above, students leave university for a combination of reason. Indeed, Johnes and McNabb (2004) Olsen et al., (2008) and Yorke (1999) found students’ difficulties with their course and with the institution to be key predictors of attrition. Yet it is argued that if courses are made easier, students may become complacent and bored. Consequently, students may attrite, that is drop-out from their university studies, transfer internally into another degree program, stop-out, that is, transfer to another academic institution, or have their enrolment terminated due to poor grades. Overall, evidence suggests that the number of favourable options a student has to further their education after high school is correlated to their retention in the other higher education institution at which they first enrolled. Students are less likely to transfer internally to another degree program, or ‘stop out’ to another university if the preference choice and course/study program and institution in which they are enrolled align with their own perception that these choices are right for them.

2.5.5 Institutional attempts to cater for the diversity of students’ preferred learning styles and limitations

Studies by Kift et al., (2010) and Pitkethly and Prosser (2001) concluded that a coordinated, well-informed, institution-wide response to student transition issues is more likely than no such response to engage students and to progress their first-year learning experiences, thus enhancing students’ goodness-of-fit academically and socially. Both the student and the institution must assume responsibilities in this process. This understanding is true for all students, including non-traditional students, so as Bamber and Tett (2000) articulated, for non-traditional students to be successful in higher education, the two-way process must occur between the student and their institution of enrolment. It means these students, who by their very categorisation are effectively alien to the university environment, need to take responsibility, for their disposition to learning and theory practice for maximising opportunities from such learning in pursuit of their personal and/or professional goals. It also means the higher education sector needs to take into account the implications of providing places to non-traditional students, offering the particular types of support they may especially need, particularly during their first year of enrolment.

With growing recognition internationally about the importance of the first-year experience, Fleming (1995), working in the area of university staff development, began to focus his work on ways of learning, and thus teaching methodologies. Fleming (1995) contended that although
it appeared to be beyond doubt that higher education students have a penchant for sensory input, some teaching staff did not take that into account in their teaching. Indeed, this observation of teaching staff appears to have currency still, perhaps even more today than two decades ago with some teachers following their personal preferences rather than adjusting to respond most effectively to the diverse needs of the student cohort. This has particular significance in the present context where the student population, and the needs, abilities, preferences and other personal characteristics of those who comprise it – are by design (national policy) ever more diverse. It is therefore useful to consider whether and how universities and their teaching staff have adjusted teaching to cater for the rapidly changing student demographic, and how these more diverse cohorts of students adjust to changes in the learning environment.

Concerned with the quality of university teaching, Peel (2000) and McInnis (1996, 2000) and Coates (2014) considered respectively the importance of the institutional environment, research culture, and the hindrances of everyday workloads of academics. In the current university climate, undergraduate courses with very large student enrolments have become mainstream. But without the necessary levels of teaching support, courses with such large student numbers have in-built costs. It seems that many teaching staff believe some parts of management, administrators and other university staff who have not convened or taught large undergraduate courses are unable to appreciate the consequences of such an approach to teaching. For students it may result in attrition. Especially for staff in their first year or early years of teaching, it produces day-to-day stress. These teaching staff are the frontline face of the university for so many students at such an important stage in their life. Recognising this, focussing on undergraduate students and first-year teaching in particular, Peel (2000, p. 8) assessed “large, impersonal teaching environments and staff who are too busy to care (Abbott-Chapman et al., 1992) increase the chances of wasteful and damaging student attrition. But this common sense has apparently been lost among those making decisions about what really matters in higher education”. It is likely that many staff do care about their teaching, but with heavy university demands upon them cannot spend the time that teaching such large numbers of students deserves. The rapid expansion in student numbers and associated challenges without a similar increase to staffing levels (May et al., 2011) is likely to have further deteriorated teaching conditions, and thus the teaching that students receive at Australian universities since that time.
Cook and Leckey (1999) surveyed first-year students in the United Kingdom to identify their attitudes to learning and their expectations of university life, assessing students’ pre-semester and repeating the survey after students’ completion of first semester. The authors found that although university staff expected students to work more independently than at school, the data indicated that during their first year of university these students continued to rely on study habits they had developed in school. Cook and Leckey suggest this behaviour may be influenced by new students’ naivety about these expectations that university students take a more independent approach to their studies, and by these students’ initial ability to meet these expectations given the major adjustment they must make to settle into university life, including its academic standards, learning styles and environment.

Lizzio, Wilson and Simons (2002a) found that university students’ perceptions of teaching and of their learning environment not only influence their approaches to study. These perceptions are also a stronger predictor of learning outcomes at university than the students’ previous academic achievement at high school. These findings highlight the importance for universities to maximise the support they provide for both quality teaching and quality learning environments. Tinto (2007) noted the capacity and responsibility of institutions to positively influence the surroundings in which students find themselves, such as classrooms, learning spaces, laboratories and accommodation. As Tinto (2012b, p. 5) later explained:

[I]t is one thing to hold high expectations; it is another to provide the support students need to achieve them. At no time is support, in particular academic support, more important than during the critical first year of college or university when student success is still so much in question and still malleable to institutional intervention. A key feature of such support is its being aligned or contextualised to the demands of the classroom and thereby enables students to more easily translate the support they receive into success in the classroom.

Krause and Armitage (2014) suggest that physical space in which student engagement occurs is receiving increased attention citing the work of Keppell, Souter & Riddle (2011); Matthews, Andrews & Adams (2011), pointing to the relationship with a sense of belonging as per McRae (2007). Krause’s heavily cited study with Hartley, James and McInnis (2005) identifies the importance of students spending time on campus to increase their sense of belonging, however more recently in her seminal work James and Jennings (2010) and work with Armitage (2014), Krause points out that time on campus
over the past decade has reduced due to increased hours of paid work and online learning. Interestingly, or perhaps paradoxically as Krause and Armitage (2014) put it, students did not believe that “time away from campus affected their levels of engagement” although the student did acknowledge that there was more group work, perhaps negating the time away from campus (Krause and Armitage, 2014). Nonetheless the authors recognise the need for collaborative formal and informal learning spaces so that time-poor are less likely to disconnect (Krause and Armitage, 2014).

The role that the increased use of virtual learning environments appears to have a negative impact on student success and retention. While some students are potentially still able to feel engaged and motivated despite not studying on campus, data suggests this is not the case for many online students. As noted previously (see 2.3.1) the attrition rate from online courses is low when compared to on-campus mode of teaching, as supported by the literature of Heyman (2010); Herbert (2006); Smith (2010).
Although online students have ready access to online resources, these courses are often heavily self-directed and self-learned where the student is often able to determine where and when to spend time studying and does not have a social contract and same interaction with the teacher that may occur in face to face on-campus teaching. Therefore, as Bawa (2016) and Heyman (2010) point out a lack of individual motivation is just one factor that can lead to attrition within online courses. This is supported by data produced by CDET (2019) which evidences poor completion by students studying by external modes of education, for example the data reveals that for those students who commenced their studies in 2005 on-campus graduate at rates near double that of external students over a 4-year period (47.4% compared to 25% respectively, with poorer but similar rates for 2014, the most recent 4-year completion rates (44.9% compared to 24.4% respectively). The gap in completion rates between these groups is not quite as extreme but is comparable over six and nine-year timeframes with the most recent data as follows: (6-year, 2012 cohort internal completion rate of 68.1 compared to 39.5; 9-year, 2012 cohort internal completion rate of 76.7 compared to 48.4).2.5.6 Class Size Matters

Large class sizes have been found to negatively affect learning, teaching, engagement and thus student success in university studies (Cuseo, 2007; Glass & Smith, 1979; Richardson, King et al., 2012). As Glass and Smith (1979) noted almost 40 years ago, it is somewhat obvious that university teaching staff worry about the effect of large class sizes on their teaching while university administrators worry about how to not increase class sizes as budgets tighten. These authors noted that the first examination of the impact of class size early in the 20th century by Rice (1902) found although there was no strong correlation between class size and student grades, leading to better quality teaching/learning outcomes resulted from smaller classes (Glass & Smith, 1979). Potts et al., (2004) found no significant correlation between academic success and smaller learning communities at post-secondary level in a US example, but this finding may be limited to particular student cohorts. Furthermore, the literature considering the impact of class size specifically in the higher-education sector is sparse compared to parallel
literature on class size in primary and secondary school. While it is limited, the research in higher education suggests a positive correlation between increasing class size and decreasing student grades (Bandiera, Larcinese & Rasul, 2010; De Paola & Scoppa, 2011; Kokkelenberg, Dillon & Christy, 2008; Machado & Vera-Hernandez, 2010; Richardson, King et al., 2012). More recently Kahu, Nelson, and Picton (2017) found that students develop friendships based on common interests and contribute to students’ comfort in attending classes and help to mitigate stress and well-being. Placed in the context of large classes, the forming of friendships is likely to be more difficult in large classes. As highlighted by Kahu and Nelson (2018), the effect of having friends on wellbeing is critical. Not only does ill-health affect have implications for students, it is also cited by many Australian university students who consider withdrawing from their studies as being their main reason (Baik et al., 2015; Kahu, Nelson, & Picton, 2017). This is significant for university administrators, especially bearing in mind that decreasing student grades due to large class sizes and to more limited contact with academics can also lead to attrition.

Research also suggests that class sizes affect teaching evaluations. In a review of the apposite literature, Marsh (2007) found research findings were mixed, although most suggested students rated smaller class size more favourably. Most importantly for the research undertaken for this thesis is the finding that class “size is moderately correlated with factors to which it is most logically related (group interaction and individual rapport, as large as −030) (Marsh, 2007, p. 350), which intuitively affects success and retention.” In their study of teaching economics at college level in the US, when controlled for both teaching influence and course fixed effects over half a decade, Bedard and Kuhn (2008, p. 4) consistently found “a large, nonlinear, and statistically significant negative impact of class size on student evaluations”; where classes have more than 80 students, evaluations are likely to decrease most rapidly per added student, evaluations are likely to decrease most for each student more than 80 in the lecture hall.

On the basis of their study at the University of Munich in Germany, Mandel and Süßmuth (2011, pp. 1083-1084) claimed, “from an administrator’s perspective, our findings imply that both instructor efficiency as measured by instructional evaluations and welfare measures are (highly) elastic in classes with less than approximately 100–125 students, while beyond this threshold the valuation of the status quo becomes insensitive to increases in class size”. They identified two particular aspects that work against positive student evaluations from larger-sized classes: these classes require the instructor to use a microphone, which distances the
instructor from the class; and instructors of such classes lose the ability to connect with students at a personal level, including knowing the names of the students in the class. The implications of this research make it clear that large class size can negatively affect student engagement, sense of connection and personal fit, and thus student success and retention. As Kokkelenberg et al., (2008, p. 14) argue, “there are dis-economies of scale associated with a deterioration of student outcomes as class sizes grow larger”. Bedard and Kuhn's (2008) study of students in the United States may also have some relevant in this context, since it suggests on the basis of a common perception that class size matters, some parents are willing to pay higher tuition fees for small class sizes.

Overall, research on university class size suggests strongly that large classes have consequences generally not favourable for student success and attrition. This observation has lessons for those who administer first-year university programs in Australia today. Enrolments for first-year courses are usually large, their classes consequently are also large, and first-year students are vulnerable to attrition. Diversity of student cohort, including growing shares of non-traditional students who may have distinctive problems with adjustment to university studies, would seem to amplify the unfavourable consequences of large classes for success and attrition.

**2.5.7 Other Empirical Indicators of Student Retention and Attrition**

A study by James et al., (2010) into the experience of first-year students in Australian universities across 15 years (1994–2009) considered the performance of students working 16 hours or more per week. It found these students were more likely than students working fewer hours to have considered deferral, to have withdrawn from one or more subjects, to have received an average mark between 51 per cent and 60 per cent, and to have difficulty comprehending course material. At the same time, these students were less likely to believe that university life suits them, less interested in extra-curricular activities, less likely to feel that university has lived up to their expectations, less likely to enjoy being a university student and to have made friends, and less likely to enjoy their course and to be satisfied with their university experience overall. They were also more likely to agree that their paid work moderately or severely interferes with their study. Working 16 hours or more per week, or dependence on paid employment rather than scholarships are an undergraduate student phenomenon mirrored in other countries, including the US and UK (McInnis & Hartley, 2002).
Students’ lack of connection with the university or university stakeholders also has negative consequences for success and attrition. A study by Heverly (1999) of such lack of connection, including frustration with bureaucratic university processes, procedures such as financial services and changing courses, or obtaining academic advice, is positively associated with student failure and attrition. A lack of connection also relates to other parts of the institution, such as attendance at lectures and other teaching sessions, and making new friends. Hayes (1974, p. 141) found that students who dropped out of university appeared to have not involved themselves in the activities students normally engage in such as attending class and borrowing books from the library. They also had significantly fewer university friends, similar to the findings of Richardson, King et al., (2012).

Tinto (1999, p. 2) argued that academic expectations upon students are important, stating “expectations, specifically high expectations, are a condition for student success. Quite simply, no student rises to low expectations. Regrettably, it is too often the case that universities expect too little of students, especially during the critical first year of college”. An example offered in an Australian study (Hayes, 1974, p. 141) although now more than 40 years ago, illustrates this well, with a female Arts student who attrited opining, “First year seemed a vast repetition of high school. The attitude of other students, if not those of staff and faculty administrators, was far too near those of previous educational years to be interesting”. Yet other students still felt the need for transition support, such as a male Commerce student who urged the university to “take a hand in giving first-year students some help in finding their feet, socially; making student affiliation more profound, and I believe, thus increasing scholastic incentive” (Hayes, 1974, p. 142).

The rationale underlying many studies of the student experience in higher education is to understand the factors that explain and predict poor academic performance or attrition, with a view to designing appropriate and effective interventions to improve both student performance and retention (Caison, 2005; McKenzie & Schweitzer, 2001a), which is the rationale of the present study seeking to design interventions most effective for a particular cluster of university students known in the Australian discourse as “non-traditional” and thus identified to be at risk of academic failure or early attrition. It is widely recognised that in higher education early and timely intervention is critical to the success of poorly performing students and retention of those at risk of attrition (Krause & Armitage, 2014; Whannell, 2013), underlying the importance of efficacious interventions and by extension the importance of this study.
2.5.8 Feeder Institutions

Lower and mid-ranked universities, such as the one at which research for this study was undertaken, face a type of attrition risk that is not discernible in bare attrition statistics. These are known as feeder universities. They lose some students who do not withdraw from their studies completely but transfer to a university of their higher preference since the students are able to meet that university’s higher entrance requirements on the basis of their first-year performance. Thus, federal government figures that suggest 20 percent of domestic students fail to continue into second year of university (ACER, 2010; DEEWR, 2009) do not indicate the share of students dropping out of the university sector entirely. When numbers for those who transfer to a different institution or ‘stop out’ are taken into account, the attrition figure is significantly lower.

Analysis of MyUniversity data suggests that difference in university retention rates is heavily dependent on the university’s profile. Higher-ranked proximate institutions draw high-achieving students away from lower- and mid-ranked institutions. Harvey and Luckman (2013) note, for example, that Charles Sturt University (located in relative geographic isolation in inland NSW) has the same attrition rate (around 25 per cent in 2010–11) as the case-study University in Brisbane, yet the transfer rate (‘stop outs’ rather than ‘drop outs’) at the case-study University is more than double at 9 percent as opposed to 4 percent at Charles Sturt (Harvey & Luckman, 2013). Students who study at their first or second preference institution also tend to perform better than those who end up at their third or fourth preference institution (McClelland & Kruger, 1993, Harvey & Luckman, 2014). This is significant when recognising that a student’s early success at university is one of the best predictors of their later success, as discussed above. Student’s choice of study program and institution has been identified as a significant predictor of their university persistence (Pascarella, Duby, Miller & Rasher, 1981, Jardine, 2012), but this has been the subject of only little systematic study (Harvey & Luckman, 2014), but has been explored through thesis work of Jardine in relation to students from low SES backgrounds, identifying six indicators of persistence

2.5.9 The Costs of Failure and Attrition

Whatever the reasons for student failure and attrition, collectively this ‘wastage rate’ has multiple costs to institutions (Lowe & Cook, 2003). In cost–benefit terms, failure and attrition represent a loss to the institution through (1) revenue not received, from government funding
of students and from student-paid fees; (2) cost to the institution’s reputation (Palmer et al., 2009; Wilson et al., 2014); and (3) impinging on the institution’s moral commitment to students (Braxton, Hirschy & McClendon, 2011). There is also cost to the government public purse insofar as it has already begun subsidising student education fees that have produced no identifiable public benefit (Long et al., 2006). There is also public cost from attrition through the socio-economic and equity benefits that are lost to society. But beyond costs to the institution and to society are, perhaps most importantly, the financial, personal and potential health costs to the student who has withdrawn their enrolment (Richardson, King et al., 2012; Von Ah, Ebert, Ngamvitroj, Park & Kang, 2004). Nevertheless, Long et al., (2006) found that many of those who left university did not find it a negative experience, and a quarter of them ended up studying elsewhere, primarily at TAFE. There is also a moral dimension of this picture that Australian researcher Olsen (1957, p. 175) observed more than 60 years ago: “Democracy is committed to the humanistic ideal that every individual should be given the opportunity to realize to the full his innate capacities”. In what Kift (2015) terms a “hidden [cost of] attrition” (p. 53), she accurately points out that there is further wastage of opportunity costs, with students dropping out of university before the official week 4/5 census date. Very recently, Luckman & Harvey (2019) have argued that the attrition is not as bad as the media leads the public to believe, with many students returning to study at a later stage or completing vocational studies. Furthermore, students who only partially complete their degree still on average earn more than the population who have not completed any post-school education (Luckman & Harvey (2019). Nonetheless they also acknowledge that more could be done by the government and universities to encourage more students to return to their studies such as using alumni networks.

2.6 Theory Concerned with Academic Success and Retention

2.6.1 Expectancy Theory

Expectancy theory (Vroom, 1964) attempts to explain how behaviour results from a person consciously making more or less rational choices, on the basis of what they expect as payoffs from a range of alternatives. Choices are a function of an individual’s personality, knowledge, experiences and abilities. Although Vroom’s early work focused on the role of expectations in explaining people’s motivations to work, it has since been applied in academic settings to students’ motivations to achieve academic success (Geiger & Cooper, 1996; Harrell, Caldwell
& Doty, 1985; Mitchell & Nebeker, 1973), and to re-enrol in subsequent semesters (retention) (Friedman & Mandel, 2009, 2011). For example, students may be motivated to enrol in business programs if they expect the payoffs from this option to be greater than the next best alternative course open to them. Payoffs may be immediate, intrinsic (e.g., satisfaction), distal, or extrinsic (e.g., better salary from a career in business, better job prospects).

Under expectancy theory, people modify individual behaviour when their expectations are not realised (i.e., an ‘expectations gap’ arises), such as when a student expects to pass an assessment item, but in fact fails. The student may be motivated to achieve much higher than a pass on the next assessment item; they may quit (withdraw) from the study program; or they may engage in a spectrum of behaviours that are in between these polar limits. Students who are at risk of academic failure may be motivated to modify their behaviours by, for example, engaging in a range of co-curricular interventions offered by their university. They are of course unable to modify their behaviour in this way if their university does not offer such interventions. However, through the frame of expectancy theory, students will become engaged if they expect the payoff to be worth their investment in time, energy, work, and foregoing the next best alternative activity. Their expectations are realised if they perceive they have achieved academic success, in which case they are more likely to re-enrol in their study program in subsequent semesters. As Tinto (2012b, p. 4) points out, “high expectations are a condition for student success, low expectations a harbinger of failure”.

The concept of behavioural expectations has also been applied to academic success through the notion of academic self-efficacy (Bandura, 1993; Fan & Williams, 2010; Odaci, 2011). As a global concept, it draws on the student’s beliefs about their ability to engage in particular activities (in this case, academic). Behavioural confidence relates to a self-efficacy that is specific to a particular domain, and in the case of students it is the expectation of their competence in completing an academic-related behaviour (Sander & Sanders, 2009; Sanders & Sander, 2007).

2.6.2 Tinto’s Student Integration Model

Tinto’s work in the field of academic success (failure) and retention (attrition) is credited with bringing theory to the field of education (Breier, 2010), and as such is seen to be of ‘paradigmatic status’ (Braxton et al., 2011; Braxton, Hirschy & McClendon, 2004). Tinto’s published works on interactionalist theory and student departure/withdrawal from study are
perhaps the most cited and influential work in this field. They are not, however, without limited criticisms. Further, since Tinto’s work is grounded in empirical work in the United States, it may also be restricted in how, and how far, it can be useful for explaining circumstances in Australia.

Tinto’s 1975 paper was amongst the first to analyse student success and investigate retention and attrition in the university sector. Tinto theorised a students’ chances of academic success and retention in subsequent semesters would be enhanced if the students were successfully integrated into the academic and social life of their university (Tinto, 1975, 1993, 1995, 1998, 2004). Drawing on sociological, psychological and economic theory, Tinto (1975) sought to explain why some students, particularly in their first year, succeeded academically, while others failed to persist with higher education. Tinto attributed student success or dropout (attrition) to individual factors, institutional factors, and factors relating to student–institution interaction (Figure 2).

![Figure 2: Tinto’s (1975) Student Integration Model](image)

Individual factors included student goals and values, individual commitment to set goals, and commitment to engage fully in all aspects of university life; individual attitudes, attributes, talents (including academic ability), experiences and family background; and student
expectations of success and integration (Tinto & Cullen, 1973). Institutional factors included class sizes, the extent to which an institution offered social or co-curricular activities to enhance student integration into the academic and social life of the university; and the institution’s commitment to engage its students in all aspects of the academic and social life of the university. Factors relating to student–institution interaction included the extent to which the student interacted with and related to their peers, the extent to which students and the university shared a goal based on mutual commitment to student success and retention, and the degree to which students and other university stakeholders were presented with opportunities to actively engage in meaningful, shared social and academic experiences.

Students usually integrate in one domain or the other (i.e., academic or social), or both. Integration in the academic domain is essential for academic success, but not sufficient for complete integration into the full academic and social life of the university. Academic integration did not necessarily imply social integration, and an excess of the first might result in a paucity of the second. Thus, some students who focused overly on the academic domain but neglected the social domain (and did not compensate with a social life outside the university environment) might well feel a lack of being completely integrated into the full life of the university, and in the absence of external influences (e.g., parental pressure) may wish to drop out of higher education. Perhaps more intuitively, student integration in the social but not the academic domain was predictive of academic failure and student attrition; and failure to integrate in either domain was also predictive of academic failure and student attrition.

Whether a university student chose to re-enrol or drop out depended on whether the student perceived that the next best alternative, investment of time, energy, and resources would yield a greater net payoff than continuing to study at university. Two decades later, Tinto (1993) revised his model, not straying far from his original model and rather acknowledging the students’ external commitments (Figure 3). Intellectual development was removed from the model and faculty interactions were shifted from social system to the academic system, in place of intellectual development. Peer-group interactions were then included. Additionally, goals and institutional commitment were expanded, and the influence of intentions and external commitments were acknowledged.
Tinto’s seminal model has significantly influenced education researchers and practitioners alike (Swail, 2004). While a number of models have expanded on Tinto’s Student Integration Model, Tinto’s model still dominates the research literature (Braxton, Sullivan, Johnson & Smart, 1997; Melguizo, 2011).

Melguizo (2011) suggests that review of this model is long overdue, citing the appraisal by Braxton and colleagues (1997) that found very little empirical evidence for the model. Melguizo (2011) points out that the initial model was developed on the basis of research with residential students who fit the traditional student model. However, Bean and Metzner (1985) found, even before Tinto’s 1993 model, that with the increase of non-traditional students, academic integration is the most important factor for student retention. They also stressed the importance of factors they described as “noncollegiate, external environment … [e.g., finances, hours of employment, outside encouragement, family responsibilities, and opportunity to transfer (p. 489)].”

Tinto’s model assumed that students enrol in university directly following high school graduation, and that students change in geographical location to attend. However, the profile of students Tinto seeks to explain has evolved particularly over the past few decades, with
movements towards diversity and inclusion suggesting that the applicability of Tinto’s work may be reducing (see, for example, Melguizo, 2011). Rather than further progressing his earlier model. Tinto has offered practical adjustments with recommendations that acknowledge the presence of non-traditional students, including those from low income; first generations (called ‘FiF’ in Australia) and African Americans. Further, Tinto has strongly recommended academic advising as essential for first-year students and as a cross-department responsibility. This academic advising is not to focus solely on developing students’ academic capability, but to take a holistic approach that includes provision of personal and support services (Coates, 2014). Research suggests that student support is an important factor that correlates with early departure, and is key to prevention of such (Coates, 2008; Coates & Radloff, 2010; James, Krause & Jennings, 2010; Coates & Ransom, 2011). It is therefore perhaps ironic that, according to Coates (2014), the range of support services is not always clear or well promoted, or obvious.

In Australia, the university student profile has evolved particularly over the past few decades, with the movements initiated from the national policy level towards diversity and inclusion dramatically shifting the student demographic and suggesting the possible applicability of Tinto’s practical adjustments for the Australian example.
2.6.3 Lizzio’s Five Senses Model

Building on expectancy theory and Tinto’s model of student integration, the student-centred approach of Lizzio (2006) offers a deeper understanding of the motivations underlying student behaviour. Student success in the first year can be analysed using Lizzio’s (2006) and Lizzio and Wilson’s (2009) ‘Five Senses Models’, which frame student needs for integration across five conceptual domains (Figures 4(a) and 4(b) respectively). The 2006 model was first used to develop a schema for successful transition to university and to integrate theory and practice. It included ‘academic culture’ rather than identity as the fifth ‘sense’.

Figure 4(a): The Five Senses Model of Successful Transition (Lizzio, 2006)
Lizzio and Wilson (2009) further developed the model, replacing academic culture with student identity (Figure 5), positioning the student at the centre of the Model. This thesis uses ‘identity’, arguing that culture emerges from the other five senses. Lizzio (2011) used the model to develop a ‘student lifecycle framework’.

Intervention programs drawing from the works of Lizzio and Wilson have been implemented across the Australian higher education system (e.g., at the University of Tasmania (2011), Macquarie University (Burnett & Larmar, 2011) and of course Lizzio and Wilson’s ‘home institution’, Griffith University, and internationally at York University in Canada. Their work has been used to design intervention strategies to help minimise student attrition generally (French et al., 2014; McPhail et al., 2015; Wilson, 2009b), and to design and implement university-wide strategy focussing on, in particular, the attrition of at-risk students (French et al., 2014; Wilson et al., 2014). It has also been used to develop a transition in – transition out...
model of retention by the Royal Melbourne Institute of Technology (RMIT) and the University of Southern Queensland (USQ) (Chester et al., 2013a, 2013b).

In the Five Senses Models, a student’s academic success (a passing GPA) and retention (in negative terms, attrition, i.e., failure to subsequently re-enrol) are associated with their sense of identity (feelings of identification and personal fit with the university, its staff and other students). The student’s sense of identity is in turn a function of their sense of connection (the quality of their relationships with university, school, staff and other students); capability (their mastery of academic skills and capacity to contribute to the learning community); purpose (their capacity to set personal goals and engage with the discipline area); and resourcefulness (their ability to access assistance or information from the university). Table 2 presents an overview.

**Table 2: The (Original) Five Senses Model and Associated Characteristics (Lizzio, 2006).**

<table>
<thead>
<tr>
<th>Sense</th>
<th>Characteristics</th>
</tr>
</thead>
<tbody>
<tr>
<td>Capability</td>
<td>Understanding the student role and mastering of academic knowledge and skills</td>
</tr>
<tr>
<td>Connectedness</td>
<td>Building relationships with peers and staff, as well as identifying with the university</td>
</tr>
<tr>
<td>Purpose</td>
<td>Setting realistic goals, engaging with the discipline, and developing a sense of vocation</td>
</tr>
<tr>
<td>Resourcefulness</td>
<td>Knowing about university resources and procedures. Balancing work, life and study</td>
</tr>
<tr>
<td>Culture</td>
<td>Appreciating the core values and ethical principles of higher education</td>
</tr>
</tbody>
</table>

The following discussion briefly reviews the evidence particular to each of the five senses in Lizzio’s model. It then seeks to synthesise the literature in relation to an extension of the five senses model.

**Sense of Connection**
Students’ sense of connection with teaching staff has been identified by prominent researchers (e.g., Coates & Goedegebuure, 2010) as both a key pedagogical component and a predictor of academic success. However, students’ sense of connection is often at odds with the perception of connection on the part of academics (Hamish Coates, 2010; Coates, 2014). Pascarella and Terenzini (2005), Coates (2014) and Xerri, Radford & Shacklock (2018) note that students are more likely to be successful and retained if they have a sense of connection to their institution and peer groups, and importantly have some engagement in campus life. Put broadly, strong social networks within the university setting are considered a necessary ingredient for student success.

Students may develop a sense of connection to a university through choosing a tertiary course option, and even for students without a sense of connection when commencing their studies, this connection can be cultivated through university orientation days or open days (Burnett, 2007). Aspects of course design can also build a sense of connection for students. For example, students are bonded through common curriculum components or through a large core curriculum with heavy regular on-campus requirements (such as laboratory work for chemistry students) producing a sense of unity on the part of a student cohort. Researchers have argued that large degree programs and classes that do not create a shared identity and purpose among students by having a common curriculum, may make the transition to university more challenging for first-year students (Burnett, 2006; Beder, 1997; Hayden & Long, 2006; Krause, 2005; McInnis & Hartley, 2001).

Cabo and Satyanaravana (2018) show that the kind of atmosphere that creates a shared identity and purpose among students and a sense of connection for students which can be created in study programs that might intrinsically lack this sense of cohort. Laboratory-related studies, for example, have lower attrition rates because the ‘hothouse’ environment builds a sense of team among students. Connection with academic staff, facilitated through smaller classes, can also build among students a stronger sense of connection to the institution and to their teachers (Cuseo, 2007), which is more likely to lead to student success and retention. Some disciplines, particularly those aimed towards a professional outcome, explicitly encourage among students a sense of connection with the discipline itself, which overlaps with sense of identity (Leiman, Ankor & Milne, 2015). But there are also factors that reduce a sense of connection, including off-campus work and financial constraints, which are often inter-connected (Potter & Parkinson, 2010). Academic performance is more sensitive to the impact of such constraints as
working in paid employment than attendance/attrition or hours spent on study (Kulm & Cramer, 2006).

The interaction between student and the physical campus, as well as the atmospherics of the campus have been identified as key components of the student’s sense of connection (Baik et al., 2015). Post-graduation, a student may continue to express their sense of connection through alumni support, which is often associated with financial support for the institution (Stephenson, 2013). Sense of connection has been implicitly and explicitly acknowledged as a key factor in positive early student experience through programs such as peer-mentoring (Chester, Burton, Xenos & Elgar, 2013) and orientation design (McPhail et al., 2015).

To explain sense of connection, researchers have used attachment theory, which comes with testable (and empirically supported) hypotheses such as “high levels of social support buffer individuals from stress” (Robbins, Lese & Herrick, 1993). Overall, testing of the construct has focused on social connections among students, and empirical work supports the notion that sense of connection, thus defined, can be as powerful a predictor of retention as are academic factors (Enochs & Roland, 2006). The construct does have an intervention flavour in many studies (e.g., Consolvo, 2002), with researchers looking at building student sense of connection by encouraging them to join extra-curricular organisations with a social focus. These interventions, such as UniStart (Adam, Hartigan & Brown, 2010), are explicitly aimed at increasing social connections/networking on campus. In Australia they are driven at least in part as a response to indicators of student engagement with universities that reveal engagement levels are falling, with particularly sharp falls since 2009. Students’ sense of connection fell below 50 percent by 2014, when the share of students indicating that they kept largely to themselves at campus rose to 44 percent (Baik et al., 2015).

**Sense of Capability**

Students entering university with recognised lower high-school achievement scores may be no less capable than their higher achieving high-school peers of performing well at university. Even so, they start university life with a muted sense of their own capability (Baik et al., 2015). Conversely, excessive sense of ability, or overoptimism, is equally a risk factor (Corbin, Burns & Chrzanowski, 2010). Self-evaluation traits are therefore significant for student success or otherwise. Traits such as self-esteem and self-efficacy can flow through to influence factors such as engagement and student stress (Olwage & Mostert, 2014). Hence, early discipline-
specific training to try to ensure students develop an early sense of their capacity to master their chosen discipline has been identified as a key ingredient of students’ academic success (Phelps & Ellis, 2002). More general training or shaping of student expectations is also required in relation to development of skills such as time management and how to stage assessment tasks (Wilson et al., 2016). Newly arrived first-year students need to be brought to an understanding of how the tasks and expectations at university differ from both secondary education and the world beyond education. Aspects of university study in Australia, such as lack of compulsory attendance and active preparation for and participation in tutorials are not intuitively understood by newcomers to tertiary education. Guidance provided through intervention programs is therefore a useful complement to regular classes.

**Sense of Purpose**

The university student role comes with freedoms and responsibilities that new undergraduate students may not intuitively understand. This is particularly true in Australia in the post-Dawkins reform era, with an ever stronger flow of non-traditional new students who have minimal access to older peers, let alone to parents, grandparents or other close relatives who can help model and advise the behaviours expected of the undergraduate (O'Shea et al., 2014). Generational change may also test those who staff the university frontlines; for example, the expectations and mindsets of Generation Y students can challenge administrators and academics from a different era (Krause, 2005b). However, Baik et al., (2015) argue that students are entering university with an increasingly clear understanding of what they want from their university experience. Over the last two decades, the share of students claiming they understand their reasons for coming to university has risen to around 90 percent (Baik et al., 2015). Yet this claim does not necessarily imply that the students have a firm sense of identity/purpose – as university students. Indeed, around one in five reported their reason for attending university was to buy time to ponder their future (Baik et al., 2015). They engage to some degree in a cost/benefit analysis (Corbin et al., 2010) related to expectancy theory, and sometimes that analysis can be the driver of disengagement and attrition.

Universities are of course not passive contexts when it comes to students’ sense of identity and purpose. Universities retain a pivotal place in the future life-course of their students partly because universities challenge students as they transition to greater multiplicity and uncertainty in their worldviews ((Burnett, 2007; Larmar & Lodge, 2014; Weiler, 2005). Universities also attempt to foster a student’s sense of professional identity, with socialisation into the profession
encouraged by collaboration between universities and professional societies involved on campus. Lizzio and Wilson (2010, p. 1) argue that a sense of purpose would “appear to be the key motivational foundation for students’ academic and career self-regulation”. For degree programs without a clear professional pathway, such as the typical Bachelor of Arts degree, universities actively seek to address some particularly severe challenges (Burnett, 2007), and which include the symptoms of ever lower university-entrance requirements, and greater attrition symptomatic of the struggle to address the perception of relevance the struggle by universities to address students’ questioning about the relevance of their studies Stebleton and Diamond (2018) suggest that building deliberate career development and exploration programs into first-year students’ studies helps to improve retention through honing students’ sense of purpose. Despite a possible lack of academic capital and resources, including financial, Krause and Armitage (2014) state that “studies have shown that students who belong to equity groups can, in fact, have higher levels of persistence than the normalised, traditional students they are measured against (p. 23)”, citing the research of Long, Ferrier and Heagney (2006), Grebennikov & Skaines (2008) and Marks (2010) in regard to students of a LOTE background.

**Sense of Resourcefulness**

Sense of ‘resourcefulness’ is often identified more in terms of ability to access the resources available to the student, rather than referring to an individual variable, although this sense also refers to the ability to be able to balance study with work and family commitments, for example. Students may vary in the extent to which they know how to access resources (Chester et al., 2013a), including IT resources (McDowell, 2002). These ‘resources’ also include human resources. Discussion commonly focuses on people within the university setting, with students often recognising academic staff as both gatekeepers of resources, including those online (Cashion & Palmieri, 2002) and resources themselves. However, beyond the university, students turn for support to family, partners and friends, which is where a student’s low socioeconomic origin can potentially play conflict in terms of a lack of preparedness, resourcefulness and resources itself may be unable to yield the extent and quality of resources accessible to students of higher socioeconomic origin.

A key resource identified in the literature and discussed at many turns so far in this thesis is financial resources and consequently student access to them. A major trend among university students over the last two decades has been the sharp rise in number of hours these students spend in paid employment during their study period (Baik et al., 2015), which in turn has been
linked to reduction in the time students devote to study outside class. However, the same data suggests students may be sufficiently resourceful to deal with this issue; Baik et al., (2015) report a significant decrease in the share of students claiming they are unable to balance their commitments.

 Sense of Identity (academic culture)

Lizzio (2006, p. 2) further developed the variable of ‘sense of academic culture’ in arguing, “Successful students know the value of learning ‘how things are done’ and what is important or valued in new culture”. ‘Sense of academic culture’ relates to students’ sense of alignment or at least their understanding of the difference between their own “core values and principles” and those of the university. The key question here, Lizzio suggests, is “What is a university?”. The university and its culture can be learnt about, along with the curriculum itself.

A ‘Sense of Student Identity’ as a construct (Lizzio, 2009) is analogous to the educational theory of ‘academic self-concept’. The academic dimension of self-concept has been researched by numerous scholars and recognised as strongly influencing academic outcomes (Bong & Clark, 1999; Bong & Skaalvik, 2003; Byrne, 1984; Choi, 2005; Ferla, Valcke & Cai, 2009; Marsh & Seaton, 2012; Marsh & Yeung, 1997; van Dinther, Dochy & Segers, 2011). According to Marsh and Seaton (2012), the construct of self-concept “has a long and distinguished history, spanning the centuries from Socrates and Plato to Bandura and Rogers in the present day. Academic self-concept – one’s knowledge and perceptions about one’s academic ability (Bong & Skaalvik, 2003) – can be considered as one of the principal components of self-concept (Shavelson, Hubner & Stanton, 1976; Marsh & Seaton, 2012). Similarly, Byrne (1984) describes self-concept as one’s perception of self, one’s attitude, feelings and knowledge concerning one’s skills, capabilities, appearance and social acceptability. Researchers have recognised parallels between the construct of academic self-concept (student identity) and self-efficacy (capability). However, whilst identifying similarities between the constructs, multiple researchers have argued that self-efficacy is normally a precursor that enables the development of self-concept (Bong & Clark, 1999; Bong & Skaalvik, 2003; Ferla et al., 2009; Schunk, 1991; van Dinther et al., 2011).

University study years are a period in life when students are often challenged to understand their ‘general self” as an individual identity, and their ‘academic-self” as a student, or as Lizzio and Wilson (2010) suggest, as a future professional in training. These possible selves are
commonly referred to as ‘general self-concept’, ‘academic-self-concept’, and ‘student identity’. Students have conceptions of ‘possible selves’ as they transition through university (Lizzio & Wilson, 2004; Markus & Nurius, 1986). Whilst this concept of ‘possible selves’ is connected to their present-day student identity, a student’s ‘possible self’ primarily derives from their personal views of past and future selves (Markus & Nurius, 1986). In viewing past selves, students attempt to consolidate where they have come from, while attempting to conceptualise their future-selves, who they may become in the future as a professional identity in their anticipated specialised domain (Lizzio & Wilson, 2004; Markus & Nurius, 1986). Consequently, over the course of their studies students simultaneously appraise the worth of different skills set, in part building their own ‘constructed identities’ of their future-self (Lizzio & Wilson, 2004). These constructed identities are an important facet of student success and thus retention.

Self-concept constructs have been recognised as significant predictors of the quality of academic outcomes an individual will achieve (House, 1996, 2000). Director of Institutional Research at Northern Illinois University and prolific researcher of academic self-concept over many years, Daniel House stresses that academic self-concept is a significant predictor of student success in regard to a student’s overall grades and student drop-out (House, 1992, 1993, 2000). Studies at a tertiary level by Choi (2005); Komarraju, Musulkin and Bhattacharya (2010); Michie, Glachan and Bray (2001); and Reynolds (1988) validate this view that a positive ‘academic’ and ‘general self-concept’ influence grades at a tertiary level.

Skaalvik and Skaalvik (2002) have argued that the frames of reference students personally identify contribute to the growth of their own academic capability. These authors identify frames of reference for academic self-concept as being internal and external to one’s self. They view their construct within the classroom setting and suggest that the external frames include: (a) school-average ability, (b) class average ability, (c) selected students in class, and (d) selected students outside class. The authors describe internal frames of reference as those students use when they consider their own performance in a particular course across time, when comparing achievements across different courses, and subsequently when comparing these to the effort they required.

Image below removed.
2.7 Prior Evidence on Co-Curricular Interventions, Student Success and Retention: Insights for improving student retention and success

Having reviewed above the literature on key predictors of university student success and retention – in negative terms, poor academic performance and attrition – this section turns to consider intervention programs that have been introduced by universities, complementary to student study programs, to help maximise student success and retention. The section seeks to identify what aspects of these interventions can best achieve such success and retention for students. The section first overviews the most notable intervention programs, including the work of Wilson (2009), which was used as a precursor to introducing institution-wide the Student Success and Retention Project at the heart of this thesis. It then discusses evidence from use of other co-curricular interventions in light of their contribution to student success and retention, for insights into the strengths and weaknesses of intervention programs overall.

2.7.1 Wilson’s Three Generation Taxonomy of Interventions

Using Wilson’s (2009b) taxonomy, interventions to enhance academic success and retention of first-year students identified to be at-risk of failure/withdrawal can be categorised in line with the three types of students for whom these programs are aimed: (1) first-generation (first-in family) students (timely co-curricular interventions in addition to standard contact hours); (2) second-generation students (curricular enhancements at the School, Department or Faculty level); and (3) third-generation students (integrated institution-wide, program-wide curricular and co-curricular enhancements). This thesis focuses on the effectiveness of particular type 1 interventions for first-generation (first-in family) students, for whom university success and retention have been identified to be ‘at risk’. This type of intervention strategies tends to be the best supported empirically, and includes orientation programs, peer mentoring and student advising (Wilson et al., 2016).

2.7.2 Wilson’s Staged Academic Failure and Attrition Prevention Measures

If university or government resources are to be used optimally, learning interventions must be made available to at-risk students in a targeted rather than an unstructured or unfocused way. These interventions need to be matched to the distinctive needs and circumstances of at-risk
students and so require informed understanding of such students (Caplan, 1964). Further, since needs of at-risk students are multifarious, the range of interventions offered needs to be multi-faceted, recognising that no single academic failure or attrition measure can provide a panacea for all issues faced by a diverse group of at-risk students.

Wilson (2009b) proffers a useful classification for successively staged, targeted interventions to assist at-risk students. Many so-called interventions, she argues, are early but may be too general to be useful for at-risk students. These non-targeted interventions, which are made available to all commencing students, include measures such as contacting all students before the start of semester to inform them of university services. Wilson points out that these non-targeted, so-called ‘primary’ interventions run the risk of failing to address the needs of at-risk student sub-groups within the first-year population and argues that academic success for many of these people can be achieved only if their key risks or vulnerabilities are identified and activities implemented early to mitigate their problems and activate their resources. Doing this in a systematic way is seen as vital for at-risk student success and retention (Krause & Armitage, 2014).

For first-year at-risk students, Wilson (2009a) distinguishes primary failure/attrition prevention measures from a subsequent (though still early) stage of ‘secondary’ prevention measures that are designed to identify at-risk students from those not likely to be at risk of failure or attrition. The rationale for these so-called secondary prevention measures is that by more accurately identifying at-risk students, learning interventions can be tailored to better target their needs. Evidence-based ‘risk filters’ (the term used in this thesis) can be used early to identify students who are, upon entry to the university, at risk of failure or attrition. Also, useful here are dynamic ‘early engagement’ and ‘risk’ markers to identify students who, for example, did not attend their first few tutorials, or did not submit their first assessment item. As noted previously, early intervention is critical to the academic success of at-risk students (Krause & Armitage, 2014; Whannell, 2013). Wilson then identifies ‘tertiary’ failure and attrition prevention measures designed to assist students who have already failed one or more courses during their first semester, so they do not fail again in subsequent semesters. These tertiary prevention measures are typically co-curricular and may include timely peer-assisted study sessions and workshops on academic skills such as information and computer literacy, numeracy, written communication, analysis and critical thinking.
2.7.3 Other Prior Evidence on Co-Curricular Interventions, Student Success and Retention

Research suggests that students’ academic success and student retention are both on average positively correlated with the following dynamic early engagement markers. Rienks and Taylor (2009) used management information systems for collecting administrative data to identify students at risk on entry to university, so these students can be contacted and encouraged to attend orientation and offered extra support particularly during their first semester. The management information system can also be used before the semester starts and later in students’ study programs to identify students at risk due to their “academic standing, access to Learning Management Systems, repeat fails in core courses, failure rates, cohort tracking with retention and attrition and a history of suspension/exclusion/appeals” (Kusevskis-Hayes & Clark, 2016, p. 1). Linked to this approach is a strategy to monitor students who have failed more than one course, with a view to possibly placing them on probation (Prentice et al., 2009; Burgess & Considine, 2014).

Early engagement markers are also used to track students’ attendance at orientation and at tutorials. Wilson (2009b) advocates recording attendance at orientation and keeping a record of non-attendances in all core courses, particularly in the first two weeks of tutorials. Staff are then able to contact students who have not been attending to check on their welfare, whether they plan to continue their studies, and whether they understand their options as enrolled students. If students are unfamiliar with university procedure, the staff member will make them aware that they can (1) participate in an appropriate intervention program to support their continued study, (2) officially defer their studies, or (3) officially withdraw their enrolment without having to pay student fees if officially withdrawn by the specified closing date for such withdrawal. Students are often unaware even that they can defer their enrolment, let alone that in doing so (by the set date) they will not incur a HECS debt, and will not have ‘Fail’ recorded on their academic transcript (Wilson, 2009a). Directly contacting students who have not attended at all and advising them about withdrawal as a cost-free option if their withdrawal is officially lodged before the specified HECS (now HELP) census date helps both students and institutions. Cancellation of enrolment is a cost-free option for students who wish to permanently withdraw from university only if they formally cancel their enrolment before the HECS (now HELP) census date. Student fees are not charged at all if the student officially cancels their enrolment within the federal government’s nominated period (around four weeks
from start of semester). But students do remain liable for tuition fees, whether or not they attend any classes, if they do not officially cancel their enrolment by the nominated census date. Knowledge of this aspect of the HELP system can therefore have great significance for at-risk students, especially those with low-income backgrounds. It helps to build the possibility for the student to have a future relationship with the institution when the student is better placed to accept the offer. Significantly, it also helps the university in meeting its retention targets; students who for whatever reason do not follow up at all after accepting a university place, but do not officially cancel their enrolment by the census date, are included as attritions in the federal government’s tracking data.

An early engagement marker that is successful if undertaken early in the semester is tracking all students who fail to submit a first assignment (Nelson, Duncan & Clarke, 2009). Another strategy is to give students an early, formative piece of assessment, usually a diagnostic test that can be used to help students understand their progress during the early weeks of a course, to test students’ understanding of foundation concepts and help students adjust to the new learning environment. This type of assessment also enables staff to identify students who may be in need of academic support. With tracking of test results, a staff member can speak to the identified students via ‘sensitive’ telephone contact, and follow through with email to (1) encourage the student’s attendance, engagement, time-on-task, and use of support services; (2) advise contact details and times when students can consult with the staff member for further academic feedback (Nelson et al., 2009; Ryan & Kemlo, 2012; Wilson, 2009a); or (3) facilitate the student’s withdrawal from the course without financial or academic penalty to themselves or debt to government, when possible (Wilson, 2009a).

Early feedback from teaching staff on first-year assessment items is also recommended (Adams et al., 2010; Lizzio et al., 2002a; Lizzio & Wilson, 2004). Student workbooks may be provided specifically for this purpose, enabling students to better understand what is required of them and adapt to both their studies and the university environment (Lizzio & Wilson, 2013). Another commonly discussed successful co-curricular intervention is student consultations with trained student advisors to help students with social and academic integration into university life (Burgess & Considine, 2014; Hirsch & Burack, 2001; Ryan & Kemlo, 2012; Shamah & Ohlsen, 2013). This intervention can include appointment of academics as first-year advisors (Adams, 2010, p.168; Burnett, 2011, p. 77; Wilson, 2009, p. 74) who not only help students in adjusting to university, but also become the academic face of the first-year teaching
workbooks can be used in addition to triage procedures, to help solve student challenges.

Both students’ academic success and retention are also on average positively correlated with strategies that encourage early engagement, including pre-semester mail-outs inviting students to attend an early enrolment support drop-in-centre a few weeks before the star of first semester. The mail-out should include details about the university’s orientation program, which is generally held during the week before first semester begins (Braxton and McGlendon 2002; Keup and Barefoot, 2005; Horstmanshof and Zimitat, 2007; Crosling, Heagney & Thomas, 2009; Wilson et al., 2014). More recently, students have been emailed since this type of ‘mail-out’ allows management information systems to track whether students have been online and checked their email before the semester starts.

Purnell, McCarthy and McLeod (2010) recommend preparatory (pre-semester) studies programs or ‘early bird’ workshops to improve students’ academic skills such as academic writing, referencing, researching, plagiarism and note-taking. Wingate (2006, p. 457) argues that “learning how to study effectively at university cannot be separated from subject content and the process of learning”. Nonetheless, Wilson (2009b) suggests it is helpful to use a weekly, one-hour Common Time Program during Weeks 1–3 of first semester, to help students transition into university life. It is also considered beneficial to have an optional ongoing, one-hour small-group meeting with a peer mentor every week for the remainder of first semester, also to facilitate early social and academic transition to university life (Wilson et al., 2014).

Other formats for skills sessions can include mentoring and study groups (Purnell et al., 2010) and skill-development initiatives (Kift et al., 2010; Nelson et al., 2009; Wilson & Lizzio, 2011). Jamelske (2009) found a significant positive correlation between these interventions and academic success, but no significant correlation between the interventions and student retention in the following semester. The results indicated a “stable, consistent pattern of early transition needs across the cohorts, with commencing students expressing most concern about accessing resources, balancing work, family and study commitments, establishing peer relationships, and understanding the requirements and standards for early assessment tasks, particularly group tasks (p. 1)”. Also correlated with student success and retention are peer-mentoring programs in which successful later-year students mentor first-year students, in both academic-skills development
and personal integration with university life. These interventions have also been correlated with longer-term success and retention (Adams, 2010, p. 168; Beasley, 1997, p. 486; Couchman, 1997, p. 488; Muckert, 1996, p. 485; Pascarella, 2005, p. 92; Ryan, 2012, p. 82). Another type of program is Supplemental Instruction (SI), discussed in detail below since it is a major focus of one of the interventions used in the empirical research for this thesis. SI can be conducted by academics or by successful student peers. It differs from remedial instruction in that it identifies high-risk courses or subjects rather than high-risk students (Beasley, 1997, p. 486; Reyes, 1997, p. 487), but it too is statistically significantly correlated to academic success and retention. As discussion through this thesis suggests, peer-assisted learning sessions for students normally consist of high-performing later-year students tutoring first-year students (Ryan, 2012, p. 82; Wilson, 2014, p. 150).

Other types of interventions that support student success and retention include just-in-time support shortly before the due dates for key assessment items (Higher Education Academy, 2001; Wilson & Lizzio, 2008; Wilson et al., 2014); English-language support for students who normally speak a LOTE (Adams et al., 2010); and targeted-student remedial approaches to retain students who have been placed on probation because of low grades (Prentice et al., 2009; Burgess and Considine, 2014). Having said this, however, neither students’ academic success nor student retention is on average significantly correlated with these co-curricular interventions: academic-staff development programs for staff already identified as successful teachers and having a good relationship with their students (Prebble, 2004); English-writing and composition courses designed for all first-year students (Crissman, 2001); and student-support services such as counselling, career guidance, access to childcare facilities, increased support for student networks, or liaison services (Prebble et al., 2004). Moreover, student attrition is correlated more significantly with non-institutional factors than with institutional factors (Davies, 1999, p. 490; Zepke, 2005, p. 47). In this context, non-institutional factors include financial problems, altered work or family environments, employment concerns, and gaining access to or eligibility for other courses of higher preference.

### 2.7.4 Supplemental Instruction

Supplemental Instruction (SI) refers to academic support programs using students as tutors (mentors) in peer-learning sessions involving a non-traditional form of tutoring that focuses on collaboration, group study and interaction to help students undertake "traditionally difficult" courses (Martin 2010). Dawson et al., (2014) looked at a recent decade of interventions,
examining 29 studies that indicate collectively the effectiveness of structured peer-assisted learning patterns. Close to a decade earlier, Ginsburg-Block, Rohrbeck and Fantuzzo (2006) conducted a similar study with elementary-school students, finding homogenous outcomes. The findings of these and numerous other studies suggest there are very strong positive benefits from using SI to advance learning at any educational level, as long as the learning patterns are well constructed and supported (McInnis, Hartley et al., 2000). Research also suggests that SI enhances qualities in student mentors (leaders) (McPhail, Despotovic & Fisher, 2012) as well as in their mentees (students), with both academic and non-academic benefits (Dobbie & Joyce, 2009). In addition to enhanced academic performance, these benefits include extension of friendships beyond the classroom, and a sense of efficacy, confidence, connectedness, community, capacity and personal responsibility (Etter, Burmeister & Elder, 2001; Marrone & Draganov, 2017; Singh & Tregale, 2014), as well as students claiming “ownership of learning” (Adam, Skalicky & Brown, 2011). Not surprisingly, Anderson and Boud (1996) claim SI therefore adds to the overall tertiary experience.

It is important to note, however, that there are restrictions on some programs such as PASS used by numerous universities across Australia. These programs are normally not ‘compulsory’, they are offered only in the most challenging courses, and perhaps most importantly they are an optional adjunct-learning experience attached to normal scheduled classes. Accordingly, it can be argued that programs such as these have a self-selecting bias, in that it is the most motivated students, who have a sense of purpose and resourcefulness, who are most likely to attend (Hodges, Dohen & Joy, 2001). Indeed, motivation is a key element to the success of these programs, with Hodges et al., (2001, n.p.) concluding in their post hoc comparisons that “motivation scores were significantly higher for the SI voluntary group when compared to the mandatory SI and non-SI groups”. Nonetheless, the value of SI programs is well recognised, even when controlled for motivation. As Visor, Johnson and Cole (1992, n.p.) found, “undergraduate students participating in Supplemental Instruction earned significantly higher final course grades than did students not participating in SI, even when the researchers controlled for motivation”.

Researchers such as Marrone and Draganov (2017) recognise the challenges for universities in attaining high attendance rates at these voluntary sessions. The literature provides a range of reasons for non-attendance, beyond motivation, such as conflicting work or class schedules (Blanc, DeBuhr & Martin, 1983). Yet in the present study it is argued that intrinsic motivation
is conditional to success university student success depends upon the student’s intrinsic motivation to succeed. Even though the benefits of SI are regularly communicated to students, the students appear to remain unaware of the tangible benefits, or, perhaps for the majority, are apathetic about attending SI sessions as no marks are normally attached to attendance. As highlighted by Marrone and Draganov (2017), the established success of these programs means that strategies need to be established and continually evolved not only to counter the challenges presented by students’ poor attendance, but also to increase students’ pursuit of ‘help-seeking’ avenues.

It is recognised that many students do not seek out academic-support programs like SI as regularly as other students (Hodges et al., 2001). Rosen (1983) suggested that generally help-seeking is curvilinear, that is, greater when the requirement for help is modest, and lesser when that requirement is very high or very low. Reporting on a special admissions program for US college students, Friedlander (1980) found less than a quarter of students with ‘low ability’ sought support from academic-related assistance programs. Other studies have explored the importance of non-cognitive factors in students’ participation in academic-support programs. Hodges et al., (2001, n.p.), suggested this participation might be influenced by students’ “…locus of control, self-efficacy, and self-esteem”. Earlier, Visor et al., (1992) found, “…students with an internal locus of control were likely to participate in SI, as were students with the highest self-esteem”. Similarly, Hodges et al., (2001, n.p.) found that “high-risk students – those with an external locus of control, low self-efficacy and low self-esteem – did participate in SI, but their attendance was sporadic and they ceased to participate after only a few sessions”. On a somewhat positive note for later-year courses, Friedlander (1980) reported that continuing students were more likely than first-year students to utilise these types of academic-support services. This suggests that building strong peer-mentoring relationships across the years may be one positive response to the challenge of students’ non-attendance at such programs.

PASS is a well-established intervention (Kohler & Strain, 1990; van der Meer & Scott, 2009) that originated in the US during the 1970s as part of SI (Sole et al., 2012). Amongst others, the benefits of peer-assisted interventions have been linked with training in generic skills (Stigmar, 2016), discipline-based skills (Durkin & Main, 2002), improved grades and thus lower failure rates, as well as overall course satisfaction resulting in reduction in both withdrawal from courses and attrition (Adam, Hartigan & Brown, 2010; Blanc et al., 1983; Congos & Schoeps, 1993; Etter et al., 2001; Marrone & Draganov, 2017).
SI (including PASS) are typically run for small groups of students and are often attached to specific ‘high risk’ courses, involving, for example, numeracy skills in business courses (see, e.g., Dobbie & Joyce (2009) and Marrone & Draganov (2017) for accounting SI; Dancer, Morrison & Tarr (2015) for statistics SI, and Worthington, Hansen, Nightingale & Vine (1997) for economics. It is noted that the term ‘high risk’ is often open to interpretation and dependent on context (Martin & Arendale, 1993), with SI versions sometimes implemented for ‘high risk’ students, based on their grades in previous courses or test scores (Arendale, 1994).

SI may include weekly readings guided by an advanced student within the course, or more typically by a student mentor who has most often recently completed the course with very high grades (Bowles, McCoy & Bates, 2008; Field, Burke, McAllister & Lloyd, 2007). Voluntary additional classes focus on academic skills tailored to course content and are normally led by academically successful students who have been chosen also for their interpersonal skills. Although students are provided ‘double-exposure’ to course content (Kenney, 1989), the idea is not to ‘cover old ground’, but mostly to work through problem-solving exercises, mock exams, or group work focused on integrating content. Unlike other categories of intervention, SI interventions tend to be fairly consistent internationally, partly as a function of the work of the International Centre for Supplemental Instruction based within the University of Missouri, Kansas City where the contemporary form of SI was ‘born’ (Hodges et al., 2001). Despite the apparently contemporary genesis of SI, however, peer learning had its origins in Greece, with Aristotle using his peer teachers to instruct their peers (Hodges et al., 2001; Wagner, 1982).

Sole et al., (2012) recognise SI sessions as a beneficial and effective addition to traditional teaching. Comparing a traditional study group with an SI study group, Kenney (1989) found that the latter emerged with recorded an overall higher performance. What happens in the regular classroom is clearly still very important in the overall context. However, both quantitative and qualitative studies find that peer-assisted learning systems tend to offer a number of advantages over traditional learning environments. Two of the most commonly cited advantages are that the sessions have less ‘remedial stigma’ attached as they are often open to all students, and that most often the sessions identify high-risk courses rather than just high-risk students (Arendale, 1994; Hodges et al., 2001). Consequently, students find the sessions less intimidating because rather than run by academics where the power differential is greater, the sessions are run by student mentors, who the students see as their peers and thus more approachable (Sole et al., 2012). The content is delivered more informally, leveraging group
support and dynamics to encourage individual performance, and the sessions also form part of
a socialisation process, with peers acting as role models (Field, 2007, p. 428; Hammond, 2010,
p. 431). Others, such as Ginsburg-Block et al., (2006) have conducted meta-analysis
documenting the positive impact of peer-assisted learning on social, self-concept and
behavioural effects, which were positively correlated to academic results.

2.8 Gaps in the Literature

As noted earlier, there is some evidence for the effectiveness of specific interventions in fields
such as psychology (e.g., the use of reflective workbooks with follow-up tutor consultations)
(Lizzio & Wilson, 2013; Potter & Bye, 2014) and in secondary education (Lamb & Rice, 2008).
However, there is no peer-reviewed empirical evidence from Australia, whether cross-sectional
or longitudinal, on the effectiveness of embedded multiple co-curricular interventions for at-
risk first-year business students in the context of large Australian universities. This study
addresses that context. Studies of business students in Australia address variables such as have
examined students’ choice of major (Willcoxson & Wynder, 2010) and career or student
expectations of service quality in terms of their career (Ong & Nankervis, 2012). None has
explored the effectiveness of specific co-curricular interventions in business courses at an
Australian university. The study that most closely approximates the current thesis, Ryan &
Kemlo (2012), is a survey-based pilot investigation of the impact of student advisors on
students’ results of students in a variety of university courses. That study reported an increase
of 4 percent, and 6 percent in one of these courses. Nevertheless, the study does not make clear
whether these are self-reported or actual results, nor whether the students intended to re-enrol
in the subsequent semester. This thesis seeks to address this gap in the literature by
investigating, quantitatively and qualitatively, the effectiveness of specific co-curricular
interventions on the academic performance and retention of first-year, at-risk business students
at a major Australian university. In doing so, this study responds to recent calls for more
empirical testing on specific student populations to identify the effectiveness of specific
interventions (Hein et al., 2013) using a robust theoretical framework.

This thesis also addresses an additional gap in the literature that has implications beyond the
business school context. The qualitative empirical research was designed to consider student
retention and success program from the viewpoint of the end-user, students who formed part
of the case-study cohorts. While retention and attrition, and indeed student performance
variables such as GPA, are relatively easy to establish objectively, it is harder to pin down variables commonly used in the literature such as ‘engagement’. Engagement, for example, has been “described as both enigmatic and complex” (Nelson, 2014, p. 1). Purely quantitative approaches often tempt researchers to shape the variables around the (hypothesised) operationalising of variables that we see in the environment around us. However, universities are not true laboratories; university practices can be easily manipulated without transgressing ethical boundaries, and thus as researchers we work with what we are given. Tracking students qualitatively through their first-year experience enables us to see how their sense of the university in relation to their selves evolves during the challenges across first year. In that sense, this thesis draws particularly on the variables identified in theories of work stress/burnout in psychology, and the apposite theories developed in education research. Namely, it attempts to incorporate Lizzio’s ‘Five Senses’ variables, and also use as variables student expectations, role demands, and support and control, to explore how these elements interact with student perceptions of their place and of their future in the university. The Five Senses Model has been subject to limited empirical tests, with some support (Chester et al., 2013a). The present study, however, offers the first longitudinal test incorporating this model.

2.9 Conclusion

This chapter reviewed relevant theoretical and empirical literature on timely identification of at-risk students in tertiary education. It also considered the effectiveness of particular learning interventions used to equip at-risk students for successful academic performance and to encourage them to continue their enrolment in subsequent semesters. In summary, the evidence shows that despite their lower rates of access to university or other institutions, students from low socioeconomic or other disadvantaged backgrounds achieve academic success similar to that of their peers from mid-to-high socioeconomic and more advantaged backgrounds (Bradley et al., 2008, p. 30); Marks, 2007; Tranter, 2012; Tranter et al., 2007). The at-risk students can do so if they have at least adequate financial assistance and if they engage effectively in support systems offered by their universities such as additional academic support programs, mentoring and counselling (Bradley et al., 2008; Lizzio, 2009). In other words, once at-risk students have to a good start to the university studies, their present and future becomes more important than their past.
A sense of purpose and of personal integration with university life, and academic achievement (manifest in a good GPA), are key factors in predicting first-year student retention. Sense of personal integration and successful GPA. All three serve as protective ‘buffers’, which mitigate the likelihood of student dropout (Wilson, 2009b). This chapter’s literature review has identified likely key predictors of the academic success of commencing at-risk students and their retention in subsequent semesters as displayed in Figure 6 below.

**Figure 6: University’s key predictors of student success**

There is some evidence in other disciplines that particular interventions, such as PASS, additional tutoring and mentoring, or workshops designed to improve students’ academic skills, are effective in facilitating student academic success and retention. The opportunity for providing early preparatory support for at-risk students in a timely way is, however, limited; the sooner at-risk students are identified and engaged in effective interventions in a timely manner, the better for the student and for the university (Wilson et al., 2014). There is some empirical evidence in the literature on the effectiveness of particular interventions in other disciplines and other countries and educational systems. However, there is as yet no detailed cross-sectional or longitudinal empirical study on the effectiveness of multiple co-curricular interventions on the academic performance and retention of first-year, at-risk students at a
major Australian university. This thesis seeks to address that gap in the literature through study of such students enrolled in a business degree. Furthermore, as previously highlighted across the literature discussion, the Australian context is unique insofar as it is rapidly growing, with higher student-to-staff ratios, greater research productivity expectations, and a higher proportion of international students than most of its global competitors. Nonetheless, while Australia’s position might be relatively unique (or at least extreme), the Australian case may well reflect some insights that are useful beyond the Australian context. Similarly, a longitudinal study of the Five Senses Model within the Australian context is seen as being a beneficial addition to the Australian literature as this has not been completed in such extensive detail previously. As discussed above (see 1.1.2) the application of the Five Senses Model will be valuable in applying theory to application, responding to the calls from Kahu and Nelson (2018) that “more longitudinal data is required to monitor the outcomes of students irrespective of whether they were graduates or partial completers (p. 13)” creating an improved “understanding of the student experience to ground policy and practice (p. 13)”.

The following chapter develops the hypotheses and the model to be tested and explains the data and the methodology used in hypothesis-testing.
Chapter 3 - Hypothesis Development, Data and Methodology

3.1 Overview

This chapter develops testable research propositions and hypotheses and presents an outline of the case study data used in this thesis. It also presents the methodology and methods used to empirically test those hypotheses against the quantitative (Chapter 4) and qualitative (Chapter 5) data. It then evaluates the internal and external validity of the methodology and models used for testing.

The results of these investigations and their implications are outlined in Chapters 4 and 5. In these chapters, two distinct studies involving two different cohorts of students studying the same program are described separately, and details of the methods used to undertake the studies are laid out, followed by presentation of the data and analysis.

3.2 Research Paradigm

Researchers inevitably approach their work with prejudice, that is, with some philosophical assumptions not founded solely on the considered investigation that guides their approach to designing and conducting the study. Such a ‘paradigm’ can be understood through two different branches of philosophy: ontology (the nature of reality) and epistemology (how knowledge is created) (Creswell, 1998; Neuman, 2011). Ontology is the process that allows the categorisation and common understanding of a particular field of study, thus helping to explain the various relationships amongst scientific concepts. Epistemology, on the other hand, explains the theoretical underpinnings of knowledge, and how humans understand that knowledge to make sense of the world. It is concerned particularly with methodology, validity and scope in knowledge creation, distinguishing between defensible belief and opinion (Burrell & Morgan, 1979; Creswell, 1994; Husserl, 1970; Neuman, 2011).

From a realist standpoint, which is related to empiricism, scientific knowledge arises from observing the world and collecting evidence to support or undermine assumptions (Bryman, Bell, Mills & Yue, 2011). This school of thought on the origin of scientific knowledge is also known as positivism. Positivism continues to be associated most closely with the natural
sciences and uses deductive reasoning in an attempt to unveil universal laws (Cavana, Delahaye & Sekaran 2001; Neuman, 2011). However, the approach has also been adopted, even during the 19th century, and sometimes slavishly, by the social sciences. In the ideal positivist approach, the researcher is expected to remain isolated from the subject(s) of their inquiry to ensure their findings are not influenced by their affective responses (Cavana et al., 2001) and their research thus remains objective. Even so, the approach has been criticised for offering an illusion of objectivity; the scientist as a person is dehumanised, and reality as a dynamic between the observer and the observed is desensitised in this ‘traditional’ scientific approach.

In general, a positivist approach is one that relies on statistical testing and presumes that a ‘truth’ can be revealed through the scientific approach, has been taken to the quantitative section of the project (i.e. Study 1). Thus, unlike the qualitative component of this study, set hypotheses have been advanced. Furthermore, the secondary data used by the researcher has been collected by university staff external to analysis of the data.

By contrast, interpretivism or nominalism argues that objective knowledge is impossible, as our human understanding and perceptions of the world are rooted in interpretation (Neuman, 2011). It thus argues that the social sciences cannot simply adapt positivist principles wholesale because the subject of social science inquiry, commonly human society, is created partly through perceptions and through interactions among individuals. Hence the meaning of reality can change, depending on circumstances (Holstein & Gubrium, 2013; Jupp, 2006; Schwandt, 1998; Tracy, 2013). Such a perspective is distinguishable from the dominant paradigm of the natural sciences, where the scientist is seen to be the investigator exploring a relatively static object of inquiry. Interpretivists therefore argue a different approach is required for social science inquiry (Bryman, Bell, Mills & Yue, 2011). As an approach to knowledge creation, interpretivism validates people’s perceptions, attitudes, values and cognitions, arguing that these elements are the very elements that shape knowledge (Neuman, 2000). Perhaps most challenging, the interpretivist approach argues that researchers themselves ‘interfere’ or at least play an active role in the creation of knowledge, and the interaction and involvement of the ‘scientist’ and the ‘subject’ of science, is not seen as a methodological weakness, but essential in sense-making (Cavana et al., 2001). The findings of a research project depend not only on the ‘object’ of the research, but also on the ‘subjectivity’ (i.e., interpretations) of the researcher (Guba & Lincoln, 1998; Schwandt, 1998).
An interpretivist approach is most appropriate for Study 2 as the research is concerned with the social sciences and human subjects, rather than the natural sciences and natural phenomena such as rocks or micro-organisms. While positivist research is generally deductive and seeks to establish laws and causal relationships, Study 2 is explorative and inductive and seeks to generate knowledge and new conceptual and practical knowledge. This second stage of the research project is fundamentally concerned with understanding the behaviours and perspectives of social actors in the context of an organisation, and subjective interpretation of the data is essential. Further, an interpretivist approach is considered most suitable in circumstances such as these where extant research in the field of study is limited (Cavana et al., 2000).

The approach chosen for this thesis is commonly called ‘mixed methods research’, which Johnson and Onwuegbuzie (2004) usefully describe as a combination of pragmatism and eclecticism. Mixed methods research has become increasingly popular in social science research projects, but for reasons that reach beyond those that guided the choice of that approach for this thesis. A mixed methods approach aims to move away from the antagonistic relationship between quantitative and qualitative approaches summarised very briefly above, and instead to draw from the strengths of both approaches in beginning to answer an intractable research question. By narrowing the divide between quantitative and qualitative research approaches, mixed methods research “has a great potential to promote a shared responsibility in the quest for attaining accountability for educational quality” (Johnson & Onwuegbuzie, 2004, p. 24). Greene, Caracelli and Graham (1989) recognised five strengths of a mixed methods approach: triangulation (seeking convergence on the ‘truth’, through using different research approaches); complementarity (illustrating and clarifying the results of one method with another); expansion (allowing broader knowledge about the target issue to be accessed); development (using one method as a source of ideas for explorations using another method); and initiation (uncovering paradoxes or research gaps to initiate new research).

However, the interpretivist approach, used for the qualitative component of this thesis, is helpful in assessing the whole project. The author of this thesis was one of the founders of the SSA program within the Business School under study here. The author thus recognises and acknowledges that through his direct involvement in conducting this research project assessing the impact of the SSA program and student perceptions of its value, is conducting a research project into a part of himself. Indeed, the researcher’s embeddedness in both the project and its
outcomes from the project’s inception required the researcher to be critically self-conscious through the full course of the research. A standard empiricist perspective that the researcher/author’s acknowledged subjectivity here limits the validity of this research, in addition to the traditional limits of research that positivists acknowledge. However, the positivist perspective fails to acknowledge that the researcher has a ‘subjective’ role even in positivist research, through for example, choosing what/who/where/when to research, what questions to ask, and so forth. And, as noted above, for the interpretivist approach, acknowledgement of the researcher’s role is a strength rather than a weakness or limitation of this study. As Teddlie and Tashakkori state emphatically:

When a research study has a purpose, there is a reason for carrying it out. The purpose for a social science research study is rooted in the unique conceptualization in the researcher's thinking about the study. The purpose is not the question. Purpose is not design. Purpose is not methodology. Purpose is not data collection or analysis (Teddlie & Tashakkori, 2003, p. 173).

The SSA Program was not an intervention implemented as a laboratory experiment. It was established to address an operational concern of a working university. Nor was the program designed as a research project per se, even though it was explicitly to operationalise understandings and assumptions derived from the literature and from a particular theoretical standpoint. Conducting the SA program was thus a purposive and applied project.

It is also important to acknowledge that this project has used both qualitative and quantitative methods. The second of the project’s two studies uses both qualitative and quantitative data, rather than cleanly ‘representing’ one or the other of the two distinct approaches to data collection. The explicit objective of the second study was to explore students’ perspectives of the SSA process rather than predefining it for them as a quantified study requires (Lett, 1990). Having taken a qualitative approach to collecting data on the students’ perceptions of the SSA program, these data were then linked with measurable external outcomes associated with firmly through a quantitative approach. While acknowledging the value of the mixed-methods approach – for example, in triangulation of findings to develop a comprehensive understanding of the SSA Program, the approach was chosen for a set of considerations not fully captured in the set of five, triangulation, complementarity, expansion, development and initiation, put forward by Greene et al., (1989).
First, the availability of data from the university made the choice of at least a quantitative component a natural one for this research. Extant research suggests that what drives university student retention and attrition remains a mystery, with a ‘black box’ of unknowns that appear to drive a high degree of individual variability and thus unpredictability of findings. These circumstances suggested to the researcher/author the possible utility of an in-depth qualitative approach, enabling relatively non-directed, atheoretical inquiry into the minds of at-risk students to access their explanations. However, the availability of extensive longitudinal quantitative data suggested the possibility of an additional strength for this study, through linking qualitative data on the students’ perspectives with the objective longitudinal qualitative data already available.

The large institution that is the site of this study can be characterised as a bureaucracy. Webber (1946) influentially defined bureaucracy as a system of administration that requires trained professionals to work to fixed, written rules, with written records, and usually in a way that is hierarchical, with clear lines of authority, clear and consistent ways of working, and work arranged in particular fields of business. The modern university is a clear example of a bureaucracy, which offers the researcher certain advantages and limitations in collecting and interpreting data.

Overall, this study seeks to unravel the dynamics of a transition process for a specific type of university student (“what” questions) (Eisenhardt, 1989), observed through the ‘eyes’ of yield quantified and qualified data for the university, but it also endeavours to make sense of the experience from Seeking to understand the perspective of the students (“why” and “how” questions) as one way to help unravel this transition process (Yin, 2012), makes it an example of Yin’s (2009) exploratory case-study research.

3.3. Research Questions

Given the purpose and scope of the thesis, and the gaps in the scholarly literature, the researcher identified three fundamental research questions that guided this study.

Quantitative and Qualitative Analysis
**RQ1:** Do co-curricular learning interventions introduced by the University (i.e. SSA, AS Sessions and PASS) during first semester, or other distal or proximal factors, significantly increase at-risk Business students’ GPAs during their first year of study?

**Quantitative and Qualitative Analysis**

**RQ2:** Do co-curricular learning interventions introduced by the University (i.e. SSA, AS and PASS) during first semester, or other distal or proximal factors, significantly impact at-risk first year Business students’ retention (i.e. decisions to re-enrol) in the following semester and/or the following year?

In addition to RQ1 and RQ2, the design of this research enables exploration of the degree to which other factors, such as a student’s socioeconomic status, that are commonly recognised to moderate and mediate student academic performance, also alter the relationship between the study’s participation in intervention programs and their GPA and retention outcomes.

More broadly, this thesis explores two types of relationships. One is the degree to which Lizzio’s (2006) Five Senses model, which was used to inform the intervention deployed at the case-study University, maps onto the student experience of the intervention. The other is the possible influence of a range of variables, including FiF status, upon student performance (GPA) and retention outcomes.

### 3.4 Hypothesis Development

Research questions are operationalised as testable hypotheses through the use of empirical indicators (Dubin, 1978). The research questions RQ1 and RQ2, yielded the following testable hypotheses, all of which are expressed in the alternate form. Null hypotheses are typically expressed in a form that suggests there is no association or correlation between the dependent and independent variables (Campbell & Stanley, 1963; Huck, Cormier & Bounds, 1974). Only hypotheses in the alternate form are presented here for ease of comprehension (Hu & Kuh, 2002).
H.1. The distal and proximal factors identified were significantly associated with at-risk students’ academic success at the end of their first and/or second semesters.

H.2. The number of at-risk student attendances at one or more of the co-curricular learning intervention programs introduced by the University (i.e. SSA, AS or PASS) during the students’ first semester is significantly positively associated with those at-risk students’ academic success at the end of their first and/or second semesters.

For Retention

H.3. The distal and proximal factors identified were significantly associated with at-risk students re-enrolling at university at the end of their first and/or second semesters (i.e. being retained by the University).

H.4. The number of at-risk student attendances at one or more of the co-curricular learning intervention programs (i.e. SSA, AS or PASS) during the students’ first semester is significantly positively associated with those at-risk students re-enrolling at university at the end of their first and/or second semesters (i.e. being retained by the University).

The qualitative component of the study is not included in hypothesis development, as the approach with Study 2 is exploratory.

3.5 Data

3.5.1 Study 1 – Quantitative Data

Of the population of 539 first-year students enrolled in the Bachelor of Business Degree Program at the case-study University in first semester of 2012, 61 students (11 percent) were identified to be at-risk, primarily because of (1) their relatively poor TE (OP) score, or (2) because of their low preference for enrolling in a Business degree, or (3) both factors. In terms of the first criterion, the University’s official cut-off for entry to a Bachelor of Business degree in 2012 was OP (TE score) 11, but 2012 in response to the social values expressed in its Charter, the university accepted into the Business degree students with poorer OP scores (i.e., lower academic aptitude) than in previous years. From 2012 the official OP cut-off for the Business program was shifted to 17. Note, the higher the OP score, the ‘poorer’ the student performed academically at high school.
In terms of the second criterion – low preference for enrolling in a Business degree – even students with a reasonable OP score (e.g., OP 11–12) were identified as being at-risk if they had expressed on their admission documentation application for university admission a low preference for studying Business. This means business was only their third, fourth, fifth or sixth preference. In short, these students would have preferred to study a number of other degree programs such as pharmacy or law but did not achieve an OP score sufficiently strong to qualify for admission to their higher preference degree programs. In terms of student engagement theories promoted by Lizzio (2006) and Tinto (1975, 1993), the low preference for studying business can be viewed as a proxy for risk of academic failure and attrition because of a student’s low engagement with the curriculum or poor alignment between the course and the student’s goals.

For these 61 students identified as being “at risk”, data was collected inter alia on two additional distal data sources relating to two risk factors identified in the literature: whether the students were from low SES backgrounds (9.8% of student cohort) and whether they spoke a LOTE (11.5%) at home. Data was also collected on a wide range of multiple proximal resources.

3.5.2 Study 2 – Qualitative Data

An important aim of this study was to develop understanding of (1) how participating students perceived the co-curricular intervention, and (2) how distal and proximal variables impacted on the ability of these students to persist with their degree program. Lizzio’s Five Senses Model (2006) was used with data from Study 1 to frame the exploratory questions used in Study 2.

Data was also collected on (1) the GPA of participating students upon leaving the university; (2) whether the students re-enrolled in subsequent semester (i.e., they were “retained”) in the Business degree over the four years after their initial enrolment; and (3) whether the students graduated within four years of their initial enrolment.

The role of the qualitative data was to examine the perceived impact of the co-curricular initiatives delivered as part of the Academic Success and Retention Project. While the quantitative data is able to provide academic success and retention and attendance rates at the interventions, it is not able to unpack the perspective of the end-user, the student whose viewpoint is important for analysis and developing future strategies so that universities can
work with like-minded students. Study 1 is silent on providing possible answers to the possible impacts of the interventions, in addition to the perceived effect of distal characteristics, such as being FiF; a students’ self-awareness of what is means to be a university student; the role that off-campus employment plays; and the relationships with staff and peers. Demonstrating the causal link of the interventions is problematic, since the nature and quality of such interventions are difficult to evaluate without feedback from the end-user. Eminent scholar Tinto, as recently as 2017, stated that whilst much research has been completed as to why students attrite from university, there has been comparatively less research from the student perspective that has focussed on the development of strategies to lessen such attrition (Tinto, 2017). As such, Study 2 sought to explore these variables through interviews with 25 students deemed to be at risk of failure and attrition. This data is further analysed and discussed in Chapter 5.

3.6 Methodology

This thesis is broadly a test of an embedded institutional intervention, using both primary and secondary data. As outlined in discussion above, variables that impact upon student retention and attrition have been intuitively clustered into two broad categories, proximal and distal markers. Whereas for Study 1 the focus is constrained by variables collected on a sub-institutional level or intervention-wide scale, for the second study, the focus is broader. The majority of questions for Study 2 are developed out of Lizzio’s Five Senses Model, to enable exploration of the degree to which the interventions, developed out of this Model, successfully map onto the theoretical variables identified in Lizzio’s work. A number of additional questions developed out of, or not available from Study 1 and drawn from the broader literature, concerning factors such as FiF status, are included in the in-depth approach taken in this second study.

3.6.1 Case study approach

Case-study was chosen as the most applicable research approach as it is best suited to the research task of individually examining for comparative purposes two cohorts of university students enrolled in a Bachelor of Business degree program at the case-study University. Crotty (1988, p. 3) defined the case-study approach as “a strategy of inquiry in which the researcher explores in depth a program, event, activity, process of one or more individuals [allowing for] a variety of data collection procedures over a sustained period of time”. Yin (1981) and Eisenhardt (1989) claim that case-studies can use quantitative and/or qualitative evidence, and
therefore this approach does not imply the need for a particular form of evidence. This position is further qualified by DePoy and Gitlin (1998) who advocate that an important element of a case-study approach is to allow for a variety of data-collection approaches to ascertain the complex nature of a case, with “triangulation, or collecting information using different strategies to examine a phenomenon being a basic strategy in case study designs” (p. 142).

This thesis presents a case-study of particular interventions in a particular institution at a particular time in both the history of Australia’s economy and development of its higher education context. Importantly, this intervention was implemented by a particular group of staff working at the institution. The limitations that arise from having some of the ‘active ingredients’ of the intervention administered by a small group of staff raise questions about the generalisability of the study. This concern touches on common criticisms of case-study research using small samples or extreme or unusual cases, which has inspired critics to challenge assumptions of such research about its generalisability to the wider population (Flyvbjerg, 2006; Yin, 2009). It is in this sense that the study draws on the qualitative approach, seeking to draw fundamental and broader insights from the particular case. Students were selected for participation in this study on the basis of being “representative or typical cases”, as opposed to “critical, unique or revelatory cases” (Yin 2009) (see following section on sampling).

While case-studies such as this have limitations on their contributions to knowledge, they also have their strengths. They allow for what Neuman calls the holistic elaboration of an entire process or situation and “permit the incorporation of multiple perspectives” (Neuman 2011, p. 42). This study includes multiple sources of data, collected not just by the small set of SSAs and the researcher during the interviews, but also by university staff ‘blind’ (separate) to the daily activities of the SSAs.

The case of the present study is bounded, that is, the context in which it takes place is clearly stipulated: a particular cohort of students studying in a particular degree program at a particular university (Swanborn, 2010; Yin, 2009). While the ‘perimeters’ of the case can be clearly defined, it is still difficult to separate the case from its context (Yin, 2012). The study attempts to meet this challenge by including in the qualitative inquiry (and to a much lesser extent in the quantitative element) a number of distal variables, including the students’ home life and origins.
The unit of analysis in the studies discussed below was students from two cohorts: (1) a 2012 cohort of first-year Bachelor of Business degree program students who were followed for six years to the end of Semester 2, 2017; and (2) a 2014 cohort of ‘equivalent’ Bachelor of Business degree program students who were followed for four years to the end of Semester 2, 2017. ‘True’ cohort studies are typically conducted in medical research and are presumed to be ‘forward-looking’. These studies examine variables captured at one point in time, and then track individual cases over a period of time. Typically, through the use of regression analysis, they examine how variables at ‘time 1’ (T1) predict variation in outcomes at T2, T3 and so forth. For example, cohort studies have looked at the change in medical students’ attitudes as they progress through medical school (Woloschuk, Harasym & Temple, 2004), and how exposure during a degree program to community medicine increases the likelihood of a graduate being interested in undertaking primary care in the community (Howe & Ives, 2001). Cohort studies are less common in education, and the classic studies in education often have a medical flavour (see for example Smith (1920) and Puddey & Mercer (2014)).

Schematically, the logic of the analyses is summarised in Table 4.
### Table 4: Logic of Analyses

<table>
<thead>
<tr>
<th>Analysis</th>
<th>Success in Semester 1 (DV1)</th>
<th>Retention in Semester 2 (DV2)</th>
<th>Retention in following year (DV2)</th>
<th>Independent Variables (IVs)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Effect of interventions (2012) Quantitative analysis (n = 61)</td>
<td>Pass/Fail (in 1–5 courses) GPA&gt;4.0</td>
<td>Enrolled in Semester 2</td>
<td>Enrolled in Semester 1</td>
<td>Interventions – number of attendances per student: SSA Consultations AS Sessions PASS Program + Combined Engagement Markers</td>
</tr>
<tr>
<td>Qualitative interviews and Quantitative analysis (2014) (n = 25)</td>
<td>GPA&gt;4.0 Perceived effectiveness of co-curricular interventions</td>
<td>Enrolled in Semester 2</td>
<td>Enrolled in Semester 1</td>
<td>As above (1) – (3)</td>
</tr>
</tbody>
</table>

*DV = Dependent variable; IV = Independent Variable*

#### 3.6.2 Quantitative Methodology

**Study 1 – Quantitative Data**

The quantitative element of the data is largely, but not exclusively, based on institution-wide secondary data, and was collected systematically as part of the usual operations of the University, in addition to the operation of the SSA program at the University. The thesis takes advantage of data stored in the University databases and links this existing data with secondary data collected by the author and other members of the SSA team in the course of implementing
and monitoring the intervention. The data collectively enables this study to take a longitudinal tracking approach to observing students from 2012 through to 2017.

Two key outcome variables are used in Study 1: GPA, which is a commonly used measure of university student performance, and retention, a binary variable. It is operationalised in this study as the retention of first-year students, measured through progression of the at-risk target student group into second semester of their studies and into the second year of their university degree. This study also examines retention long-term, exploring factors that appear to influence whether the chosen cohorts graduated from the University. Regression analysis enables examination of the impact of factors such as the number of contact sessions between SSAs and the students; non-attendance at orientation; failure to access online course websites; non-attendance at tutorials during the first three weeks of semester; failure to submit first assessment in any of their core courses; and failure of the first assessment item in any of their core courses; in addition to the possible impact of demographic factors on the identified outcomes (McInnis 2003; Tinto 1997).

Adopting a cross-sectional and longitudinal approach, the study used ordinary least squares (OLS) regression and logistic regression or logit to quantitatively evaluate the impact of key co-curricular interventions on the first-semester cohort: 61 at-risk students in 2012. Regressions were completed across a number of models range of iterations over 2012 to gain a more comprehensive and deeper understanding of the drivers of at-risk students’ academic success and retention. First, academic success of at-risk students as identified above was regressed using OLS on student engagement in the key interventions, using three different measures: (1) SSA Consultations, AS Sessions and PASS; (2) the three ‘early engagement risk’ markers noted earlier; and (3) whether students failed their first assessment item (an ‘early outcome risk’ marker).

Second, further regressions were conducted exploring the impact on academic success (using the three different measures), and student engagement in the three key interventions (SSA Consultations, AS Sessions and PASS). Third, similar regressions were run, this time regressing academic success (using the three different measures), on just the four ‘early engagement’ markers noted earlier, and whether students failed their first assessment item (an ‘early outcome risk’ marker). Fourth, for the sake of completion, student success as defined was also regressed against all six of the ongoing engagement markers, the four ‘early engagement’ markers, and the ‘early outcome’ marker (i.e., pass/fail on first assessment item).
Fifth, academic success as defined, *given* engagement in the key interventions (expressed as a conditional dependent variable), was regressed on all four iterations of independent variables noted previously. Sixth, all of these regressions were again conducted using a logit model, rather than OLS. The logit model was used to test whether the data followed a curvilinear pattern, but more importantly, so that the 2012 logit model could be used, in a rough and ready way, to generate a “probability” of academic success. The dependent variable in a logit model varies between 0 and 1, so that the figure generated by the model can in a rough and ready way, be interpreted loosely as a “probability” estimate. This “probability” could then be compared with actual student results in 2014, to evaluate the model’s predictive power. Seventh, all of the previous iterations were run using student *retention*, as previously defined, as the dependent variable rather than *academic success*.

In total, this study evaluates the data across more than 100 model iterations to gain a more comprehensive and deeper understanding of the predictors of at-risk students’ academic success and retention. In order to gain a comprehensive understanding of the underlying predictors of at-risk students’ academic success and retention, more than 100 model iterations were run. The founding for each of these iterations were theoretically based rather than a *P*-hacking exercise and were driven by the inability to fit the data to a singular model. The fact there were three different semesters, a number of different ways of measuring attrition and performance, and a small *n* value meant that not all variables could not be usefully run in each equation and therefore necessitated a large number of tests per term. It is acknowledged that the large number of iterations could have imposed some Type I statistical errors and future studies could account for this through the application of a Bonferroni correction factor.

**Single Sample t Tests**

In the OLS analyses, t statistics were generated for each independent variable. These were calculated as the coefficient values divided by their standard errors. The t statistics were then compared with the Student’s t distribution to determine *P*-values. This allowed the assessment of statistical significance of each of the independent variables used in the regressions.

**F Statistics: Effects of Interventions in Combination**

The combined effects of all independent variables were also assessed in the OLS analyses using F statistics and the coefficient of determination (adjusted $R^2$).
Logit Analysis

The significance of the independent variables in the logit analysis was evaluated using Wald statistics (Menard 2002), with the goodness-of-fit of the model evaluated using a binary classification table, a likelihood-ratio test and the Hosmer-Lemeshow test (Hosmer and Lemeshow, 2000).

Using a cross-sectional approach, the study evaluated the impact of co-curricular interventions on at-risk students’ academic success and retention in 2012 and beyond, as well as their perceived impact, in the case of the qualitative analysis in 2014. The mixed-method approach enabled detailed analysis of large secondary-source data-sets of quantitative information collected by the University, in addition to rich and informative information being coded and analysed through semi-structured interviews from semi-structured interviews being coded and analysed.

3.6.3 Qualitative Methodology

Study 2 – Qualitative Data and Analysis

Students’ perceptions of the effectiveness of the interventions on their academic success and re-enrolment in second semester are addressed in the second study. This study is based on in-depth interviews with 25 at-risk students from the 2014 cohort, who broadly match the at-risk cohort of 2012 in Study 1. This second study considers the effect of the extra assistance provided to the target group and attempts to gauge the extent to which it appears to have helped these students, in terms of both success in academic grades and retention.

Additionally, the design enables exploration of the students’ perceptions of their place in the university, their background, and how it impacted on their ability to engage with the university. The study also examines the students’ views of the university in terms of its fit to their expectations and resources. The number of participants and cases is often considered to be a weakness of the case-study approach, prompting some to argue it does not allow for generalisation (Flyvberg, 2013; Swanborn, 2010; Yin, 2009). The purpose of this study was to provide insight into the individual experience, which could then be compared to other experiences of individual students, which could be compared with each other as part of the whole at-risk student population (Flyvberg, 2013). This research design enables some confidence that the results have external validity.
The research process involved creating a basic demographic profile of the participating students, including their age; full or part-time student enrolment status; and family details including whether the student was the first in their family to attend university, level of education of earlier-generation family members, nationality, including whether the student originated from a LOTE background, the students’ SES based on postcode was recorded separately. Students were also asked about how they perceived both their high-school experience and being at university, as having impacted on their ‘sense of capability, resourcefulness and purpose’. Questions also concerned how students felt about their ‘sense of connection’ to the university, to staff and to other students, and whether any of the above had impacted on the way they felt about themselves as being university students (i.e., their ‘student identity’). In this way, interviews with students were useful for investigating the degree of relevance of the ‘Five Senses Model’ (Lizzio, 2006) when put into practice. Students were also asked detailed questions about their interactions with the SSAs and their involvement in co-curricular interventions, to what extent they felt this involvement had helped them adjust to university life, and whether they believed their involvement in the interventions had influenced their ‘five senses’, GPA, and decision to continue with their studies. The Model’s testing elsewhere, this is indeed a very early study of this nature, in particular in that it is a longitudinal study unlike the small handful of previous studies. There are no other studies that have examined the Five Senses model in a qualitative study using one-on-one face to face interviews with students determined by a university to be at risk of academic failure and attrition. The two closest studies of this nature have involved midwifery and nursing students. Both groups completed anonymous surveys, in addition to the second group of second- and third-year students participating in year level focus groups. Therefore, it was determined to be important to conduct one-on-one face-to-face interview with the at-risk students, to explore individual responses.

The data was evaluated using thematic analysis (Guest, 2012) in order to gain a deeper understanding of the first semester (first year) experience. Creswell (2009) has identified the key elements of qualitative data analysis as preparing the data, reducing it to meaningful chunks (in the following referred to as “codes”), combining the codes into broader categories or “themes”, and finally presenting the data attached to these themes in visual and verbal form. Interviews were recorded digitally and transcribed before being manually coded. The use of a
priori codes in this manner has been established practice in the health sciences (Crabtree & Miller, 1992; 1999), however this process was supplemented by adding additional codes that emerged during initial readings.

The aim of this process was to effectively answer the research questions (Gibbs, 2008). Each transcript was initially read twice without coding, with remarks detailed on hard copy. In the subsequent readings, a priori or “pre-set” coding was conducted using themes identified in the development of the interview questions (including Lizzio and Wilson’s ‘Five Senses’). Repeated coding (coding upon coding) was thus conducted to ensure that all relevant insights were identified, inconsistencies eradicated, and to ensure that “drifting into an idiosyncratic sense of what the codes mean” was averted (Schilling, 2006, p. 33). Finally, the codes identified as having common elements were merged to form categories, a constant comparative technique (Anderson et al., 2009; Boeije, 2002; Fram, 2013; Glaser, 1965; Glaser & Strauss, 2009; Grove, 1988; Hewitt-Taylor, 2001; Rihoux & Ragin, 2009). Analysis saturation was deemed to have occurred when upon revision no further distinct codes emerged, and repeated attempts to contact students who had not responded to request for participation in interview had been ignored.

**Quantitative approach**

A unique aspect of this study is the augmentation of qualitative data with extensive longitudinal data collected from institutional records and linked to interview variables. The interviews contained a number of closed ended or structured questions, as well as semi-structured and open-ended questions. The structured questions were coded to enable linkage to the quantitative data. Institutional datasets ending in 2017 were linked with these variables to enable an examination of the impact of a broad range of variables on retention and performance.

**Methodological problems**

Hall (2001) acknowledges that much data on student retention and attrition in the higher education sector is poor quality and may be inaccurate or even misleading. Definitions of attrition vary and national figures on acceptable attrition are arbitrary (Glossop, 2001). Comparison of attrition rates between and among institutions is difficult (David Mason Consultancy, 2004). Some institutions may include in their attrition data all students who leave for part of a program, even when the student later returns. Other institutions will use the
convention of temporary withdrawal to cover periods away from the program for up to a year (David Mason Consultancy, 2004).

Defining attrition is also complicated (David Mason Consultancy, 2004). Students may elect to leave their study program, or they may be required to leave the program by the institution. The most common reason for institutions requiring students to leave is their academic failure. A smaller number of students leaves because of disciplinary issues. Attrition figures do not differentiate between students who leave at their own choice and students who are required by their institution to leave. Further, the stage of the study program at which students leave may not always be recorded accurately. For example, a student may fail an assignment in Year 1 of the program but, because of academic processes, remain enrolled in the program until Year 2, before being discontinued. This inconsistency in recording enrolment further complicates the analysis and reporting of attrition.

Yorke (1999) refers to much of the research into university attrition as ‘autopsy studies’, because these studies concern only students who have left. Many higher education institutions undertake exit interviews with students who elect to leave their study program. But as Last and Fulbrook (2003) observed, it is likely some students offer what they perceive to be acceptable reasons for leaving the program, rather than the real reason/s. This can skew the data, with institutions using their resources to address dubious, perhaps inaccurate reasons for attrition. For this study, retention/attrition has been narrowly defined in terms of re-enrolment/non-re-enrolment at particular time points after initial enrolment to meet institutional requirements for continued enrolment.

**Sample**

Of 60 first-year students who the university had identified to be at-risk in their first semester of 2014, a sample of 25 of these at-risk students agreed to participate in semi-structured interviews with a view to identifying the perceived effectiveness of the co-curricular intervention programs to which they had been exposed. Students were asked about their perceptions of the effectiveness of each intervention on their grades and pass/failure rates, and on their decision about whether or not to re-enrol in the following semester. Students’ perceptions of intervention effectiveness were evaluated using a 1-10 Likert scale, with (1-2) indicating strong disagreement; (3–4) indicating disagreement; (5–6) indicating neither
agreement nor disagreement; (7–8) indicating agreement; and (9–10) indicating strong agreement.

The broad range of questions including: The students were also interviewed about their perceptions (again measured using a 1–10 Likert scale) of the effectiveness of interventions on their experience of Lizzio’s (2006) personal identification constructs, including their sense of connectedness with staff, other students and university assistance services (including learning services, academic skills, doctors and career and welfare counsellors); and their sense of capability; resourcefulness; and purpose as defined by Lizzio (2006).

3.7 Interview Questions

Broadly, the interviews with these students had two phases. In the first phase, students were asked for a series of closed-ended responses to questions seeking to identify personal information: their TE score (OP), age, language spoken at home, postcode (to check socioeconomic status), course load (that enabled coding to part-time or full-time enrolment status) and identified gender, in addition to whether they were the first in their family to (presumably complete) a university degree. In the second phase of the interviews, students were asked open-ended questions that were more complex than in the first phase, as outlined below.

3.7.1 School and University Questions

The second phase of the interviews saw students asked about their preference and choice of university and degree program. Questions included whether their current enrolment reflected their first or subsequent choice on each, and what drove their decisions, with further questions concerning their experience of secondary school and their perception of how well their school had prepared them for university. Students were also asked about their degree of satisfaction with their university studies up to the point of the interview. Here questions included their choice of three to five words that best described their university experience; and on a scale of 1–10, whether they felt they had realistic expectations of how much time that you would need to dedicate to their study; as well as the actual hours they were spending on directly university-related tasks. The students were asked about their attendance at orientation, their perception of orientation if they had attended, their most challenging and most interesting course, in addition to the degree to which they were aware of, and had accessed careers counsellors since attending
the University. Finally, they were asked to name any aspects of their experience that helped or hindered their transition from secondary school to university, and to offer suggestions for improvements the university could implement.

3.7.2 ‘Five Senses of Success’ Model Questions

The focus of the interviews was on the ‘Five Senses of Success’ Model of Lizzio (2016). Interview questions were designed to test the students’ perceived views of their university experience to date. The questions were framed in ways that were non-directive in relation to Lizzio’s ‘five senses’, but instead to offer information that could inform the students’ understanding of how they viewed their place in the university. Consequently, analysis revealed that although the questions were themed by the five senses discussed below, the data these questions elicited did not fit neatly with the five senses; for example, questions designed to probe students’ ‘sense of identity’ often gave rise to responses that could be better understood as illuminating their sense of connection.

Sense of Identity

Given the nature and purpose of this study, questions themed with Lizzio’s ‘sense of identity’ generally concerned the students’ ‘sense of the university’.

Students were questioned about their ‘sense of the university’, Here students were asked to give three words – no choices offered – to describe how they felt about the university, and to comment on whether they believed they had made the right choices in going to university and in pursuing the Bachelor of Business. They were given a series of questions about their university experience including: how comfortable do they feel about being at university? Are you getting a sense of where you are headed as a student? And what does it mean to you to be a student? They were asked about their sense of how integrated they felt with the university community. Finally, they were questioned about their ‘sense of their own responsibility’ to manage work/life/study balance, and their ‘sense of academic values and culture’, in addition to how this influenced the way they learned and studied.

Sense of Connection

For this ‘sense’, students were asked about the degree to which they felt supported at the university, and the degree of their pride in their enrolment at the institution. They were asked
to elaborate on their involvement with the PASS program and the AS Sessions, and their degree of their friendships/networks with other students at the institution. The latter topic included eliciting details of their membership of formal and non-formal social or study clubs, their relationships with peers, and their understanding of the importance of establishing social relationships at university. A series of three further questions that were each linked with a ten-point Likert scale asked the students to rate their perceptions of the warmth of their interactions with university staff, the importance of social relationships, and their relationships with peers.

**Sense of Purpose**

Here students were asked about their future career plans/dreams and why they had chosen their university and particular degree program. They were asked about their personal goals, and in particular about their interest in achieving “good grades”, as well as what they saw as the key elements in achieving their aims. They were asked about their awareness of the course structure; if they had attended all lectures and tutorials in the previous semester, and why/why not; and about their willingness to purchase textbooks and whether they had purchased set texts in the previous semester. They were also asked a series of questions, all matched with a ten-point Likert scale, including about their intentions to attend lectures and tutorials in the coming semester; their perception of the likelihood they would be able to complete assessment tasks on time in the coming semester; their confidence they would pass courses in the coming semester; sense of commitment to the degree and perception of the likelihood they would complete it; and the extent to which they took notes during lectures and tutorials. The students were also asked about their discipline/degree knowledge their preferred major (area of specialisation), and whether they had any work experience relating to their business degree.

**Sense of Capability**

For this ‘sense’, students were asked to consider and discuss differences in the standards of work required at secondary school and at university. They were asked whether they had been able to keep up with workload requirements at university, and, if there was a shortfall, whether they hoped to be able to address this in future semesters. They were asked if there were any skills they felt they needed to acquire to handle university life, and whether they had made progress in acquiring these skills. As follow up, they were asked if they were confident they could acquire these skills. In addition to being asked open-ended questions about their secondary studies, the students were also asked on a scale of 1-10, to rate how well school
prepared them for university study to help elicit their sense of capability. Finally, students were asked two questions, each linked with a ten-point Likert scale, requiring them to rate their perception of the degree of difficulty of their completed course work, and their ability to be self-directed in conducting their studies.

**Sense of Resourcefulness**

These questions attempted to map the degree to which students knew what services were available to support them on campus, and where these facilities were located. These questions in general asked students about their degree of comfort in navigating the university and its systems, asking for help, and more focused questions about particular resources. Students were also asked about their general awareness of the location of particular services such as counsellors and medical practitioners, on-campus post office and kebab shop, and other university services.

**3.7.3 Family and Personal Resources and Support Questions**

The next phases of the interviews consisted of questions framed around family and personal resources.

**Family and Personal Resources**

Questions here sought to identify types of support for students’ emotional, academic and financial, from within their family and through personal means. Students were asked for a history of university attendance/completion in their family, and details of their parent/s’ occupations. They were asked to detail their family members’ perceptions of their study at university, through both emotional understanding of what is involved in completing a degree program, and practical understanding of financial resourcing, including whether the student lived at home and was required to pay rent.

**Family Background, University Access and Basic Living Arrangements and Family-Carer Responsibilities**

Here students were asked about their residential arrangements while a university student, including location (suburb), postcode, co-habiting arrangements (with friends, family, partner, or alone), rental arrangements if applicable, home study arrangements (did they have a separate place to study), and means of travel arrangements to university (including time and cost). They
were asked about any primary-carer relationships they might have for immediate family members, siblings, or other relatives. They were questioned on funding arrangements for their degree. They were asked for family history of university attendance/completion, and details of their parent(s)’ occupations. They were asked to chat about their family’s perception and any involvement and influence that their families had in regard to their studies at university.

**Effect of Paid Employment**

Students were asked about the nature and scale of their paid employment activities, including full or part-time status/hours, current length of tenure, intended length of tenure, commuting time, and whether their employment related to their long-term vocational plans. They were also asked if they were familiar with the recommended maximum number of hours the university suggests that students should work, and whether they perceived that the number of hours they worked had impacted on their academic success and retention.

**Perceived Support (SSA Experience)**

The student experience of working with the SSA intervention was explored comprehensively. Students were asked to describe their SSA experience, as well as their encounter with the particular adviser assigned to them. They were asked to evaluate the experience, including the SA Consultations, the AS Sessions, PASS, and any other university-coordinated assistance they may have accessed. They were asked if it was likely they would continue to have further contact with the SSAs. Students were also asked about their perceptions of the effectiveness of each intervention on their grades and pass/failure rates, and on their decision to re-enrol or not in the following semester.

At the end of the interview they were debriefed, and if they required further information or clarification, it was provided once the formal part of the interview was completed.

### 3.7.4 Qualitative Thematic Analysis: Student Perceptions of Intervention Effectiveness

The data collected from interviews of 25 commencing at-risk students from the 2014 cohort was evaluated using thematic analysis (Guest, 2012) to gain deeper understanding of the first-semester (first year) experience. As noted earlier, perceived effectiveness was assessed using student responses on a 1–10 Likert scale, adding, along with responses to the closed-ended
questions, a quantitative element to what was largely a qualitative approach. The transcripts of student interviews were also analysed, and the responses coded and clustered according to common themes and sub-themes, which contributed meaningfully to answering the research questions. Extracts of student responses were reported if they captured the meaning of relevant points, to further enhance the credibility of the thematic analysis.

Upon completion of transcription, the transcripts were closely read twice as an initial exploration of themes, prior to coding. At a second, more detailed stage, coding was commenced, following the process described by Aronson (1995), data was transcribed and evaluated using thematic analysis, with coding broadly formed around the research questions and variables established in the literature review. Aronson recommends that following this initial coding, related material should be “combine[d] and catalogue[d]” into sub-themes, which broadly maps topics or recurring clusters (Braun & Clarke, 2006). The use of a priori codes (drawn from the research aims) is considered established practice (Crabtree & Miller, 1992; Crabtree & Miller, 1999).

3.7.5 Methodological issues

The validity of these research results could conceivably be limited in the following ways, categorised in terms of internal validity (i.e., the internal cohesiveness) of the research design and external validity (i.e., generalisability) of the results (Huck, Cormier & Bounds, 1974).

Internal Validity of Research Design

First, for the years 2012 and 2014, it is not possible to ascertain what the results and retention rates of the at-risk students would have been if the students had not engaged in the learning interventions. The best that can be done is to compare their results and retention rates with the 2012 at-risk student cohort who did not have any intervention or, in the case of the 2014 cohort, to compare student outcomes with the 2012 year.

Second, the statistical analyses associated with Study 2 are cross-sectional rather than longitudinal, although analyses of how responses to key questions were associated with future performance based on secondary data collected on each student was considered. Nevertheless, in Study 1, at-risk student outcomes can be statistically compared over the years 2012 and 2014 for equivalence, insofar as they are drawn from a similar set population, and the effects of the interventions can be assessed on a new sample from the same population.
Third, it is conceivable (though there was no evidence) that some maturation could have occurred among some students between the start of first semester 2012 and the end of first semester 2014, insofar as more at-risk students over successive semesters might have become increasingly aware of university support, e.g., from talking with other students about the availability and benefits of engaging in the co-curricular interventions.

Fourth, it is possible (though again, there was no evidence) that some confounding could have occurred to the extent that, because the AS Sessions and PASS interventions were available to all students, highly motivated students who were not at risk of failure or attrition might have ‘crowded out’ at-risk students.

Fifth, in the context of the qualitative analysis, it is possible that the conclusions inferred from the thematic coding of interview responses may be somewhat inaccurate, insofar as a variety of interpretations could arise from the themes, particularly when these are drawn from large amounts of text (interview transcriptions). There was no possibility of confounding from the use of multiple encoders of themes, since all encoding was conducted by the one researcher.

Sixth, it is conceivable that nuanced information or less obvious meanings embedded in student interview responses were not captured in thematic coding, although this risk was minimised through the use of follow-up clarifying questions in the interviews themselves.

External Validity of Research Design

Finally, the generalisability of the research findings was constrained insofar as they were limited to one-degree program, one business school, one university, particular years, particular risk filters, and particular early-outcome markers, early and ongoing engagement markers, and co-curricular interventions.

3.8 Ethical Approval Process

The guiding ethical principle in studies such as this, particularly the qualitative component that is relatively intrusive, is ensuring no harm comes to the participants through the process itself or subsequent revelation of their identity at some stage of the process (Roulston, 2013; Rubin & Rubin, 2011; Saunders, Saunders, Lewis & Thornhill, 2011). The key ethical considerations are those of informed consent, confidentiality and integrity of data security, transparency in relation to intended use of the data, and a consideration and response to the perceived or actual
asymmetries of power in the interviewer/interviewee relationship (Creswell, 2012, 2013; Marshall & Rossman, 2010; Miller, Mauthner, Birch & Jessop, 2012; Ryan, Coughlan & Cronin, 2009; Willig, 2013). The last of these is a particularly relevant consideration in this study, as it involves students at a university being interviewed by an academic who may be seen as a future lecturer of these students. These issues were considered at length by the author and his supervisory team, and ethics approval was granted in the 05/14 cycle of the case-study University Human Research Ethics Committee [NR: Bachelor of Business Student Success and Retention Project” (Ref: AFE/04/14/HREC)].

All key informants at the qualitative stage of this project signed an informed-consent form. The form indicated they understood the purpose of the research study; were cognisant of the nature of their participation in the research study, including the voluntary nature of their participation; were aware of the potential risks and potential benefits of their participation in the research study; and understood that they were free to elect to not participate in this research project. Students were provided with a small thank you for their participation ($20 iPhone voucher or a double movie ticket). They were also assured that they could withdraw from the interview at any time without penalty, and their anonymity in all publications arising from their participation was guaranteed. Furthermore, they were informed during the recruitment stage and at the start of the interview that not partaking in the interview process would have no detrimental impact on their assessment or results for their courses, on their relationship with their SSA or any other staff member, or on any type of university support. Finally, all potential participants were advised that the interview process had been passed by the University Ethics Committee and all personal details would be kept confidential with pseudonyms used in the thesis.

Subsequent to the study, signed consent forms and (where relevant) hard copies of data have been stored in locked filing in the researcher’s private university office, and electronic data has been stored on subject-coded, password-protected university hard drives (Beauchamp et al., 1991; Kvale & Brinkmann, 2009; Seidman, 2012). Interviews were recorded electronically, de-identified and transcribed, and then analysed by the author of this thesis, before the sound files were destroyed. Neither the Bachelor of Business SSAs nor any other staff members were provided with any direct individual feedback from the student surveys/interviews. Student identity was not used in any of the analyses, with student identity numbers only used to track and link different data bases. While data de-identification was undertaken, there remains a risk
that subjects may be unintentionally revealed through their testimony, and care has been taken in choosing extracts from their transcripts that do not contain these particulars. At the conclusion of the interviews the students were debriefed, and if they required further information or clarification, it was provided once the formal part of the interview was completed. A full description of the information provided to all student participants at each interview and of the process to obtain informed consent is presented in Appendix A.

3.9 Summary

This chapter described the specific research question to be investigated the basic model and hypotheses to be tested; and the data, empirical constructs and methodology used to test the hypotheses. It has evaluated the internal and external validity of the methodologies employed. It has also further explained the philosophical foundations of ontology and epistemology informing the research design and methodology applied in this study.
Chapter 4 - Study 1 - Results - Examining Effectiveness of Targeted Interventions on GPA (Academic Success) through analysis of university data

4.1 Background and Purpose

4.1.1 Introduction

The case-study analysis presented in this chapter is based on the assumption, drawn from the literature that a number of key variables impact positively and negatively on a students’ academic success. Descriptive analysis of students’ academic success is examined with the key variables, attendance and participation in co-curricular activities, revealing certain patterns of successful academic outcomes. Importantly these finding are also supported by detailed statistical analysis which also evaluates the impact of other commonly cited distal and proximal variables in the academic literature.

4.1.2 Scope of Chapter

A predictive model could be particularly useful to determine how to best help students manage their own academic success as well as for university retention initiatives, since it would facilitate a comparison of the expected outcomes (as predicted by the model) with those actually achieved. In a sense the model seeks to test what could tentatively be described as a ‘positive theory of academic success’; that is, how universities, government and schools can best help students achieve their academic goals and retain these students, in addition to what positive steps students can take to enhance their chances of academic success and ultimate goal of graduation from a degree program of their choice.

The results of this testing should be viewed as exploratory only and suggestive of continued research, rather than as generating definitive conclusions regarding the probability of academic success and retention. In part, this is due to inherent limitations of applying a statistical methodology to social science research of this nature.
4.1.3 Structure of Chapter

The remainder of this chapter is structured as follows. The chapter begins by briefly describing the institution of focus (Griffith University) and placing it into the context of first year student success and retention, including the co-curricular initiatives implemented by the university. This includes how the most salient risk factors as determined by the university at the time of implementation were operationalised. A description of the status quo in 2011, the year before the targeted co-curricular interventions were collectively introduced to improve the success and retention of at-risk students. The educational scaffolding in 2011 is briefly compared to that afforded to students in 2012 and beyond. The chapter then provides descriptive statistics on the 2012 at-risk student cohort. These descriptive statistics summarise the cohort’s key characteristics, key data on student engagement during the semester, and the at-risk students’ academic success and retention outcomes before statistically examining and reporting on the related available quantitative testing (based on OLS and logit modelling) for the first semester 2012 at-risk student cohort. Finally, the implications of these results are discussed.

4.2 Case-Study University and Context

The focus of the study is on first year domestic students at a non-Group of Eight institution in a highly competitive market. The ‘Group of Eight’ is a common term used to refer to the Australian ‘Ivy League’ universities, the oldest and generally highest ranked institutions, which, in Queensland, includes the University of Queensland which like the university at the centre of this study, is in the state capital of Brisbane. The case-study University, Girfith, is a large multi-campus metropolitan public university in south-eastern Queensland. With 44,000 students (80 percent domestic and 20 percent international) and around 4,000 full-time equivalent staff, it is Australia’s ninth largest higher education provider and the third largest of the ten universities in Queensland. Around 70 percent of its enrolment are from school leavers with the balance from various pathways. About 90 percent of its students’ study via the on-campus mode of education, although actual attendance at classes within the Business degree program is considered well short of this mark. The University is traditionally known for a strong social conscience approach, and in particular for providing access to students, who research suggests, may present a retention challenge: The Universities’ Academic Plan 2013–2017, Transforming the Student Experience (August 2013) states that “the university catchment area is extremely diverse in terms of its ethnic and socio-economic composition” (Griffith
University, 2013, p. 7) with over 70 percent of non-traditional students enrolled. First-to-second year retention is thus a particularly high priority of the university planners (Wilson et al., 2016).

As many as 70 percent of its students enter as FiF and up to 45 percent of students in some degree programs emerging from low socio-economic backgrounds. In this latter sense, the measure of ‘low socio-economic backgrounds’ is established through a considerable shortcut: postcodes, which list those from rural and remote settings (not necessarily from poor backgrounds) as ‘low socio-economic status’, for example. Further characteristics that distinguish these students as being non-traditional are reflected in the following cohort similarities. They frequently have lower OP entry levels and are often working full-time or working a large number of casual or part-time hours to just make ends meet, which is a typical reality for FiF students. It also means that unlike traditional students they are not on-campus very often outside scheduled class times, and often miss classes because of their outside work commitments; thus, often working well beyond the number of hours that allow for a study/work/life balance.

In the Business School’s Bachelor of Business First Year Degree Program, students can enrol into one to five courses of their own choice across first, second or third year as the enrolment system does not prevent students from their choice of courses, allowing for ‘flexibility’. Clearly, students are strongly discouraged from enrolling in later year courses by staff wherever possible but there is nothing to prevent them from doing so. As students are able to enrol into any combination of courses this means sometimes students can enrol into what are considered numeracy-based courses (i.e accounting, statistics and/or economics) or literacy-based courses (business informatics, employment relations, government business relations, management concepts, and/or marketing) or a combination of both literacy and numeracy courses. If first year students are recognised as having enrolled in all numeracy or all literacy courses or second or third year courses, staff will attempt to encourage students to complete a more balanced course load. This study’s student cohort all completed only first year courses, after this issue was identified for some of these students at time of orientation.

4.2.1. Data about the ‘at-risk’ problem at institution of study

Table 4 listed below demonstrates the percentage of students enrolled into first year courses at the institution in 2010, but then having transferred to another institution in 2011. The Table
demonstrates one aspect of the retention, or put in negative terms, attrition concerns that the Student Success Project sought to address. At that time, prior to the implementation of the Project, the University had the highest undergraduate student transfer (stop-out) rate by public institutions (those categorised as public universities) in Australia (DIISRTE Students: Selected Higher Education Statistics, Attrition, Progress and Retention, 2011, Table 4.7) as published in Widening Participation in Australia in Higher Education (Gale et al., 2013).

Table 3: Lowest and highest undergraduate student transfers by institution, 2011

<table>
<thead>
<tr>
<th>Ten lowest undergraduate student transfers, 2011</th>
<th>Percentage point difference (the extent of student transfer)</th>
</tr>
</thead>
<tbody>
<tr>
<td>University of Tasmania (non-aligned)</td>
<td>3.19</td>
</tr>
<tr>
<td>The University of Melbourne (Go8)</td>
<td>3.88</td>
</tr>
<tr>
<td>Charles Sturt University (RUN)</td>
<td>4.15</td>
</tr>
<tr>
<td>Monash University (Go8)</td>
<td>4.42</td>
</tr>
<tr>
<td>University of South Australia (ATN)</td>
<td>4.55</td>
</tr>
<tr>
<td>Central Queensland University (RUN)</td>
<td>4.66</td>
</tr>
<tr>
<td>The University of Newcastle (IRU)</td>
<td>4.74</td>
</tr>
<tr>
<td>James Cook University (IRU)</td>
<td>4.80</td>
</tr>
<tr>
<td>Curtin University of Technology (ATN)</td>
<td>4.89</td>
</tr>
<tr>
<td>Deakin University (non-aligned)</td>
<td>5.02</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Ten highest undergraduate student transfers, 2011</th>
<th>Percentage point difference (the extent of student transfer)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Murdoch University (IRU)</td>
<td>6.57</td>
</tr>
<tr>
<td>The University of Queensland (Go8)</td>
<td>6.63</td>
</tr>
<tr>
<td>Swinburne University of Technology (non-aligned)</td>
<td>6.90</td>
</tr>
<tr>
<td>La Trobe University (IRU)</td>
<td>7.16</td>
</tr>
<tr>
<td>University of the Sunshine Coast (RUN)</td>
<td>7.17</td>
</tr>
<tr>
<td>Southern Cross University (RUN)</td>
<td>7.65</td>
</tr>
<tr>
<td>Australian Catholic University (non-aligned)</td>
<td>8.19</td>
</tr>
<tr>
<td>University of Western Sydney (non-aligned)</td>
<td>8.81</td>
</tr>
<tr>
<td>Victoria University (non-aligned)</td>
<td>9.10</td>
</tr>
<tr>
<td>Griffith University (IRU)</td>
<td>9.28</td>
</tr>
</tbody>
</table>


Of further concern for the case-study’s University’s Business School in 2012, the year that the Project commenced, was that the university’s business management courses (Column 1) had
less favourable attrition and retention rates when compared to its main competitors in South East Queensland as per Table 5 below.

Table 4: Major South East Queensland University business management courses attrition rates

<table>
<thead>
<tr>
<th>University - Business Management Courses (2011)</th>
<th>Case Study University (Griffith)</th>
<th>City University 1 (University of Queensland)</th>
<th>City University 2 (Queensland University of Technology)</th>
<th>Other SEQ University (Bond University)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Student Outcomes (Attrition Rate) - Domestic Students*</td>
<td>26.2</td>
<td>13.90</td>
<td>13.5</td>
<td>7.9</td>
</tr>
<tr>
<td>Adjusted attrition rate**</td>
<td>16.4</td>
<td>6.10</td>
<td>8.8</td>
<td>7.9</td>
</tr>
<tr>
<td>Student Outcomes (Retention Rate) - Domestic Students*</td>
<td>77.5</td>
<td>87.00</td>
<td>87.6</td>
<td>90</td>
</tr>
<tr>
<td>Adjusted retention rate**</td>
<td>84.5</td>
<td>92.00</td>
<td>91.1</td>
<td>91</td>
</tr>
</tbody>
</table>

* Attrition rate is defined for commencing, domestic, undergraduate students. It is the number of students in year (x) who neither complete nor return to study.

** Adjusted attrition rate is defined for commencing, domestic, undergraduate students. It is the number of students in year (x) who neither complete nor return to study in the following year (x + 1) as a percentage of all commencing domestic undergraduate students taking into account students who move to another university.

*** The retention rate displayed did not include students who move to another university.

**** The adjusted retention rate is defined for the number of domestic students who undertook an undergraduate course in year (x) and continue studying in year (x + 1) as a proportion of all domestic students who undertook an undergraduate course in year (x) and did not complete a course in year (x) taking into account students moving to another university.

(Source: MyUniversity Government Website 2013).
4.3 Educational Scaffolding for Students under the Status Quo (2011)

No relevant co-curricular interventions were in place in 2011 targeting only at-risk first year students, although a range of educational scaffolding measures had been introduced. Much of the educational effort directed at undergraduate business students within the Business School in 2011 was directed at enhancing the learning outcomes and university experiences of all students, not just those in first year who may have been perceived to be at-risk of academic failure or attrition. The Business School sought to introduce whole-of-cohort initiatives, such as encouraging and supporting talented students from equity backgrounds (e.g., students from low socio-economic and FiF backgrounds) to enrol in the Bachelor of Business degree program. In practice, this meant, allowing all students to take advantage of centrally-paid discipline-specific tutors and generalist learning advisors external to the Business School who assisted these students with their studies and assessment pieces as required. For example, indigenous students were supported by discipline-specific tutors based in the indigenous Student Support Unit, which facilitates the Indigenous Tutorial Assistance Scheme within the university for Aboriginal and Torres Strait Islander students and is funded by the Department of Prime Minister and Cabinet (PM&C). PM&C funding covers the costs associated with providing tutors, but there is no charge to the students themselves. Other equity students could take advantage of generalist central learning advisors based in the university library, while international student could take advantage of help via the English Help Program run by the University English Language Institute (GELI).

Other whole-of-cohort initiatives included offering general orientation workshops in the week preceding the commencement of first semester; appointing a number of First Year Advisors from academic staff in the undergraduate Business degree program to act as mentors to first year students; introducing blended learning advisors and curriculum consultants to work with staff to enhance the curriculum and assist with the transition to greater online learning and introducing electronic online marking rubrics for key assessment items, designed to inform students of the criteria on which they would be assessed, and give immediate, meaningful student feedback consistent with those criteria.

The Business School also introduced a so-called ‘amber risk' strategy (a traffic light analogy) designed to identify students who failed their first item of assessment in or about Week 4 of
the semester, so that teaching staff could support their study efforts and encourage them to invest more time-on-task, or suggest complementary services (e.g., counselling) if appropriate. It also implemented ‘quality assurance’ measures, consistent with accreditation by the Association to Advance Collegiate Schools of Business (AACSB) and designed to ensure that all students within the degree program learned key skills (e.g., written and oral communication, critical thinking, ethical implications of decisions, content knowledge) consistent with the explicitly articulated learning goals of the program; offered its teaching staff multiple opportunities for enhancing their learning and teaching skills in line with best practice for first year classes; encouraged peer review of teaching, particularly in first year classes; and developed an online system for student evaluations of courses and teaching (Griffith University, 2010, pp. 1, 7).

While these measures provided undoubtedly useful complements to the first-year university experiences of all business students, no students, except perhaps those captured by the ‘amber risk’ strategy, were targeted specifically to at-risk first year students. Certainly, none of the embedded co-curricular interventions investigated in this thesis were thus systematically targeted at-risk first year Business students in 2011. This is not to say that individual teaching staff did not seek to assist at-risk students (e.g., those identified as being at risk using the ‘amber risk’ strategy) with academic skills development, of course many did as part of their employment contracts, but also as part of the psychological contract with students, often going out of their way to do so. This was more a triage, rather than concerted, organised or institutional response. These efforts at educational scaffolding for at-risk first year were not systematically applied across all at-risk students in the cohort.

There was in fact no systematic way to identify all at-risk students early in the semester; interventions almost invariably targeted all students, rather than deliberately at-risk students; they were not embedded systematically in the program to target at-risk first year students; and they were not necessarily co-curricular in nature. The interventions thus were not designed as a suite of multiple interventions proffered more or less simultaneously in the one semester specifically to address the needs of at-risk students (as distinct from all students). Their timing was not necessarily optimal, insofar as at-risk students were typically identified only through the ‘amber risk’ strategy. Judging ‘amber risk’ is fraught with difficulty in applied settings, considering that the weighting, type and marking consistency of the first assessment will vary in practice. As such there remained a distinct probability of Type I and II errors. A Type I error
is equivalent to a ‘false positive’; while a Type II error is equivalent to a ‘false negative’ (Campbell and Stanley 1963). That is, some students might well fail the first assessment and be designated ‘at risk’ but not fail the course at the end of semester, while others might well pass the first assessment (not be designated ‘at risk’) but fail the course at the end of semester.

4.4 Rationale and Modifications to Student Support since Last Year

Three main interventions, the SSA Consultations, AS Sessions and PASS, were systematically made available for, and targeted towards at-risk first year business students in the first semester of 2012. The rationale for the introduction of the SSA Consultations and AS Sessions was to target at-risk students, in addition to specific targeting of at-risk students to attend PASS which was available in numeracy courses within the undergraduate business program. The emphasis was to provide these students with a suite of multiple embedded co-curricular interventions offered more or less simultaneously in the one semester to specifically address their needs. Based on the higher education literature, these interventions were expected to be effective, although they had never been empirically tested on at-risk first year undergraduate business students in Australia, who would then be tracked across the following six years.

Responding to Lizzio’s (2006) model, the AS Sessions and PASS were intended to enhance students’ senses of capability and connection with all university stakeholders, including the First Year Student Success and Engagement Team, but in particular the SSA. The SSA Consultations in turn were specifically designed to enhance students’ senses of resourcefulness, purpose, capability and connection with all university stakeholders, including the FYSSET, but in particular the SSA. Together, all three co-curricular interventions were designed to bolster an individuals’ sense of student identity, previously identified by Lizzio (2006) as academic culture. Thus, this thesis tests whether the intervention ‘hit its mark’.

4.5 Descriptive Statistics of 2012 Cohort Student Characteristics

This section sets out the relevant key descriptive statistics for the Semester 1, 2012 at-risk student cohort, in particular, their academic success outcomes at the end of first and second semester in 2012, and the extent to which they were retained in the second semester of 2012 and re-enrolled at the start of the following year (2013) and graduation up to 6 years later.
As noted earlier, these students were identified as being potentially at risk on entry to university using distal or static data from Queensland Tertiary Admissions Centre (QTAC). As noted earlier, the selected distal factors included two primary characteristics having a combination of: Low OP 11+ range (which is a Queensland marker for academic success at a secondary school level but known as ATAR in other Australian States) and low degree preference (i.e. having the Bachelor of Business Degree Program as a third preference or higher). Two secondary characteristics were also observed which included, low socio-economic status (SES); and speaking a Language other than English (LOTE) at home.

From the first year undergraduate Business program intake of 539 students, an original group of 68 Bachelor of Business students were identified as being potentially ‘at risk’ of academic failure and or attrition. Seven of these students withdrew for legitimate reasons around HECS Census date with no financial or academic penalty. Exit interviews were conducted for five of these seven students who discussed their reasons for dropping out with either the appointed SSA or via an exit interview with the Office of Student Success. Table 6 below outlines the reasons of departure for these students.

**Table 5: Reasons for early departure from Study (before Census) of Relevant Targeted At-Risk Students in 2012**

<table>
<thead>
<tr>
<th>Student</th>
<th>Reason(s) for Early Departure (Drop-Out)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>To complete an education degree after deferment</td>
</tr>
<tr>
<td>2.</td>
<td>To study fashion at TAFE</td>
</tr>
<tr>
<td>3.</td>
<td>Glandular Fever – Deferred (Never returned)</td>
</tr>
<tr>
<td>4.</td>
<td>To study science or engineering pre-requisites at TAFE</td>
</tr>
<tr>
<td>5.</td>
<td>Running business and not enough time to dedicate to studies</td>
</tr>
<tr>
<td>6.</td>
<td>Not contactable</td>
</tr>
</tbody>
</table>
As these students did not attend any substantive co-curricular activities during the semester and are not recognised by the federal government as being part of relevant retention data, they were not included in the statistical analysis. The remaining potentially at-risk cohort of students represented 11.3 percent of the Brisbane Bachelor of Business commencing student intake (61/539). The profile breakdown is shown in Table 7 below:

<table>
<thead>
<tr>
<th>Course: Bachelor of Business</th>
<th>n = 61 (11.3% of B.Bus Students)</th>
</tr>
</thead>
<tbody>
<tr>
<td>OP range (TE Score) Range (Primary characteristic)</td>
<td>11 – 18</td>
</tr>
<tr>
<td>Degree Preference Range (Primary characteristic)</td>
<td>3 – 6</td>
</tr>
<tr>
<td>Low SES [based on Postcode Index] (Secondary characteristic of students selected)</td>
<td>9.8%</td>
</tr>
<tr>
<td>LOTE (Secondary characteristic of students selected)</td>
<td>11.5%</td>
</tr>
<tr>
<td>FIF</td>
<td>Not available</td>
</tr>
</tbody>
</table>

Source: University student data (Retrieved 2013).

4.6 Description of Interventions

The approach to understanding and approaching student risk and developing staff protocols was based on three propositions as enunciated by Lizzio (2015) as follows:

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). Second, 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 (Lizzio, 2015).

4.6.1 SSA Role

As part of the First Year Student Success and Engagement Team, the SSA role as a discipline-specific learning advisor (rather than a generalist learning advisor attached to, for example, the central university library) was embedded into the undergraduate Business Degree Program before the commencement of first semester in 2012. The rationale for locating an embedded learning advisor within the program was in order to “locate student help as closely as possible to student need” (Percy et al., 2004; University, 2012, p. 1). The SSA was appointed on a contract of 4 days a week to engage with the at-risk students, in addition to targeting at-risk students to attend AS Sessions and PASS. A number of tools were developed to assist the SSA and other first year team members implementing the program interventions. These included a suite of strategies, rather than merely a single monolithic approach, aimed at identifying implications for best practice in the area of success and retention of at-risk first year students.

The role was specifically designed to target students who had been identified as being at possible risk of failure and attrition from the University. At-risk students were monitored using proximal intervention engagement and outcome markers: the number and percentage of at-risk students who attended SSA Consultations, AS Sessions, and PASS. Targeting this student group required the university staff to profile the cohort of commencing students and secondly build a database to monitor the progress of the students selected as being at possible risk of failure and/or attrition and support their academic and personal skills development. A university database was used to track the ‘at-risk’ students (T61 group) over the OSS markers, workshop attendances, PASS attendances, mid-semester progress and final Pass/Fail of all courses attempted. The SSA also designed a ‘Referral Index’ to be used by convenors, lecturers and tutors to channel students who required any kind of social or academic support to the SSA and other student services.

4.6.2 SSA Consultations

The first strategy was to actively target for individual consultations students considered at risk using predictive analytics. Student consultations were developed to encourage at-risk students
to build a psychological contract between the student, the SSA and the university. The framework for the consultations was developed within the context of Lizzio’s (2006) ‘Five Senses of Success’ Model. As part of this process the ‘Five Senses of Success’ Framework was used to guide the logic of the interview process using a series of questions which followed the strategic order as follows. First, the SSAs were asked to begin with discussing sense of purpose, to build aspiration and focus for being at university. They explored the students’ background and how that shaped, or could reshape, the way they saw their path at university. The discussion was then moved to a ‘sense of connection’ theme, to explore the students’ key relationships that adhered them to the university, campus and course. The SSAs then moved to ‘sense of capability’ theme, helping the student explore their academic history and developmental needs. They then focused on resources required to deliver their needs (‘sense of resourcefulness’) to enable the development of academic capability. This aspect of the consultation finished with a conversation focused on ‘sense of student identity’ to strengthen sense of belonging and personal fit at university.

Mindful of the University’s approach to at-risk students, the SSA proactively reached out to the potentially at-risk students by attempting to contract them by phone (e.g., phone calls and text messages) and email to help them plan not only their study routine, but also their engagement with co-curricular study support services such as SSA Consultations, AS Sessions and PASS. This attempted contact commenced before the semester started although many students were not able to be contacted until several weeks into the first semester. On most occasions, several attempts at contacting the individual students were required. Eventual contact allowed the SSAs to make in person appointments to speak to the students one-on-one in regard to appropriate adjustments (if necessary) to help them settle into university, set personal academic goals and create successful study habits, in addition to offering the support of learning services and pastoral care. The First Year Student Success and Engagement Team, including the SSA, also made themselves visible at several co-curricular events held where the at-risk students were likely to be in attendance (e.g., Early Bird Workshops, GUMMURI Hands-Up Session, Uni-Skills, the Orientation Session and O’Week activities). The content of these SSA Consultations was semi-structured whilst also allowing for student questions. Based on student concerns and interests, the SSA gave advice and directed students to pre-existing university resources and student societies, such as the International Office, English-Help, Learning Advisors, Program Services Officers and Academic Credit Officers in addition to
students being guided to online resources. These sessions also involved the co-constructing of a Study Success Plan with the focal areas of these consultations listed in Table 8.

**Table 7: Content of individual consultations**

<table>
<thead>
<tr>
<th>Effective time-management</th>
</tr>
</thead>
<tbody>
<tr>
<td>Foster motivation and engagement</td>
</tr>
<tr>
<td>Link student with resources</td>
</tr>
<tr>
<td>Discuss importance of submitting assignments on time</td>
</tr>
<tr>
<td>Discuss importance of in person and online attendance</td>
</tr>
<tr>
<td>Create a study plan</td>
</tr>
<tr>
<td>Making students aware of student societies</td>
</tr>
</tbody>
</table>

*Source: University Project (2012).*

The protocol established required the SSAs to begin the consultation in a way that focussed on the relationship in an attempt to build rapport with the individual students. After building of rapport with the students via discussion about the ‘Five Senses of Success’ Model, next the SSA used a ‘Checklist for Success’, which summarised seven key predictors that have been recognised in the academic literature as helping students to be successful in their first year at university. The ‘Checklist for Success’, which is also covered during orientation sessions for the whole Bachelor of Business cohort, is summarised as follows in Table 9:

**Table 8: ‘Checklist for Success’**

<table>
<thead>
<tr>
<th>Key Predictors of Success</th>
<th>Reasoning</th>
<th>Sense of</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Invest Time on Task</td>
<td>Every course requires an average of 10 hours per week so put time aside to study</td>
<td>Purpose</td>
</tr>
<tr>
<td>2. Attend all Classes (lectures and small classes)</td>
<td>Attending all lectures and tutorials is important to build a</td>
<td>Capability</td>
</tr>
</tbody>
</table>

Connection |
### Focus on your Goals
Determine where you want your degree to take you and keep focused on that goal

### Develop your self-confidence
Understanding what is expected at University builds confidence

### Build peer relationships
Having a small social network at University can help you feel connected and supported

### Engage online with Learning@Griffith
Check course content by accessing Blackboard (Intranet) and checking your student email regularly is essential

### Balance work-life-study commitments
Find a balance between study, social/family and work commitments

---

*Source: University Project (2012).*

Written and oral report feedback from the SSA suggested emphasising the importance of time management and the importance of taking advantage of the extra help provided by the university via the AS Sessions and PASS being crucial. Based on data from previous Bachelor of Business first year student cohorts, the SSAs were aware that the numeracy-based courses had a higher failure rate than non-numeracy-based courses and therefore students were advised to consider spreading these courses across multiple semesters, rather than completing them all at the one time. The other issues most commonly centred on assessment items, program information and workshop content.

To improve time-management for students, the SSA developed a timetable of strategic activities designed for enabling early student engagement from point of offer through the early weeks of semester. Anecdotal evidence suggests that this was often built with the student present to allow for guidance from the SSA, but also input from the student, developing capability and resourcefulness. After this had occurred the SSA finished the consultation session with a SMART (Specific, Measurable, Attainable, Realistic and Timely) Success
Action Plan. This included creating a timetable of important university dates (e.g., assignment due dates, tests and exams) in addition to considering how the student may schedule their university, work and social time. The SSAs also proactively followed up at-risk students who failed to engage in these interventions, or failed their first assessment item, with telephone calls and emails in an attempt to improve student engagement and ultimately the likelihood of retention. In summary, the sessions were friendly but intense, detailed, specific and involved a high degree of follow-up on the part of the SSA officer where possible.

4.6.3 Descriptives of SSA Consultations

During the semester, just 42 of the 61 students (68.9%) responded to SSA contact, despite the intensity of contact attempts by the SSA, attending at least one SSA consultation. Of the 42 (68.9%) students who attended an SSA consultation, 18 (42.85%) attended more than one consultation with the SSA, with a total of 67 SSA Consultations being conducted throughout the semester with this group as per Table 10 below. The same table shows the number of the at-risk student cohort who had multiple interactions with the SSA (18 of the 61) as a percentage of the total cohort (approximately 29.5%). During those SSA Consultations when students attended more than once, the students primarily received counselling and guidance in regard to navigating the university system and understanding university policies in regard to deferred assessment, special consideration and other student support services with regard to personal issues affecting their studies (e.g., the death of a student’s father), in addition to general matters of importance to these students.

<table>
<thead>
<tr>
<th>Total Number of SSA Sessions Attended</th>
<th>(Number of Students)</th>
<th>Percent</th>
<th>Cumulative Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>19</td>
<td>31.1</td>
<td>31.1</td>
</tr>
<tr>
<td>1</td>
<td>24</td>
<td>39.3</td>
<td>70.5</td>
</tr>
<tr>
<td>2</td>
<td>12</td>
<td>19.7</td>
<td>90.2</td>
</tr>
<tr>
<td>3</td>
<td>5</td>
<td>8.2</td>
<td>98.4</td>
</tr>
<tr>
<td>4</td>
<td>1</td>
<td>1.6</td>
<td>100.0</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>--------------------------------</td>
<td>-------</td>
<td>-----</td>
<td>-----</td>
</tr>
<tr>
<td>Total (Cohort)</td>
<td>61</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Total Attending at least one</td>
<td>42</td>
<td>68.9%</td>
<td>-</td>
</tr>
<tr>
<td>SSA Consultation</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total number of SSA Consults</td>
<td>67</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>held</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*Source: University Database (Retrieved 2013).*

### 4.6.4 Effect of lack of attendance at SSA Consultations on Overall Failure Rate

Of the 42 students who attended an SSA Consultation, 33 (78.57%) had a passing GPA (>4) at the end of first semester, while nine of the 42 (21.43%) students had a failing GPA. Of the 19 students who did not attend any SSA Consultations 11 (57.89%) had a passing GPA and eight (42.10%) had a failing GPA as shown in Table 11.

#### Table 10: SSA Consultations & GPA

<table>
<thead>
<tr>
<th>Attended SSA Consult (42)</th>
<th>Did Not Attended SSA Consult (19)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Attended SSA Consult</td>
<td>Did not attend SSA Consult</td>
</tr>
<tr>
<td>&amp; Passing GPA (&gt;4)</td>
<td>&amp; Passing GPA (&gt;4)</td>
</tr>
<tr>
<td>33 out of 42 (78.57%)</td>
<td>11 out of 19 (57.89%)</td>
</tr>
<tr>
<td>Attended SSA Consult</td>
<td>Did not attend SSA Consult</td>
</tr>
<tr>
<td>&amp; Failing GPA (&lt;4)</td>
<td>&amp; Failing GPA (&lt;4)</td>
</tr>
<tr>
<td>9 out of 42 (21.43%)</td>
<td>8 out of 19 (42.10%)</td>
</tr>
</tbody>
</table>

*Source: University Database (Retrieved 2013).*

In total 44 of the 61 (72.13%) students considered to be at-risk of academic failure and attrition had a passing GPA (>4) at the end of first semester, while 17 had a failing GPA. Nine of the 17 students (52.94%) who failed at least one course during the first semester and had a failing
GPA (<4) attended one SSA Consultation, but only one of these students attended more than one SSA Consultation. The same student was the only one of the 18 (5.55%) students who attended more than one SSA consultation and had a failing GPA (<4) at the end of the semester, having failed a numeracy course, but having not attended PASS as advised by the SSA. Thus, on the measure of failing GPA alone, failure to attend the consult appeared to be associated with doubling of GPA failure.

4.7 AS Sessions

The AS Sessions were designed to coincide with the assignment due dates in four core Bachelor of Business literacy-based courses that had a major written task as part of their assessment. As part of the students developing the academic skills required for completing the major pieces of assessment, the SSA, in conjunction with the campus Learning Advisors, generally staff attached to the university library, and the FYA developed a series of three AS Sessions. From the outset, it was intended that the sessions serve multiple purposes and would again be based around Lizzio’s (2006) Five Senses Model. The sessions primarily focussed on each major piece of assessment within the courses, but also provided the students with the academic skills to successfully complete each piece of the written task within the courses. Furthermore, as part of building on the Five Senses Model, the sessions were intended to develop the students sense of capability (in terms of academic skill building), resourcefulness (in terms of being able to find information when required), purpose (having the students thinking about their reasons for studying a business degree) and connection (to both their peers and other staff present at the sessions). In turn building a sense of culture and identity. There was not one single failure in a literacy course from a student who attended at least one AS Session.

As part of designing the AS Sessions, the SSA also designed an ‘Assessment Flow Chart’ outlining the various assessment pieces within each course taught in the first year of the Bachelor of Business Degree Program. This allowed for both academic staff and students to have mapped out for them, the weighting and timing of each of the assessment items within all eight first year courses. Considering the students in the Business School are able to choose one up to a maximum of five courses from a combination of any of the eight first year courses during each semester, this helped students and staff review timing of assessment pieces within their own combination of courses very early in the semester and allowed for the timing of assessment to be discussed with students during the SSA Consultations when addressing the
issue of time management, and amongst staff generally. Mapping also allowed for organising the timing of the AS Sessions in regard to trying to prevent timetabling clashes and for making the AS Sessions close to due dates, but still allowing enough time for work to be completed. This initiative was a ‘Just-in-Time’ approach as anecdotal evidence from previous semesters suggested that most at-risk students and first year students in general tend to address assignment tasks quite close to the due dates.

The AS Sessions were a primary element in the intervention as a co-curricular strategy and had a distinctly different focus from the PASS set out below, which primarily dealt with numeracy skills. Similar to PASS, these skills sessions were open to all students enrolled in the Bachelor of Business courses but were specifically targeted at the cohort of students considered to be at-risk of possible failure and or attrition.

Three types of workshops were created to address fundamental academic skills including broad approaches to study (Week 1 and repeated in Week 2), research and writing skills (Week 5 and repeated in Week 6) and referencing (Week 7). The general sessions were about one to two hours in length (allowing for networking and discussion at the end of the sessions), and included time management, note taking, and strategies for approaching written assignments. The more specific academic and writing workshops were two hours in length, and included essay and report structure, plus use of library data-bases. These workshops were repeated to enable a wider participation in these sessions. The referencing workshops were one hour in length and addressed common referencing styles and the use of Endnote software.

**Table 11: AS Sessions Total Attendance by At-risk Students**

<table>
<thead>
<tr>
<th>Number of AS Sessions</th>
<th>Attendance Numbers</th>
<th>Percent</th>
<th>Cumulative Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>45</td>
<td>73.8</td>
<td>73.8</td>
</tr>
<tr>
<td>1</td>
<td>14</td>
<td>23.0</td>
<td>96.7</td>
</tr>
<tr>
<td>2</td>
<td>2</td>
<td>3.3</td>
<td>100.0</td>
</tr>
<tr>
<td>3</td>
<td>0</td>
<td>0.0</td>
<td>100.0</td>
</tr>
<tr>
<td>Total</td>
<td>61</td>
<td>100.0</td>
<td></td>
</tr>
</tbody>
</table>

*Source: University Database (Retrieved 2013).*
4.8 PASS

Neither secondary school mathematics nor science-based subjects are prerequisites to enrolment in the undergraduate business degree program at the University. It is possible with these required components of numeracy-based disciplines, including accountancy, economics and statistics. Designers of these courses start with flawed assumptions about capability. There are no remedial/introductory maths courses in the Bachelor of Business degree program curriculum. Instead, PASS is conducted as an additional, non-compulsory learning opportunity within the business school first year courses (accounting, economics and statistics). As such it is only available to those students enrolled in those particular courses. PASS is attached to those courses because, based on academic results of previous students, these courses have been recognised as traditionally being the most challenging of the Bachelor of Business students’ first year courses, if not perhaps for many students, much of the degree.

Similar to other academic institutions that have PASS attached to their courses, the programs are conducted primarily by academically successful final-year undergraduate business students. In 2012 those students who were considered to be potentially at-risk of academic failure and attrition were specifically targeted to attend these sessions via encouragement by the First Year Student Success and Engagement Team. Uptake of the PASS program within the at-risk group of 61 students was not to expectations, with enrolment proportions not matched by actual attendance (see Table 13 below). The actual attendance figures at PASS in Semester 1 2012 were low. For example, only 48 out of the 61 students identified as being at-risk enrolled in numeracy-based (non-literacy) courses in the first semester of 2012 (78.68%), making them eligible to attend the optional PASSs attached to those courses. Despite their risk, and despite the strong institutional support for PASS (mentioned by lecturers in class for example).

<table>
<thead>
<tr>
<th>Number of Courses</th>
<th>Number of Students</th>
<th>Percent</th>
<th>Cumulative Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>13</td>
<td>21.3</td>
<td>21.3</td>
</tr>
<tr>
<td>1</td>
<td>22</td>
<td>36.1</td>
<td>57.4</td>
</tr>
<tr>
<td>2</td>
<td>26</td>
<td>42.6</td>
<td>100.0</td>
</tr>
</tbody>
</table>

Table 12: Number of Students enrolled in Courses with PASS Attached
Total number of students enrolled in PASS Courses: 48 (78.7%) of the at-risk cohort of 61 students.

No students were enrolled in all 3 courses with PASS attached.

Source: University Database (Retrieved 2013)

Of those 48 students enrolled in courses with PASS attached, 10 (20.83%) attended at least one PASS throughout the semester. However, early in the semester by Census cut-off date in week 4, only 6 of the 48 (12.5%) eligible students had attended at least one session. At that time the SSA made additional proactive contact with students to further encourage attendance. Although this increased the attendance figures of this group of 48 students to date by 40%, it added only a further 4 students overall of the remaining 42 students who had not previously attended.

4.8.1 PASS and Numeracy Course Results

As evidenced in Table 14 below, of the 48 students who completed at least one numeracy-based course (i.e. a course with PASS attached), 33 (68.8%) had a passing GPA at the end of the first semester, with 15 (31.2%) students having failed at least one numeracy course.

<table>
<thead>
<tr>
<th>Number of Students who failed/passed courses with PASS attached*</th>
<th>Number of Students</th>
<th>Percent</th>
<th>Cumulative Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Failed 1 Course with PASS Attached</td>
<td>9</td>
<td>18.8</td>
<td>18.8</td>
</tr>
<tr>
<td>Failed 2 Courses with PASS Attached</td>
<td>6</td>
<td>12.5</td>
<td>31.3</td>
</tr>
<tr>
<td>Passed all Courses with PASS Attached</td>
<td>33</td>
<td>68.8</td>
<td>100.0</td>
</tr>
<tr>
<td>Total</td>
<td>48</td>
<td>100.0</td>
<td></td>
</tr>
</tbody>
</table>
Number of students who failed at least 1 Course with PASS Attached | 15 | 31.3

# During Semester 1, no student completed more than two numeracy courses

Source: University Database (Retrieved 2013).

As evidenced in Table 15 below, of the 22 students who completed only one numeracy course, five (22.72%) students failed to successfully complete the course that semester. While 10 of the 26 students (38.46%) who completed two numeracy courses failed one of those two numeracy courses. Six of those same 10 students failed both numeracy courses. Due to help by the SSA with changes to student enrolment during Orientation Week, no student considered to be at risk of failure and or attrition attempted all three numeracy-based courses during their first semester at university. In the following section the impact of PASS attendance is considered.

Table 14: PASS Results - Number of students enrolled into courses with PASS attached and failed (eligible Students) and attendance at PASS

<table>
<thead>
<tr>
<th>Number of Courses enrolled into with PASS Attached and failed*</th>
<th>Number of Students enrolled &amp; failed at least one numeracy course</th>
<th>Percent</th>
<th>Number of failing students who attended PASS</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Enrolled in 1 Course with PASS attached</td>
<td>5 of 22</td>
<td>22.72%</td>
<td>0 out of 5</td>
<td>0 %</td>
</tr>
<tr>
<td>Enrolled in 2 Courses with PASS attached</td>
<td>10 of 26 (6 of these students failed both courses)</td>
<td>28.46%</td>
<td>0 of 10</td>
<td>0 %</td>
</tr>
</tbody>
</table>

During Semester 1 no student completed more than two numeracy courses
4.8.2 Effect of Numeracy Courses and lack of attendance at PASS on Overall Failure and Success Rates

Of the 61 students enrolled in the Bachelor of Business Degree Program, 17 had a failing GPA at the end of the first semester (i.e. less than a passing grade < 4). Two of these 17 (11.76%) students failed a literacy-based course. Of these two students, only one was enrolled in numeracy-based courses, and successfully completed both of these. The other student completed only literacy-based courses, failing two of the four. Of the remaining 15 out of 17 students who had a failing GPA at the end of the first semester, all failed at least one numeracy course. That is, a total of 15 of 16 (93.75%) students who were enrolled in at least one numeracy-based course and had a failing GPA had failed at least one of those numeracy-based course. None of these 16 students attended a single PASS.

Table 15: Students with failing GPA and enrolled in numeracy courses and did not attend PASS

<table>
<thead>
<tr>
<th>Number of students enrolled in at least one numeracy course and had a failing GPA at the end of Semester 1</th>
<th>Number of students enrolled in at least one numeracy course and had a failing GPA at the end of Semester 1 and failed at least one numeracy course</th>
<th>Number of students who failed at least one numeracy course and attended PASS</th>
</tr>
</thead>
<tbody>
<tr>
<td>16</td>
<td>15 of the 16 (93.75%)</td>
<td>0 out of 15 (0%)</td>
</tr>
</tbody>
</table>

Source: University Database. (Retrieved 2013).

As discussed below only 51 of the original students re-enrolled into Semester 2, 2012. Of the 51 re-enrolled students, only 20 (39.21%) enrolled into numeracy-based courses. Eleven of these students only enrolled in a single numeracy-based course. Eight of the students who failed that numeracy-based course. All eight of these students had a GPA of 1.5 for that second semester of university studies, effectively meaning that they were likely to have been a ‘no-
show’ or ‘defaulter’. The remaining three students had a passing GPA in Semester 2, 2012. Of the six students who enrolled in two numeracy-based courses, five of these students failed at least one of those courses, with two students failing both courses. All of the three remaining students who enrolled into three numeracy-based courses failed at least one course, with one student failing two courses and the other student failing all three courses as discussed below.

4.9 Risk markers

As noted in Chapter 2, emphasis in the literature on early disengagement and failure leading to attrition meant that five proximal risk lifecycle and early engagement markers known to predict student engagement and retention (Wilson & Lizzio, 2011) were tracked, including attendance at orientation, early engagement with the university’s online system, attendance at early tutorials, and submission and successful completion of early assessment items. Part of the SSA’s role was to ensure the collection of this data by the relevant course convenors during Semester 1, 2012. This data was collected across compulsory gateway courses so that progress of the 61 students could be monitored and supported by the team working on the intervention. The SSA actively monitored at-risk students and attempted to address any alerts presented by failure to meet markers, such as non-attendance at orientation, not logging on to the course sites within the first two weeks of semester or attending the early tutorials. All these markers occurred within the first three weeks of semester and therefore allowed time for the SSA to contact these students to warn them about still incurring a HELP liability government debt if they were still enrolled past Census Date but had decided that they were not going to attend university that semester. As students who withdraw from their studies before Census Date (end of Week 4) are not included in retention rates used by the Federal Government, the University takes the strategic approach of trying to contact all students who have been recognised as not engaging during the early weeks of semester. It is one of the few guaranteed ways of improving retention as those students who were not going to attend would have otherwise been counted in the government census and therefore attrition rates.

4.10 Student ‘Engagement’ Data

Key engagement data for the Bachelor of Business Semester 1, 2012 at-risk cohort are set out in Table 17. Where available this data is compared to the remaining students enrolled Bachelor of Business during Semester 1, 2012.
<table>
<thead>
<tr>
<th>TIMING - STUDENT LIFECYCLE</th>
<th>EARLY ENGAGEMENT/RISK MARKER</th>
<th>OUTCOME</th>
</tr>
</thead>
<tbody>
<tr>
<td>Orientation Week</td>
<td>Attendance at Orientation (at-risk cohort)</td>
<td>44.3% (27/61)</td>
</tr>
<tr>
<td></td>
<td>BBus Program attendance BBus Program attendance (other BBus Students)</td>
<td>85% (406/478)</td>
</tr>
<tr>
<td></td>
<td>Overall BBus Program attendance</td>
<td>86.67% (467/539)</td>
</tr>
<tr>
<td>End Week 2</td>
<td>Accessing L@G (at-risk cohort)</td>
<td>91.80% (56/61)</td>
</tr>
<tr>
<td></td>
<td>BBus Program attendance (other BBus Students)</td>
<td>89.33% (427/478)</td>
</tr>
<tr>
<td></td>
<td>Overall BBus Program access</td>
<td>90.53% (488/539)</td>
</tr>
<tr>
<td>End Week 3</td>
<td>Attendance at tutorials (at-risk cohort)</td>
<td>81.96% (50/61)</td>
</tr>
<tr>
<td></td>
<td>BBus Program attendance (other BBus Students)</td>
<td>88.28% (422/478)</td>
</tr>
<tr>
<td></td>
<td>Overall BBus Program attendance</td>
<td>89.61% (483/539)</td>
</tr>
<tr>
<td>Week 5</td>
<td>Submitted early literacy-based assessment task (at-risk cohort)</td>
<td>91.80% (56/61)</td>
</tr>
<tr>
<td></td>
<td>(3 students did not submit and failed)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(2 students were provided an extension and passed)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Overall BBus Program attendance</td>
<td>Not Available</td>
</tr>
<tr>
<td>Week 7</td>
<td>Passed early literacy-based assessment (at-risk cohort)</td>
<td>91.80% (56/61)</td>
</tr>
</tbody>
</table>
Interestingly this was not exactly the same 5 students who did not originally submit.

| Overall BBus Program attendance | Not Available |

*Source: University student database. (Retrieved 2013).*

### 4.11 GPA (Academic Success) Descriptive Statistics

GPA outcomes as a proxy for academic success for at-risk students at the end of the first semester in 2012 are summarised in Table 18 below.

**Table 17: GPA End of Semester 1 2012**

<table>
<thead>
<tr>
<th>GPA of 61 Students</th>
<th>Frequency of GPA</th>
<th>Percent</th>
<th>Cumulative Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.50</td>
<td>2</td>
<td>3.3</td>
<td>3.3</td>
</tr>
<tr>
<td>2.12</td>
<td>1</td>
<td>1.6</td>
<td>4.9</td>
</tr>
<tr>
<td>2.13</td>
<td>1</td>
<td>1.6</td>
<td>6.6</td>
</tr>
<tr>
<td>2.33</td>
<td>1</td>
<td>1.6</td>
<td>8.2</td>
</tr>
<tr>
<td>2.37</td>
<td>1</td>
<td>1.6</td>
<td>9.8</td>
</tr>
<tr>
<td>2.75</td>
<td>3</td>
<td>4.9</td>
<td>14.8</td>
</tr>
<tr>
<td>3.38</td>
<td>5</td>
<td>8.2</td>
<td>23.0</td>
</tr>
<tr>
<td>3.63</td>
<td>2</td>
<td>3.3</td>
<td>26.2</td>
</tr>
<tr>
<td>3.88</td>
<td>1</td>
<td>1.6</td>
<td>27.9</td>
</tr>
<tr>
<td>4.00</td>
<td>5</td>
<td>8.2</td>
<td>36.1</td>
</tr>
<tr>
<td>4.20</td>
<td>1</td>
<td>1.6</td>
<td>37.7</td>
</tr>
<tr>
<td>4.25</td>
<td>14</td>
<td>23.0</td>
<td>60.7</td>
</tr>
<tr>
<td>4.33</td>
<td>1</td>
<td>1.6</td>
<td>62.3</td>
</tr>
<tr>
<td>4.50</td>
<td>1</td>
<td>1.6</td>
<td>63.9</td>
</tr>
<tr>
<td>4.75</td>
<td>5</td>
<td>8.2</td>
<td>72.1</td>
</tr>
<tr>
<td>5.00</td>
<td>6</td>
<td>9.8</td>
<td>82.0</td>
</tr>
<tr>
<td>5.25</td>
<td>3</td>
<td>4.9</td>
<td>86.9</td>
</tr>
<tr>
<td>5.50</td>
<td>3</td>
<td>4.9</td>
<td>91.8</td>
</tr>
</tbody>
</table>
As can be seen below in Table 19, 44 of the original 61 (72.1%) students passed all courses, with 17 failing at least one course (22.9%).

**Table 18: Academic Success Outcomes – 2012: Passing GPA >4 in Semester 1, 2012**

(t=1) by Targeted At-Risk Students

<table>
<thead>
<tr>
<th>TIMING - STUDENT LIFECYCLE</th>
<th>SUCCESS INDICATOR</th>
<th>OUTCOME (% Passing GPA)</th>
<th>OUTCOME (% - Failing GPA)</th>
</tr>
</thead>
<tbody>
<tr>
<td>t=1</td>
<td>Targeted Semester 1 at-risk students re-enrolled in Semester 2 (61 students)</td>
<td>72.1% (44 out of 61)</td>
<td>22.9% (17 out of 61)</td>
</tr>
</tbody>
</table>

*Source: University Database. (Retrieved 2013).*

### 4.12 Long-term outcomes of 2012 cohort

Using secondary data collected at an institutional level, it was possible to track results six years after their initial enrolment. The analysis revealed that of the 61 students only 14 (approximately 23%) had graduated at that point from the Bachelor of Business, while another three students (approximately 5%) had graduated from other degree programs within the University; two from a related degree, a Bachelor of Commerce, and one from the Bachelor of Education. So in total, 33% of students eventually graduated from this cohort. At the least, this result does confirm that the students identified for this intervention were indeed at risk of attrition.
4.13 Key Statistical Results

4.13 Testing of Multiple Linear Regression – Predictive Model of Academic Success

The remainder of this chapter reports the results of testing the hypotheses using statistical analysis. Key descriptive statistics for the dependent and independent variables used in the linear regression models to test GPA results at the end of first and second semester (academic success for Semester 1, 2012 and Semester 2, 2012) are listed in Table 20. The particular variables selected were based on the university’s management’s decision to use these factors for assessing a student’s risk of academic failure and attrition, in addition to variables considered after completing the extensive literature review.

Table 19: Descriptive statistics of Linear Model for Regression GPA Semester 1-2012

<table>
<thead>
<tr>
<th>Variable</th>
<th>N</th>
<th>Minimum</th>
<th>Maximum</th>
<th>Mean</th>
<th>Std. Deviation</th>
</tr>
</thead>
<tbody>
<tr>
<td>GPA Semester 1-2012 (Dependent)</td>
<td>61</td>
<td>1.50</td>
<td>6.25</td>
<td>4.2093</td>
<td>1.08666</td>
</tr>
<tr>
<td>Preference</td>
<td>61</td>
<td>3</td>
<td>6</td>
<td>3.69</td>
<td>.941</td>
</tr>
<tr>
<td>OP</td>
<td>61</td>
<td>11</td>
<td>18</td>
<td>14.16</td>
<td>1.734</td>
</tr>
<tr>
<td>Age</td>
<td>61</td>
<td>16</td>
<td>42</td>
<td>18.56</td>
<td>3.726</td>
</tr>
<tr>
<td>Credit Points undertaken in Semester 1, 2012</td>
<td>61</td>
<td>10</td>
<td>50</td>
<td>38.20</td>
<td>7.418</td>
</tr>
<tr>
<td>Risk Marker Total</td>
<td>61</td>
<td>0</td>
<td>5</td>
<td>.98</td>
<td>1.133</td>
</tr>
<tr>
<td>SSA Consultations Total</td>
<td>61</td>
<td>0</td>
<td>4</td>
<td>1.08</td>
<td>.988</td>
</tr>
<tr>
<td>AS Sessions Total</td>
<td>61</td>
<td>0</td>
<td>2</td>
<td>.30</td>
<td>.527</td>
</tr>
<tr>
<td>Eligible for PASS (Total)</td>
<td>48</td>
<td>.00</td>
<td>1.00</td>
<td>.7869</td>
<td>.41291</td>
</tr>
<tr>
<td>PASS Attendance</td>
<td>61</td>
<td>.00</td>
<td>1.00</td>
<td>.1639</td>
<td>.37329</td>
</tr>
<tr>
<td>Valid N (listwise)</td>
<td>61</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

In addition to the above-mentioned dependent and independent variables, the following variables as listed in Table 21 were added into the linear regression models to test GPA Semester 2, 2012 results at the end of second semester (academic success for Semester 2, 2012).

Table 20: Descriptive statistics of Linear Model for Regression GPA Semester 2-2012
The above variables yielded the following testable hypotheses, namely (co-efficients were expressed in the null hypotheses form):

i. Attendance at SSA Consultations by at-risk students during their first semester is significantly positively associated with those at-risk students achieving pass grades or higher at the end of their first and/or second semesters and/or being retained into the following semester (denoted by SSA Consults).

ii. Attendance at AS Sessions by at-risk students during their first semester is significantly positively associated with those at-risk students achieving pass grades or higher at the end of their first and/or second semesters and/or being retained into the following semester (denoted by AS Sessions).

iii. Attendance at PASS by at-risk students during their first semester is significantly positively associated with those at-risk students achieving pass grades or higher at the end of their first and/or second semesters and/or being retained into the following semester (denoted by PASS).

Non-attendance at a combination of co-curricular activities early in the semester will be positively associated with those at-risk students receiving failing grades at the end of their first and/or second semesters and/or failing to persist into the following semester. These co-curricular activities were defined as: orientation; logging onto course sites within the first two weeks of semester; online attendance; attending seminars within the first 3 weeks of semester; submitting the first piece of early assessment and failing the first piece of assessment.
Other potential explanatory variables tested are listed in Table 22, but none of these variables or the AS Sessions were significant at either the 90% or 95% levels.

4.14 Data

Data was extracted from multiple university databases for the years 2012-2017, as outlined in Appendix C.

4.14 Methodology

A series of linear regressions were run across a range of iterations over 2012 to gain a more comprehensive and deeper understanding of the drivers of at-risk students’ academic success and retention. The criterion variables were academic achievement (Grade Point Average: GPA) in Semesters 1 and 2, 2012 and retention during the following two semesters after first enrolment, i.e. enrolment into Semester 2, 2012 and Semester 1, 2013. The model parameters were estimated using OLS computed with IMB SPSS Statistics v.22.

These regressions were run on the Study 1 cohort, including the distal markers as predictor variables in the first stage (OP scores reflecting high school performance, degree preference, SES status, LOTE status, age, gender and student course load in the semester being examined), and proximal variables including a composite score of participation in the SSA Consultations process (the number of consults), a composite score of participation in the AS Sessions (the number of consults), eligibility for PASS and a composite score of participation in PASS (the number of consults) and composite score of all five tracked risk markers.

4.14.1 Backward Regression

To affirm our testing of the variables that have the most significant impact on GPA as a proxy for academic success, a backward stepwise regression was undertaken to determine the relationship variability within the included independent factors in preference to other testing procedures. This involved regressing the dependent variable (i.e. GPA) on all independent variables together, and subsequently omitting those independent variables, determined by the t-test, one at a time, until the termination point is reached with the p value for all remaining variables in the model. In this thesis the cut-off points for these p values were 0.05 levels. Five of the 12 predictor variables were found to be significant to the .05 level using this backward elimination model technique. With the exception of (low) SES status, all directional signs of
A backward step regression was chosen in favour of a forward stepwise methodology, since the second runs the risk of the interdependent variables included early in the procedure may be omitted, when in fact, these variables are more significantly correlated with the dependent variable than other regressors which are subsequently included, therefore leading to misspecification of the model.

With all variables included prior to omitting insignificant variables, the original backward stepwise regression which included the explanatory independent variables listed above which were based on a review of the relevant literature as covered in Chapters 2 of this thesis, and taking the following functional form:

\[
\text{Academic Success (Passing GPA or better)} = f(\text{the individual student’s preference for studying a business degree at the university where the study was undertaken (Preference), TE score (OP), whether a language other than English is spoken at home (LOTE), socioeconomic status (SES), age, gender, the number of credit points enrolled in the current semester (Credit Points), total number of early risk and outcome markers (Marker Total) that were flagged as a possible indicator of a lack of potential success, the total number of SSA consultation attended (SSA Consultation Totals), total number of AS Sessions attended (ASS Total), eligibility for attending PASS attended (PASS eligibility) and the total number of PASS (PASS attended) plus an error co-efficient, where academic success (i.e. GPA ≥ 4) is the continuous dependant variable, grade point average (0-7, with 4 being a passing GPA).}
\]

Eligibility for attending PASS was denoted as a dummy variable which relates to those 13 students who were part of the 2012 cohort of 61 students who were determined to be at possible risk of failure and attrition but were not eligible to attend PASS due to non-enrolment into those courses. These 13 students were assigned a zero in the data, showing their ineligibility for PASS. In this way, this variable was designed to capture the effect (if any) of the students not being enrolled in numeracy courses, and the effect of PASS on the likelihood of an increased or decreased on academic outcome. The creation of the independent dummy variable limits the effect of the variables co-efficient (attendance at PASS) not having a role in
influencing the dependant variable. A separate regression was run on data with only those enrolled in PASS related courses to compare outcomes between these cohorts. The same regression was run the following semester taking into account the students who may have not completed a PASS related course in the first semester but completed it during the second semester of enrolment.

The OLS version of the predictive model was derived from the backward stepwise procedure for the cohort from Study 1 and then retested against the same group at the end of the following semester. The autonomous constant $a$, the regression coefficients $b_1$, $b_2$ … $b_{12}$ and the stochastic disturbance term $\varepsilon$ were estimated using the IMB SPSS Statistics v.22.

In order to test Hypotheses 1 to 3 an OLS model was derived using the backward stepwise procedure. In order to test the results of Hypotheses 1-3, the independent variables included in the OLS model at the 90% and 95% levels used to test the predictive value of the model on GPA as a proxy for academic success during the following semester (Semester 2, 2012). The predictive outcomes of the model were then compared with the actual academic success (GPA) of students during this time period ($t_2$), in order to test whether there was a significant difference between the predicted and actual results for that Semester 2, 2012.

In this sense, the interpretation that is drawn from re-testing the results of Hypotheses 1-3 which is very much dependant on the variables from the model used to test GPA outcomes in Semester 1 and thus must now exclude the further testing of Hypothesis 2 as it was found not to be significant and is not part of the predictive model.

### 4.14.2 OLS Results of Testing GPA, Semester 1, 2012

The resulting model contacting the significant predictor variables is shown in Equation 1:

$$ GPA_t = \beta_0 + \beta_1 \text{Attendance at PASS}_{t-1} + \beta_2 \text{Early Risk Markers Combined} + \beta_3 \text{OP}_{t-1} + \beta_4 \text{SSAConsultTotal}_t + \beta_5 \text{PASS Eligibility}_t + \varepsilon $$

The data is summarised as follows:

The key predictors of GPA as a proxy for academic success were: attendance at PASS, the early engagement and outcome markers combined, OP, attendance at SSA Consults and eligibility for PASS. As per Table 22, the Model Summary provides an Adjusted R Square of 0.469, suggesting that the predictors account for nearly half of the variability in in the
dependant variable (GPA\textsubscript{t1}) (End of Semester 1). The standard error of the model estimate is 0.79 inferring that the average distance between the observed values and the regression line is 0.79 of a GPA mark.

**Table 21: Model Summary\textsuperscript{b}**

<table>
<thead>
<tr>
<th>Model</th>
<th>R</th>
<th>R Square</th>
<th>Adjusted R Square</th>
<th>Std. Error of the Estimate</th>
<th>Durbin-Watson</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>.716\textsuperscript{a}</td>
<td>.513</td>
<td>.469</td>
<td>.79204</td>
<td>1.133</td>
</tr>
</tbody>
</table>

a. Predictors: (Constant), Attended any PASS, Marker Total, OP, SSA Consult Total, Eligible for PASS
b. Dependent Variable: GPA112

The analysis of variance (ANOVA) model is significant at 0.000 as per the ANOVA Table 23 below, meaning that the model is statistically significant. The resulting F statistic for the ANOVA test is 11.588. For an α value of 0.10, the critical value of the distribution (F\textsubscript{4;56;0.05}) was 3.674. As the test statistic is much larger than this critical value, it can be concluded that Equation 1 provides a statistically significant explanation for the differences in an at-risk student’s performance (GPA) in the current semester.

**Table 22: ANOVA\textsuperscript{a}**

<table>
<thead>
<tr>
<th>Model</th>
<th>Sum of Squares</th>
<th>Df</th>
<th>Mean Square</th>
<th>F</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Regression</td>
<td>36.347</td>
<td>5</td>
<td>7.269</td>
<td>11.588</td>
<td>.000\textsuperscript{b}</td>
</tr>
<tr>
<td>Residual</td>
<td>34.503</td>
<td>55</td>
<td>.627</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>70.850</td>
<td>60</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

a. Dependent Variable: GPA112
b. Predictors: (Constant), Attended any PASS, Marker Total, OP, SSA Consult Total, Eligible for PASS

Table 24 below indicates that the five above mentioned variables: attendance at PASS, the early engagement and outcome marks combined, OP, attendance at SSA Consults and eligibility for PASS (i.e. enrolment in a numeracy-based course, are statistically significant at
the 95% confidence level, when looking at their P Values ($p < 0.05$). All directional signs of the predictor’s coefficients are consistent with our *a priori* assumptions. The intercept (line of best fit) is 6.76, intercepting with the Y axis, with a negative co-efficient on OP and Risk Marker Total, and a positive co-efficient on the SSA Consultations Total. An increase in OP (worse entry score) equals a decrease in GPA. Similarly, an increase in the number of Risk Markers Total (i.e. not turning up, submitting etc.) equals a decrease in GPA. Additionally, being enrolled in a numeracy course (i.e. eligible to attend PASS) increases the risk of a failing GPA. While an increase in SSA Consult Attendance and Attendance at PASS both equal an increase in GPA.

**Table 23: Coefficients**

<table>
<thead>
<tr>
<th>Model</th>
<th>Unstandardised Coefficients</th>
<th>Standardised Coefficients</th>
<th>Collinearity Statistics</th>
</tr>
</thead>
<tbody>
<tr>
<td>(Constant)</td>
<td>6.389</td>
<td>.877</td>
<td></td>
</tr>
<tr>
<td>TE Score</td>
<td>-.124</td>
<td>.061</td>
<td>-.197</td>
</tr>
<tr>
<td>Marker Total</td>
<td>-.285</td>
<td>.091</td>
<td>-.297</td>
</tr>
<tr>
<td>SSA Consult Total</td>
<td>.357</td>
<td>.109</td>
<td>.325</td>
</tr>
<tr>
<td>Eligible for PASS</td>
<td>-.873</td>
<td>.267</td>
<td>-.332</td>
</tr>
<tr>
<td>Attended any PASS</td>
<td>.923</td>
<td>.297</td>
<td>.317</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Model</th>
<th>B</th>
<th>Std. Error</th>
<th>Beta</th>
<th>t</th>
<th>Sig.</th>
<th>Tolerance</th>
<th>VIF</th>
</tr>
</thead>
<tbody>
<tr>
<td>(Constant)</td>
<td>6.389</td>
<td>.877</td>
<td></td>
<td>7.287</td>
<td>.000</td>
<td></td>
<td>1.056</td>
</tr>
<tr>
<td>TE Score</td>
<td>-.124</td>
<td>.061</td>
<td>-.197</td>
<td>-2.039</td>
<td>.046</td>
<td>.947</td>
<td>1.011</td>
</tr>
<tr>
<td>Marker Total</td>
<td>-.285</td>
<td>.091</td>
<td>-.297</td>
<td>-3.136</td>
<td>.003</td>
<td>.989</td>
<td>1.119</td>
</tr>
<tr>
<td>SSA Consult Total</td>
<td>.357</td>
<td>.109</td>
<td>.325</td>
<td>3.263</td>
<td>.002</td>
<td>.894</td>
<td>1.167</td>
</tr>
<tr>
<td>Eligible for PASS</td>
<td>-.873</td>
<td>.267</td>
<td>-.332</td>
<td>-3.264</td>
<td>.002</td>
<td>.857</td>
<td>1.176</td>
</tr>
<tr>
<td>Attended any PASS</td>
<td>.923</td>
<td>.297</td>
<td>.317</td>
<td>3.107</td>
<td>.003</td>
<td>.850</td>
<td>1.176</td>
</tr>
</tbody>
</table>

*a. Dependent Variable: GPA, Semester 1,12*

### 4.14.3 Assumptions

The model was checked for the assumptions of a multiple linear regression model. These assumptions include linearity of predictive relationships, independence of errors, homoscedasticity of the errors and absence of multicollinearity and normality of the error distribution. From 5 above it can be seen that the relationship between the standardised predicted to standardised residuals is roughly linear around zero. Table 25 checked for linearity of predictor variables in the regression as partial regression plots. Variance inflation factors (VIF) values greater than 10 highlights that multicollinearity may be present (O'Brien, 2007). However, looking at the VIF column in Table 25, it can be seen that multicollinearity is not an
issue in this model with all values substantially less than 10. Normality was checked with a Q-Q plot shown in Appendix D.

A White’s Test was conducted for heteroscedasticity. This required squaring the residual and predicted values from Model 1 and then conducting a linear regression where the squared residuals was the dependent variable and the independent variables were the predicted values and the squared predicted values. The null hypothesis is that there are homoscedastic error terms. Looking at the significance value in the ANOVA test (Table 24:) for this White’s test regression, we can see that this is not significant, so we can accept the null hypothesis of homoscedasticity in the model. As seen in the Durbin-Watson value it suggests that there is some positive autocorrelation, however below the critical level of 1.

Table 24: ANOVA for the White’s test of homoscedasticity

<table>
<thead>
<tr>
<th>Model</th>
<th>Sum of Squares</th>
<th>Df</th>
<th>Mean Square</th>
<th>F</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Regression</td>
<td>2.891</td>
<td>2</td>
<td>1.446</td>
<td>2.132</td>
<td>.128</td>
</tr>
<tr>
<td>Residual</td>
<td>39.331</td>
<td>58</td>
<td>.678</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>42.222</td>
<td>60</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

a. Dependent Variable: RES_square  
b. Predictors: (Constant), PRE_square, Unstandardised Predicted Value

4.14.4 OLS Results of Testing GPA, Semester 1, 2012 for only Students eligible for PASS

Taking into account that not all of the 61 students completed a course that involved PASS (i.e. statistics, accounting or economics), the above testing process was repeated using only the 48 students eligible for PASS. This was completed using a backward stepwise regression for the same reasons outlined above with the previous testing. Eligibility for attending PASS as a variable was removed as all of the remaining 48 students had completed a numeracy course and were therefore eligible to attend PASS. All other parts of the testing process remained the same using the backward regression process.

The resulting model contacting the significant predictor variables is shown in Equation 2:
\[ GPA_t = \beta_0 + \beta_1 \text{Attendance at PASS}_{t-1} + \beta_2 \text{Early Risk Markers Combined} + \beta_3 \text{SSA Consult Total}_t + \beta_4 \text{Credit Points} + \varepsilon \]

The data can be summarised as follows:

Similar to the previous regression key predictors of GPA as a proxy for academic success included: attendance at PASS, the early engagement and outcome markers combined, and attendance at SSA Consults, in addition to a new variable which was the number of credit points undertaken during the semester. As discussed previously eligibility for PASS was not included as all 48 students were eligible. This new significant variable (credit points) ‘replaced’ OP as being significant with this group. As per Table 26 the Model Summary provides an Adjusted R Square of 0.386, suggesting that the predictors account for just over one-third of the variability in in the dependant variable (GPA112) (End of Semester 1). The standard error of the model estimate is 0.81 inferring that the average distance between the observed values and the regression line is 0.81 of a GPA mark. The model is significant at 0.000 as per the Anova Table 27 meaning that the model is statistically significant.

**Table 25: Model Summary**

<table>
<thead>
<tr>
<th>Model</th>
<th>R</th>
<th>R Square</th>
<th>Adjusted R Square</th>
<th>Std. Error of the Estimate</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>.662 (^h)</td>
<td>.438</td>
<td>.386</td>
<td>.81781</td>
</tr>
</tbody>
</table>

a. Predictors: (Constant), CP\(^{112}\), Marker Total, Attended any PASS, SSA Consult Total

**Table 26: ANOVA**

<table>
<thead>
<tr>
<th>Model</th>
<th>Sum of Squares</th>
<th>Df</th>
<th>Mean Square</th>
<th>F</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Regression</td>
<td>22.433</td>
<td>4</td>
<td>5.608</td>
<td>8.385</td>
<td>.000</td>
</tr>
<tr>
<td>Residual</td>
<td>28.759</td>
<td>43</td>
<td>.669</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>51.192</td>
<td>47</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

a. Dependent Variable: GPA112

b. Predictors: (Constant), Attended any PASS, Marker Total, Credit Points\(^{1,12}\), SSA Consult Total, Eligible for PASS
Table 28 below indicates that the four above mentioned variables, namely attendance at PASS, the early engagement and outcome marker combined, credit points undertaken in Semester 1, 2012, and attendance at SSA Consults, are all statistically significant at the 95% confidence level, when looking at their P Values \((p < 0.05)\). All directional signs of the predictor’s coefficients are consistent with our \textit{a priori} assumptions. The intercept (line of best fit) is 5.81, intercepting with the Y axis, with a negative co-efficient on Credit Points and Risk Marker Total, and a positive co-efficient on the SSA Consultations Total and attendance at PASS. An increase in OP (worse entry score) equals a decrease in GPA. Similarly, an increase in the number of Risk Markers Total (i.e. not turning up, submitting etc.) equals a decrease in GPA, while an increase in SSA Consult Attendance and Attendance at PASS both equal an increase in GPA.

Table 27: Coefficients\(^a\)

<table>
<thead>
<tr>
<th>Model</th>
<th>Unstandardised Coefficients</th>
<th>Standardised Coefficients</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>B</td>
<td>Std. Error</td>
</tr>
<tr>
<td>(Constant)</td>
<td>5.816</td>
<td>1.004</td>
</tr>
<tr>
<td>Marker Total</td>
<td>.285</td>
<td>.123</td>
</tr>
<tr>
<td>SSA Consult Total</td>
<td>.417</td>
<td>.148</td>
</tr>
<tr>
<td>Attended any PASS</td>
<td>1.098</td>
<td>.307</td>
</tr>
<tr>
<td>CP112</td>
<td>-.054</td>
<td>.025</td>
</tr>
</tbody>
</table>

\(^a\) Dependent Variable: GPA112

4.14.5 Testing of the effect of Co-Curricular Activities only on GPA

For the sake of completeness, the GPA of at-risk students’ GPAs as a proxy for ‘academic success’ was regressed using OLS on student ‘engagement’ in the key interventions, notably SSA Consultations, AS Sessions, PASS, the four ‘early engagement’ markers noted earlier; and the marker of whether students failed their first assessment item (an ‘early outcome’ marker). The aim was to determine which of these co-curricular activities most impacted on GPA at the end of Semester 1, 2012. Second, similar regressions were run, but this time regressing academic success on just student attendance at the four key interventions, SSA
Consultations, AS Sessions and PASS. Third, similar regressions were run, but this time regressing academic success on just the four ‘early engagement’ markers noted earlier, and whether students failed their first assessment item (an ‘early outcome’ marker). Fourth, for the sake of completion, student success as defined was also regressed against all five of the ongoing engagement markers, the four ‘early engagement’ markers, and the ‘early outcome’ marker (i.e. pass/fail on first assessment item). Fifth, academic success as defined, given engagement in the key interventions (expressed as a conditional dependent variable), was regressed on all four iterations of independent variables noted previously. After this process was completed a separate backwise regression was run as a separate test of the data. The Model is summarised in Table 29.

Table 28: Model Summary

<table>
<thead>
<tr>
<th>Model</th>
<th>R</th>
<th>R Square</th>
<th>Adjusted R Square</th>
<th>Std. Error of the Estimate</th>
<th>Durbin-Watson</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>.758&lt;sup&gt;a&lt;/sup&gt;</td>
<td>.574</td>
<td>.543</td>
<td>.73427</td>
<td>1.194</td>
</tr>
</tbody>
</table>

<sup>a</sup> Predictors: (Constant), Attended any PASS, Eligible for PASS, SSA Consult Total, Mark5 Dependent Variable: GPA112

4.15. Semester 2, 2012 GPA

4.15.1 OLS Results of Testing GPA, Semester 2, 2012

The resulting model contacting the significant predictor variables is shown in Equation 3:

\[
GPA_t = \beta_0 + \beta_1 \text{Attendance at PASS}_{t-1} + \\
\beta_2 \text{Preference for Business Degree} + \beta_3 \text{Age} + \beta_4 \text{GPA112} + \epsilon
\]

The data is summarised as follows:

The key predictors of GPA as a proxy for academic success were: attendance at PASS, the preference on entry for completing the business degree, age and the student’s GPA in Semester 1, 2012. As per Table 30, the Model Summary provides an Adjusted R Square of 0.610, suggesting that the predictors account for over half of the variability in the dependant variable (GPA<sub>12</sub>) (End of Semester 2). The standard error of the model estimate is 0.92 inferring
that the average distance between the observed values and the regression line is 0.92 of a GPA mark.

### Table 30: Model Summary

<table>
<thead>
<tr>
<th>Model</th>
<th>R</th>
<th>R Square</th>
<th>Adjusted R Square</th>
<th>Std. Error of the Estimate</th>
<th>Durbin-Watson</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>.801a</td>
<td>.642</td>
<td>.610</td>
<td>.92472</td>
<td>2.036</td>
</tr>
</tbody>
</table>

a. Predictors: (Constant), Attended_any_PASS, Preference, Age, GPA112  
b. Dependent Variable: GPA212

The analysis of variance (ANOVA) model is significant at 0.000 as per the ANOVA Table 31 below, meaning that the model is statistically significant. The resulting F statistic for the ANOVA test is 20.583. For α value of 0.10, the critical value of the distribution (F4;56;0.05) was 3.674. As the test statistic is much larger than this critical value, it can be concluded that Equation 1 provides a statistically significant explanation for the differences in an at risk student’s performance (GPA) in the current semester.

### Table 31: ANOVA

<table>
<thead>
<tr>
<th>Model</th>
<th>Sum of Squares</th>
<th>Df</th>
<th>Mean Square</th>
<th>F</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Regression</td>
<td>70.402</td>
<td>54</td>
<td>17.601</td>
<td>20.583</td>
<td>.000b</td>
</tr>
<tr>
<td>Residual</td>
<td>39.335</td>
<td>46</td>
<td>.855</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>109.737</td>
<td>50</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

a. Dependent Variable: GPA112  
b. Predictors: (Constant), Attended any PASS, Marker Total, OP, SSA Consult Total, Eligible for PASS

Table 32 below indicates that the four above mentioned variables: Attendance at PASS, the preference on entry for completing the business degree, age and the student’s GPA in Semester 1, 2012, are all statistically significant. GPA12 and PASS are both statistically significant at at the 90% confidence level, when looking at their P Values ($p < 0.05$). Preference and age are significant at the 90% confidence level, when looking at their P Values ($p < 0.10$). All directional signs of the predictor’s coefficients are NOT however consistent with all of our $a$
priori assumptions. The intercept (line of best fit) is -2.486, intercepting with the Y axis, with a positive co-efficient on all independent variables. An increase in all four markers equals an increase in GPA which is not expected. (i.e. an increase in a lack of preference for a business degree actually increases GPA). PASS is the only variable from the GPA regression at the end of semester 1 that remains significant.

**Table 29: Coefficients**

<table>
<thead>
<tr>
<th>Model 1</th>
<th>Unstandardised Coefficients</th>
<th>Standardised Coefficients</th>
<th>Collinearity Statistics</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>B</td>
<td>Std. Error</td>
<td>Beta</td>
</tr>
<tr>
<td>(Constant)</td>
<td>-2.486</td>
<td>.908</td>
<td>.159</td>
</tr>
<tr>
<td>Pref</td>
<td>.241</td>
<td>.135</td>
<td>.159</td>
</tr>
<tr>
<td>Age</td>
<td>.090</td>
<td>.037</td>
<td>.234</td>
</tr>
<tr>
<td>GPA112</td>
<td>.857</td>
<td>.140</td>
<td>.607</td>
</tr>
<tr>
<td>Attended any PASS</td>
<td>.841</td>
<td>.379</td>
<td>.208</td>
</tr>
</tbody>
</table>

a. Dependent Variable: GPA212

**4.15.2 Overall Results of Co-Curricular Interventions on Student Academic Success (GPA)**

This study was restricted by the limitation that there was no random assignation to intervention and control groups. Thus, comparisons between the 61 and other students are not particularly illustrative. Within group comparisons however, are more revealing, showing that at least for proximal responses, the interventions appeared to have impact. The study did confirm the at-risk nature of high-OP students and that those who attended the SSA Consults, PASS and other co-curricular (orientation) and curricular events (early classes) were more likely to succeed.
4.16 Study 1 - Results - Effectiveness of Targeted Interventions on Retention

4.16.1 Retention Outcomes Data of Students Re-enrolment into Semester 2 2012

The proportion of the 61 students identified as being at-risk in first semester 2012, who re-enrolled (were retained) in the second semester of 2012 was 51 students as set out in Table 33 below. Table 33 indicates that neither a passing nor failing GPA determined whether a student re-enrolled in the following semester, with both groups (i.e. passing and failing) re-enrolling in approximately the same percentages.

Table 30: Retention into Semester 2 2012, and GPA and Co-curricular Interventions of all Targeted 61 At-Risk Students

<table>
<thead>
<tr>
<th>TIMING - STUDENT LIFECYCLE</th>
<th>RETENTION INDICATOR</th>
<th>OUTCOME (% Re-Enrolled)</th>
<th>Re-enrolled with Passing GPA from Semester 1, 2012</th>
<th>Re-enrolled with Failing GPA from Semester 1, 2012</th>
</tr>
</thead>
<tbody>
<tr>
<td>t=1</td>
<td>Targeted Semester 1 2012 at-risk students re-enrolled in Semester 2 2012</td>
<td>83.6% (51 out of 61)</td>
<td>84.09% (37 out of 44)</td>
<td>82.35% (14 of 17 re-enrolled)</td>
</tr>
</tbody>
</table>

Ten students did not re-enrol into the Bachelor of Business Degree Program. Seven of these students had a passing GPA, while the remaining 3 had a failing GPA as highlighted in Table 34 below.

Table 31: Percentage of non-enrolments into Semester 2, 2012 and GPA Outcomes
4.16.2 Reasons for non-enrolment into Semester 2, 2012

As highlighted above, 10 of the original 61 students did not re-enrol into Semester 2, 2012. As evidenced below in Table 35 below, five of the seven students who had a passing GPA transferred internally to a related business degree within the Business School (Bachelor of Commerce), but only one of these students has subsequently graduated after five years. One student ‘stopped-out’ to study at TAFE, while another student who left the Bachelor of Business Degree Program stated that it was due to work commitments and never returned to his studies. The three students who failed and did not re-enrol were unable to be contacted to ascertain their reason for leaving.

Table 32: Reasons for exit from the Bachelor of Business Degree Program at the end of Semester 1, 2012

<table>
<thead>
<tr>
<th>TIMING - STUDENT LIFECYCLE</th>
<th>RETENTION INDICATOR (Non-enrolment into Semester 2, 2012)</th>
<th>Internal Transfers</th>
<th>Stopped-Out</th>
<th>Work Commitments</th>
<th>Unable to be contacted</th>
</tr>
</thead>
<tbody>
<tr>
<td>t=1</td>
<td>Targeted Semester 1 at-risk students not re-enrolled in Semester 2</td>
<td>16.4% (10 out of 61)</td>
<td>70% (7 of 10)</td>
<td>30% (3 of 10)</td>
<td></td>
</tr>
</tbody>
</table>
t=1 | Targeted Semester 1 at-risk students not re-enrolled in Semester 2, 2012 (N=10) | 5 | 1 | 1 | 3 (all with failing GPA)

| # Only 1 of the 5 internal transfers at the end of the first semester graduated within 6 years of enrolment of their original degree. |

### 4.16.3 Re-enrolment into Semester 2, 2012 and ‘no-shows – defaulters’

It is important to note that of the 51 students who re-enrolled in Semester 2 2012, nine received a GPA of 1.5 at the end of that second semester (i.e. failed all enrolled courses). As discussed in the literature review these students are commonly referred to as subcategories of dropouts known as either ‘no-shows’ or ‘defaulters’, that is, students who have essentially re-enrolled into the following semester but have failed to attend classes, submit assignments and/or attend exams, as indicated by failing all classes for which they were enrolled. By comparison, only two students during Semester 1, 2012 failed all courses for which they were enrolled (i.e. GPA of 1.5), with only one of these two students enrolling in second semester. That student again failed all courses resulting in a semester GPA of 1.5 for the second time. At the end of that second semester the student was dismissed for poor academic standing. This may suggest that students were more motivated when they first enrolled into university but once reality of the academic workload set in, the motivation became limited.

Taking into account the above retention statistics and Semester 2 GPA data, the retention rate and academic success of students from Semester 1 re-enrolling into Semester 2 is worse than it first appears. Seven of the nine students who received a GPA of 1.5 (i.e. failed all courses) in the second semester also had a failing GPA in Semester 1. Of the two students who had a GPA of 1.5 in Semester 2 but had a passing GPA in Semester 1, only one had enrolled in numeracy courses the semester before. This meant that the student who had not completed a numeracy course during Semester 1 subsequently enrolled into all three numeracy courses the following semester and failed all three. It is further noted that in Semester 2 2012, three students enrolled into all three numeracy courses within the business degree program (including the
above-mentioned student). Of the remaining two students one student failed two of the three courses and the third student failed one of the three numeracy courses.

4.16.4 Retention into Semester 2, 2012 and GPA Outcomes at the end of Semester 2, 2012

Of the 51 students who enrolled into Semester 2 2012, at the end of that semester, 28 had a passing GPA while 23 students had a failing GPA as noted in Table 36 below.

Table 33: Retention Outcomes – 2012: Re-enrolment into Semester 2, 2012 by Targeted At-Risk Students and GPA Outcomes

<table>
<thead>
<tr>
<th>TIMING - STUDENT LIFECYCLE</th>
<th>RETENTION INDICATOR</th>
<th>Number of Re-enrolled Students in Semester 2, 2012</th>
<th>Passing GPA at end of Semester 2, 2012</th>
<th>Failing GPA at end of Semester 2, 2012</th>
</tr>
</thead>
<tbody>
<tr>
<td>t=1</td>
<td>Re-enrolment into Semester 2, 2012 &amp; Semester 1, 2012 GPA Outcome</td>
<td>83.60% (51 of 61)</td>
<td>54.01% (28 of 51)</td>
<td>45.09% (23 of 51)</td>
</tr>
</tbody>
</table>

Of the 23 students who had a failing at the end of Semester 2 2012, 16 failed at least one numeracy course and seven failed at least one literacy course. These 23 students included the 9 students who had a GPA of 1.5 (mentioned above). As highlighted in Table 37 below, after removing these 9 students (no-shows and defaulters) 14 out of the remaining 42 students had a non-cumulative failing GPA at the end of Semester 2, 2012. Twelve out of these 14 students also had a failing GPA at the end of Semester 1, 2012.

Table 34: Retention Outcomes – 2012: Re-enrolment into Semester 2, 2012 by Targeted At-Risk Students and GPA Outcomes (Not include ‘no-show/defaulters)
4.16.5 Logistic Model of Retention into Semester 2, 2012

A logistic regression model was formulated to test if the proximal ongoing engagement (risk) markers, the participation in voluntary academic interventions (SSA Consultations, PASS and AS Sessions), and distal characteristics such as SES and LOTE could be used to explain the retention of students in the following semester and the following year. Specifically the Logit Model was used to test Hypothesis 4 (Retention into Semester 2, 2012), relating to the predictors of retention. In order to test the predictive theory of the Logit Model (Hypothesis 4), the model was then used to predict the outcomes of retaining students into the following year (Semester 1, 2013). It was found that the model was not significant in predicting retention into Semester 1, 2013.

The dependent variable for this model was binary in nature with students being either those retained denoted as (1) in the Business School at the start of Semester 2 2012 or having withdrawn denoted a (0). That is, retention as a dummy variable on the same range of regressors as used for GPA at the end of Semester 1 & 2, 2012. The withdrawn category included 10 students who had officially withdrawn from the business degree program and an additional 9 ‘no-show’ or ‘defaulter’ students who had failed all units in second semester (a ‘defaulter’ is...
one who voluntarily dropped out during the term and did not attend the final exams, or attend (show up) the following semester.

To determine the explanatory variables a conditional backwards elimination regression technique was applied to the following variables to derive the model. These variables included the preference for studying a business degree (Pref), gender (Gender), age (Age) TE score (OP), whether a language other than English is spoken at home (LOTE), socioeconomic status (SES), the number of credit points enrolled in the current semester (CP), total number of risk markers (MkTotal), total number of SSA consultation sessions attended (SSA ConsultTotal), total number of AS Sessions attended (ASSTotal), eligibility for, and attendance at PASS, and the grade-point average (GPA) in the previous semester.

The model parameters were estimated using a binary logit regression computed with IMB SPSS Statistics v.22. The optimal model when using a conditional backwards stepwise regression technique can be derived from Table 38 below and is described as Equation 3:

\[
\text{Retain}_{t+1} = \beta_1 \text{GPA}_1,_{12t1} + \beta_2 \text{SSA Consult} + \text{Pref} + \epsilon
\]

Where Retain\(_{t+1}\) is a binary variable for whether students are retained in semester \(t_1\), \(\beta_j\) represents the model parameters, with \(j = 0,1,\ldots,3\), \(t\) is time period in terms of semester and \(\epsilon\) is the error term.

It can be seen from Table 38 that both attendance at SSA Consultations and GPA from Semester 1, 2012 are both significant at the 90% level, with GPA also being extremely significant at the 99% level. However, the directional signs of the predictor’s coefficients are to some extent inconsistent with our \textit{a priori} assumptions. As the number of consultations increase with the SSA, the students are more likely to leave transfer out of the Bachelor of Business Degree Program. However as we know that five students transferred into another related degree program at the same university (Commerce) this is perhaps less surprising. It is consistent with \textit{a priori} assumptions that a successful first semester GPA would influence re-enrolment into the following semester as overall two and half times more students passed than failed the previous semester. Although forming part of the final model for retention, preference was not found to be significant, contrary to the findings of Harvey and Luckman (2014).

Table 35: Variables in equation from backwards conditional stepwise regression for logit model on student retention
<table>
<thead>
<tr>
<th></th>
<th>B</th>
<th>S.E.</th>
<th>Wald</th>
<th>df</th>
<th>Sig.</th>
<th>Exp(B)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Model 1 Pref</td>
<td>.644</td>
<td>.424</td>
<td>2.301</td>
<td>1</td>
<td>.129</td>
<td>1.903</td>
</tr>
<tr>
<td>SSA Consult Total</td>
<td>-.760</td>
<td>.427</td>
<td>3.161</td>
<td>1</td>
<td>.075</td>
<td>.468</td>
</tr>
<tr>
<td>GPA112</td>
<td>1.266</td>
<td>.395</td>
<td>10.280</td>
<td>1</td>
<td>.001</td>
<td>3.545</td>
</tr>
<tr>
<td>Constant</td>
<td>-6.162</td>
<td>2.258</td>
<td>7.445</td>
<td>1</td>
<td>.006</td>
<td>.002</td>
</tr>
</tbody>
</table>

a. Variable(s) entered on step 1: Pref, OP, LOTE, SES, Gender, Age, CP112, Marker Total, SSA Consult Total, AS Sessions Total, Eligible for PASS, Attended any PASS, GPA112.

The significance level for the chi-square statistic of the logit model represents the probability of obtaining the reported chi-square statistic if the independent variables had no effect on the dependent variable, i.e. the null hypothesis. From Table 39 below (Omnibus of Model Coefficients), it can be seen that the chi-square statistic is significant for this model (chi-square = 21.171, df = 4, p < 0.000) so the null hypothesis is rejected, and it is concluded that the model in Equation *Above* provides a statistically significant explanation for the retention of students in the following semester.

**Table 36: Omnibus Test of Model Coefficients**

<table>
<thead>
<tr>
<th></th>
<th>Chi-square</th>
<th>df</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Model 1</td>
<td>-2.251</td>
<td>1</td>
<td>.133</td>
</tr>
<tr>
<td>Block</td>
<td>21.171</td>
<td>4</td>
<td>.000</td>
</tr>
<tr>
<td>Model</td>
<td>21.171</td>
<td>4</td>
<td>.000</td>
</tr>
</tbody>
</table>

a. A negative Chi-squares value indicates that the Chi-squares value has decreased from the previous step.

The Nagelkerke R-square value of 0.413 in Table 40 below indicates a moderate relationship between prediction and grouping.

**Table 37: Model Summary**

<table>
<thead>
<tr>
<th>Model</th>
<th>-2 Log likelihood</th>
<th>Cox &amp; Snell R Square</th>
<th>Nagelkerke R Square</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>54.502a</td>
<td>.293</td>
<td>.413</td>
</tr>
</tbody>
</table>

185
a. Estimation terminated at iteration number 39 because maximum iterations has been reached. Final solution cannot be found.

Table 41 below (Classification) provides a summary of the predicted retention in time period $t+1$. It can be seen that overall the equation variables specified in the model correctly predicted the retention/loss of students in 78.7% of cases. There is a strong predictive accuracy for students retained with only 3 of the 42 incorrectly predicted providing 92.9% accuracy. The predictive ability of the model for students who were not retained was lower with 10 of 19 students incorrectly predicted as being retained showing 47.4% accuracy.

Table 38: Logit model for student retention, Classification

<table>
<thead>
<tr>
<th>Observed</th>
<th>Predicted</th>
<th>Percentage Correct</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Retained_Defaulters</td>
<td>.00</td>
</tr>
<tr>
<td>Retained</td>
<td>9</td>
<td>10</td>
</tr>
<tr>
<td>Defaulters</td>
<td></td>
<td></td>
</tr>
<tr>
<td>$t+1$</td>
<td>3</td>
<td>39</td>
</tr>
<tr>
<td>Overall</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Looking at the B values in Table 42 variables in the Equation: (first column in log form) the relationship can be seen between the independent and dependent variables, where the logit scale is used for the dependent variable. The Wald criterion demonstrates that only SSA Consult Total and GPA112 made a statistically significant contribution to the prediction at 0.75 and 0.001 respectively. It can be seen that these two variables, GPA112 and SSA Consult Total, have B values of 1.266 and -0.760 respectively. This implies that for every one-unit percent increase in GPA we expect a 1.266 increase in the log-odds of student retention (Retained$_{t+1}$). For every one-unit increase in SSA Consultation there will be a -0.760 decrease in the log-odds of student retention.

These values are more intuitively interpreted when converted to odds ratio form as shown in column Exp (B). These coefficient values are converted from log-odds to odds ratio form and presented in the column Exp (B) in Table 42 below (Variables in equation). The value of 3.545 for the variable GPA112 indicates that when the student’s GPA is increased by one unit, the
odds ratio is over 3.5 times as large. Therefore, students are 3.5 times more likely to be retained. The value of the odds ratio value of 0.468 means that when the number of SSA Consultations increases by 1 consultation the odds of being retained total is approximately 0.5, and students become 0.468 less likely to be retained as a student.

Table 39: Variables in equation from backwards conditional stepwise regression for logit model on student retention

<table>
<thead>
<tr>
<th>Model</th>
<th>B</th>
<th>S.E.</th>
<th>Wald</th>
<th>df</th>
<th>Sig.</th>
<th>Exp(B)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Preference</td>
<td>.644</td>
<td>.424</td>
<td>2.301</td>
<td>1</td>
<td>.129</td>
<td>1.903</td>
</tr>
<tr>
<td>SSA Consult Total</td>
<td>-.760</td>
<td>.427</td>
<td>3.161</td>
<td>1</td>
<td>.075</td>
<td>.468</td>
</tr>
<tr>
<td>GPA Semester 1,12</td>
<td>1.266</td>
<td>.395</td>
<td>10.280</td>
<td>1</td>
<td>.001</td>
<td>3.545</td>
</tr>
<tr>
<td>Constant</td>
<td>-6.162</td>
<td>2.258</td>
<td>7.445</td>
<td>1</td>
<td>.006</td>
<td>.002</td>
</tr>
</tbody>
</table>

a. Variable(s) entered on step 1: Preference, OP, LOTE, SES, Gender, Age, CP112, Marker Total, SSA Consultation Total, AS Sessions Total, Eligible_for_PASS, Attended_any_PASS, GPA1.12.

4.16.6 Assumptions of Logistic Model of Retention into Semester 2, 2012

The dependent variable of student retention is dichotomous. This variable is coded as either 1 or 0 for retention or loss of student, respectively. The logit regressions do not assume a linear relationship between the dependent and independent variables. Independent variables do not need to be normally distributed, linearly related or of equal variance with the categories are mutually exclusive and exhaustive. Larger samples are required compared to OLS regressions for the maximum likelihood coefficient estimates. A minimum of 10 variables per predictor but a recommended minimum of 50 observations per predictor is recommended.

4.16.7 Retention Outcomes Data of Students Re-enrolment into Semester 1 2013

Of the original 61 students considered to be at risk of academic failure and attrition, 25 (40.98%) enrolled in Semester 1, 2013 as indicated in Table 43
Table 40: Retention into Semester 1 2013, and GPA and Co-Curricular Interventions of all Targeted 61 At-Risk Students

<table>
<thead>
<tr>
<th>TIMING - STUDENT LIFECYCLE</th>
<th>RETENTION INDICATOR</th>
<th>OUTCOME (% Re-Enrolled)</th>
<th>Re-enrolled with passing GPA at end of Semester 2, 2012</th>
<th>Re-enrolled with failing GPA at end of Semester 2, 2012</th>
</tr>
</thead>
<tbody>
<tr>
<td>t=2 (Start of 3rd semester)</td>
<td>Targeted Semester 1, 2012 students re-enrolled in Semester 1, 2013</td>
<td>25 of 61 (40.98%)</td>
<td>10 of 25 re-enrolled (40%)</td>
<td>15 of 25 re-enrolled (60%)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>3 of the 25 were ‘no-show/defaulters’</td>
<td>10 of 61 initial student cohort (16.39%)</td>
<td>15 of 61 initial student cohort (25.59%)</td>
</tr>
</tbody>
</table>

4.16.8 Retention of Semester 2 students into Semester 1, 2013

Twenty-five out of the 51 students enrolled in Semester 2, 2012 re-enrolled in Semester 1 2013 as set out in Table 44 below. Table 44 further indicates that 10 out of 28 students who had a non-cumulative passing GPA in Semester 2, 2012 re-enrolled in Semester 1, 2013, compared to 15 out of 23 students with a non-cumulative failing GPA in Semester 2, 2012 who re-enrolled in Semester 1, 2013. Thus, more students with a failing than a passing GPA had re-enrolled at the start of the following year. Eight out of the 15 students with had a non-cumulative failing GPA at the end of Semester 2, 2012 also had a failing GPA at the end of Semester 1, 2012.

Table 44: Proportion of re-enrolling students in Semester 1, 2013 who had a passing/failing GPA in Semester 2, 2012

<table>
<thead>
<tr>
<th>TIMING - RETENTION INDICATOR</th>
<th>Number of re-enrolled</th>
<th>Re-enrolled Students into Semester 1, 2013</th>
<th>Number of Re-enrolled</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
STUDENT LIFECYCLE

<table>
<thead>
<tr>
<th>t=2</th>
<th>Re-enrolment into Semester 1, 2013 &amp; GPA Outcome in Semester 2, 2012</th>
<th>Students into Semester 1, 2013 as a percentage of those who passed Semester 2, 2012</th>
<th>Students into Semester 1, 2013 as a percentage of those who failed Semester 2, 2012</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>49.01% (25 out of 51 students enrolled in Semester 2, 2012)</td>
<td>35.71% (10 out of 28)</td>
</tr>
</tbody>
</table>

4.16.9 Reasons provided for non-re-enrolment into Bachelor of Business in 2013

Of the 26 of the 51 students from Semester 2, 2012 who did not re-enrol into the Bachelor of Business Degree Program after Semester 2 2012, 19 had a passing GPA, while seven had a failing GPA, as highlighted in Table 45 below.
Table 41: Non-Re-enrolment into Semester 1, 2013

<table>
<thead>
<tr>
<th>TIMING - STUDENT LIFECYCLE</th>
<th>RETENTION INDICATOR (Enrolment into Semester 1, 2013)</th>
<th>OUTCOME (% - Did Not Re-enrol)</th>
<th>OUTCOME (% - Did Not Re-enrol in Semester 1, 2013 and had a passing GPA in Semester 2, 2012)</th>
<th>OUTCOME (% - Did Not Re-enrol in Semester 1, 2013 and had a failing GPA in Semester 2, 2012)</th>
</tr>
</thead>
<tbody>
<tr>
<td>t=2</td>
<td>Targeted Semester 1 at-risk students re-enrolled in Semester 1, 2013</td>
<td>50.98% (26 out of 51 in Semester 2, 2012 did not enrol into Semester 1, 2013)</td>
<td>64.28% (19 out of 28)</td>
<td>34.78% (7 out of 23)</td>
</tr>
</tbody>
</table>

The number of targeted Semester 1, 2012 at-risk students who did not re-enrol in Semester 1, 2013 was 36 out of 61 (59.01%)

4.15.9.1 Internal Transfers (i.e. internally transferred at the end of Semester 2, 2012 to study at a different degree program at the start of 2013)

Four of these 19 students with a passing GPA transferred internally to another degree program at the university. Of these four students one transferred to a related business degree within the Business School (Bachelor of Commerce), but subsequently ‘dropped-out’ or ‘stopped-out’ of the university (destination unknown) with a passing GPA. Two students transferred to a Law degree (one is still completing this degree, the other student ‘dropped-out’ or ‘stopped-out’ (destination unknown) with a passing GPA). One student internally transferred to the Bachelor of Education and subsequently graduated from that degree program (see Table 46 below).
4.15.9.2 Known ‘Stop-outs’ with Passing GPA (i.e. left at the end of Semester 2, 2012 to study at other institutions at the 2013)

According to exit interviews, eight out of the 19 students who did not re-enrol but had a passing GPA at the end of Semester 2, 2012 ‘stopped-out’ to another university. According to exit interviews five ‘stopped-out’ to study at Queensland University of Technology in Semester 1 2013, two ‘stopped-out’ to study at the University of Queensland, while 1 student stopped out to an unknown New South Wales university (see Table 46 below).

4.15.9.3 Remaining Known and Unknown ‘Drop-outs’ or ‘Stop-outs’ with Passing GPA (i.e. left at the end of Semester 2, 2012 to study at other institutions at the 2013)

Of the remaining seven out of 19 (36.84%) students who did not re-enrol into Semester 1, 2013 but had a passing GPA at the end of Semester 2, 2012, exit interviews disclose that one student left because of work commitments and two students stated that they were leaving for personal reasons, but did not provide any greater detail (see Table 46 below). The remaining four did not respond to attempted contact in regard to the reasons for leaving their studies. It is therefore unknown if any of these students who all had a passing GPA ‘stopped-out’ to another university. It is known that only one of these students returned to study (original degree program) one year later but subsequently ‘dropped-out’ or ‘stopped-out’ again with a passing GPA.

Table 42: Reasons for Exit from Bachelor of Business Degree Program with Passing GPA

<table>
<thead>
<tr>
<th>TIMING - STUDENT LIFECYCLE RETENTION INDICATOR (Non-enrolment into Semester 1, 2013)</th>
<th>Internal Transfers</th>
<th>Stopped-Out</th>
<th>Work Commitment &amp; Personal Reasons</th>
<th>Unable to be contacted</th>
</tr>
</thead>
</table>
Targeted Semester 1 at-risk students with passing GPA in Semester 2, 2012 but not re-enrolled in Semester 1 2013 (N=18)

| t=2 | 4 of 19 (21.05%) | 8 of 19 (42.10%) | 3 of 19 (15.80%) | 4 of 19 (21.05%) |

4.15.9.4 Known and Unknown ‘Drop-outs’, ‘Stop-outs’ and Dismissed with Failing GPA

Twenty-three students had a failing GPA at the end of second semester, 2012. Seven of these students did not re-enrol at the start of the following year. Table 47 below shows that four of the seven students who had a failing GPA at the end of Semester 2, 2012 and did not re-enrol into Semester 1, 2013 were dismissed at that time due to poor academic standing while the reasons for the remaining three students are unknown.

Table 47: Reasons for Exit from Bachelor of Business Degree Program with Failing GPA

<table>
<thead>
<tr>
<th>TIMING - STUDENT LIFECYCLE</th>
<th>RETENTION INDICATOR (Non-enrolment into Semester 1, 2013)</th>
<th>Dismissed for Poor Academic Grades during first year</th>
<th>Unable to be contacted</th>
</tr>
</thead>
<tbody>
<tr>
<td>t=2</td>
<td>4</td>
<td>3</td>
<td></td>
</tr>
</tbody>
</table>
Targeted Semester 1 at-risk students not re-enrolled in Semester 1 2013 (N=7)

4.16.10 Logistic Model of Retention into Semester 1, 2013

The statistical analysis was repeated using a logistic regression model to test if the proximal ongoing engagement (risk) markers, the participation in voluntary academic interventions (SSA Consultations, PASS and AS Sessions), and distal characteristics such as socio-economic status and language other than English could be used to explain the retention of students in the following semester and retained into the following year.

The dependent variable for this model was binary in nature with students being either those retained in the Business School at the start of Semester 1 2013 or having withdrawn. From the 51 students enrolled in Semester 2, 2012, the withdrawn category included 26 students who had officially withdrawn from the business degree program and did not re-enroll into Semester 1, 2013 plus an additional 2 ‘no-show’ or defaulter’ students who failed all units in first semester 2013. To determine the explanatory variables a conditional backwards elimination regression technique was applied using the same variables used to derive the model for Semester 2, 2012 in addition to Semester 2, 2012 Credit points and GPA.

The model parameters were estimated using a binary logit regression computed with IBM SPSS Statistics v.22. The final model when using a conditional backwards stepwise regression technique is described as Equation 4:

\[
\text{Retain}_{t+2} = \beta_0 + \beta_1 \text{Age} + \varepsilon
\]

However age was not significant at 0.156.
Where Retain_{t+1} is a binary variable for whether students are retained in semester t, \( \beta_j \) represents the model parameters, with \( j = 0,1,\ldots,5 \), t is time period in terms of semester and \( \varepsilon \) is the error term.

The significance level for the chi-square statistic of the logit model represents the probability of obtaining the reported chi-square statistic if the independent variables had no effect on the dependent variable, i.e. the null hypothesis. From Table 48 (Omnibus of Model Coefficients), it can be seen that the chi-square statistic is significant for this model (chi-square = 3.752, df = 1, p < 0.053) so the null hypothesis is rejected and it is concluded that the model in Equation ** provides a statistically significant explanation for the retention of students in the following semester.

**Table 43: Omnibus Tests of Model Coefficients**

<table>
<thead>
<tr>
<th>Step</th>
<th>Chi-square</th>
<th>df</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Step 15a Step</td>
<td>-2.327</td>
<td>1</td>
<td>.127</td>
</tr>
<tr>
<td>Block</td>
<td>3.752</td>
<td>1</td>
<td>.053</td>
</tr>
<tr>
<td>Model</td>
<td>3.752</td>
<td>1</td>
<td>.053</td>
</tr>
</tbody>
</table>

a. A negative Chi-squares value indicates that the Chi-squares value has decreased from the previous step.

The Nagelkerke R-square value of 0.095 in Table 49 indicates a low relationship between prediction and grouping.

**Table 4944: Model Summary**

<table>
<thead>
<tr>
<th>-2 Log likelihood</th>
<th>Cox &amp; Snell R Square</th>
<th>Nagelkerke R Square</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>66.458b</td>
<td>.071</td>
</tr>
</tbody>
</table>

a. Estimation terminated at iteration number 6 because parameter estimates changed by less than .001.
b. Estimation terminated at iteration number 5 because parameter estimates changed by less than .001.

Table 50 (Classification) provides a summary of the predicted retention in time period $t + 2$. It can be seen that overall the model specified in Equation Variables in Step 15** (B Variables) correctly predicted the retention/loss of students in 60.8% of cases (Step 15 of the classification table). There is a poor predictive accuracy for students retained with only six of the 23 correctly predicted providing 26.1% accuracy. The predictive ability of the model for students who were not retained was much higher with 25 of 28 students correctly predicted as being retained showing 89.3% accuracy.

Table 50: Classification Tablea

<table>
<thead>
<tr>
<th>Observed</th>
<th>Predicted</th>
<th>Percentage Correct</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>RetainedSem113notincluding 2defaulters</td>
<td></td>
</tr>
<tr>
<td></td>
<td>.00</td>
<td>1.00</td>
</tr>
<tr>
<td>Retained</td>
<td>25</td>
<td>3</td>
</tr>
<tr>
<td>Overall</td>
<td>17</td>
<td>6</td>
</tr>
<tr>
<td>Percentage</td>
<td></td>
<td>89.3</td>
</tr>
<tr>
<td></td>
<td>1.00</td>
<td></td>
</tr>
<tr>
<td>Overall</td>
<td>17</td>
<td>6</td>
</tr>
<tr>
<td>Percentage</td>
<td></td>
<td>26.1</td>
</tr>
<tr>
<td>Overall</td>
<td>25</td>
<td>3</td>
</tr>
<tr>
<td>Percentage</td>
<td></td>
<td>60.8</td>
</tr>
</tbody>
</table>

a. The cut value is .500

Looking at the B values in Table 51, the relationship between the independent and dependent variables, nothing is significant at the 90% or 95% level where the logit scale is used for the dependent variable. The Wald criterion also demonstrated that no variable was significant in predicting retention one year after original enrolment.

Table 51: Variables in the Equation

<table>
<thead>
<tr>
<th></th>
<th>B</th>
<th>S.E.</th>
<th>Wald</th>
<th>df</th>
<th>Sig.</th>
<th>Exp(B)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age</td>
<td>.241</td>
<td>.170</td>
<td>2.011</td>
<td></td>
<td>.156</td>
<td>1.272</td>
</tr>
<tr>
<td>Constant</td>
<td>-.456</td>
<td>3.049</td>
<td>2.237</td>
<td></td>
<td>.135</td>
<td>.010</td>
</tr>
</tbody>
</table>
a. Variable(s) entered on step 1: Pref, OP, LOTE, SES, Gender, Age, GPA112, GPA212, CP112, CP212, Marker Total, SSA Consultation Total, AS Session Total, Eligible for PASS, Attended any PASS.

4.16.11 Overall Enrolment (retention) and Graduation outcomes of the Semester 1, 2012 targeted at-risk student cohort over the subsequent five years from time of first enrolment.

Table 52 provides the overall retention, attrition and graduation outcomes of the Semester 1, 2012 targeted at-risk student cohort over the subsequent 5 years from time of first enrolment in the Bachelor of Business Degree Program.

<table>
<thead>
<tr>
<th>Status within 6 years of original enrolment</th>
<th>Frequency</th>
<th>Percent</th>
<th>Cumulative Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dismissed</td>
<td>6</td>
<td>9.8</td>
<td>9.8</td>
</tr>
<tr>
<td>Dropped out - failing GPA</td>
<td>1</td>
<td>9.8</td>
<td>19.7</td>
</tr>
<tr>
<td>Dropped out – Passing GPA</td>
<td>2</td>
<td>31.1</td>
<td>50.8</td>
</tr>
<tr>
<td>Dropped out - Transfer GU</td>
<td>3</td>
<td>13.1</td>
<td>63.9</td>
</tr>
<tr>
<td>Still completing - Transfer GU</td>
<td>4</td>
<td>4.9</td>
<td>68.9</td>
</tr>
<tr>
<td>Still completing – BBus</td>
<td>5</td>
<td>3.3</td>
<td>72.1</td>
</tr>
<tr>
<td>Graduated other degree – GU</td>
<td>6</td>
<td>4.9</td>
<td>77.0</td>
</tr>
<tr>
<td>Graduated – BBus</td>
<td>7</td>
<td>23.0</td>
<td>100.0</td>
</tr>
<tr>
<td>Total</td>
<td>61</td>
<td>100.0</td>
<td></td>
</tr>
</tbody>
</table>

As also highlighted above, Table 53 below reveals that after five years only 14 of the 61 potentially at-risk students graduated from the Bachelor of Business program. A further two
students are still enrolled and completing the program. Three of 61 completed another degree within the case-study University, after transfer (two of these from a related degree, the Bachelor of Commerce and one from the Bachelor of Education), while a further three students are completing another degree program at the same university. The figures below suggest that a possible 16 (26.3%) of the original group of 61 students may possibly graduate from their original (business) degree program within the maximum 8 years allowed by the federal government. A total of six students (9.8%) from the original group of 61 students may possibly graduate from a different degree program at the same university within the maximum 8 years allowed by the federal government. Of those who have graduated, any failures by these students primarily occurred at the very early stages of their enrolment.

Table 46: Overall Retention and Graduation Outcomes – 2012 Cohort Targeted At-Risk Students

<table>
<thead>
<tr>
<th>TIMING - STUDENT LIFECYCLE</th>
<th>RETENTION INDICATOR</th>
<th>OUTCOME (% Re-Enrolled) into BBus</th>
<th>OUTCOME (% Graduated) Cumulative from BBus</th>
</tr>
</thead>
<tbody>
<tr>
<td>t=1</td>
<td>Targeted Semester 1 students re-enrolled in BBus Semester 2</td>
<td>83.6% (51 out of 61 re-enrolled)</td>
<td>n/a</td>
</tr>
<tr>
<td>t=2</td>
<td>Targeted Semester 1 students re-enrolled in BBus Semester 1, 2013</td>
<td>44.2% (25 out of 61 re-enrolled)</td>
<td>n/a</td>
</tr>
<tr>
<td>t=9</td>
<td>Targeted Semester 1 students re-enrolled in Semester 2, 2017 or graduated from BBus</td>
<td>3.3% (2 of 61)</td>
<td>22.95% (14 out of 61)</td>
</tr>
</tbody>
</table>

# Three of 61 (4.9%) completed another Degree within the same university after transfer (two of these from a related degree, the Bachelor of Commerce and one from the Bachelor of Education)

### A separate three (4.9%) students are completing another degree program at the same university.
4.17 Limitations

The study did confirm the at-risk nature of OP 11+ students, and that the relatively few at-risk students who did engage early in the semester and were supported by the interventions were indeed statistically more likely to succeed. However, it is important to recognise some limitations. The validity of these research results could conceivably be limited in the following ways, categorised in terms of internal validity (i.e. internal cohesiveness) of the research design and external validity (i.e. generalisability) of the results (Huck, Cormier & Bounds, 1974).

First, for the years 2012-2014, it is not possible to ascertain what the results and retention rates of at-risk students would have been if they had not engaged in the learning interventions. In the absence of a control group, it is only possible to compare results and retention rates with the 2011 at-risk student cohort.

Second, the statistical analyses are cross-sectional rather than longitudinal, meaning that it is not possible to compare the results of the same students over time. Nevertheless, at-risk student outcomes can be statistically compared between years 2012 and 2013 for equivalence, insofar as they are drawn from the same population; and the effects of the interventions assessed on a new sample from the same population.

Third, it is conceivable (though there was no evidence) that some maturation could have occurred between the commencement of the first semester of 2012 and the end of first semester 2013 (or 2014), insofar as more at-risk students over successive semesters might have become increasingly aware – e.g., from talking with other students – of the availability and benefits of engaging in the co-curricular interventions.

Fourth, it is possible (though again, there was no evidence) that some confounding could have occurred to the extent that, because interventions were available to all students, highly motivated students who were not at risk of failure or attrition might have ‘crowded out’ at-risk students.

Fifth, in the context of the quantitative analysis of the exit interview data, there was limited possibility of confounding from the use of multiple encoders of themes, since all encoding was conducted by the one person within the Office of Student Services.
Sixth, the use of LSES and LOTE as secondary risk factors of LSES and LOTE were effectively collected for the 61 students on the basis of first being identified as being at risk on the basis of their TE score and course preference. This is problematic for the use of LSES and LOTE as separate risk factors, as they can only be examined in conjunction with the prevailing factors used to identify the students to begin with. As data was also collected on a wide range of multiple proximal resources, similarly, this applies to other personal variables with in the thesis, including the age of the student.

There was an issue with very small cell sizes in the sample of AS Sessions. Only 16 students participating in the AS sessions and only 2 students attending more than once, which means any meaningful analysis is almost impossible. As discussed within the qualitative chapter students mentioned that they were more concerned about attending extra given to them in regard to numeracy courses as they felt they had developed sufficient literacy skills at school. This remains an element worthy of future research, in particular ways to encourage students to attend these types of sessions.

Finally, the generalisability of the research findings was constrained insofar as they were limited to one-degree program, one Business school, one university, particular years; particular risk filters; and particular early outcome markers, early and ongoing engagement markers, and co-curricular interventions.

**4.18 Summary**

The statistical analysis confirms that both attendance and participation in co-curricular activities had a statistically positive significant effect on academic success, while poor OPs (TE Score) and enrolment in numeracy courses both had a statistically negative significant effect on GPA (academic success outcomes). The multitude of other commonly cited variables that may affect a student’s academic success discussed in the literature review were not found to be significant in this study.

Both attendance and participation in co-curricular activities as well as enrolment considerations such as the types of courses and the number of credit points allowed to be undertaken are considered to be proximal factors (i.e. Systems variables, those that become relevant after a student has been admitted into university, such as enrolment into courses, and attendance and participation requirements), and thus, importantly, are able to be influenced by government and
institutional policies. Although found to be less significant than attendance and participation, the one distal factor (i.e. those characteristics that students ‘bring with them’ such as age, race, gender, socio-economic status and OP. that was also found to be statistically significant was OP (TE Score). The higher (worse) the OP score the more at risk students were of failing their courses. Overall the research from this case-study suggests that while there is no single panacea for creating academic success for all students, the involvement in co-curricular activities does influence students’ end of semester grades, as does OP and consideration of enrolment issues. However, the results also imply that the first, and perhaps key challenge, is getting students to engage with that co-curricular support.

The empirical results showed a significant association between early targeted, embedded multiple interventions and at-risk students’ academic success (in terms of GPA and pass-fail rates) and retention into second semester 2012. The SSAs are well placed to initiate early contact with at-risk students in order to help students to more broadly plan their studies and their engagement with other academic support services. That the interventions synergistically had significant impacts on first year at-risk student success suggests that it would add value to embed such learning advisors within the business degree program (and possibly others) so that students can take advantage of these services. However, the data is silent on a number of key variables raised earlier in this thesis: what is the impact of family background on student engagement with the SSAs? Are the students who enter the SSA program better resourced or more self-aware even before they engage with the process? How great is their awareness or engagement with the campus? What is the role that off-campus employment plays in relation to their ability to engage with either the SSAs or indeed their studies and the campus? Indeed, how did they perceive the SSA process itself, as a ‘user’. To begin to address these questions, captured by the in-depth qualitative interviews were conducted with 25 students, and in the following chapter we will analyse in both quantitative and qualitative form the responses derived from these interviews.
Chapter 5 – Study 2 Findings – Examining Effectiveness
Targeted Interventions on Academic Success and
Retention (Qualitative - Semester 1, 2014)

5.1 Introduction

This chapter presents and discusses the findings of the qualitative study of students, exploring both their response to the co-curricular intervention introduced in this thesis as well as exploring their perceptions of the elements identified in the literature as being predictive of retention and academic success. The findings are drawn from extended interviews with the 25 students who commenced their university studies in Semester 1, 2014 (Study 2). These students had participated in the university’s Academic Success and Retention Project and were the beneficiaries of extra support during their first semester of study. This study combines traditional thematic analysis with linkage to the objective longitudinal secondary data available as part of running a modern higher education institution. It combines the examination of transcripts of semi-structured interviews conducted with these students, with observations of their engagement with the university in subsequent semesters. This chapter details the observed impact of the distal and proximal factors on their academic success and retention. The analysis also provides an opportunity to link more directly to the ‘Five Senses Model’ (Lizzio, 2006) that underpinned the co-curricular initiatives developed for the university, including the SSA Consultations, PASS and AS Sessions. Importantly, the perceived impact of the Model and co-curricular initiatives on academic success and retention is also evaluated in qualitative terms, taking into account the students’ perspectives. The questions posed at the beginning of this chapter helped to explore the students’ own perceptions of the effectiveness of the interventions on their academic success and re-enrolment in second semester, having experienced the interventions first-hand. The questions helped to inform the researcher as to the students’ understanding of how they viewed their place in the university and the co-curricular interventions and allowed the researcher to consider the effect of the extra assistance provided to the target group. This provided an opportunity to gauge the extent to the perceived effect of what appears to have helped these students, in terms of both academic grade success and being retained into the second semester. Additionally, the design enables exploration of the students’ perceptions of their place in the university, their background, and how it impacted on their ability to engage with the university.
The quantitative data of Study 1 analysed in the preceding chapter is silent on a number of key variables raised earlier in this thesis, in particular from the students’ perspective. Study 2 sought to explore these variables through the following questions:

1. What is the impact of the students’ distal characteristics such as family background (e.g., being FiF or second-generation students) on student engagement and retention when linked to consultations with the SSAs?
2. Do the students perceive themselves to be more resourceful or do they have greater self-awareness of what it means to be a university student, after they have completed at least one consultation with the SSA?
3. How strong is the students’ awareness or engagement with the campus?
4. What role does off-campus employment play in relation to the students’ ability to engage with the interventions (either the SSAs, PASS and/or AS Sessions), and with their studies, the campus, staff and peers?
5. Perhaps most importantly, from a program-evaluation perspective, how did the students as ‘end-users’ perceive the SSA consultation process?

To begin to address these questions, qualitative interviews were conducted with 25 students, and in this chapter the data derived from these interviews is analysed. Having completed their first semester of studies, these students were able to reflect on how they envisaged university from the perspective of their high school experience, and how they experienced their first semester of university. The present study used this qualitative data to examine the perceived impact of the co-curricular initiatives delivered as part of the Academic Success and Retention Project.

5.2 Purpose and Scope of Chapter

The previous chapter analysed quantitative data from Study 1 on drop-out, stop-out and internal transfer rates (2012 cohort), and on the overall success (in terms of GPA) and the retention rates of the same cohort into semester 2 of 2012 and semester 1 of 2013, and their graduation status as at the end of 2017. Analysis of Study 2 data in this chapter builds upon that work in a qualitative direction, examining whether a group of students with similar student risk and discipline profiles (within the same degree program at the same university, having similar distal and proximal characteristics) perceived the broad range of support services and co-curricular activities provided by the university to have impacted positively or negatively on their
academic success and retention. As a broad theoretical framework shaping the interview, the ‘Five Senses Model’ (Lizzio, 2006) backgrounded the design of the semi-structured interviews.

In Study 2 it was considered necessary to interview students who had most recently completed their first semester at university (to mirror the approach in Study 1) and thus the Semester 1 2014 cohort was interviewed after completing their first semester. The academic success and retention of this cohort was then tracked over four years to the end of Semester 2, 2017, to assess the academic success and retention rates of these students over a longer period of time. To do so the study leveraged the substantial secondary data retained on each participant by the enrolling institution.

As with Study 1, all students in Study 2 had access to the university’s resources and support services, access to the support of SSAs, and the availability of the PASS and AS Sessions. However, since the SSA Consultations had proven to be significant for the students through Study 1, at least with regard to their academic success and retention during first semester, it was deemed particularly important to consider the perceived impact of the SSAs from the students’ viewpoint. Therefore, unlike the Study 1 cohort, all 25 students interviewed in Study 2 needed to meet one additional criteria for inclusion in the study: participation in at least one consultation with their SSA during the previous semester.

The following analysis allows the perceptions of students to be objectively related to the long-term variables that educators commonly measure: academic performance (success) and retention. Additionally, the open-ended questioning of at-risk students in Study 2 creates a rich dataset that enables us to gain an insight into the ‘black box’ (unknown) of an at-risk student’s world. Included in this study, then, are factors that have been relatively less investigated in-depth in the peer-reviewed Australian and international literature but are nevertheless a priori likely to impact on the students’ studies. These variables include students’ access to and type of transport, and travel distance and travel time between residence and university; their ‘sense of resourcefulness and connectedness’ in relation to campus; the perceived effect of campus surroundings on their ‘sense of capability and purpose’; and parental influences and support. All of these affect students’ sense of self (‘student identity’).
5.3 Interview Structure

Interviews with students were structured through questioning in this order: demographic information about students, secondary-school background, basic living arrangements and transport arrangements to university, discipline/degree knowledge, satisfaction with university studies, perceptions of and experience with SSAs, PASS and AS Sessions, and finally, questions that explored the applicability of Lizzio’s (2006) ‘five senses of success’ model. This latter group of questions was extended to include students’ available resources, their paid employment and the impact of these on their studies and work/life balance. Appendix B presents the structure of the interview questions in detail. It should also be noted here that students were encouraged to elaborate and diverge from the structured aspect of the study during their interviews.

5.4 Subject Recruitment and Interview Participants

Given the nature of the project, purposive sampling was considered the most suitable method for the study (Jupp, 2006; Swanborn, 2010; Tracy, 2013; Yin, 2009). There was a single target participant group (pool) for this research. It was the case-study University’s Bachelor of Business students enrolled in their first year of studies at the University in Semester 1, 2014, who had completed at least one initial consultation with one of the Bachelor of Business SSAs during that semester. These participants had been identified by the university as ‘at-risk’ students, based on the university’s predictive analytics. Initial contact and recruitment of these students for interviews with the author of this study were made via an invitation to them to attend a welcome back to Semester 2, 2014 seminar. All 60 students who had been identified as ‘at-risk’ at the beginning of the first semester in 2014 were contacted, initially by phone calls and a text message in an attempt to establish their interest in participating in confidential, one-on-one, face-to-face interviews, on a voluntary basis. A sample of 25 ‘at-risk’ students voluntarily participated in the interviews, their profiles in Table 54 and demographics in Table 55 below. The semi-structured interviews were conducted at the start of Semester 2, 2014. The procedure for the interviews, as noted previously, was reviewed and approved by the case-study University’s Human Research Ethics Committee.

Table 47: Profile of Targeted At-Risk Interviewed Students in 2014
First-year Bachelor of Business students considered to be at risk in Semester 1, 2014 and who had undertaken at least one interview with the SSA  

Bachelor of Business Students interviewed for Study 2  

<table>
<thead>
<tr>
<th>Description</th>
<th>N = 60</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bachelor of Business Students interviewed for Study 2</td>
<td>N = 25 (41.66%)</td>
</tr>
<tr>
<td>Range of interview length</td>
<td>32–72 minutes</td>
</tr>
<tr>
<td>Average length of interview</td>
<td>53 minutes</td>
</tr>
</tbody>
</table>

### 5.4.1 Demographic Information on Interview Participants

The demographics of the students interviewed are summarised in Table 55 below:

**Table 48: Distal Characteristics of Relevant Targeted At-Risk Interviewed Students in 2014**

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Range (primary characteristic)</th>
<th>Number (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>OP (TE Score) range (primary characteristic)</td>
<td>11–18</td>
<td>Average: 13</td>
</tr>
<tr>
<td>Non-OP entry students</td>
<td>N=6</td>
<td></td>
</tr>
<tr>
<td>Degree preference range (primary characteristic)</td>
<td>3–6</td>
<td></td>
</tr>
<tr>
<td>LOTE (Secondary characteristic of students selected)</td>
<td>N = 6</td>
<td>(24% of interviewed students)</td>
</tr>
<tr>
<td>Low SES [based on Postcode Index] (Secondary characteristic of students selected)</td>
<td>N = 5</td>
<td>(20% of interviewed students)</td>
</tr>
<tr>
<td>Living with family</td>
<td>N = 20</td>
<td>(80% of interviewed students)</td>
</tr>
<tr>
<td>FiF students</td>
<td>N = 13</td>
<td>(52% of interviewed students)</td>
</tr>
<tr>
<td>Gender</td>
<td>Female = 17</td>
<td>(68% of interviewed students)</td>
</tr>
<tr>
<td></td>
<td>Male = 8</td>
<td>(32% of interviewed students)</td>
</tr>
<tr>
<td>Age Range</td>
<td>17–42 years (3 students aged &gt;21)</td>
<td></td>
</tr>
<tr>
<td>------------------------</td>
<td>----------------------------------</td>
<td></td>
</tr>
<tr>
<td>Average Age (mean)</td>
<td>20.32 years</td>
<td></td>
</tr>
<tr>
<td>Average Age (medium &amp; mode)</td>
<td>18 years</td>
<td></td>
</tr>
</tbody>
</table>

*Source: University student data (Retrieved, 2014).*

### 5.5 Study 2 Findings

To further inform the findings of Study 2, the academic success, retention and graduation rates of the interviewed students are outlined below. This data is examined in conjunction with the student attendance rates at SSA Consults. Below the first semester academic success and retention rates are also outlined in regard to SSA consultations, PASS and AS Sessions. Finally, a more detailed explanation of the academic success and retention of these students is outlined in qualitative terms, from the students’ perspectives. Caution however must be taken with regard to the discussion of quantitative outcomes due to the small sample size.

#### 5.5.1 Academic Success, Retention and Graduation Rates of Interviewed Students

Of the 25 students who participated in interviews, a quarter disclosed during the interviews that they had considered internally *transferring* within the university to another degree program, or *stopping-out*, that is, leaving their current institution, and transferring to a program at another university. Academic transcripts reveal this percentage *under*-estimated actual transference or stopping out. A quarter of students did subsequently internally transfer, while an additional two students ‘stopped-out’ to other universities; one in Queensland and one interstate. Thus, collectively a third of the students left the program, but cannot be considered as cases of attrition from the higher education sector. A further two students indicated during the interview that they would be unlikely to graduate from the Bachelor of Business. These students were accurate in their perception of their future progress: having subsequently dropped-out of university. It is noted that this is a small sample size and therefore any findings cannot be considered significant. However, in itself it is interesting to note that these findings suggest that simply by asking students about their likely progress in a confidential setting, one can obtain a highly accurate prediction of their likely trajectory. Nonetheless, similar to other statistical results provided in this chapter more research is required to be able to suggest any significant findings.
Forty percent of students interviewed (10 out of 25) graduated from the university within four years of their original enrolment in Semester 1, 2014; 90 percent from the Bachelor of Business and 10 percent from the Bachelor of Commerce. The influence of having FiF status (data unavailable for Study 1), proved very informative and perhaps to many counterintuitive, with these students out-performing second-generation students in terms of both long-term retention and graduation findings as outlined below.

5.5.2 First Semester Academic Success, Retention and Graduation Findings of Those Attending/Not Attending AS Sessions

All interviewed students attempted at least one literacy-based course and thus were eligible to attend an AS Session. Of the total interviewed cohort, 88 percent passed their literacy-based course. Of the 12 percent who failed, none had attended an AS Session. Those students who attended at least one AS session accounted for 40 percent of all interviewed students (10 of 25), with 100 percent of these students passing the literacy-based courses, for which they were enrolled into. In comparison, 80 percent of the students who did not attend an AS Session (12 of 15), passed their literacy-based courses. Overall the attendance at the AS Sessions was poor, with several students commenting that they were more interested in focussing on numeracy skills (ST20), (which they had not completed at school) and that they were time poor (ST2, ST11, ST15, ST24) or lacked time management (ST4, ST17). These students were the same ones that stated that they worked more than 20 hours per week or had to travel longer than half an hour each way to attend campus. At the same time however, 76 percent of students commented that they need to build their capacity with regard to time management, note-taking, writing referencing, computer skills and time management.

5.5.3 Academic Success, Retention and Graduation Rates of First-in-Family and Second-Generation Students

Study 2 findings further suggest that of the 25 students interviewed, those who were FiF performed significantly better than the other students. This was evident not in terms of first-semester GPA ‘success’, but in long-term retention and graduation, as Tables 56 and 57 reveal below. The findings here are particularly interesting because in the previous study, FiF status could not be distinguished in the sample. For Study 1, students’ FiF status as a standard variable
was not available to the author as clean data, even though the status was theoretically linked in the literature to important outcomes.

Table 56: FiF and Second-Generation Students (Semester 1, 2014) Academic Success Rates

<table>
<thead>
<tr>
<th>FiF (Generation) Students N=13</th>
<th>Second -Generation Students N=12</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pass rates (GPA ≥ 4) after First Semester 8 of 13</td>
<td>Pass rates (GPA ≥ 4) after First Semester 10 of 12</td>
</tr>
</tbody>
</table>

*Source: University student database. (Retrieved 2014).*

Table 57: FiF and Second-Generation Students (Semester 1, 2014) Retention and Graduation Rates as at end of 2017

<table>
<thead>
<tr>
<th>FiF (Generation) Students (N=13)</th>
<th>Second Generation Students (N=12)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dropped-out or Stopped-out of University 2 of 13</td>
<td>Dismissed, Dropped-out or Stopped-out of University 8 of 12</td>
</tr>
<tr>
<td>Completing studies after internal transfer 1 of 13</td>
<td>Completing studies after internal transfer 0 of 12</td>
</tr>
<tr>
<td>Still completing Bachelor of Business 3 of 13</td>
<td>Still completing Bachelor of Business 1 of 12</td>
</tr>
<tr>
<td>Graduation rates after 4 years from Bachelor of Business 7 of 13</td>
<td>Graduation rates after 4 years from Bachelor of Business &amp; Bachelor of Commerce 3 of 12</td>
</tr>
</tbody>
</table>

*Source: University student database. (Retrieved 2018).*
The Study 2 interviewed student cohort was split roughly equally between FiF students and those from families with a history of higher education. There were 13 FiF students within the cohort of interviewed students. Fifty-three percent of all FiF enrolments have graduated from the Bachelor of Business within four years of enrolment (end of 2017). In comparison, only two of the 12 second-generation student enrolments have graduated from the Bachelor of Business, although an additional two second-generation students graduated with a different degree. Thus, FiF status was associated with twice as high a likelihood of graduation.

The FiF participants in many key senses appeared to be drawn from the same population as those who came from a family with university heritage. They were almost the same age, had the same entry scores, and were just as likely to come from a background of non-conventional pathways to university (i.e., not having a formal TE score). These latter two characteristics are traditionally used by both university planners and researchers to predict tertiary success, and it is interesting to note that in this study they do not do so.

However, the two groups did differ in some key particulars. FiF participants were more likely to be female (10 of 13 FiF students compared with 7 of 12 non-FiF students). They were less likely to have their father employed in a self-identified white-collar profession or be self-employed (6 of 13, as opposed to 9 of 12 for those who were not FiF), but this tendency was not the case for their mother’s profession (where around half of both FiF and non-FiF students were white collar or self-employed status). Even so, the data gave other signs that those of FiF status were not of lower socioeconomic status. Those using a car to travel to university were more likely to be FiF status (just over three-quarters travelled by car) than non-FiF status (just over half). Their mode of transport was reflected in faster travel time to university (by around 20 percent).

5.5.4 Qualitative Findings of Responses Relating to Questions about the Five Senses of Success

The following sections outline the interviewed students’ qualitative responses to the semi-structured interview questions. The material is organised as follows. The first section concerns general responses to the co-curricular sessions and the individuals who delivered the co-curricular content. Following sections are devoted to each of Lizzio’s Five Senses, before turning to themes that emerged in the student discourse that are not easily captured in, or reconciled with, the Five Senses Model. Unusually, findings of bivariate statistical analysis of
this admittedly small group of students are reported where the nature of the coding of responses has made this possible. With participants’ responses mapped against their retention, GPA performance and completion data, this study, even while small, offers an unusually (and objectively) ‘long view’ perspective for a qualitative study.

5.5.5 Overall comments on PASS and SSA interventions

The term used most commonly by interviewed students to describe PASS and mentors was “helpful”; approximately three-quarters of those who attended these sessions said they preferred PASS to traditional tutorials as they found the PASS classes more interactive. In comparing PASS with traditional tutorials, they claimed that having to regularly attend PASS to be eligible for the “exam buster session” was important, with some remarking on the power of this incentive for improving their own and others’ attendance. “With tutorials, by the end of the semester if you don’t get marked for being there, there are two or three people there”, one student (ST2), remarked.

In addition to more than ‘mere attendance’ at PASS being encouraged, a common theme to emerge here was the depth of engagement in the PASS, which has been voiced in previous scholarly studies in the field (Adam, Hartigan, & Brown, 2010; Blanc et al., 1983; Congos & Schoeps, 1993; Etter et al., 2001; Marrone & Draganov, 2017). One student, for example, remarked:

in a [standard] tutorial … the tutor kind of like just read through the sheet and gave us the answers, whereas in the PASS they like to let you work through it and they actually say how well you’re doing, rather than just like telling you what the answers are. They give you a chance to figure it out. So that was really good. (ST10)

A social element to the peer component that PASS attempts to foster also emerged in the analysis. In this example, the ‘people’ who the student refers to are, of course, fellow students:

I find in PASS there are a lot more people there you can discuss, like, the topics with, whereas in tutorials you’re sort of just following the tutor … I don’t think I would have passed stats without attending [PASS]. (ST2)
This social element extended beyond content development and understanding, to a sense of social support. Many students spoke of a sense of connection with their peers, being “in the same boat, paddling together” [ST10] and “working together” [ST2, ST7, ST9, ST16, ST20]. Students benefitted from listening to responses when their peers asked questions, comfortable that they were not alone in failing to fully grasp concepts. Around a quarter of the students, however, did not specifically prefer the PASS approach to the standard tutorial approach, believing both were beneficial in their own way. Views that focused not on process or approach, but on the personalities and perhaps abilities of different PASS mentors, with their knowledge and communication skills, varied significantly. This was reflected in student preferences that were often course and mentor-specific, e.g., “He didn’t know what he was doing in economics, but in accounting if I ask a question they’re going to know the answers” (ST20).

By contrast with responses to the PASS program, which was larger and staffed with facilitators who were generally younger and less carefully vetted than the SSAs, responses to the SSA program were more consistently positive. The following sections consider the students’ responses to the SSAs through a number of themes guided by the Five Senses of Success Model (Lizzio, 2016). On the broadest level, almost all comments used terms such as supportive, caring, concerned, helpful, available and friendly to describe the consultant and the consultation experience. Indeed, a quantitative analysis of the content of these responses shows almost uniformity, with 92 percent of all students’ comments of a positive valence when referring to the SSAs. Positive responses came from students who were thriving, revealing that these students had been motivated by their engagement with the SSA program:

Helpful. Very helpful and he’s really friendly as well. That was sort of my first university experience. I met up with him before I started and he sort of put me at ease. I was a bit worried before then but he gave me lots of resources to prepare myself and I felt really prepared before I even started. This is something that just doesn’t happen at school. It motivated me. It’s very individual to this…. (ST2, with a GPA of 5.44)

And from those who were appreciated the assistance but struggled to juggle study, work and travel:
It was really good. I found it very informative. It was a little bit of an information overload but I found it very informative, answered all the questions I needed and sort of put me at ease and what I needed to know, very friendly. It definitely helped me sort of speed up the transition, definitely. Well worth it, yes. If I need any, it’s just a general information base. If I’m unsure about something, I know I can get reliable information from [SSA] (ST24, with low GPA who dropped out having found his commute to university made it too hard).

Such was the uniformity of response, that no students used negative words to describe the SSAs. However, a small minority of interviewed students described the consultation in terms of finding them challenging (e.g., “scary but helpful” [ST12]). It is also noted that the quality of the teaching of the PASS sessions was often preferred over teaching in normal tutorials. As such, this is an area of further research, in particular whether the students felt that the age of the person teaching made any difference to the interaction within the classroom.

5.6. Five Senses Model

5.6.1 ‘Sense of Student Identity’ and ‘snugness’ of fit

For Lizzio (2009), student identity seems to be analogous to the notion of ‘academic self-concept’ and relates to how students see themselves. However, the way Lizzio frames sense of identity relates to a fit between the students’ own ‘core values and principles’ and those of the university at which they study. This interaction is a complex point of analysis. While the institution may change only sluggishly, a student’s sense of self may be relatively fluid, as the data revealed. Conceptions of ‘possible selves’ alter for students as they transition through university (Lizzio & Wilson, 2004; Markus & Nurius, 1986). A number of factors emerged in the data that were capable of altering the student’s self-concept or the snugness of fit between student and university, and these factors filter through into more than simply the single category of student identity. For example, as students became more aware of resources available to them and became familiar with university requirements, their sense of resourcefulness and their capability also changed, strengthening or weakening in response, at least in part, to their experience. This is dealt with first through discussion of the formation and altering of self-concept/self-identity. Discussion then moves on to the question of fit.
5.6.2 Student Identity

Interviewees’ responses on what it meant to them to be a ‘student’ were less clear cut and less easy to classify than their direct perception of ‘fit’, and more particularly, how the university fitted their (‘fixed’) self. Perhaps most strikingly, students spoke of a sense of emerging determination when faced with hurdles, or that same determination being sapped when hurdles either individually or collectively proved insurmountable. This level of determination and associated planning seemed in some cases to be ‘seeded’ by the advice of SSAs, and sometimes occurred only after arriving in the university setting.

I wasn’t sure [if I wanted to go to uni] at the beginning but after seeing, opening my eyes a little bit and realising that without uni I don’t know really what I’d do. I needed a degree. I wanted to be able to achieve something in life. Now I definitely want to stay at university (ST7)

This theme of self-discovery was echoed by ST17:

I was talking to a friend of mine about this and I said it’s unbelievable how much I actually love studying, which I didn’t when I was younger and I sometimes felt that back then studying tourism diploma now is to me beyond, I just think what a waste. I would have never studied that today. That was just a course I chose because there were more things that I obviously understood what to do or had the guidance, the right type of guidance so I studied something completely irrelevant to what I really wanted to do… I was finding it really difficult at the beginning, but right now, midway through, it’s fine.

One student who went on to achieve high average grades despite the ‘disadvantage’ of a relatively poor university entrance score, focused on the planning and information assistance offered by the SSA, observing, “he was full of information, which I needed – and quickly”. The SSA helped provide prompt direction, which enabled the student to find herself back on a path “instead of wandering around and kind of doubting yourself” (ST17).

In the section below on sense of purpose, this thesis analyses the degree to which long-term planning impacted on student success, but there was also evidence of an evolution in the students’ willingness to develop a plan to fit the university context. This aspect of planning,
either seeded by the SSA or developed by the student more organically in response to pressure of workload, was one of a number of avenues for family influence.

The role of family goes beyond providing resources and information, regardless of whether the student is following in the footsteps of relatives already graduated. Indeed, family appeared to often be key in determining students’ university-related identity. Students – even those who were FIF – commonly observed it was their family who set expectations and provided encouragement. “Mum’s proud. She’s never been to uni before. She thinks finishing the degree will help me find a better job” declared one student who despite the disadvantage of poor high-school performance was pushing on and had achieved a comfortable passing GPA. Similarly, ST12 stated “both my parents were really proud … and my auntie used to work here, and she said it was really good here” achieved an above-pass GPA, despite a high school performance that in the 1990s, for example, would have seen her refused entry to university. When students offered positive comments about family support for both attending university and having a vision aligned with their current study program, the impact was clearly profound. “Dad told me that business is a good thing … my parents are around me as well (ST12)”. ST20’s father, (who had wanted her to attend university as a FIF student), passed away during her first year of enrolment, and her interview was punctuated by tears in stating how proud her father would have been of her. The ‘snugness of fit’ between the student’s own vision, their current identity as students, and their family’s support for that vision, was profound. These students, at the four-year follow-up mark, had all graduated.

A question of fit

The issue of ‘fit’ between institution and individual emerged in the interviews in a number of ways, at times in an unexpected manner. Multiple reasons the students provided for attending the case-study University included some not related to discipline choice or curriculum. The most common reasons were, in order of most cited, the university’s reputation, the influence of friends and family, geography (convenience, or being a non-city campus), and factors related to the students’ tertiary-entrance scores.

Reputation

“I’d always been pretty set on [case-study] university because I’d heard really good things about it and it’s close to my home”, declared ST9. The case-study University is recognised as not the most elite institution in the crowded tertiary-education marketplace of Southeast
Queensland, and for some this was an appealing feature. One student, for example, was drawn to the more personal atmosphere of the case-study University (and in particular the SSA system), by contrast to one of its competitors where, as ST20 observed, “I was just literally a number… I just hated it, absolutely hated it.” Of interest, for the students who claimed the university’s reputation impacted positively on their choice of institution enrolment, the source of information about the university was not the university’s own marketing, but the students’ own, relatively immediate, personal experience: feedback from family and friends who had studied at the institution. In some cases, the university’s reputation in areas other than its business school was the driving factor. For example, one student (ST4) spoke of being drawn by the university’s Criminology offering and had chosen the university’s business school as a stepping stone to that, while another spoke similarly about the university’s high-ranking Aviation program.

Geography

Geography influenced some students’ decision-making in a variety of ways. For some students, the fit was one of “convenience, really” as ST3 (a drop-out student) put it. “That was pretty much it. It was probably the closest and easiest to get to”. The unusual ‘bush’ (heavily forested) setting of the main campus (which is the main location of the Business School) was also appealing for a number of students. The university’s forest setting was not a direct element of questioning by the researcher, but emerged spontaneously in some students’ responses:

It’s actually pretty good with [case-study] university I find, because it’s in the middle of a bush. Everybody is more relaxed and yet they do have to go somewhere but they kind of prioritise and that’s what I liked about it (ST11, dropped-out student).

“I’d always seen it as a kid driving down the highway”, said one student (ST14), who was also attracted to what they recognised as the university’s country atmosphere.

I just found I liked the countryside [atmosphere of the university] because I live in the country and there wasn’t a lot of parking opportunities for me at the other universities because I drive a Land Cruiser and it’s way too big to park anywhere but the [case-study] university.
A high-achieving young student identified appeal partly in what the campus was not. “I didn’t want to go into the city every day” (ST9). The intimacy of the campus, being literally ‘nested’ in a forest, appeared to be a background ‘layer’ to the university’s appeal to these students, and contrasted positively with how they saw other university choices in Southeast Queensland.

You come here and you can do it without feeling like the world’s too big, you know. I feel this is the closest thing to school in, as I feel comfortable being here. I didn’t feel comfortable being at [University X] so I dropped out and transferred to [case-study] university”. (ST20)

**Entrance scores**

For some students, their enrolment at the university’s Business School was a matter of ‘convenience’ on the basis of what academic program their tertiary-entrance score would make them eligible for university, rather than a choice driven by their own or someone else’s passion. Consequently, perhaps, the grip of these students on their continuing studies was clearly tenuous. Many of these students appeared to have ‘connected’ to their peers (part of what Lizzio sees as sense of connection), yet their identity as students was not aligned with the academic culture. Their decision to accept an offer from the university to undertake a Bachelor of Business degree appeared to be related to the degree of fit between their modest tertiary-entrance score, and the entrance requirements of a general business degree at the local university.

A significant number of the interviewed students were in this category, thus from the outset not particularly wedded to the goal of completing a business degree. Their tertiary-entrance scores had not entitled them to direct entry into the university or the bachelor-degree program that they most wanted to undertake. Indeed, more than a quarter of the interviewed students (ST4, ST15, ST16, ST18, ST21, ST23) saw their initial university experience – Bachelor of Business in the case-study University in purely functional terms as a means to an end that was not this degree. Some of these students had a clear plan afoot; They saw enrolling in the Bachelor of Business program at the case-study University as a necessary first step through which they would seek to ‘upgrade’ their tertiary-entrance score to move to a degree program that they preferred more highly within the university, or as a stepping stone to another university again, having often entered university and the Bachelor of Business under the influence of their school or family. The students in this cohort who wanted to transfer internally
to another degree or ‘stop out’ to a sandstone university pursued their aims with varying outcomes. Some graduated with their preferred degree; others had persisted, but four years later still had not achieved their dream. Some students were defeated in terms of being able to achieve their precise dream, via internal transfer or stop-out, to eventually graduate, with a degree they preferred more highly than Bachelor of Business, but they were successful in completing degree. For example, a student who originally targeted aviation (at the same university) and subsequently managed to transfer to that degree program, subsequently returned to the Bachelor of Business degree program, and was progressing through this degree with a passing GPA. An interesting exception to those pursuing a ‘seek upgrade’ strategy is ST25 whose father wanted her to follow in his footsteps to a different (sandstone) university, but because she did not “get good enough marks” she had chosen the current university. This student graduated with a Bachelor of Business degree from the case-study University where she first enrolled, having found her own ‘student identity’.

A lack of ‘fit’?

While the factors discussed above – university reputation, geography and entrance scores – were identified most commonly by the students in terms of ‘fit’, another factor that appears to be significant, since recurrent indirectly through the students’ interview responses, is socialising. A few students mentioned that one appealing aspect of the Bachelor of Business program was the presence of friends, and some identified the chance to socialise while they were deciding on their future. A factor associated with ‘deciding on their future’, for a few students, appeared to be that their chosen degree program would provide them with something legitimate to do and/or place to be – i.e., they perceived it would perform something like a fill-in function – while they were undecided about the next step in life. For example, ST1 was a male FiF student who entered university at the age of 17 but conveyed that he was more “interested in going travelling”, and explained, “I’m still not all in my head what I’m going to do with the next five years of my life”. The student later dropped out, with a failing GPA.

5.6.2 ‘Sense of Connection’

Students’ responses revealed that ‘goodness of fit’ between student and institution was closely involved not only with student identity, but also with students’ sense of connection. This interlinkage made it difficult to disentangle students’ ‘sense of connection’ from ‘goodness of fit’. In the literature, sense of connection emerges as a largely ‘extra-curricular’ predictor of
persistence at university, related to issues such as students’ connection to peer groups, involvement in campus life, and sense of emotional connection to the university campus itself (e.g., Pascarella & Terenzini, 2005; Kahu & Nelson, 2017). Sense of connection is also seen to relate to students’ connection with staff, which has been identified as a key predictor of academic success (e.g., Coates & Goedegebuure, 2010). Aspects of course design can also build students’ sense of connection, for example, when students are bonded through common curriculum components, or through a degree program featuring laboratory or project work that requires students to work consistently with the same group. A recent study of computing students showed that creating an ‘artificial’ combined cohort can be beneficial for student retention (Cabo & Satyanarayana, 2018).

For business students in a general business degree program, team-project work is increasingly common but is still the exception, and usually involves only short-duration connections with a project team. Thus, having a common purpose, which can provide sense of connection among students can be absent, or very limited, when enrolled in a business degree. Nevertheless, in the case-study example, the University where the Bachelor of Business degree program students were enrolled offers something that effectively serves as an alternative to connecting students through ‘shared purpose in shared projects’, which the Bachelor of Business degree of itself does not provide. Here, rather or more than course design, it is the university’s physicality that can foster in students a sense of emotional connection to the university campus. The campus that is home to the case-study University’s school of business is in a relatively isolated, self-contained location surrounded by natural forest, inside which students share university-specific facilities. This geophysical arrangement not only contributes to a ‘relaxed atmosphere’ that helps unify students, but also creates a discreet space where students can connect with the campus and with each other if willing and able.

Some students interviewed also recognised the absence of connection with other students and its impact on their degree program:

Maybe if I had, this sounds ridiculous, but maybe if I had a few more friends and I could get into study groups. I’m sort of doing it completely by myself now. I know if I had like... It’s just hard. I know myself. I’m in touch with a different working industry to everyone else. Nobody really understands like how much effort and like time it takes up and they don’t really understand what you do. It’s hard because you can’t talk about similar things because they have no idea (ST2).
Students were also asked to elaborate on their involvement with other students arising from the PASS program. The PASS program, as previous research indicates, builds a sense of cohort “because you’re all in the same boat” (ST16), which is thought to enhance academic performance and a sense of efficacy, confidence, connectedness, community and capacity, in addition to personal responsibility (Etter, Burmeister & Elder, 2001; Marrone & Draganov, 2017; Singh & Tregale, 2014). However, their membership of formal and non-formal social, sporting or study clubs was very limited (12 percent said they were members). The primary reason given for their low rates of membership in clubs was lack of time and lack of interest in that part of the university experience. Potentially because by very nature the at-risk cohort was more likely than other students to experience socio-economic disadvantage, these students appeared to be more interested in – or needed to – use their time earning an income; almost all had jobs that were unconnected to their study or their campus.

The students’ relationships with their peers appeared, overall, to be weak. Those for whom these relationships appeared to be almost nil were, it emerged, at high risk of attrition. Three students reported making no friends at university and all three later dropped out of their degree program.

As to students’ sense of connection to staff, the length of responses overall tended to reflect engagement not just with the interviewer (an academic staff member), but with the university staff in general. One student (ST3), for example, who answered most interview questions with “no” or “yeah”, or, in an extended response “it was a bit boring”. Overall, however, the students’ sense of engagement with staff as expressed during interviews appeared to be high. When talking about the development of their sense of engagement with the university and about their degree, students spoke primarily of regularly attending lectures, tutorials, and taking advantage of academic and administrative support consultations, such as participation in co-curricular activities including multiple visits to the SSA, and to a lesser extent attending PASS and AS Sessions.

In describing the university’s academic and general staff, a considerable majority of this cohort used descriptors similar to those they used to describe the SSAs, with around three quarters of the participants in Study 2 using terms such as “friendly”, “helpful”, “enthusiastic”, to describe staff regardless of their role. ST17, a mature-aged female who had the highest GPA of the graduating students from this cohort (5.75) claimed, “I have to say the staff make a huge difference, or made a huge difference”, adding, “I’ve really got to know my lecturers and my
This sense of the accessibility of staff as a *resource* (discussed further in a later section) flowed through to both emotional and cognitive progress in developing themselves as students:

I wish I’d come to [case-study university] first. I honestly do. I’m not just saying that because you’re interviewing me. When I first came here I told [the SSA] about my situation and he has been amazing. I didn’t expect how much he’d help me. He helped me see a counsellor here as well, and she’s awesome. I don’t know [case-study university]. I just feel like I can do it because I’m here. If I were at [X University] I would have quit. I would have… Even the tutors, they gave a shit, excuse my French. They actually do. I saw a tutor today and I’d just met her and she just said, “Email me anything you need. Come and see me”. I just felt like I would do that… Honestly, I’m enjoying it so much already. I really am. It feels more of a community here. (ST20, since graduated)

A minority, however, clearly did not recognise and use this engagement with staff as an opportunity to benefit their learning, studies and progress with their degree. They associated it more with a sense of ‘fun’ or ‘entertainment’ in delivery of the curriculum. These students spoke of their close relations with staff in terms of enjoyment rather than useful opportunity for academic and personal development. These students’ responses made no mention of the value, or even the possibility, of asking staff for advice or feedback, thus demonstrating a shortfall in resourcefulness to address academic challenges. This level of disengagement with opportunities for academic and self-development through the university experience appeared to be related to a more general lack of connection with the university itself, as the interviews for the present study revealed. The students were interviewed on the main, ‘village style’ campus set in bushland in the south of Brisbane, in a coffee shop or meeting room within 200 metres of the university’s post office, medical service and kebab shop. However, most students in this ‘unengaged’ category could not identify the location of any of these arguably ‘key’ facilities; the medical service was best known of all on-campus services, with half of the interviewed students able to identify its location. This issue is considered further in the analysis of sense of resourcefulness later in this thesis.

**Broken connections: factors that militate against connection**

Analysis of data revealed a number of variables that militated against a strong sense of connection for some students with the university campus, staff, fellow students and the
curriculum. These variables included factors both within and beyond the control of the university.

In the latter (not beyond) category, most prominent of the issues was the inadequacy of parking facilities, which along with scheduling of night-time lectures proved to be a problem particularly (but not exclusively) for female students. A high achieving student, ST9, declared “once it took about an hour and a half to find a car park … There’s no parking here … I’ve paid for a parking permit I think I deserve one”. Others spoke of driving literally in circles (the campus has a ring road around its heart) following other cars in fruitless pursuit of available parking spaces. “The lecture times”, another student noted, “along with travelling at night meant [that] I have to get two buses actually… so usually my Dad just comes and picks me up” (ST6).

What appeared on the surface to be relatively simple connected problems, parking and night time lectures, proved to overlay a complex mix of concerns that were helpful in predicting attrition. Connected to the issue of lecture times were commute times to the university. The quantified and qualified data reveals a close link between students living at distances requiring a substantial commute to campus and sense of [dis]connection. Time spent commuting also interacted with students’ financial resources and having time for study, and commuting time and financial resources both clearly leaked through to issues relating to work–life balance. The sense of connection, in such a tight balance, could be ‘snapped’ simply by the student living too far from campus.

Many of the students had lived closer to their high school than to university and appeared ill prepared for the impact of travel time on their commitment to study. The inconvenience of the commute to keep living at home with their family was offset, for 20 of the 25 students, who reaped the (partial) advantages from this living arrangement; only two of these students admitting to paying rent (both were FiF students with family acting as ‘cheerleaders’). This meant that unlike high school, which was typically in the same postcode as ‘home’, university was still an average travel time of 36.5 minutes each way, plus parking (when travelling by car). This average commute time conceals a high degree of variability in both mode of transport and commute time. The most common mode of transport among these students was car (17), followed by bus (6) walking (2) and a combination of train and bus (1). Thus, the issue of parking impacted on a large majority of the students in this study. However, the commute length itself also had a measurable impact on retention. The further away the student lived from
university, the less likely they were to graduate. Of the 25 students who were interviewed, the retention and success (graduation) of those who enrolled while living more than 20 kilometers from campus was very poor (see Figure 7).

Of the 10 students who graduated from the case-study University, only one (ST 2) lived more than 20 kilometers from the university at any time during their studies. At the time of enrolment, this student lived close to 100 kilometers from the university in a rural area. Her case was particularly interesting. She was attracted to the university by its country setting but found her capacity to persist eroded by her lengthy commute. Distance also made it difficult for her to form close bonds with other students on campus. However, soon after the interview for this study (midway through her second semester), she moved closer to university to focus on her studies and eventually she graduated with a Bachelor of Business degree from that campus.
The travel time between a student’s term address and campus, and between term address and campus, was generated using Google Maps database.

Figure 7: Retention Status and Distance to Case-study University

Source: University Data (Retrieved 2018).
5.6.3 ‘Sense of Purpose’

Closely aligned to students’ sense of connection is their sense of purpose. Lizzio (2006) identifies ‘sense of purpose’ as students having a clear sense of goals; a sense of vocation and engagement (i.e., connection) with what they are studying. Indeed, the students’ enjoyment of both the content and style of the lectures, and their attachment to aspects of the campus seemed to be less important in determining persistence than the students’ sense/ clarity of mission. For example, a student (ST11) who described the experience at [case-study university] as “amazing” (“The teaching’s fun. It’s as fun as teaching can be. It’s not boring so it doesn’t drone on…”) nevertheless dropped out with a very low GPA, whereas many of the more successful students did not talk about their study in terms of visceral response.

Since sense of purpose may associate with maturity/age, it is noteworthy that student age was closely associated with GPA in the semester during which the students were interviewed, as well as in the following semesters (r(23) =.577, p=.003 and r(23)=.587, p=.002) respectively). Age was not a proxy for wealth, access to a car, having independent study space, or work variables such as number of hours worked on non-university employment, so it would appear that age was acting directly on factors relating to university achievement. Similarly, the two variables that statistically predicted persistence in this sample were planning ahead for future courses (r(23)=.446, p=.025) and actual attendance at lectures (r(23)=.448, p=.025).

Returning to the qualitative data, it was clear that students with strong clarity of purpose having ‘shopped around’ to best inform their decisions about university study. They had made their choice on the basis of their own reasoning and planning, and apparently inspired by a pre-existing (distal) passion, or they had accepted the decision made for them by family members, in which case the signs of attrition were clear in the transcripts. For the former group of students, rather than their passion being sparked in the classroom, it predated their enrolment. For example, ST20 explained:

During school, my Dad also told me that business is a good thing to have behind you, so I thought Bachelor of Business would sum it up for me, give me an overview of everything. Pretty much the same thing, like having business behind me, I was interested in running my own things my own way. I do a lot of management work at my place of work, and it also interests me a lot being my own boss sort of thing. My parents are around me as well, so…
In a similarly predetermined way, ST18 advised she had chosen the Bachelor of Business degree not because of a particular love of ‘business’, but because she recognised it as a good generic degree that would open up a range of options on completion:

I knew I wanted to get a degree and I just thought I’d jump into something. And as my partner says, you don’t really know what you want to do. But I think with business I can sort of jump around a bit. If I did choose just to go down another pathway, yeah it is... it’s pretty broad. So I just thought it would be a good place to start. (ST18)

The motivations of these two students contrast with that of ST13, who admitted to being relatively directionless. “I guess it kind of helped with my OP (TE score) to get me in, [but] I didn’t know what I wanted to do and that [a business degree] was something that was kind of interesting to me, so yeah”. This student referred to being “pushed” by parents into taking on university.

For students who advised they had in mind a future career related to a Bachelor of Business degree, there were a number of statistically significant correlates, including FiF status (r(23)=.428, p=.033) and long-term retention as measured by number of courses completed (r(23)=.575, p=.003).

Distal motivation for choice did not predict success (in terms of GPA or graduation) in a simple manner. Overall, interview transcripts reveal that about a quarter of students admitted their enrolment decisions were strongly influenced by family, in particular by their fathers (ST11, ST13, ST16, ST19, ST20, ST24, ST25). For several students, enrolment at university was largely about being able to ‘tick the box’ — to work in the family business. For ST19 it was to “start a business [with family]” as family would not “let me be in the company if I did not have a business degree”. In similar vein, ST24 declared with little conviction that his path was to follow his father’s career path of “being in business”. These students revealed their lack of clarity and certainty in their future vision of themselves in business, despite their family experience. In these cases, mostly the students’ fathers were “in business” and “business orientated”, and it was clear their fathers had been “a big influence”, with students wanting “to be like him” (ST11). Significantly, all of these students subsequently received poor GPAs and dropped or stopped out of the Bachelor of Business at the case-study University.
Findings reveal that where this ‘family vision’ does not fit with the student’s own internal map, it can end up frustrating the student. ST11, who ended up dropping out, explained he had chosen to pursue a business degree because of family pressure: “Dad was a big influence, I guess. He has always been in business and his mindset is always business orientated and I wanted to be like him. But I realise what I want actually is something entirely else”. Consistently, for students who appeared to be at university to please family (family pressure), the lack of ‘fit’ between student and university and the study program generally led to poor findings. ST3 told of how his parents had advised, “You don’t pay rent if you go to study”, whereas if you don’t go to study, you do pay rent and it is “a ridiculous price”. This student’s GPA of under 4.00 was clearly not the result his parents wanting him to achieve by providing free rent as support of his studies. ST19 told a similar story of being effectively pushed into university by his father: “He won’t let me be in the company if I don’t have a business degree”, but this student’s GPA was hovering just on the pass level at the time of interview.

Similar to discussion in the literature about what motivates students’ choice of degree, a third of students interviewed for this study had enrolled in the Bachelor of Business degree program because they had, as ST15 put succinctly, “no idea of what to do”. Students attributed this lack of preparation, and deep uncertainty about study program, primarily to poor advice or poor preparation at the high-school level. Students who revealed their choice of study program was significantly shaped by their high school experience, where the focus was on “getting you in [to any university]” (ST13), or where school had “babied us a little” (ST2) or “hand-held” them too much (ST7, ST10, ST12), revealing the impact of poor preparation in their academic performance. The majority of these students dropped out of university altogether, transferred internally, or dropped-out or stopped-out of the business degree, with failing or barely passing GPAs. The absence of a sense of ‘destiny’ was evident in many of these students’ accounts of the early stages of university.

These students are not necessarily ‘failures’ of the education system. They are products of a national policy drive to increase student numbers and diversify the range of students enrolled at university, so for some of whom, inevitably, extrinsic motivations capable of sustaining their university attendance and driving their academic achievement are absent. These students openly acknowledge their lack of motivation and show considerable insight into why they are failing to gain traction within the system. One student (ST4), who at the time of interview was failing in her Bachelor of Business degree and transferring to a criminology degree, was
nevertheless prepared to spend time explaining her trajectory. Explaining her feelings about the degree program she had enrolled in originally, she admitted:

There was just no interest there. Lack of motivation [on course content] ... It’s definitely been a good learning experience because I’ve figured out that this is not the path that I want to go down. (ST4)

Another student (ST3) quite crisply advised the probability of completing her degree straight through from enrolment to graduation as “zero”, adding, “unless I come back [later in life], it’s never going to happen”. Indeed, those who conveyed confidently that progression towards graduation “definitely is going to happen”, evinced signs of the opposite kind of self-scaffolding as ST2 conveyed:

I have a timetable, a whiteboard that I just sort of scribble on notes that I need to remember, and I sort of go through and if there is anything I’m struggling with, I type it up and stick it on the wall so I’m sort of always looking at it… I don’t really have anyone at home that I can look to help me, so I feel like I’m going to do it myself but I like it that way. I like being able to sort out what I’m going to do and when I’m going to do it and I’m pretty focused on doing well so that probably helps me as well. (ST2, then with a strong passing GPA of 5.44)

The experience of ST2 contrasts sharply with that of ST23, where such focus, commitment and planning were absent:

We have the questions that we have in the tutorials, but I find that I don’t have to bring something so that I don’t push myself throughout the week to kind of get anything done for it. (ST23)

Overall, the students’ explanations of why they chose their particular university and degree program (‘sense of purpose’) revealed that about 28 percent were instilled with a passion that drove them towards achieving their personal goal of completing their business degree. A few understood clearly how knowledge in and from their chosen discipline/degree related to their workplace, and were also clear about their goals, such as the following LOTE student (ST5) who graduated with a Bachelor of Business:
I’ve got a lot of experience in doing business. I’ve got my own business people in the market. I purchase all my stuff. It’s a market. I sell phone cases, speakers, headphones, which I import from China. I want to be an entrepreneur.

Some students’ decision to tackle a generalist degree was, as noted earlier, deliberate from the outset. “It covered everything that I think I’d like to learn about in general” (ST10). “I didn’t know exactly what I wanted to do”, explained S9, “but I knew I’d end up working in a business in a marketing department or HR or something like that, so I couldn’t choose wrong with going with business”. Yet beneath this apparent ‘certainty’ that ‘business’ was their desired program was considerably greater uncertainty about the ‘flavour’ of business (i.e., specialisation) that they preferred, let alone highly specific career goals. For a fifth of the students, having a ‘clear sense of purpose’ was less or not at all about defined career goals, but about proving to themselves, and to some extent to their family, that they were capable of not just gaining a university offer but especially of completing a university degree (ST2, ST9, ST10, ST20, ST23).

Well, whenever anybody asks me I let them know. I’m proud that I’m doing university in itself. It’s something that not many people in my industry do, like they sort of just put it in the ‘too hard’ basket. I know a lot of girls who started and sort of just dropped off because they found it too hard. So I’m really proud of myself that I’m sticking to it and I’m going to make sure I do. (ST7)

Some students did have a clear sense of purpose that in fact presaged their departure from the course. Their purpose lay elsewhere, and the Bachelor of Business was merely a stepping stone on that path. A quarter of students were in this category, aiming for a ‘sandstone’ (more highly ranked and established) institution, one closer to home, or one with an offering better aligned with their vision for their future. In some cases, their attrition from the business program was a gain for another arm of the same university. ST4, for example, despite a relatively poor TE score of 16, had a vision to enter the university’s criminology degree program, and strategically used the Bachelor of Business as a pathway. Despite failing her first semester at university (GPA of 3 at the end of first semester), the student persisted, learned her lesson, and with a second semester GPA of 5 was allowed to formally transfer to Criminology the following year. At the time this study was completed, her dream remained alive, with the student accumulating almost the full quantum of credit points required to graduate in her chosen degree. This is how
she spoke about the business program, however, from the vantage point where her dream was still a distant target:

I came [here] because they have the best criminology course in Australia from what I’ve heard, but I didn’t get in for crim [criminology] so I decided to take business as a way of getting my foot in the door. Crim was first, business [came] after that.

For students who revealed in interviews a high degree of informed thought and planning for their university degree (which, as noted earlier, appeared to overlap with sense of purpose), their participation in the university’s orientation events, would appear to be a clear signal of future success, may well have signalled first steps towards success with their university studies. However, the data showed that was not the case with this student sample; there was no binary relationship between student attendance at orientation and either their GPA or their retention in the Bachelor of Business program. All students interviewed stated that they were aware of the orientation program, having been advised about it by the SSA or through other university communication, and close to half the students had attended orientation. The mixed responses of students who did attend orientation may suggest why attendance at these activities could not predict later success. Of those who attended orientation, 60 percent spoke about their experience as “helpful”, “exciting” and “an opportunity to meet other people”. A quarter evaluated the experience as confusing and/or boring, while the remaining 15 percent spoke of the experience in relatively non-descript terms such as “alright” and “normal”. However, only a fifth of the case-study cohort who attended orientation events could provide detailed information about the experience and could recall important information explained to new students at these events. For example, students were repeatedly told during orientation that there is a recommended maximum number of hours of paid employment or other non-study ‘work’ that a student can reasonably sustain in addition to full-time study while hoping to graduate, but less than a fifth of those who attended could recall even the mention of a ‘ceiling’ on paid and non-paid work hours.

Just as attendance at orientation events may be seen as a sign of strong motivation in pursuing a university degree, listing the business degree as a low preference in university entrance application may be seen as a signal that urge to complete the business degree is low, or at least that alignment between the student’s original sense of purpose and their current study program is poor. Indeed, those who indicated in their university entrance applications a low preference for undertaking a Bachelor of Business degree at the case-study University all dropped out or
stopped out of university, therefore did not complete this degree. One of the students interviewed for this study exemplifies the problem with low alignment between ‘dream’ and program. The student had, however, a relatively poor entrance score, came from a LOTE background, and went on to fail both of his first two semesters:

I think because I chose this [degree] not because I really wanted to do it … It’s probably why I’m not much motivated. No [problem with study], it’s just probably studying, yeah. I think because I chose this, not because I really wanted to do [it]. It’s … laziness really. (ST13)

A lack of purpose combined with no lack – indeed, apparently excess – of enjoying the social side of university was evident in a little under a fifth of the students. ST13, for example, found university to be “relaxing”, and observed that, “I’ve made a lot of friends here … think if I didn’t have friends in my tutorial I wouldn’t go”. Again, this was pleasure in the university social experience. It did not inspire pleasure or motivation in the academic experience and the students of this ilk dropped out with failing GPAs. Few had taken the time to attend PASS and AS Sessions and had not booked repeat consultation with SSAs. The length and conduct of their interviews with this researcher (author) also signalled their lack of academic engagement. Indeed, a few of these eventually drop-out students were so bereft of purpose at university that it was surprising they agreed to the interview at all. The following extract well illustrates this position on the part of an academically non-performing, uncommitted young student, who had plenty of ‘friends’ and enjoyed the ‘social side’ of university, but had minimal inclination to engage with academic content, in his study program and in the interview.

Interviewer: Do you feel comfortable about approaching staff – library staff, lecturers or tutors?
Student (ST1): Yeah.
Interviewer: Have you attended any other academic session like in the library or anything?
Student: No.
Interviewer: Any reasons?
Student: Nah.

Having mentioned a mild interest in possibly studying Property Management at a different university, the researcher pressed attempted to open up further conversation by asking whether
the student was aware of there being a property management course offered by the case-study university. Rather than questioning the interviewer further or showing any interest in that prospect, the student responded simply:

ST1: “I didn’t know that”.

This was one example where ST1 appeared to be upfront and honest in his lack of a genuine sense of purpose for being at university, not being interested in finding out more about any future study possibilities, having already indicated his preferred interest in going travelling rather than studying.

5.6.4 ‘Sense of Capability’

Lizzo (2006) states that those who are successful in their first semester of university are more likely to be satisfied with their progress, and satisfaction translates into long-term success through its impact on sense of capability. He argues that sense of capability emerges in students if their learning is appropriately scaffolded, which is a relatively difficult task considering the contrast between a monolithic institution and its diverse student population. Students’ sense of their capability is clearly grounded in previous experience and is thus likely to be forged at high school and captured to a significant degree in TE score. Even in the small sample of homogenously at-risk students who participated in this study, despite the relatively low variation in their TE scores, these scores predicted the students’ GPAs with a high degree of statistical significance. As with Study 1, however, these scores did not predict students’ attrition.

It is also worth noting that Study 1 indicated the significant hurdle that numeracy courses presented to these at-risk students. Numeracy courses early in their degree often give students’ ‘experience’ (albeit unwanted) of failure, which is likely to damage the sense of capability they might otherwise bring to their first year of university. However, careful scaffolding can counter this potential threat. A good example was provided by multiple students (ST1, ST2, ST11, ST22) who mentioned they felt bolstered by the weekly review quiz in accounting, which broke the challenge posed by this key numeracy course into less daunting increments.

Capability as a variable proved to be difficult to isolate from the qualitative data but emerged frequently when students talked about the role of the SSA officers. The majority of students arrived at university in a bubble of nervous confidence and anticipation, but the chaos of their
encounter with the institution rapidly eroded those feelings, even for students who would later prove more than ‘capable’. “I was stressed and couldn’t find anything, but now I know where I’m going”, declared ST5, who came through the process with a comfortably high GPA. Another, even more successful student, described the challenge to her confidence:

Once again it was the learning to be a student. I just kept forgetting to download [the lectures]. I kept forgetting to watch them and when it came to exam time, especially [in] economics, I just re-downloaded them all and pretty much went into shutdown mode for three weeks before exams and was just watching them all back-to-back. It was the worst way of doing it. I’m never doing it again. I’m just like, I can’t believe I’ve done this. Holy crap! Exams are soon. I’m going to die. (ST18)

For many, the SSAs offered crucial help in making the transition to tertiary studies possible. This issue of resources that can be relied on during crisis re-emerges later in this thesis in discussing ‘sense of support’. For now, the following remark by a student during interview indicates the relief that a significant minority of students found in the SSA:

I wouldn’t be here if it wasn’t for him and I’m being very truthful. I’ve told three of my friends to go to [named SSA]. Honestly, I wouldn’t be here if he didn’t tell me I could do it. (ST20, with passing GPA and since graduated).

This ‘if I’m being very truthful’ narrative was characteristic of the accounts of some students, whose insights helped unpack an element that emerged at a number of points in this study’s analysis. Students who acknowledged the difficulty they experienced in surmounting the challenges of university were not more likely to fail; to the contrary, they were more likely to continue to pass and complete their degree. Analysis of data revealed statistically significant relationships between students’ assessment of “the difficulty” of university and (1) their subsequent GPA (r(23)=.413, p=.04), (2) their long term-persistence (r(23)=.430)=.03), and (3) their self-assessed commitment to their degree (r(23)=.433, p=.03). This capacity for self-reflection or self-reflection that was mindful of addressing difficulty in the university experience was also evident in students who ‘stopped out’, such as ST16, who ended up at one of the region’s ‘sandstone’ traditional universities are performing well at the case-study University.

I don’t like change much, and then this whole entire year has changed my perspective and point of view on that. If you need to ever get somewhere, you
actually need to push yourself, so you get out of your comfort zone. You need to be pushed. You need to challenge yourself. You need to say, “Hey, I’m here, look at me. I want to work a bit harder for it”.

This style of ‘personal’ learning about responding positively to difficulty was of course not true for all students. Some who reported feeling overwhelmed, and were honest in acknowledging their parlous state, went on to drop out. Asked if something was preventing their ultimate success, one student who ultimately dropped out replied candidly “laziness probably” (ST13). It’s … laziness really. (ST13)

Findings from data on ‘sense of identity’ revealed that students experienced an emerging sense of self-as-a-student, which related to increased confidence. “I was finding it really difficult at the beginning”, ST17 noted, “but right now, mid-way through, it’s fine”. Sense of identity and capability largely merge on which point. It was easier to distinguish the two in questioning focused on elements of the university experience that students found difficult to master. One of the most academically successful students interviewed, ST22, who was a part-time mature-age student, was asked what he found the most difficult aspect of study. His response concerned learning to decode what was considered ‘excellent’ by the university:

It’s going to be the report writing, I think. I haven’t done a lot of that. I feel reasonably confident with it, but I suppose I’m still just a little bit uncertain about the expectations. I just need to read up on it more. Just about how it will be marked and what sort of content I need in there, and I suppose just the whole researching part and even referencing. I don’t know a lot about that.

Even for the successful students in the case-study cohort, mysteries in the university left them feeling inadequate (“choosing your courses, and how it works, and what you’re going to be doing… It’s quite full on” [ST17]).

There were also specific skills that students identified to be necessary for academic success, which the students saw themselves as lacking, and the self-assessed ‘lack’ was eroding their sense of capability. Apart from academic writing, these skills were relatively clear-cut: referencing, numeracy, time management and organisation. ST20, graduated from the Bachelor of Business, saw the challenge to his capability in terms of ‘routine’ rather than skill shortfall, observing, “At university your whole routine is screwed. You’ve got to adjust to that and that’s hard in itself. Yes, it’s too much from going from 12 years of routine (ST20)”.

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later dropped out also did not generally refer to their lack of skills. The challenges they identified to their sense of capability were more abstract and related to motivation. As ST3 observed:

The ability to just sit there and study and not get distracted, jump on YouTube for a few hours during study. Once you get like the first 15 minutes done, I realise you keep going. If you get distracted in the first few minutes, that’s when you’re done.

(ST3)

A comfortable majority of students commented on the increased workload and higher standard of work required at university compared with high school. Continuing the contrast with school, they observed that school offered higher levels of support (see later in this chapter) and was more lenient than university. For ST2, “There were things like extensions [on assignments] that were easy to get at high school, and almost impossible here”, while for ST4 the virtues of high school over university were the opportunity to have drafts checked and strict monitoring of homework.

High school may have been a cosy haven compared with university, but this also had its downside. A quarter of students were dismayed at the lack of capability, or at least lack of resilience instilled in them at high school. A significant cluster of students found university and its ‘freedom’ was just too foreign to their experience; they claimed that schools needed to be more focussed on transition, self-discipline and organisation, or universities needed to mimic the personal support and structure of high school, at least in their early terms (ST4, ST14, ST15, ST21, ST24). Significantly, all five students who expressed these views had not graduated by the end of 2017.

You seem to say in 2nd sentence that in 2nd study both cohorts graduated at rate of 50% each. But discussion that follows seems to me to present data that’s contrary to that claim, and confusing (incomparable). Later in para you say ‘only two second-generation students had graduated from the Bachelor of Business by the end of 2017, with another having graduated from the Bachelor of Commerce’, i.e., only 3 of this cohort graduated, and you don’t give the number or the % who graduated for FIF cohort so reader can’t compare. This para may need some attn.

It was noted earlier that FiF students ultimately progressed through university at rates twice of those with family history of university. It is worth looking at the contrast between the two
cohorts, with, as highlighted above, the cohorts interviewed had roughly equal in numbers but did not graduate at the same rate. While second-generation students demonstrated a ‘sense of capability’ in passing their first semester courses (80 percent), only two second-generation students had graduated from the Bachelor of Business by the end of 2017, with another having graduated from the Bachelor of Commerce. This contrasted with FiF students who, relative to their peers, struggled with their first semester (with 61 percent achieving a passing GPA). But these early studies clearly reflected learning of how to cope with university despite lack of university heritage/knowledge: all of these passing students graduated from the Bachelor of Business, in addition to one student who had failed his first semester, graduating by the end of 2017. One student describes this point of transition:

After getting a [driver’s] license and being able to do whatever you wanted to do, it’s a bit different to settle down and study. Now after the first semester, it definitely hit me and it’s a lot more now what you have to do from day one and not wait until the last minute... I think it is just part of growing up and learning. (ST7)

Finally, all students were asked whether they felt capable of being self-directed. The findings of bivariate analysis with other statements that were measurable quantitatively were startling. Students who claimed they were more self-directed were less likely to have outside work, (r(23), - .540) but more likely to have longer working hours p=.005; r(23)=p-.019).

5.6.5 ‘Sense of Resourcefulness’

The ‘resourcefulness’ element in Lizzio’s model is expressed more accurately, insofar as it relates to students, as ‘sense of availability of resources’ or ‘capacity to access available resources. When the students were interviewed at the early stage of their tertiary studies, they showed reasonable depth of understanding about what they needed and what they lacked, but there were ‘blind spots’ in their knowledge of what the university offered them and how to access these resources. However, time was clearly a major mediating and moderating factor for students, even those who recognise that they are at risk. Students may be aware of resources, know that they have a need for those resources, but still lack the time to access them. ST17 explained:

I know there are a lot of facilities available, I just haven’t got my head around which is relevant for me and I know that when I was doing my assignment I really
wanted to get my assignment checked and to go through it with somebody but I just ran out of time.

Time poverty also reduces aspirations for academic success. “I just wanted to make sure I pass”, was a refrain borne of student frustration with what they saw as an inability to devote the time needed to meet the requirements of the course. “I don’t want to have to re-do anything. That’s my main objective”, declared ST2. “I just don’t have time”.

This sense of being beleaguered and badgered by the university (compared with the “babied us a little bit” perception ascribed to high school) reflected in some students revealing that sometimes they wanted to have university email addresses not linked to their phones, even though this was a ‘service’ that the SSAs offered to help students. A reminder of the university presence “stresses me out” ST7 declared. Thus, some students resorted to using only paper-based diaries, even though it meant that they missed some key university milestones and events.

First-year students may be frequently advised to ask for help early, but students’ self-identity as well as shaped partly by their perception of the university as larger and in some sense more important than themselves, impedes their willingness to ask. Some students perceive universities to be distant, even those like the case-study University that have taken steps to personalise and intensify support services to at-risk students. Students almost universally turned in on themselves ‘blame’ for their difficulties and failure, critiquing their own resourcefulness, rather than the university’s provision of resources. So, students focused on concerns like time management and ability to write or to handle numeracy issues and tended to overlook the sources of support that the university offered to help them. The orientation measures the university provided failed to reach some students, so they could reappraise and overcome perceptions of their own shortcomings and the university’s superior domain. Although the university had informed students about university resources, some students appeared to be oblivious to key support services such as free sessions run by library learning advisors that enable students to navigate core elements of the university eco-system. Shortcomings in making best use of support and resources the university offered to students were not simply the preserve of students facing failure.

There was, however, a subtle difference in the view of a 21-year-old student (ST5) who was first in her family to attend (and graduate from) university, despite a failing GPA during first semester. Her view bridged a position between blaming herself and blaming the institution,
although she later conceded she had been too overwhelmed to understand the resources available. She claimed, “It is very different. Harder [than school]. You have to do the work, no one to help you”.

The students tended to express themselves in terms of “not knowing” rather than “not being able to access” or “not being offered access” to support.

I think because I didn’t go for help. In high school you don’t have to go and find it yourself, you already know the information. In uni it’s like you don’t really know what you can do. Even there’s a support, you know a career program. When you first come to uni you don’t really know about this. (ST25)

While most students participating in this study accurately identified the location of general university information hubs such as the location of the business school offices, their knowledge of specific services and facilities was remarkably low at the early stage of their degree program when the present study was undertaken. Half of the sample could advise the location of medical services (12 percent had used the medical services), but only small minorities could identify other key services on campus. Importantly, only a fifth of the students were able to pinpoint the location of career counselling services. In some senses this was not surprising. No students had used the career counselling service, even though three quarters admitted they did not have a clear idea of their future career path post-graduation, or that they wanted to do something not specifically related to the business degree in which they were enrolled.

A final key theme in relation to sense of resourcefulness that emerged was actual financial resources, including the issue of paid work. Paid work is closely associated with a complex range of issues for students. These issues include work–life balance and work–life–study balance more particularly, as well as access to financial resources that flowed into things available to students to support activities like transport, textbooks, food and IT. Students sensed the preciousness of time, expressed not surprisingly in terms of what they had to sacrifice to make the different elements of their life ‘fit’. ST3’s view was clear:

Sleep. I need to. I’ve realised now that I used to not be able to sleep. I would go to bed late for work purposes or whatever I was doing, and if I forced myself to get up early and come to a lecture, I wouldn’t really take it in. So I would rather just sleep in, get up, listen to it online.
For some students, the competing “need to” elements of the new students’ life proved almost impossible to reconcile in a satisfactory way. ST9 explained:

I need to cut back work hours. I know that for a fact but I struggle to do that because I always get called in. I took this Tuesday off because I got really sick. I think it was from stress to be honest, because I don’t get migraines or anything like that and I got a really bad migraine. The doctor said it was a problem from my stress levels.

As noted earlier in this thesis, almost all students claimed they were unaware of the recommended maximum number of paid employment. Nevertheless, as in the case of ST9 cited above, they were painfully aware of the conflict between work and study, work and sleep, and even work and health.

Table 58 outlines the average number of hours students spent working in paid jobs during their first semester at university, their academic success (GPA) at the end of their first semester, and subsequent longer-term graduation outcome. Half the students admitted they spent more time working in paid employment than attending university classes and studying. Students who had to pay rent and thus needed to work more than 15 hours per week, or who simply chose to work longer hours than required to meet immediate financial needs would arguably be less likely to graduate or take longer to graduate. In fact, the relationships of paid job with GPA and with ultimate graduation are not linear, although students who spent longer hours in paid employment were less likely to graduate quickly. The sample size is small but there is a striking lack of significant statistical associations between elements of the secondary and primary data on work/life/study conflicts. The number of hours the students spent on their studies did not have positive or negative association with the number of hours they spent at work. Neither did it foretell short- or long-term success (graduation) to any significant degree; hours spent on work or on study did not at any stage correlate significantly with GPA or graduation.
Table 58: Number of Hours Worked and Academic Success (GPA & Graduation) & Retention

<table>
<thead>
<tr>
<th>Average Number of Hours Worked during First Semester</th>
<th>Number of Students</th>
<th>Percentage of Students with Passing GPA at end of Semester 1, 2014</th>
<th>Percentage of students no longer enrolled or graduated as at Semester 2, 2017</th>
<th>Percentage of students still enrolled in BBus or other degree as at Semester 2, 2017</th>
<th>Percentage of students graduated from BBus or other degree as at Semester 2, 2017</th>
</tr>
</thead>
<tbody>
<tr>
<td>No hours</td>
<td>7</td>
<td>85%</td>
<td>57%</td>
<td>14.5%</td>
<td>28.5%</td>
</tr>
<tr>
<td>1-15 hours</td>
<td>8</td>
<td>62.5%</td>
<td>25%</td>
<td>12.5%</td>
<td>62.5%</td>
</tr>
<tr>
<td>16-25 hours</td>
<td>8</td>
<td>62.5%</td>
<td>37.5%</td>
<td>25%</td>
<td>37.5%</td>
</tr>
<tr>
<td>&gt;25 hours</td>
<td>2</td>
<td>100%</td>
<td>50%</td>
<td>50%</td>
<td>0%</td>
</tr>
</tbody>
</table>

Source: developed for this study.

While this data reveals that working in part- or full-time jobs did not appear to affect the academic success of these students, it was evident through their interviews that lack of time did affect their capacity to connect with other students, to attend the AS Sessions and PASS, and in particular to be involved in campus life such as sporting and social clubs.

At a more granular level, students’ struggle for resources in unexpected areas also emerged spontaneously in their interviews, “I just struggle with the location of rooms and bubblers”, ST9 declared, referring to water fountains on campus. For ST5, “I can never find a bubbler. I know there’s one right there. If I’m somewhere else, I don’t know where they are and I always run out of water”. Another student (ST23) referred to not liking the choice of shops on campus finding. “the choice of shops on campus very limited: “Everything is the same; can’t have different food.”

Money matters also provided a valuable window into students’ priorities, academic and other, and thus the importance students placed on their studies. Importantly, students on a budget chose in many cases to forego owning textbooks and instead opted for ‘workarounds’ such as accessing photocopies or sharing texts with friends or simply relying on class notes, often
printing six slides per page. Yet all of these students had iPhones, for most of them a late (recent) model. Furthermore, some spoke about saving money to travel during their student holidays. Possession of textbooks was not associated in a statistically significant way with student performance or retention outcomes. However, one of the fundamental tools of the modern student, the laptop, did show a causal pathway of interest to the core theme of this thesis. Students’ possession of a laptop was consistently and significantly associated with their declared sense of purpose (r(23)=.529, p=.0007). Their use of a laptop was an even more remarkable predictor, associated positively with having career goals (r(23)=.529, p=.0007). More importantly, use of a laptop correlated strongly with two indicators of persistence in the degree: number of semesters enrolled in the Bachelor of Business (r(23)=.448, p=.025) and total credit points/courses completed (r(23)=.429, p=.032) at the time of data collection.

5.6.6 ‘Sense of Support’

The Lizzio ‘Five Senses Model captures a significant proportion of student commentary on their likelihood of persisting at university. As arranged through this model, the data not only shows significant overlap and synergies between the ‘five’ factors, but also reveals an additional factor that permeates all five: a ‘sense of support’. Students do not remain passive ‘victims’ of the challenges they face at university, but instead react and respond to these challenges. If they felt a lack of connection with the university or with their peers, they sought to remedy that lack. Some students even sought to switch universities, a high-level active response to lack of connection:

I went to [University X] for six months and it made me miserable absolutely miserable, so I dropped out. I was just a number at [University X], I was literally just a number. I then found what I wanted here. (ST20)

Some students even sought to actively and directly modulate the support they received from their peers. For ST9:

I kind of like surrounded myself with a group of friends that don’t care as much about their degree as me. “Oh it’s too hard. I’ll probably just fail and do it again”. I’m like, “No. Don’t say that around me I don’t want to fail”.
The university’s reputation for offering support was something that drew students to the case-study University. For example, ST8, a high-achieving female student who has since graduated, explained:

Probably the support they were willing to offer me made me choose [the case-study University]. Something others couldn’t give me… like with business success advisors, the mentoring groups, things like that. None of my friends, friends that go to different unis, they don’t get anything like that.

Even students who were ‘reluctant’ drop outs recognised the value of the support that the university offered. For example, ST24 who faced a daily 180-minute round commute to university and dropped out even on a passing GPA explained:

I find the lecturers and all the tutors’ sort-of helpful, and that compared to some of the other universities I’ve heard of through friends who have been just absolutely terrible … there haven’t been very good lecturers or anything like that…

Similarly, if students lacked capacity or resources, they responded by trying to identify and access what they lacked. To some extent, the university’s orientation events are designed to provide a ‘tableau’ of options that students can access voluntarily. However, as the present study identified, at the orientation stage before actually starting their studies, students did not know what they did not know; they could not be aware of how/where they fell short in responding effectively to the demands of university study. Poorly prepared for university through their high-school experience, they did not know their limitations relative to the demands of university studies.

The SSA program, however, was much better placed to respond to the needs of incoming students since the SSAs had been alerted to their shortfalls and well prepared to address, the likely needs of these students for information and other helpful support. A typical response is that of ST17:

I contacted [named SSA] at the time. He was full of information, which I needed and quickly it also made me feel at ease... It was a great service. I actually had such a good experience that I think everybody should go and see someone like that, because I think it eases a lot of questions you have in your head and instead of
wandering around and kind of doubting yourself whatever, it answers a lot… It gives you a base to go to.

ST7 opined similarly:

The information they gave us really helped us settle… I like that it’s a bit of a family and we have a lot of people there to help us, and if you need to talk to someone or if you have a problem with something then you are able to go online quickly and work out who to email, work out who to talk to... I love it. It’s so good.

ST7’s appreciation of the university’s emotional support in the ‘family’ comment above was not unique. A number of students, even those who were articulate and successful, struggled to articulate the value of this support, expressing it as relatively difficult to articulate ‘feelings’.

For ST20, for example:

It’s kind of knowing how to explain. It’s not overwhelming, you know. You come here, and you can do it without feeling like the world’s too big, you know. I feel this is the closest thing to school in, as I feel comfortable being here.

ST7’s reference to the SSAs as “a bit like family” draws attention to the importance of family as strong source of support for the students in this study. Discussion above on student identity and purpose has already noted the importance of family as a key emotional resource for these students and identified student persistence to be closely tied with sense of family support. Further, earlier in this chapter it was noted that for some students, FiF status was associated with family networks showing enthusiasm for the ‘pioneer’ student, which helped to promote eventual graduation. However, while family was clearly a leading source of emotional support, the students identified a type of practical support to be even more important. Statistical analysis of outcomes associated with interview variables revealed the single highest strongest predictor of retention was students having access to not just generic ‘support’ from the home front, but to a specific type of practical support: a private study area at home. Although the sample of 25 students was small, the statistical significance here was high (r(23)=.565, p=.003). The ‘resource’ element inherent in ‘support’ thus appears to be central to the question of persistence.

Personal fit and feeling comfortable with the university experience were also reflected in the interviews, with several students describing their university experience like ST17 did:
“empowering, challenging and rewarding (ST17)” and as ST9 observed, recognising that the university demonstrated “care for the student … feel like I’m really cared about…”. However, the degree to which sense of support actively and directly reduces attrition is called into doubt by responses from many students in the sample that were consistent with ST20’s evaluation of the case-study University’s approach, “Everything that I’ve needed has been not just given to me, thrown at me”. While ST20 was a relative success story, sense of support and appreciation of such was also present in the discourse of students who ultimately failed to graduate.

5.7 Conclusion and limitations

Study 2 consisted of semi-structured interviews, the findings of which were linked in this chapter to the long-term secondary data sets kept by the case-study University through its standard operations. Analysis here was structured largely around the Five Senses Model (Lizzio, 2006). The qualitative data presents students’ perceptions of the impact of SSA Consultations, PASS and AS Sessions, as well as other distal and proximal characteristics of the students, their reasons for choosing the degree program in which they were enrolled, and their experiences of university life. Linking of the quantitative dataset discussed in the previous chapter has enabled some triangulation of findings against objective metrics.

The qualitative interviews were designed to explore the first-year students’ perceptions of their first semester at university, and, to explore in detail the students’ own explanations of their retention, attrition, or intention to switch degree programs or universities, taking into account the co-curricular initiatives and other distal and proximal factors. This qualitative data could then be used to identify characteristics that the university may be able to control or influence. Amongst these characteristics is the focal point of this thesis, the presence of an extensive co-curricular program at the case-study University. A particularly important finding of this study is that questions about persisting or stopping out or dropping out are very much in the minds of first-year at-risk students. How students appraised themselves in relation to these questions was found to be useful in predicting their long-term patterns of behaviour, but not always in a manner expected. For example, just three of the 25 students who participated in Study 2 claimed they had just one contact with the university’s SSA system and were unlikely to have further contact as they found it ‘unnecessary’. All three dropped out of the university system. The consequences of limited meta-knowledge were also evident in the distinction between student self-ratings of the value of PASS relative to their empirical value. Students did not
speak of the PASS and AS Sessions with the same praise, or at the same length, as they did when speaking of the SSAs, but those who did attend at least one session of the PASS and AS Sessions all graduated by the time this study was completed at the end of 2017.

Findings discussed in this chapter are significant because the cohort who volunteered for interview in Study 2 were by and large (but not exclusively) appeared to be more engaged than the students investigated in Study 1. That characterisation emerges from analysis of their undergraduate university outcomes. The three students who rated the SSA program less favourably and dropped out of their studies were very much in the minority. Unlike Study 1 students, for whom long-term retention outcomes were relatively quite poor, the vast majority of the students in Study 2 either have graduated or are continuing with their studies to the end of Semester 2, 2017. These outcomes are not universally ‘good’ for the original host university in this case-study. Some of the students arrived at the case-study University after poor experiences at other universities, and some of the students in this cohort ‘stopped out’ to other universities subsequent to their interview. Some transferred within the university to other degree programs. The path between original ‘recruitment’ into the tertiary sector and final outcomes from this is not always linear or smooth.

Study 2 findings allowed a partial replication of Study 1 and confirmed the value of the SSA interactions in terms of outcomes. Unlike Study 2, however, Study 1 used non-objective data on attendance at SSA, AS and PASS, relying on students’ own reports. In the context of the study, which was relaxed and anonymous, and conducted post-Semester 1, it is likely the self-report data is accurate. A clear link between SSA engagement and graduation emerged, with those who attended multiple SSA Consultations three times more likely to eventually graduate than those who did not.

Interpreting this result, however, remains problematic, as students were not assigned and compelled to attend interviews with the author of this thesis and the students’ choices to participate in these interviews may reflect characteristics of the student; the outcomes may be linked to those characteristics rather than signalling the value of the SSA program. Of greater value in interpreting this result was the finding that graduation was predicted by FiF status. FiF students, far from being disadvantaged, appeared twice as likely to eventually graduate, and three times as likely to graduate in the specific degree to which they had initially enrolled by comparison with non-FiF students. GPA success was not related to FiF status, suggesting this was a matter of persistence rather than academic ‘talent’ or background. Nor could it be
explained by university entrance scores or other common predictors of success in tertiary education. This general finding of the ‘value’ of having FiF status is not only novel in the academic literature but speaks to a more general finding in the literature about the importance of intent, ultimate ‘vision’ and planning, to achieve graduation. It is noteworthy that a recent Australian national survey found that ‘non-traditional’ students tended not to differ from their ‘traditional’ peers except for the stress the ‘non-traditional’ students experienced in first year (Naylor, Balk & Arkoudis, 2014). The current study found that whereas non-traditional students may encounter distinctive difficulties, they are also well equipped or determined to overcome these difficulties. The study supports the finding of Kahu and Nelson (2018) who argue that “student characteristics may be predictive factors, the relationship between them and student completions is not directly causal: that is, a student’s SES status, ethnicity or entry score is not the cause of their success or failure (p. 60).”

Collectively the qualitative responses to the SSA program were positive, finding that the SSA program reinforced the sense of support that infused these at-risk students’ experience of student life at the case-study University. Students were attracted to the case-study University by its reputation for student support and felt ‘connected’ to it by recognising a distinction (real or imagined) between the support to students offered there and elsewhere. Their sense of connection to peers, and indeed sense of enjoyment of their university studies was not, however, necessarily associated with success. For students who were highly engaged in terms of hours worked in employment this work intruded on their ability to connect with the university in ways that Lizzio’s and others suggest should be predictive of success. Indeed, the hours they worked did not seem to impact on the hours they spent on study, or their likelihood of ultimate success, possibly as work hours and study hours both reflected a determination to persist. However, one form of ‘connection’ to university, physical proximity to the campus, was predictive of persistence, with those living over 20 kilometres from their ‘home’ campus much less likely to persist to graduation.

The issue of ‘fit’ between the student and the university particularly arose as a significant predictor of success in terms of the degree to which a student’s experience at high school had realistically prepared the student for university. Students who referred to the high-school experience as ‘babying’ them or ‘hand-holding’ were much less likely to succeed, whether success was measured by GPA or graduation. For students who upon starting university quickly developed an honest understanding of their own ‘gaps’ and were subsequently connected to
the co-curricular initiatives, in particular those who persisted with the SSA Consultations, ultimately succeeded. In fact, these students succeeded at more than triple the rate of those who did not attend multiple consultations.

One of the limitations of ‘sense of support’ proved to be students’ lack of understanding, at first-year level, of what support/resources were available, where to access them, and whether they needed this support. Students appeared to be poorly aware of gaps in their knowledge or ability when it came to additional resources, and to some extent students felt overawed by the institution, not wanting to ‘bother’ others. The role of the SSAs in overcoming this psychological hurdle may have been critical in helping turn students who were struggling into solid achievers in their second and subsequent years. Students who lacked motivation at this early stage were more likely to fail and attrite, while students who were motivated but lacked skills and experienced early failure, soldiered on and overcame this experience and began to thrive in later years. It is noteworthy that FiF students failed more regularly in their first semester than those with family heritage at tertiary level, but they went on to complete their degree at the case-study University, to a greater extent than that of their peers with greater ‘academic family experience’.

Given the nature of Lizzio’s ‘five senses’ explanatory model used for this study, it is useful to note here an integration of the five senses: for example, students’ possession of a laptop and a study space at home (a resource) was closely associated with long-term success but was also associated closely (in the case of the laptop) with sense of purpose. It is likely that having access to a laptop at a university that offered a plethora of online resources, including interactive resources, would have improved their sense of capability and connection, and fed their identity as a ‘business’ student. This is not to suggest that the distinction between the five factors identified in Lizzio’s work is artificial, but as Lizzio signposts, these five factors are woven together in practice.

Finally, the findings of this case-study should be viewed as exploratory. Rather than providing a basis for firm conclusions about the likelihood of students’ academic success and retention, the findings of this limited study indicate the need for continued research and in that context have value for comparative purposes. Applying a statistical methodology to social science research, and using a relatively small sample size, impose inherent imitations on this case-study. A particular strength of this case-study, however, lies in the ability of the two studies that comprise it to objectively track student progress over the longer term, against an extensive
set of variables. The findings tend to strongly suggest the value of further exploration of the apparent advantage that may flow from FiF status. It also suggests that student ‘vision’ and knowledge of their own limitations, when combined with resources that match students to the resources they need to progress with their studies, powerfully predict student resilience in overcoming the challenges associated with attrition.
Chapter 6 – Discussion & Conclusion

6.1 Introduction

This thesis has specifically examined the value of three co-curricular interventions used at the case-study University to improve the success and retention of non-traditional first year students identified to be at possible risk of failure or attrition from their studies. This necessitated considering the possible effect of distal and proximal factors considered in the literature as being indicators of a possible lack of success and retention, allowing for a more nuanced assessment of the case-study University’s project, and in turn the value of Lizzio’s (2006) Five Senses of Success Model upon which the University project was based.

This chapter discusses the results of the quantitative analysis, and findings from the qualitative research, in light of the literature which informed both the University project and this research. In an attempt to determine which students were most likely to be at risk of failure and attrition, the case-study University used the students’ TE Scores, listed preference for enrolling in the Bachelor of Business and their SES and LOTE backgrounds. As such these specific distal factors were examined as well as the students’ age and gender which the literature indicates may impact on student success and retention. In addition to an examination of the co-curricular interventions used, specifically the SSA support, AS Sessions and PASS, the possible impacts of the following proximal factors were also examined based on the literature review: the number of credit points enrolled in during the students’ first and second semester, the use of early risk and outcome markers, and a passing or failing GPA in the previous semester. From the researcher’s observation of the number of students’ failing a numeracy-based course during the initial period of the University project, the effect of enrolment into such courses during their first and second semester was also considered as a possible indicator of a lack of success and retention. After discussing the results and findings in the context of the literature, an augmented model of academic success and retention is presented. This chapter then concludes by identifying areas for future research in this field and presents practical policy recommendations for universities, governments, schools and university students, current and future.
This research adds to the literature by taking a quantitative longitudinal approach, as well as providing a qualitative insight, into one of the most intensely-researched educational challenges: why students given the opportunity to undertake university studies fail and leave tertiary study. Kahu and Nelson (2018) emphasised the need for the use of more longitudinal data, while Tinto (2017) emphasised the importance of taking the end-user’s viewpoint into consideration, with researchers “almost always tak[ing] on the perspective of the university (p. 2).” This research answers that call and is unique in offering a longitudinal quantitative analysis of multi-component co-curricular interventions in an Australian business school, while also including additional qualitative insight into factors that are emerging as key in the Australian higher education landscape. For example, factors such as the academic success and retention status of FiF students being drawn into tertiary studies as a result of changes to government policies, which have led to greater higher education opportunities due to an increase in accessibility because of government funded places since deregulation of the sector (Clarke et al., 2013; Kemp 2014; Norton, 2014; Kift, Nelson, Smith, McKay & Devlin, 2012). Further, the research suggests an augmented framework of student success and retention, including variables the case-study research indicates are suggestive of impacting on student success and retention, including a student’s sense of support and a sense of (personal) resources. The framework also highlights the importance of considering the impact of government policies and subsequent funding (Bradley et al., 2008; Kemp & Norton, 2014; Norton, 2012; Norton & Cakitaki, 2016; White, 2014) or lack there-of, which for example, affect the availability of funds for university outreach programs (Lynch, Walker-Gibbs & Herbert, 2015).

6.2 Overview

The research was focused on non-traditional students, who are increasingly entering the Australian university system as a result of a revolution in accessibility. These students are non-traditional in many aspects: for example, they often lack family heritage in university study, often reflected in lower SES, they lack the high school achievements traditionally associated with university studies, and they often come from backgrounds where a LOTE is spoken at home. The attrition these students experience is not the same kind of attrition that might have plagued universities three or four decades ago however. The rates of attrition are greater, and the reasons for dropping-out of the system are, this thesis argues, often very different.
Broadly, the literature has moved from attempting to explain the problem of attrition from a purely individual perspective, to encompassing institutional and sociocultural factors, which are clearly at play: certain universities have far worse records of attrition than others that may appear on the surface to have a similar record. A more nuanced view that includes both institutional, individual, and sociocultural factors in the group of causal factors is likely to better explain the puzzle of attrition, but with every added variable comes substantially increased complexity in analysis.

This thesis supports Wilson’s (2009a) view that students cannot be seen as an amorphous unitary body, and the co-curricular interventions highlighted in this series of studies are a step forward in treating each student as an individual case. The weakness of this case-study University’s project which this research investigated, was probably in that the students who accepted co-curricular support were the very students who had already demonstrated two key ingredients for success: an ability to recognise their own weaknesses and the motivation to accept, and seek out, university resources and support that addressed these weaknesses, often utilising these skills to internally transfer into their preferred degree program or to stop-out to another university.

6.3 Study 1

The cohort of the original 2012 study can be seen, from a long lens, to have been particularly at-risk, with only 14 of the 61 students eventually graduating from the program they entered, and just a third eventually graduating from any program at the university. However, 19 of the 61 students ‘stopped-out’ to other post-secondary institutions in Australia, primarily to those in Queensland. These students should not be regarded as failures of the system, even though their departure marks a loss for the original ‘host’ university that invested in their development. This tracking of students as they transit out of the host to another university is a significant finding in itself, suggesting a need to understand success and attrition in the context of an educational ‘system’ rather than a single institution within that system. Here it is interesting to note that none of the variables examined, including traditional markers of university success such as university entrance scores, or indeed the co-curricular interventions, proved successful in predicting retention into the year after the original intervention, let alone graduation six years after. Like the study of Kahu and Nelson (2018) data from this thesis also revealed that family background and individual distal characteristics including gender, LOTE and SES status were
not directly causal, although age did predict GPA in the second semester, with older students doing better, but did not predict long term retention. As Wilson (2013; 2014) and Lizzio (2015) caution, distal and proximal factors are only a proxy at best, of academic success and retention. The quantitative results support those of Gottfredson (1997) and Kemp and Norton’s (2014) that academic ability, at least in the form of TE scores, do not necessarily reflect the set of academic skills which are arguably a pre-requisite for academic success at university. Akin to the recent research of Pilcher and Tori (2018) this study found that the students’ high schooling and entrance scores often did not reflect specific skills required for the particular degree. In this case, for example, numeracy-based skills required in the first year of the business degree program. Furthermore, although positive correlations between intelligence in the form of TE scores and academic success have been found in many past studies, for example, McKenzie and Schweitzer (2001a); Marks (2014); Olsen (1957); Gale and Parker (2013); Kaiser et al., (2014); and Pitman (2014), suggest that longitudinally. This study also demonstrates similar results. However, it is noted that the current study relates to only business students who entered university with low TE scores, the cohort of at-risk students only, and the researcher does not suggest this is representative of the whole commencing Bachelor of Business student cohort. All the same, it is interesting to note however, that within this group those with lower TE scores (i.e. higher high school performance within the cohort) did not out-perform their ‘less capable’ peers. Therefore, high school scores should be used cautiously in predicting the overall academic success and retention of first year students (Kahu & Nelson, 2018). Instead such scores along with other distal markers acknowledged in the literature, might be best limited to being used as a predictor of students who may need extra support during their first year of university, rather than an indicator of their long-term academic success and retention (Kahu & Nelson, 2018; Pilcher and Tori, 2018). Consequently, governments and universities need to recognise the significant costs and academic workload (Coates & Goedegebuure, 2010; Gallagher, 2000; Marginson, 2013; May, Strachan, Broadbent & Peetz, 2011) involved in helping these students achieve academic success until these students are able to become independent, rather than dependant learners, or alternatively direct these students to educational pathway providers to such universities, who often have smaller class and greater personal support (Kemp & Norton, 2014). This provides an opportunity for future research in that it will be interesting to test the hypothesis that while course completion is likely to vary across different courses (degree programs as per Marks et al. above), course completion is not likely
to be particularly affected by OP ‘within’ those courses with which Marks states “less prestige” and lower OP entry and (as found in this smaller cohort).

As TE scores did not prove to be statistically powerful in predicting GPA beyond first semester, or retention, the results also point to the necessity of disseminating these results to university staff, in particular to those looking after first year students, in an attempt to encourage these staff members to take a positive view of those students enrolling with lower TE scores, rather than a disempowering deficit view (Kift, 2015; Spiegler & Bednerek, 2013; Wilson, 2009(a); West et al., 2015). In turn, it is important for staff to communicate to students the challenges facing them during university, in particular during their first semester, but also empower students with lower (poorer) TE scores with the belief that they are capable of achieving good results if they spend time on task and involve themselves in co-curricular activities (Bradley et al., 2008; Wilson, 2009(a); Lizzio, 2006; West et al., 2015). This is in addition to the benefits of completing a university degree including the possibility of obtaining better career prospects and salary, health and positive impacts on future generations of their family (Wilson, 2009a; OECD, 2016).

The study produced some surprises that give a hint as to the challenges universities such as the case-study University in question face. While first semester ‘success’ (i.e. GPA) leads to second semester retention (i.e. re-enrolment), more students with a failing GPA than a passing GPA had enrolled in the year after the original intervention. This is in part because ‘success’ for the student may mean getting a higher GPA and taking another tertiary option, such as an internal transfer to another degree program or stopping-out to another university. However, the study did provide limited evidence, considering the very small cell sizes, that students who did engage early and took advantage of the co-curricular options available to them, were more likely to succeed, both at the GPA and retention level, similar to findings in the Bradley Report (2008) and the research of Lizzio & Wilson (2009a, 2012, 2013); and Wilson et al., (2014). The findings do suggest that within parameters such as consideration of the degree being studied (Pilcher and Tori, 2018), a student’s ‘academic ability’ is able to be nurtured and their capability developed at university via access to co-curricular activities similar to those highlighted throughout this thesis.

Tower, et al., (2015) found that early engagement and outcome markers individually impacted on the academic success and retention of nursing students. Although similar results were expected from this research, that is, a similar impact on student success individually, this did
not occur. However, a composite of all five tracked markers (including attendance at orientation, accessing the main online portal, attendance at early tutorials, submission of an early literacy-based assessment, and passing that assessment) did predict Semester 1 GPA. Similarly, engagement with the SSAs had an impact on the ‘proximal’ outcome of Semester 1 GPA, but not Semester 2 GPA. In fact, only attendance at PASS had measurable trailing impacts on Semester 2 GPA.

There were no spill-over effects into the subsequent semester and none of the early engagement markers either individually or collectively impacted on GPA in Semester 2. Similarly, engagement with the SSA (beyond Semester 1) and AS Sessions appeared to have no impact on GPA. However, similar to previous research such as that of Dawson et al., (2014), PASS attendance once again proved to have a persistent effect, with frequency of attendance positively impacting on Semester 2 GPA performance. The study also showed that as total student load (in terms of number of credit points of courses studied per semester) increased, particularly when combined with enrolment in a numeracy-based (e.g. accounting, statistics or economics) course, GPA was suppressed when students did not attend PASS.

This case-study supports the results of Tower et, al’s (2015) study which found that as student load increased (in the form of full-time and part-time enrolment status), students were more likely to fail a course during their first semester of studies. However, the current research is unique in that it further considered the effect of enrolling in numeracy courses. Uniquely, it revealed student load was inversely related to performance when numeracy-based courses were undertaken. Furthermore, TE scores were ‘washed out’ as a predictor of academic success when the combination of these factors was analysed. This is a significant finding considering that students complete these numeracy courses during their first year of studies at the case-study University, and often appear ill-equipped, in terms of numeracy-based skills, to succeed. Therefore, considering the effects of this on GPA, numeracy-based courses might be best moved to second year to provide time for students to settle into university. It also strongly hints to the need for more teaching of numeracy-based courses at high school and that they become pre-requisite courses to the Bachelor of Business.

Turning to an analysis of the flow-over effect on the following semester (the first opportunity for the students to indicate retention), TE scores were no longer significant contrary to the research of McKenzie and Schweitzer (2001) and Pitman (2014) who suggest students with higher entrance scores are more likely to have longer term academic success. Degree
preference, which is a proxy for the extent to which their current course aligned with their vision, short or long term, that they had for themselves prior to arriving at the university, showed a perverse impact on their GPA. In this sense this study partially contradicts the findings of Harvey and Luckman (2014) who found that degree preference was a strong predictor of retention. It may be that these students were applying themselves more diligently to their studies in order to opt out of their current course, paving the way for escalating to a more difficult-to-enter degree program.

Turning to the retention models, in terms of short term (i.e. Semester 1 to Semester 2) retention, GPA in the first semester predicted retention in the second, like the studies of Bradburn, 2002; and Ripple and Luthar (2000). Furthermore, engagement with the SSAs did translate into retention through to the second semester, but none of the other variables proved statistically significant in a logistic regression where other variables were controlled for such. The results for prediction into Semester 1 of the following year were even more disappointing: no variables remained predictive, but such was the mobility of the cohort (with a majority in the degree program either failing, shifting to another program of study, stopping-out to another tertiary option or dropping-out leaving the university sector altogether) that the power of the model had, by this stage, been severely compromised. Studies have not typically account for such a range of variable over extended periods of time, and as such the research adds to the literature base.

6.4 Study 2

The second study in this research took place after the SSA program was embedded down (at this stage it had been in place for two years) and integrated both detailed data on the students, long-term secondary data on performance stretching over four years, and detailed secondary data enabling a closer analysis of multiple factors that emerged as being potentially significant as a result of the access revolution occurring in Australia. While FiF status was not captured in the earlier study due to the non-availability and reliability of data, this second cohort was considered even more at risk than the first cohort with higher percentages of low-SES and LOTE students, and over 50% of the students being from FiF backgrounds.

As highlighted in the literature review, first year students encounter a learning environment very different to the one that ‘prepared’ them for university (Creagh, Nelson, & Clarke, 2013; Nelson et al., 2012; Potts & Schultz, 2008; Purnell, McCarthy, & McLeod, 2010; Wilson,
The results from Study 1 and the findings from Study 2 suggest that part of the ‘foreign’ learning environment, includes numeracy skills required to successfully complete a business degree program, which many have not encountered before. Both studies are unique in the context of scholarly literature on retention in terms of the long-term tracking of that impact. Study 2 also offers an unusual blend of qualitative insight linked with objective data of performance. As a qualitative study, it enables deeper exploration of some of the issues that are hinted at in other studies, in addition to exploring student perceptions of the co-curricular interventions at the heart of this thesis. Study 2 results allowed a partial replication of Study 1, confirming the value of PASS and the SSAs’ element of the intervention: those who attended multiple SSA sessions were three times as likely to graduate as those who attended one session or less, with similar results for those attending PASS. Nonetheless, the similar literacy-based AS Sessions were found not be statistically significant with low attendance rates. This may perhaps be as per Study 2’s findings, students were more concerned about improving their numeracy-based skills and felt more comfortable with their literacy-based skills, having completed similar courses at school, and thus did not attend in similar numbers.

The SSA intervention appeared to retain a significant impact approximately 12 months after the first consultations with these students, in terms of retention. The modest associations found require further research. If supported by further research they may have significant impact when translated to the scale of a single university, let alone across the tertiary sector due to small gains being able to have significant impacts on individual students and university finances. A number of researchers, including Coley and Coley (2010) and Tinto (2006) pointed out that despite the intensity of interest in retention, progress in ‘solving’ the problem has been remarkably sluggish. Whilst inroads have been made, attrition numbers remain challenging, in particular, across degree programs such as the Bachelor of Business and at second tier institutions such as the case study University. Thus, any indication of a path ahead is welcome against this backdrop.

Studies by Kift et al., (2010); Wilson (2009); and Pitkethly and Prosser (2001) concluded that a coordinated, well-informed, institution-wide response to student transition issues is more likely than no such response to engage students and to progress their first-year learning experiences, thus enhancing students’ goodness-of-fit academically and socially. Study 2’s statistical analysis showed a uniformly positive student response to the SSA intervention, but more detailed qualitative analysis gave a strong indication of how this assistance expressed
itself. The SSAs, with their remit to proactively seek out the at-risk students, as opposed to passively wait for warning signs before intervening, gave students help before they realised they needed it. SSAs were able to seed interventions at an early enough stage to have longer impacts and prevent students from experiencing unnecessary early failure. Interestingly, it did not always, or even particularly, predict long-term failure, particularly when ‘failure’ was operationalised as sub-optimal GPA. The support provided by the SSAs and orientation sessions created an institutional habitus (Jardine, 2012) and were able to frame ‘failure’ more accurately for students and future success. The SSA system was recognised by students as personal, ‘like family’.

Harvey et al’s 2014 study found a statistically significant relationship between course preference and attrition. Their study used a larger dataset, which amplifies statistical power, but used a narrower range of explanatory variables. This second case-study however supports the finding of Study 1, and contradicts existing research, insofar as it suggests that course preference is not a strong predictor of performance or retention. These were not students who were pre-equipped with high levels of academic aptitude, as measured at high school. Almost all the students arrived at university in a somewhat ill-informed bubble of optimism and hope, with the large, somewhat impersonal university very different in nature to the smaller, much more ‘hand-held’ operation of the high school. Students had to “learn to be a [university] student” as one of the most successful students in the cohort put it. Students who embraced the challenge, recognised their failure, and accepted help to address the gaps in their knowledge and skills, succeeded despite their disadvantage. This success despite disadvantage is consistent with the literature including the Bradley Report (2008) and the more recent work of Cardak and Vecci (2016). Indeed, students who rated the university experience as ‘difficult’ were significantly more likely to eventually graduate. Indeed, students who referred to the high school context as ‘babying’ them or ‘hand-holding’ were much less likely to succeed, regardless of whether success was measured by GPA or graduation. It would appear that lacking skills or even aptitude was less of a critical factor than lacking motivation.

As with Study 1, TE scores had some value in predicting their GPA early in their degree, but it had no value in predicting their persistence through to graduation, like the findings of Kemp and Norton (2014) which suggest high school grades appeared to have little influence on longer term success. Like Study 1 and the Commonwealth DET Report (2017), age proved to be a predictor of longer-term outcomes. The current study provided some ability to eliminate the
possibility of age acting as a proxy for wealth/resources through the lens of transport, accommodation costs and purchases of laptops, iPhones and text books, a relatively unique element of this project. There were a number of statistically significant predictors of longer-term retention that emerged (despite the small sample size) in this study uniquely: planning ahead for lectures; actual attendance at lectures; perceived difficulty of their studies, self-assessed commitment to the degree, and perhaps most interestingly, access to a study area at home and access to a laptop. This latter variable was the most statistically powerful predictor of long-term retention. Whereas the smartphone is a piece of technology that may be more or less useful to a student in the execution of their studies, the laptop represents an investment by the student in the act of studying.

According to Lizzio (2006, 2009, 2015) and Wilson (2012; 2014) one of the key proximal predictors of academic success and retention includes *time on task*. Nonetheless, despite warnings offered to students not to work in excess of a fifteen hours per week or risk their success at university, work hours neither impacted on success or indeed on the number of hours students stated that they devoted to study, with many of the poorer performing students admitting that lack of motivation or laziness and time-management, rather than employment, was reflected in their grades. Physical distance/commuting time to university did however have an impact. Based on this finding it appears that place attachment and place identity (Chow & Healey, 2008) is an evolving issue of concern and an area for further research.

FiF status was revealed as having a highly significant impact on retention. The results showed that far from being particularly at risk as the literature often suggests (for example, Jeffreys, 2007; McMillan, 2005; Yorke & Thomas, 2003), these students were to some degree protected against attrition. From the perspective of the institution that had enrolled them, these FiF students, while not showing any other significant difference to their peers who came from families who had ‘experience’ at tertiary study, were twice as likely to graduate from their own university. The FiF element of this study has important implications for future research, because universities need to understand where the ‘advantage’ that these students demonstrated in this study comes from. GPA success was not related to FiF status, nor were university entrance scores, indicating that the difference cannot be explained by academic aptitude. FiF students in this study did appear to have access to greater family support in terms of ‘cheerleaders’, with evidence that the support materialised as increased motivation for those students to succeed. This is compared to the second-generation students who did not appear to
appreciate the value, or perhaps advantage of, ‘academic and social capital’ at home, but felt pressured to attend university by their tertiary educated parents, who had often been educated at a higher ranked institution. FiF students may well have a greater sense of pride from being pioneers or role models for their families, and this sense of mission/calling may well provide a kind of non-detailed road map for the students in traversing the university challenge. Again, motivation, rather than knowledge, appeared to be the critical success factor. This finding is unique in the literature, with previous studies indicating that FiF success was at best similar to that of second-generation students, rather than outperforming them. This finding provides an area of further research, in particular for similarly ranked institutions.

Another ‘guide’ acting in the background of the students’ progress is an internal ‘guide’ relating to the students’ vision of themselves, and their path ahead as revealed in this study. The qualitative results reveal that students enter university either with a broad sense of destiny populated with varying degrees of detail, or with little sense of mission at all. For students who saw their life in the university as following a holding pattern, for the purposes of providing a place for ‘partying’ or for ‘killing time’, the prognosis was almost inevitably poor. For students who had a strong sense of destiny (purpose), even though this was not necessarily articulated clearly into a post-university career, persistence even through a period of travail, was almost certain. This finding accords with recent work suggesting that blending career progression and planning materials into first year programs can improve retention rates (Stebleton & Diamond, 2018). Again, there is good theory to suggest that a sense of long-term planning, deliberate intent and persistence (Tinto, 2017) is predictive of future behaviour. It is noteworthy that amongst the highest correlates with GPA uncovered in Richardson, Abraham, et al. (2012) relatively recent meta-analysis were student’s grade goals. Goal theory suggests that goals need to be both clearly defined and challenging (Locke, 1996), with the student involved in setting the outcomes which should involve a blend of short and long-term goals (Latham & Brown, 2006), as they were in the current study.

6.5 Integration of Studies 1 and 2 and Models

Collectively, these studies sought to longitudinally examine retention and attrition in the context of integrated co-curricular interventions focused on an at-risk population when taking into account the effect of distal and proximal factors. Clearly the population was at risk, but not necessarily in the ways that might have been expected. A significant finding of this research
is that Socioeconomic status, English as a second language, and FiF status did not predict ultimate ‘failure’ to progress, or at least not in the direction that might have been expected.

With limited research addressing the challenges associated with students completing numeracy courses during their first year at university within a business degree, another key unique finding from Studies 1 and 2 relates to the significant hurdle posed by numeracy courses. Both Studies indicated that at-risk students in business courses at the case-study University tend to be relatively poorly equipped with numeracy skills. Higher levels of numeracy abilities are more likely to be found in students in science streams, who often enter with higher TE scores, or having completed pre-requisite courses at school. The presence of a numeracy course in the students first semester was disproportionately associated with a failing GPA for the semester. However, importantly, failure without PASS was nearly certain, but failure with PASS attendance was absent. Therefore, students who face the challenge of a numeracy course(s) are able to surmount the challenge, if they take advantage of the support offered. If ‘choosing to take advantage’ is a proxy for an attitudinal stance towards study and persistence (Tinto, 2017), then it is possible that once again attitude is the causal factor in success, but more likely PASS are the mediating factor between the attitudinal stance and success. In other words, if students see the need for help, seek help, and the help is of value, success then becomes more preferable. It is in this sequence that SSA support, similarly, becomes of value. This finding provides an area of further research, in particular for universities that allow students to enter degree programs without having completed any pre-requisite numeracy-based courses.

Studies 1 and 2 indicated that distal and proximal factors commonly used to determine students as being at risk of academic failure and attrition, in addition to proximal factors that may impact on student success and retention, are likely to fade to statistical insignificance over time, similar to the research of Lizzio (2015). Nevertheless, if support is provided to at-risk students, such as the co-curricular initiatives that formed part of this research, students are more likely to be able to develop their ‘Senses of Success’ and adapt to their new environment (Lizzio, 2006; 2009; 2015). For those who have a sense of purpose, student attitude does not appear to fade. The extra support is likely to positively impact on these students’ academic success and retention (Wilson et al., 2014) within the university sector, if not in the specific degree program or at the university for which they first enrolled.
6.5.1 Five Senses Model

This research was conducted, as previously noted, at a university which had committed to funding multiple co-curricular interventions within the first year undergraduate business program, explicitly applying Lizzio's (2006; 2009) models of Australian student success and transition. As such, this thesis is also an investigation of the effectiveness of Lizzio’s theoretical ‘Five Senses Model’ (Lizzio, 2006) when put into practice. Lizzio (2006, 2009), argues that five senses (identity, connection, purpose, capability and resourcefulness) are the key variables that predict persistence.

The findings and results from the studies provide not just partial support for the Five Senses Model, but also an integration and augmentation of the Model. As noted earlier, the five senses are difficult to disentangle from each other. Looking at simply two of the objectively-measurable factors that emerged as being highly predictive of persistence at university, the possession of a laptop and access to a dedicated study space at home, then these can be viewed as resources, rather than merely signs of a sense of resourcefulness; but also being clearly associated with a sense of purpose: a sense of preparing the way for success at university. They connect the student with the university (in the case of the laptop, literally), and give them a greater capability to deliver what is required to meet the institution’s measures of ‘success’. And they correspond to and reinforce the students’ sense of being a university student, or identity.

The way these variables emerge are not always straightforward, either. Even course design components can build sense of connection, for example, when students are bonded through common curriculum components, or a large core curriculum with heavy regular on-campus requirements (such as laboratory work for chemistry students) producing a sense of unity on the part of a student cohort. In a sense, the university campus layout at which the school of business is housed acts as something of a ‘relaxed atmosphere’, with students frequently mentioning the rural setting in a positive light.

Of Lizzio’s five senses, then, the key variables to emerge were purpose, resources (rather than resourcefulness per se) and identity. Students’ sense of capability emerged, if anything as a perverse factor: students who expressed less self-confidence and failed in the first semester, as long as they possessed purpose, and had the resources to continue, persisted. How can the university as an environment assist with building these key factors? When McConnell et al.,
(2015) draw on Lizzio and Wilson’s notion of academic culture, they describe it in terms of how academic culture builds students’ sense of connection, capability, purpose and resourcefulness. Culture (which relates to Lizzio’s sense of identity most closely) is a meta-characteristic of the university environment that universities can foster. There were elements of the culture that students in Study 2 clearly identified: accessibility, lack of formality when compared to school, and support. The findings confirming the value of PASS fits in with this pattern. Dawson et al., (2014) looked at a recent decade of interventions, examining 29 studies that indicate collectively that structured peer-assisted learning patterns are effective. PASS studies link the program with building generic skills (Stigmar, 2016), and discipline-based skills (Durkin & Main, 2002), which flow to impacts such as retention (Adam, Hartigan, & Brown, 2010; Blanc et al., 1983; Congos & Schoeps, 1993; Etter et al., 2001; Marrone & Draganov, 2017) seen again in this current study. However, these studies tend to underplay the role that the social support offered by peers plays. The current thesis offers an insight into what students require, and should seek at university, which is not necessarily ‘fun’ but support, and in fact, fun-seeking, even in a lecture context, appears to be related to attrition rather than retention. This finding should be read in the context of very recent work by Picton et al., (2018) which indicates that student sense of enjoyment and satisfaction with courses are in fact a precursor to feeling successful in their studies.

6.5.2 Tinto’s Personal Integration Model

A student’s sense of personal ‘integration’ or ‘fit’ with an institution or course of study has been positively correlated with academic success and retention for many decades now (Spady, 1970; 1971; Tinto, 1975). In this thesis ‘fit’ was measured objectively by examining degree preference (which should give an indication of the extent to which the institution/program aligned with the student’s perception of fit). Preference in the quantitative analysis proved to be a relatively poor predictor of GPA, approaching significance in predicting second semester GPA, and not significantly predictive of retention, contra Harvey et al (2014). The qualitatively work was more suggestive of the importance, long term, of fit. Students, particularly successful students, were clearly engineering themselves for ‘escape’ to a degree or institution of higher preference. Their failure to be retained in the first-degree program or (university) to which they managed to gain entrance should not be seen as the ultimate measure of an institution’s success at retaining students. This study enabled an examination of student intentions that are not measured as part of the ‘harvest’ of students at an institutional level. If students intend to use
University A as a stepping stone to another University (B), then the measure of the success of University A is whether the students achieve ‘attrition’ from University A to University B. This is an area that the government should consider in regard to policy and is therefore discussed later in this chapter’s recommendations.

6.5.3 Kerby’s Predictive Model of Student Retention in Higher Education

More recently, after the completion of most data collection for Studies 1 and 2 of this thesis, Kerby (2015) developed a broader Model for investigating student success and retention (see Figure 8). It is developed in the context of the United States higher education system but is adaptable to Australia higher education system. It develops a broader Model for investigating student success and retention based on Tinto’s Student Integration Model (see Figure 2 and 3), taking into account the national, and educational, climate. Therefore, Kirby’s Model captures several variables that do not appear in alternative models, including the impact of government funding available in the United States and how the higher education sector continues to evolve. However, a drawback of the Model is that, beyond pre-college factors, it lacks detailed focus on individual differences. Nonetheless, with minor amendments to the Model, it is applicable to the Australian Higher Educations sector. As such it can be used to advance the depth of applied knowledge in Australia by universities and governments to continue to create and develop academic services for students. By adding macro factors such as those associated with socio-economic climate in which students decide whether to remain enrolled at university or leave completely, it helps to explain student success and retention and thus adds value to the literature.
The new Predictive Model of Student Retention in Higher Education is a welcome addition to the academic literature. A weakness of the model is that when compared to other models it relatively lacks in focus on individual difference, for example a student’s senses of success, except in terms of ‘pre-college factors’, but conversely a strength of the model is that it captures many variables that are sidelined in alternate models, such as the evolving nature of the higher education sector in the United States and its impact on government funding and with minor tweaks is applicable to the Australian higher education environment.

The present thesis acknowledges that Kerby’s broader framework creates an improved view of student retention. However, as part of its ex-post model of student success and retention, this thesis also extends Kerby’s framework by suggesting some minor augmentations informed by knowledge developed through conducting the research for this thesis. There has been no integrated empirical response to the explanatory model constructed, but this model’s contribution to knowledge is that it not only captures, almost exhaustively, the possible

Figure 8: Kerby’s Predictive Model of Student Retention in Higher Education (2015)
explanatory factors included in other models, adds value in adding macro factors to explain student success and retention. These macro factors include ones associated with the socio-economic climate in which students decide whether to continue their enrolment at university or leave completely.

6.6 Theoretical Contributions

The literature reviewed for this thesis, and results of Study 1 and findings of Study 2 suggest that Lizzio’s (2006, 2009) Tinto’s (1975, 1993) and Kerby’s (2015) models are very significant contributions to understanding and explaining student success and retention at university. Nonetheless, the models can be augmented to take account of omitted factors which a priori could also be expected to be significant explanators of academic success and retention.

6.6.1 Student Success and Retention (Ex-Ante Augmented Model) for At-Risk Students

An augmented ex-ante model of students’ academic success and retention was formulated, based predominantly on Lizzio’s and Tinto’s work, and trialled on students deemed by the case-study University to be at risk of academic failure and attrition. The augmented ex-ante model illustrated in Figure 9 below extends Lizzio (2006, 2009) and Tinto’s (1975, 1993) models predicting that specified distal and proximal factors would be associated with at-risk students’ academic success and retention. More specifically, it posited that distal factors such as an individual student’s personal characteristics, family background, and prior education, influence academic success and retention. Once at university, proximal factors such as Lizzio’s (2006, 2009) ‘Five Senses of Success’ and Tinto’s (1975, 1993) institutional factors such as the university’s objectives, commitment, facilities and resources, such as the co-curricular interventions, would determine a student’s sense of identity or ‘fit’ with university life and study. Those students without a good sense of identity or ‘fit’ with university life and study were predicted as being more likely to be identified as being ‘at risk’ of academic failure and attrition by Early Risk Markers and Early Engagement and Outcome Markers. Conversely, co-curricular interventions (for example SSA, PASS, AS Sessions) offered by the University were predicted to positively influence these at-risk students’ senses of academic and social integration, maximising their chances of academic success and retention at the University.
6.6.2 Student Success and Retention (Ex-Post Augmented Model) for At-Risk Students

The results of Studies 1 and 2 gave rise to a further refined augmented *ex-post* model of student success and retention. In addition to the five senses, additional factors that emerged in the study that deserve to be isolated as being important are the ‘sense of resources’ and a ‘sense of
support' and the idea of making their families (a primary source of this support) proud as illustrated in figure 10 and discussed below in terms of validation.

**Figure 10: Student Success and Retention (Augmented Ex-Post Model) for At-Risk Students**

- **Distal**
  - Individual Characteristics: e.g., Age, Gender
  - Family Background: e.g., SES, LOTE, Distance to University, FIF
  - Individual Educational Background (prior education): e.g., TE score, Numeracy Skills
  - Government Policy: e.g., HEPP Funding, HELP Funding

- **Proximal**
  - Employment, Resources and Career Aspirations: e.g., length of employment and skills developed (including time management) & personal resources
  - Preference for degree at university
  - Success Factors: Identity, Purpose, Capability, Connection, Resourcefulness
  - Academic Success GPA ≥ 4
  - Positive university experience
  - University's Objectives, Commitment, Resources, Facilities
  - Early Risk & Outcome Markers
  - Co-curricular Interventions

- **Retention/Graduation from University**
- **Attrition/Stop-out/Graduation from**
6.6.3 Added Senses: of resources and support

**Resources**

The ex-post augmented model of student success and retention takes into account the more recent work seen in Kerby’s Model (2015) and the work of Cardak and Vecci (2016) and Mullainathan and Shafir (2013) in considering a sense of resources (which is in addition to a sense of resourcefulness). The researchers’ works focus on financial elements that impact on student success and retention such as access to resources. The reasons for the inclusion of Kerby’s work have been outlined above. As previously noted, Cardak and Vecci (2016) work also discusses a sense of resources in terms of students’ credit constraints. This includes students’ socio-economic backgrounds and personal financial resources, while Mullainathan and Shafir (2013) place this in the context having scarce financial resources, causing an inability to pay for simple necessities affecting not only their own self-perception but also how they respond to these challenges (Tinto, 2017). Therefore, the work of these researchers, and in particular results from Study 2, have influenced the ex-post augmented model. It is important to understand from the student’s viewpoint the impact that finances have on their studies (Tinto, 2017) to better inform government policy and initiatives, and to ensure full effect of the government’s social equity agenda developed to increase accessibility. As discussed, interestingly, Study 2 revealed that students’ employment impacted on their studies but not in ways necessarily expected. Whilst employment often meant extra stress as a result of having to fit paid work into their busy schedules, it also allowed the students to have a sense of resources (i.e., access to money) and for those students who had been working in the same job for quite some time, the time-management skills for both study and work. A sense of personal resources deserves further analysis on a larger scale to inform government and university policies.

**Support**

Most importantly ‘support’ is also advocated; in particular for those whose family background may not provide students the academic and social capital required to easily adjust to their new (university) environment. Support is to be found, not necessarily in the guise of family academic and social capital, but in the form of motivational support as cheerleaders of their sense of purpose and ultimate success. These students appear to have a greater appreciation of the opportunities provided to them. This type of emotional support, also provided by university
staff, was clearly evident in student interview transcripts, with students describing the university support as a type of resource, being beyond what was expected before attending university. The sense of being strongly supported academically was also found in the quantitative results of those attending the co-curricular interventions, and the qualitative findings within the interview transcripts.

This additional variable, a sense of support has been included because as highlighted previously this ‘sense of support’ emerged repeatedly in Study 2’s findings as being very important to the students who the case-study University identified to be at-risk of failure and attrition. The sense of support emerged particularly strongly in the discourse of students with FiF status. Their families did not just act as a source of possible financial resources to persist (for those families who could afford to provide free rent etc.) but also as a ‘cheer squad’ providing motivational/emotional support that appeared to be related to persistence (Tinto, 2017) or what Jardine (2012) describes as individual habitus. Perhaps the emergence of sense of support in the qualitative findings was a function of the questions being framed at least in part as an investigation of the value of the co-curricular interventions, but the support variable emerged spontaneously throughout the interview, even in areas where questions were framed around challenges. Coates (2014) identified that while there may be an abundance of support services at an institution they are not always easily identified by students. Similarly, and perhaps surprisingly in this study, the range of support services and in particular their location was not well understood by the students interviewed.

Including support as a potential extra ‘sense’ in modelling of first year success has received very recent support in an Australian study by Naylor et al (2018). They found that four key variables summed up student experience: belonging (which is clearly a variant of sense of connection), feeling supported, intellectual engagement (which may well tap into sense of purpose) and workload stress. Including support in a study of persistence makes sense in the light of staff turnover studies that are grounded on models that integrate job demands (stressors) with sense of control, and sense of support. Like the UK (Pokorny, Holley, Kane, 2017) “stay-at-home students or commuter students are vital to higher education” but there is little research of this in Australia, with a recent exception being the work of Fernandes, Ford, Rayner and Pretorius (2017). Part of the concept of support is often for many students being able to live at home but as in this research, studying on campus. The literature emphasises the difficulties rural students have in adjusting to a new environment. This thesis suggests that students do not
necessarily have to be rural to be affected by a sense of place. Although numbers were limited in Study 2 there was a clear pattern of students not persisting with their studies when living more than 20kms from the university. This is likely to have been due to the greater travel requirements and the impacts of such (time, financial resources such as a car, petrol etc.) but also concerns about moving closer to the university and therefore moving away from the familiarity of their home environment, with added financial constraints. A student’s home address may change during the course of a student’s studies, however, as in this case students may be reluctant to move close to the university due to a lack of finances or wanting to remain close to family and friends. To ease these financial constraints on students who do not live close to the university it may be helpful to make more accommodation on campus which is heavily subsidised by the government and/or the university available, or campus accommodation based on an income-contingent loan scheme similar to HECS and AUSTUDY. This may also create further employment on campus, building students sense of identity, including a sense of connection, resourcefulness, in addition to providing students with paid work (sense of financial resources).

A corollary of the finding that resources and support are likely key mediators and moderators of success is that students are clearly not passive respondents to stress. There is a degree of elasticity to student response to lack of resources. Students do not passively wait for the impact of a resource deficit, for example, to be felt, but are likely to respond to it in individual ways. Their inability to purchase textbooks may for example trigger their efforts to source an older textbook by the same author, or a photocopied version, or increased time spent in the library with a library edition, and so on. Similarly, if students lack resources, capacity, or resources they can seek it out, but in a sense, it is difficult to seek a sense of purpose if one is truly lacking. In particular, this is where the SSA intervention may well have been able to apply an ‘active ingredient’ in focusing students’ persistence: as a guide to resources. It is possible that purpose is the key to student success, but ironically, may not be particularly malleable, without self-efficacy. Tinto (2017) stresses self-efficacy “is learned, not inherited (p. 2)” and therefore is able to be nurtured and developed at university.

In terms of how usefully students respond to challenges, clearly a moderating factor is meta-knowledge and self-awareness. Students who did not see they needed help, but did, failed, whereas students who recognised the challenge, were able to meet it, either themselves, or through support offered. Limited meta-knowledge was evident in the contrast between student
self-ratings of the value of PASS relative to the value shown in the analysis. Students did not speak particularly highly of the PASS and AS Sessions, but those who did take advantage nevertheless experienced greatly improved outcomes, compared to those who did not attend such. Cognisant of the concept of a ‘sense of support’ detailed recommendations have been made in this regard, beyond the university support and short courses such as Early-Bird Sessions discussed previously.

6.6.5 Implications of Added Senses: of resources and support

If universities seek to provide at-risk students with an opportunity of studying at tertiary level that they might not otherwise have (e.g. the social justice reasons), then those universities need to provide adequate support. Universities cannot go back in time and reach beyond their physical boundaries. However, the University can caveat offers of admission, in addition to designing and implementing purposeful curricular and co-curricular interventions to help scaffold at-risk students learning, as well as improve the quality of campus facilities which impact on the student’s senses of success, and thence on students’ actual academic success and retention. Therefore, universities should consider investing in SSAs to help guide those students through their university journey. While it is true that the results of quantitative testing showed that SSA Consultations as having a significant impact on GPA only in students’ first semester, the qualitative thematic analysis indicated considerable value in embedding learning advisors of this type within the Business degree program. This may have implications for government funding. Having the SSAs on-campus pre-semester and during semester, allows for pre and post enrolment consultations, and adds value and efficiency to maintaining early engagement and early outcome markers, which proved to be collectively effective in improving academic skills (though not necessarily retention). In particular, non-submission and failure of early assessment items should be used as a flag to warn of students’ possible risk of academic failure and attrition. If the University continues to allow students to enrol in any combination of any courses, it would be beneficial to also have the SSAs on campus to help new students with enrolment into their first-year Semester 1 courses. The University enrolment system is foreign to most new students and therefore support in this regard may help students transition into university easier, in addition to helping ensure that the students do not under or over load on enrolment and pick a range of courses where assessment is further spread. For example, a combination of literacy courses where essays are more likely to be important and numeracy-based courses where exams are often more important. This allows for different types of
assessment and thus often leads to not having assessment for all courses due at the same time, enabling students to better balance their commitments. As part of the outreach program the SSAs were able to develop an Assessment Flow Chart that evidenced similar types of assessment being due at the one time, when students enrol in similar type courses (all literacy or numeracy-based courses) during the first semester/year of their degree. As highlighted previously, a positive way to prevent this from occurring is to provide SSA and administrative support to first year students to enrol in a combination of courses that helps them balance their study load. When university staff outreach to students in the above manner, it may also have the effect of sending an early signal to students that help is readily available. It may also send a signal to students that university should be prioritised where possible and not based around paid employment hours.

The SSAs who were placed by the university in a position to support at-risk students and were able to initiate early contact with at-risk students to help them more broadly plan their studies and engagement in addition to connecting them to other academic support services such as PASS. Providing co-curricular programs and other support services can afford opportunities for students to develop a positive student identity. Given this support, at-risk students in particular, are more likely to be able to successfully transition to university and succeed as independent learners. Therefore, universities, governments and high schools need to invest in transition programs that are able to not only educate students academically but also socially, in turn developing this ‘sense of support’. Part of this development needs to include strategies for developing students’ awareness of the help available (help-seeking strategies) plus an understanding of it being acceptable to ask for help, and the need to ask for support as early as possible (Tinto, 2017). This is also borne out of Lizzio’s (2015, p. 52) more recent research which has suggested that it is necessary to disseminate “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’.”

Co-curricular programs involve a significant cost to universities; and students who do not graduate are sunk costs, to their first university if they stop-out to another university or to the university and the government if the students dropout. Statistics relating to retention provide greater reason for concern for some (second tier) universities. At least at the case-study University, academic success is not reflected in student retention within the Business degree program. Academically successful students are upgrading to other courses which they prefer,
either within the same university or at other universities. Management at the case-study University could be forgiven for questioning why they should invest in the students if they are likely to leave the program, or worse still, the University. Clearly, some universities spend substantial sums of money effectively giving students a ‘leg up’ and an overall reduced return on investment, in addition to possible damage to reputation rates to the standard of student and poor retention data. Conversely, the second university does not suffer bear the same costs, impact on reputation and possible poor retention rates as the first university which scaffolded their early learning prior to students transferring out.

Governments and secondary schools also influence students’ university success and retention and therefore have their own part to play. For secondary schools this focus is on pre-enrolment at university (distal in this sense), essentially preparing students for university, beyond simply focussing on ‘getting then in’ (to university, i.e. TE score). The government’s role is broader with its policies and funding impacting on both distal and proximal factors, and whose role should be seen as the conduit between the educational institutions in providing support and regulating expectations of academic standards, in addition to providing the financial incentives for the institutions to meet these expectations.

Similar to Kerby’s (2015) Model, climate factors such as government policy and funding were also considered as part of the literature review highlighting how government policy changes have caused an increase in the number of non-traditional students entering the tertiary sector which has impacted on student success, retention and graduation rates and funding. Australian governments and universities now face the challenge of balancing social justice and equity principles, in an attempt to help ensure that university is ‘in everyone’s reach’, while at the same time trying to ensure that academic standards, success, retention and graduation occur, and as such have been included in the augment model of student success and retention. Perhaps controversially, evidence suggests that student retention and the prospect of the federal government caveating funding on the basis of completion of degrees, should give cause for concern to many universities including the institution at the focus of this study. In fact, as highlighted above, if examined from a fiscal and reputational viewpoint, statistics relating to retention provide greater reason for concern for the university than academic success in the form of GPA. It would appear that it is more difficult to develop strategies for ongoing retention past first year, with analysis of retention rates (statistics) proving less significant overall, when compared to academic success rates (statistics). Academic success is not necessarily reflected
in student retention across the business degree program or even at the institution where the students first enrolled. Equally, degree program retention, or retention in a different degree at the same institution where the student first enrolled, is not necessarily a reflection of previous academic success.

This has implications both in terms of resource management and in terms of government funding for the individual universities and encourages gaming of the system by both students and institutions. In keeping with the Federal Government’s aspirational objective of having 40% of the population aged 18-35 years possessing a bachelor’s degree qualification by the year 2025, one might think that, from a purely ethical perspective, universities which admit at-risk students but scaffold their learning in order to give them the greatest chance of academic success, retention and graduation should somehow be rewarded, even when students stop-out to another institution. Yet, one of the most compelling implications of the results and findings of this thesis is that such universities may well ‘fall through the cracks’ and remain unrewarded, as a result of the Government’s current University Funding Model on retention.

Government funding and data on retention and attrition rates for individual universities dependent is on the census cut-off date. One solution might be to change the government funding model so that it rewards universities for student graduations from the University sector, (irrespective of which university the student graduates from) recognising the part that each university may play. This recommendation is practical, insofar as governments are currently able to track students who have commenced study at one institution but graduated from another, via the students’ Commonwealth Higher Education Student Support Number (CHESN), for the purposes of calculating the students’ HELP debt and other student related government services. Of those two alternatives, the second seems preferable, but would require a change of worldview and a recognition that many ‘second tier’ universities contribute to, and cross-subsidize graduation outcomes for their ‘top tier’ competitor institutions, including the so-called GO8. Furthermore, the CHESN data should be made freely available to universities so that further research can be completed to track student mobility across sectors, which according to Flower (2017) is not currently available.

As noted previously, the Australian education system has for some time been experiencing a type of cognitive dissonance, seeking to ensure that academic standards are maintained, while simultaneously aspiring to place a university education within ‘everyone’s reach’ by encouraging academic success, retention and graduation rates. It is clear that in providing ‘a
fair chance for all’, there is a complex range of factors which universities and governments need to take into account when allowing for expenditure. Nonetheless this thesis found that distal factors are less likely to impact on students’ academic success and retention than proximal factors. Furthermore, although this research indicates that proximal factors may fade over time, research indicates that co-curricular interventions may help reduce student failure and attrition, by acting as some support mechanisms. For example, it was found as part of the second study that FiF students graduated in greater numbers from the case-study University than second generation students and findings linked this to their families and SSAs in particular acting as cheerleaders. This finding supports research by Wilson (2012) that their present (proximal factors) becomes more important than their past as long as the right support is provided.

6.7 Areas for Further Research

Areas for further research include completing a cost-benefit analysis of programs such as the intervention at the core of this thesis. Co-curricular programs such as those examined in this thesis come at significant cost to institutions. To encourage universities to invest in these types of co-curricular programs, the government needs to consider re-determining how it benchmarks and rewards success and retention for universities meeting specified targets. To help safeguard funding being allocated fairly, the government should determine how best to financially encourage universities to invest in non-traditional students who prior to this time may not have been admitted to university, but have since graduated, albeit in another degree program or at another university after having stopped-out. The government is able to track students who have started at one institution but graduated at another via the students’ CHESN. Currently there is little reward to universities if students do not finish their degree, considering reputational and financial impacts. Therefore, some may consider not admitting those who have a poor degree program preference because universities may believe it to affect its degree program status when those students internally transfer, or stop-out, to their more favoured preference degree preference after upgrading one’s TE score. This brings into question from a fiscal and reputational viewpoint whether it is financially viable and worth it for these types of universities to provide these students a leg-up to other degree programs or universities. Therefore, further research and development of an equitable funding model should be investigated so that all universities involved in each student’s progress benefit from their efforts. Another example includes reviewing the viability of attracting remote students, e.g.
those who reside more than 20km from campus due to the results of Study 2 showing a negative effect of living greater than 20km way from campus. Part of this investigation would need to consider the value of providing cheaper accommodation for those students who are considered remote.

As part of this research, there is qualitative and quantitative support for the value of looking at intent, commitment, forethought and planning as long term predictors of completion. Students ratings of their commitment to their degree and their perceived chance of finishing their degree, was significantly related to the GPA of a semester a year later. Planning ahead for lectures (measured in 2014) was predictive of retention years later. The qualitative results strongly support the findings that having a clear sense of purpose at university, sufficient resources to complete (rather than just mere talent), and a network of support lead to long term retention. As such the theory of reasoned action (Wicker, 1969; Fishbein & Ajzen, 1975), later refined into the theory of planned behaviour (Ajzen, 1985, 1988) and goal theory (Richardson, Abraham et al., 2012, Locke, 1996; Latham & Brown, 2006) is a considered an important area of further research; with particular focus on a comparison between FiF and second-generation student at different institutions. It may well be the case that it will be dependent on the type of institution and degree program.

6.8 Conclusion

These conclusions form the basis of contributions to the body of theoretical knowledge in this area, as well as practical recommendations for similar universities, governments and secondary schools, as well as students themselves. The chief contributions of the thesis to the body of theoretical knowledge in this area are threefold:

(1) Student identity is more than the sum of its parts, at least as far as these parts have been articulated in Lizzio’s theory. Student identity encompasses not only a student’s senses of purpose, resourcefulness, capability and connection, but importantly also the student’s sense of their own resources (e.g. whether they have access to a laptop and reliable Internet connection) and particularly for at-risk students, their sense of being ‘supported’ and validated, because they are important (rather than simply being a number at University, or a source of revenue for it); and

(2) An augmented model of students’ academic success and retention at universities; and
(3) Empirical evidence which can be used as a basis for practical policy recommendations for universities, governments, secondary schools and students.

Low SES background and LOTE were not significant determinants of academic success or failure, or of retention/attrition. This is ‘good news’ insofar as it demonstrates that, if the results of this thesis are generalisable to other institutions, students from low SES and LOTE backgrounds can be as equally successful academically at university (and be retained within the system) as students from wealthier backgrounds for whom English is often a primary language. Furthermore, TE scores are not relevant after the first semester, as long as students are able to find their sense of purpose and spend time on task to develop their sense of (and actual) capability and resourcefulness to adapt to their new learning environment. However, having the requisite numeracy and time-management skills appear to be of particular importance. It is important for all students to try to build their numeracy skills while at high school. This may include taking on a numeracy course a sixth subject that does not count towards the student’s TE score. Even one extra course learnt in school, such as accounting, could strengthen students’ skills with numeracy-based course, and in particular a student’s sense of capability.

Most importantly for FiF students, beyond first semester, academic success and retention is not negatively influenced by having no family background in the tertiary sector. To the contrary, in this research it was shown that the FiF students outperformed their second-generation counterparts. However, this is still caveated on those students being provided, or seeking out help where necessary and as early as possible. It may be more difficult for FiF students to adjust during the first semester, but beyond that achieving academic success is more about building one’s own sense of success, and in particular having a sense of purpose and taking advantage of the opportunities provided and the support available, such as being involved in PASS and participating in the AS Sessions. It is worth noting that ‘failure’ in a FiF may not mean the same or be interpreted the same as failure for ‘traditional’ students. FiF students failed more regularly in their first semester than those with family heritage at tertiary level, but they went on to complete their degree at the case-study University, to a greater extent than that of their peers with greater ‘academic family experience’. For FiF students, these early set-backs in their tertiary education ‘careers’ are in themselves educational, rather than demotivating.

Despite this thesis recognising that co-curricular initiatives and some distal and proximal factors having some impact on academic success and retention, many of these dissipate over
time, but development of a student’s own senses of success, in particular having a sense of purpose, is important to long term academic success and retention. It is also recognised that other factors impact on student outcomes which are often beyond the control of the universities and staff and may be due to the vagaries of life (Australian Government, 2018; Bradley et al., 2008; TEQSA, 2017). For example, as found in this study, despite best attempts by a university to encourage a student to focus on their studies, a student may decide that university is simply not part of their view of their future at this time, or a student’s family may move interstate may impact on their continued enrolment at university but not necessarily within the sector. Alternatively, students may decide to pursue other careers or challenges in life. Similarly, there are sometimes factors that cause a student to dropout that are beyond the students’ control, for example, moving interstate or being severely injured in a car accident and no longer being able to study.

Nonetheless, responsibility for academic success and perhaps graduation also lies with high schools and pre-university colleges to prepare students for university. This is in addition to the universities, their staff and the government providing resources for transition (Bradley et al., 2008). This means high schools and preparatory colleges need to work together with universities in partnership to help ready students for a successful transition to university, and governments providing funds for this to occur. As seen in the literature review, government policy and funding also influence student academic success and retention (Bradley et al., 2008; Ramsay, 2005; Marginson, 2013; Kaiser et al., 2014). The past decade may well be seen as another critical juncture in the history of Australian Higher Education due to the broadening of access to university. In addition to continually developing school outreach programs, there is also the need to further mature study programs that increase student capability in areas that have been the foci of this study, such as skills used in numeracy-based courses. A central part of a students’ academic success and retention is for the students themselves taking responsibility for their actions (creating their own sense of student identity) and taking advantage of the multitude of the supportive co-curricular interventions offered by their university, in addition to other opportunities provided to them by schools and government.

Some students clearly do not see themselves as needing support or are wary of such support because of a fear of it being an admission of failure (Tower et, al. 2015; Cameron et al., 2011; Tinto, 2017). This absence of recognition of need or acceptance of help was however, a precursor to failure for students that formed part of this research. But for those students who
seek support and assistance, gaining that help from university staff and well-informed peers is likely to act as a particularly authentic form of assistance. The most common term used to describe PASS and mentors was “helpful”, with three quarters of those attending stating that they preferred attending PASS to traditional tutorials as they found the classes more interactive. However, the support the students received from the SSA team was also couched strongly in support terms, with almost 100% of those who availed themselves of SSA assistance using terms such as supportive, caring, concerned, helpful, available and friendly to describe the SSA and the consultation experience.

Overall the research from this thesis suggests that while there is no single panacea for creating academic success and retention for all at-risk students, the involvement in co-curricular activities does positively influence these outcomes. The study provides an indication that retention needs to be considered at a system, rather institution level where ‘local’ support to adjust to university can be provided’: students may not stay at the university who invested in the co-curricular support but that does not mean they are systems-wide ‘failures’. Further research is required to determine how to best reward institutions and their staff who develop programs to help at-risk students’ academic success and retention, if the Australian government is to commit to ‘a fair system for all’ and develop the business leaders of tomorrow.
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Appendices

Appendix A - Information Sheet for Research Participants & Consent Form

Informed Consent Package

As part of my PhD, this research project is designed to explore the efficacy of the consultations and workshops that the new first year Bachelor of Business students have had with the Bachelor of Business Student Success Advisor(s) at the Nathan Campus and the effect of these meetings on the students’ sense of connectedness, capability, resourcefulness, purpose and student identity. It will also explore all the interventions used as part of the Bachelor of Business engagement and retention strategy including: the Negotiated Engagement Interviews and Student Success Plans offered by the Business Degree’s Student Success Advisors (SSAs), Academic Skills Workshops and Peer Assisted Study Sessions (PASS), Academic Recovery and other follow-up sessions with students, the Student Success Club and involvement in student societies.

Participation in this research is voluntary and not compulsory. Even if you have voluntarily completed a negotiated engagement interview with the Student Success Advisor, you may elect not to participate in this research project. Involvement or non-involvement in the interview will not impact on your relationship standing with any staff member at Griffith University or the institution. In particular, it will not have any impact on your assessment or results for the courses and/or relationship with their Student Success Advisor. The individual results will be kept confidential and the Bachelor of Business Student Success Advisor will not be provided with any direct individual feedback from the individual student surveys/interviews. Participation in the survey will involve an interview of about 1 hour in length. The interview will be digitally recorded to enable the content to be transcribed for analysis. Please note that you may decide to discontinue your participation in the interview at any stage of the process, and not have your responses destroyed and included in any data sets, without the need to provide an explanation of reasons and without penalty.
I will be asking a number of questions in the survey relating to your transition into university and how this has impacted on your sense of connectedness, capability, resourcefulness, purpose and student identity and whether the you have found the Negotiated Engagement Interviews conducted between the Student Success Advisor and you to be helpful with regard to transitioning into, settling into university. The results of the study will be used to benefit future students, the university and its staff members helping them to understand the importance of students transitioning into university and how these experiences can be improved for students.

The research team will be the only people who have direct access to the data collected and the privacy details of individual students will be protected at all times, and at no stage will individual student responses be identified. Information provided during the interview process will be collected confidentially and stored via normal ethical procedures. Although demographic data will be aggregated for analytical purposes, data that would enable the identification of individual students will be excluded. At the completion of the research project, the data will be stored for a maximum of five years, after which time the data will be destroyed in line with ethics procedures. Students and Staff will be able to request access to the research findings at the end of the project, but not individual results.

Griffith University conducts research in accordance with the National Statement on Ethical Conduct in Human Research. If potential participants have any concerns or complaints about the ethical conduct of the research project they should contact the Manager, Research Ethics on 3735 5585 or research-ethics@griffith.edu.au

The conduct of this research involves the collection, access and/or use of your identified personal information. The information collected is confidential and will not be disclosed to third parties without your consent, except to meet government, legal or other regulatory authority requirements. A de-identified copy of this data may be used for other research purposes. However, your anonymity will at all times be safeguarded. For further information consult the University’s Privacy Plan at http://www.griffith.edu.au/ua/aa/vc/pp/ or telephone (07) 3735 5585.

**Student Success and Retention Strategies for First Year Students within the Australian Higher Education Framework**

_Name of participant: ________________________________
Name of Investigator(s): Mr Ben French
Professor Keithia Wilson
Dr Richard Copp
Dr Olav Murrlink

1. I consent to participate in this project, the details of which have been explained to me, and I have been provided with a written plain language statement to keep.

2. I understand that my participation will involve an interview and I agree that the researchers may use the results as described in the plain language statement.

3. I acknowledge that:

   (a) the possible effects of participating in the interview have been explained to my satisfaction;

   (b) I have been informed that my participation is completely voluntary and that I am free to withdraw from the project at any time without explanation or prejudice and to withdraw any unprocessed data I have provided;

   (c) I have been informed that the confidentiality of the information I provide will be safeguarded to the utmost extent subject to any legal requirements;

   (d) I have been informed that with my consent the interview will be audio-recorded and I understand that audio-records will be stored at Griffith University and will be destroyed after a minimum of five years;

   (e) The project is for the purpose of research which may result in academic, practitioner and media publications;

   (f) In all cases, my name will be replaced by a non-identifying pseudonym in any publications arising from the research; and

I consent to this interview being audio-recorded □ yes □ no
(please tick)

Participant Signature: ________________________________ Date: ________________
Appendix B - Short Survey and Semi-Structured Interview Questions

Ben French (s1549997) - PhD Qualitative Survey Questions

Demographics (students asked for quick, closed-ended response to the following and informed that it is not compulsory to complete any or all questions)

- Program
- Age
- Race (& language spoken at home)
- Gender
- ABTSI/Other

Demographics (other)

- Where do you live - distance from university? (postcode)
  - Do you live with family/friends?
  - Do you need to pay rent?
  - Do you have a separate place at home to study?
  - Do you have a computer/laptop available to you?
  - How do you get to university? (Time, cost)
- Are you the first student in your family to attend/complete university?
  - What are your parent’s occupation(s)?
  - How does your family feel about you studying at university?
- Do you have primary carer responsibilities for siblings, immediate family members or relatives?

School → University Studies

- Did you enter university straight from school?
  - Did you attend a private or public school?
- Why did you choose Griffith University?
  - Was Griffith University your first preference?
- What made you choose your Bachelor of Business degree?
  - Have any family or friends completed a business degree?
  - Have you completed any work experience related to your degree?
- On a scale of 1-10, how well do you think school prepared you for your university studies?
- On a scale of 1-10, do you think you had realistic expectations of how much time that you would have to dedicate to your studies?
- How do you intend to fund your studies?
- Are you happy with your university grades so far?

Work related questions:

- Do you work in addition to studying?
  - If so, how many hours per week?
  - Nights/Days?
- How long does it take to get to work?
- How long have you worked at your current employment?
- How long do you intend to stay in your current employment?
- Is the work that you are completing related to your dream job/future?
- Have you spoken to any careers counsellors since attending Griffith University?

University related questions

- Did you attend Orientation?
  - If so, what did you like or not like about Orientation?
  - If not, why did you not attend?
- How are you finding your experience at Griffith University so far?
  - What do you like/dislike about university so far?
  - Can you think of anything helping or hindering your transition to being a university student?
  - Can you think of anything that would better help you achieve your university goals?
- How many courses are you currently enrolled into?

Sense of Connection:
- Do you feel supported at Griffith University?
- Do you feel proud to be studying at Griffith University?
- On a scale of 1-10, how are you finding your interactions with staff (approachability and friendliness)?
- On a scale of 1-10, how are you finding your interactions with your peers (approachability and friendliness)?
- How many other students do you know at university that you are in regular contact with?
- On a scale of 1-10, how important do you think it is to make friends at university?
- Have you joined any formal or non-formal social and/or study clubs?
  - If so, which ones?
  - If not, are there any reasons why you have not been able to do so?
- Do you know what Peer Assisted Study Sessions (PASS) is?
  - If so, how do you know about PASS?
- Do you intend/have you attended PASS?
  - If so, which courses were attached to these sessions & how many sessions did you attend?
  - If not, is there any reason why you have not attended?

Sense of Capability:

- Have you found many differences in the standards of work required at school compared to university?
- On a scale of 1-10, in terms of difficulty how are you finding the course work required in your degree?
  - Were you able to consistently keep up to date with your course workload last semester (Semester 1)?
  - If not, having now completed a semester at university, do you think you will be better able to time manage/balance your commitments this coming semester (Semester 2)?
- On a scale of 1-10, do you feel capable of being self-directed with your studies?
- Which courses do you feel were the most difficult?
- Are there any skills that you are finding which you had not developed before entering university that you believe you will need?
  o If so, have you enquired about how to acquire these skills?
  o How confident are you about acquiring these new skills?

Sense of Purpose:

- What are your dreams for the future in regard to your career?
- Do you know of the career and counselling services?
- On a scale of 1-10, how committed do you feel towards your degree?
- On average, how long do you intend to spending studying per course per week?
- On a scale of 1-10 what do you think is the likelihood of completing your degree?
- On a scale of 1-10 how confident are you of passing all your courses?
- On a scale of 1-10 what do you think is the likelihood of completing your individual pieces of assessment on time?
- Have you bought your required text books? If not, why not?
- Have you looked at the Program structure of what courses need to be completed during your degree?
- Do you intend to attend all lectures this semester?
  o If not, is there anything in particular preventing you from doing so?
- Do you intend to attend all tutorials this semester?
  o If not, is there anything in particular preventing you from doing so?
- On a scale of 1-10, do you intend to turn up to lectures and tutorials this coming semester (Semester 2)?
  o Did you attend most of your classes last semester?
  o If not, was there anything in particular preventing you from doing so?
- On a scale of 1-10, do you think you will be able to complete all assessment on time this coming semester (Semester 2)? (certain, almost certain)
  o If not, was there anything in particular preventing you from doing so?
- On a scale of 1-10, do you take notes during lectures?
- What do you think is most important to achieving good grades in a course? (Time on task)
- Have you set your own personal goals for university?

Identity:

- Are you getting the hang of where everything is going for you at university?
- Do you feel comfortable with the idea of being a university student?
- Do you feel that you have made the right choice by going to university and studying a Bachelor of Business?
- Does it feel right to you to be a university student?
- Do you feel as if you are fitting in?
- Do you feel as if you are able to have a balance between study, life and social commitments?
- Are you beginning to realise what it means to be a university student?
- If you had to estimate the chance of you finishing your degree, what percentage would you put that at?
- Have you found university life exciting/interesting?

Resourcefulness:

- Are you clear on where to find the things you need on campus?
- Do you feel that you are able to navigate the university system to get the information and help that you need?
- Do you feel comfortable about asking for help at university?
- Do you feel that you are able to balance your work, life and study commitments?

Resourcefulness:

- Are you clear on where to find the things you need on campus?
- Do you feel comfortable about asking for help at university?

SSA related questions:

- How was your experience with the SSA?
- Did you feel that it was a useful experience? Why so/Why not?
- Do you think that you will continue to have contact with your SSA?
- Did you find the NEI process helpful? Why so/Why not?
- Did you attend any of the Academic Skills Sessions?
  
  o If so, which ones did you attend and were they helpful to your studies?
## Appendix C – Coding of Variables

<table>
<thead>
<tr>
<th>Variable</th>
<th>Coded</th>
</tr>
</thead>
<tbody>
<tr>
<td>Length of Interview</td>
<td>Time in minutes</td>
</tr>
<tr>
<td>OP</td>
<td>By Entry score to university or for non-Op Entry point and equivalent</td>
</tr>
<tr>
<td>Gender</td>
<td>Gender M=1, F= 2</td>
</tr>
<tr>
<td>Age</td>
<td>At time of interview</td>
</tr>
<tr>
<td>Postcode</td>
<td>Numeric</td>
</tr>
<tr>
<td>LOTE</td>
<td>Yes=1, No=2</td>
</tr>
<tr>
<td>Travel time to University</td>
<td>Time in minutes</td>
</tr>
<tr>
<td>Mode of transport</td>
<td>0=live on campus, Car=1, Bus=2, Train=3, Combo=4</td>
</tr>
<tr>
<td>Living at home with family</td>
<td>Yes=1, No=2</td>
</tr>
<tr>
<td>Pay Rent</td>
<td>Yes=1, No=2</td>
</tr>
<tr>
<td>Study Area</td>
<td>Bedroom=1, Study=2, Library=3</td>
</tr>
<tr>
<td>FiF</td>
<td>Yes=1, No=2</td>
</tr>
<tr>
<td>Dad (Profession Skilled)</td>
<td>1=Professional, 2=Blue Collar, 3=Small Bus, 4=Office, 5=Other, 6=N/A 7 retired</td>
</tr>
<tr>
<td>Mum Profession Skilled)</td>
<td>1=Professional, 2=Blue Collar, 3=Small Bus, 4=Office, 5=Other, 6=N/A 7 retired</td>
</tr>
<tr>
<td>Question</td>
<td>Response Options</td>
</tr>
<tr>
<td>------------------------------------------------------------------------</td>
<td>-----------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Carer Responsibilities</td>
<td>Yes=1, No=2</td>
</tr>
<tr>
<td>Enter university straight from school?</td>
<td>Yes=1, No=2</td>
</tr>
<tr>
<td>Attended Private, Public or Independent School</td>
<td>Private=1, Public=2, Independent=3</td>
</tr>
<tr>
<td>Reason for choosing Griffith University?</td>
<td>1=OP, 2=Convenience (Proximity), 3=Family &amp; Friends, 4=other (reputation, more relaxed etc)</td>
</tr>
<tr>
<td>What preference was Griffith in your QTAC Application?</td>
<td>Numbered</td>
</tr>
<tr>
<td>Will you continue this degree?</td>
<td>Y=1, Unsure=2, N=3</td>
</tr>
<tr>
<td>Do you have degree-relevant work experience?</td>
<td>Y=1, Somewhat=2, N=3</td>
</tr>
<tr>
<td>Did school prepare you for university?</td>
<td>Scale of 1-10 with 10 being the highest</td>
</tr>
<tr>
<td>Did school give you realistic expectations of university?</td>
<td>Scale of 1-10 with 10 being the highest</td>
</tr>
<tr>
<td>How many hours do you spend on study per week including contact time?</td>
<td>Time in hours</td>
</tr>
<tr>
<td>Do you find university challenging?</td>
<td>Y=1, Somewhat=2, N=3</td>
</tr>
<tr>
<td>Most challenging first year course?</td>
<td>None=0, Ec=1, St=2, Acc=3, Er=4, Mkt=5, Mngt=6</td>
</tr>
<tr>
<td>Question</td>
<td>Response</td>
</tr>
<tr>
<td>-------------------------------------------------------------------------</td>
<td>----------</td>
</tr>
<tr>
<td>Do you do any paid work (i.e. work outside of university)?</td>
<td>Yes=1, No=2</td>
</tr>
<tr>
<td>If so, how many hours of paid work?</td>
<td>Time in hours</td>
</tr>
<tr>
<td>Do you work day or night?</td>
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</tr>
<tr>
<td>Do you work full-time, part-time, casual?</td>
<td>None=0, Full-time=1, Part-time=2, Casual=3</td>
</tr>
<tr>
<td>Are you aware of max recommended hours?</td>
<td>Y=1, N=2</td>
</tr>
<tr>
<td>Did you attend orientation?</td>
<td>Y=1, N=2</td>
</tr>
<tr>
<td>Number of Courses (Sem 1)?</td>
<td>Number recorded</td>
</tr>
<tr>
<td>Number of friends?</td>
<td>Number recorded</td>
</tr>
<tr>
<td>Wee most friends made at Uni, School, Mixed?</td>
<td>Uni=1, School=2, Mixed=3</td>
</tr>
<tr>
<td>How important is it to have friends?</td>
<td>Scale of 1-10 with 10 being the highest</td>
</tr>
<tr>
<td>Have you joined study clubs either formal or informal?</td>
<td>Y=1, N=2</td>
</tr>
<tr>
<td>Are you familiar with PASS?</td>
<td>Y=1, N=2</td>
</tr>
<tr>
<td>Did you attend PASS?</td>
<td>Y=1, N=2</td>
</tr>
<tr>
<td>Question</td>
<td>Scale/Option</td>
</tr>
<tr>
<td>-------------------------------------------------------------------------</td>
<td>-------------------------------</td>
</tr>
<tr>
<td>Do you have academic goals for university?</td>
<td>Y=1, 2=general, 3=N</td>
</tr>
<tr>
<td>Do you think completing a Bachelor of Business was/is the right choice for you?</td>
<td>Y=1, unsure=2, N=3</td>
</tr>
<tr>
<td>How committed are you to completing your degree?</td>
<td>Scale of 1-10 with 10 being the highest</td>
</tr>
<tr>
<td>What chance as a percentage do you think you are of completing your degree?</td>
<td>Scale as a percentage</td>
</tr>
<tr>
<td>Did you attend PASS?</td>
<td>Y=1, N=2</td>
</tr>
<tr>
<td>Did you attend the Academic Skills Sessions?</td>
<td>Y=1, N=2</td>
</tr>
<tr>
<td>Have you bought your textbooks?</td>
<td>Y=1, 2=some, 3=N</td>
</tr>
<tr>
<td>Question</td>
<td>Response</td>
</tr>
<tr>
<td>-------------------------------------------------------------------------</td>
<td>----------</td>
</tr>
<tr>
<td>Have you looked ahead at future courses you might do?</td>
<td>Y=1, N=2</td>
</tr>
<tr>
<td>Knowledge of location of requirements at university?</td>
<td>Y=1, N=2 (i.e. able to explain destination)</td>
</tr>
<tr>
<td>Do you know where the post-office is located?</td>
<td>Y=1, N=2 (i.e. able to explain destination)</td>
</tr>
<tr>
<td>Do you know where the medical centre is located?</td>
<td>Y=1, N=2 (i.e. able to explain destination)</td>
</tr>
<tr>
<td>Do you know where the career counsellors are on campus?</td>
<td>Y=1, N=2 (i.e. able to explain destination)</td>
</tr>
<tr>
<td>Have you booked a university service, e.g. counsellors, doctors?</td>
<td>Y=1, N=2</td>
</tr>
<tr>
<td>Do you use laptop for class?</td>
<td>Y=1, Sometimes=2, N=3</td>
</tr>
<tr>
<td>Do you use student email on iPhone?</td>
<td>Y=1, N=2</td>
</tr>
</tbody>
</table>
| Coding of 5 Senses qualitative data:                                    | 1. Identity  
                                    2. Connection  
                                    3. Capacity  
                                    4. Purpose  
                                    5. Resourcefulness. |
## Appendix D - Data Retrieved from University Databases and Files (2012-2017)

<table>
<thead>
<tr>
<th></th>
<th>Data</th>
<th>Used as a Dependent Variable</th>
<th>Type of Variable</th>
<th>Reasoning for Inclusion</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Semester GPA (Academic Success)</td>
<td>Dependent Variable</td>
<td>Continuous</td>
<td>Test hypothesis 1 and 2</td>
</tr>
<tr>
<td>2</td>
<td>Retention Status between 2012-2016 for those students still enrolled</td>
<td>Dependent Variable</td>
<td>Binary</td>
<td>Test hypothesis 3 and 4</td>
</tr>
<tr>
<td>3</td>
<td>Graduation Status between 2014-2016 for those students still enrolled (Retention) for descriptive statistics</td>
<td>Dependent Variable</td>
<td>Categorical</td>
<td>Test hypothesis 3 and 4</td>
</tr>
<tr>
<td>4</td>
<td>Semester GPA (Retention)</td>
<td>Independent Variable</td>
<td>Continuous</td>
<td>Test hypothesis 3 and 4</td>
</tr>
<tr>
<td></td>
<td>Data</td>
<td>Used as a Dependent Variable</td>
<td>Type of Variable</td>
<td>Reasoning for Inclusion</td>
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</tr>
<tr>
<td>5.</td>
<td>OP (TE Score)</td>
<td>Independent Variable</td>
<td>Categorical</td>
<td>The University determined this variable to be a proxy for and a predictor of risk and potential failure and attrition. There is strong support in the literature for this assumption.</td>
</tr>
<tr>
<td>6.</td>
<td>Preference for completing a Business Degree as part of TE Application. (Compared to for example, completing a similar degree program at a difference university or a Bachelor of Nursing Degree Program at the same, or different, university).</td>
<td>Independent Variable</td>
<td>Categorical</td>
<td>The University determined this variable to be a proxy for, and a predictor of, risk and potential failure and attrition. There is some support in the literature for this assumption.</td>
</tr>
<tr>
<td>7.</td>
<td>Language Other Than English Status</td>
<td>Independent Variable</td>
<td>Binary</td>
<td>The University determined this variable to be a</td>
</tr>
<tr>
<td>Data</td>
<td>Used as a Dependent Variable</td>
<td>Type of Variable</td>
<td>Reasoning for Inclusion</td>
<td></td>
</tr>
<tr>
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<td>------------------------------</td>
<td>------------------</td>
<td>----------------------------------------------------------------------------------------</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>0 = English</td>
<td>proxy for, and a predictor of, risk and potential failure and attrition. There is strong support in the literature for this assumption.</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>speaking at home</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>1 = Language</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Other Than English spoken at home</td>
<td></td>
<td></td>
</tr>
<tr>
<td>8. Socio Economic Status</td>
<td>Independent Variable</td>
<td>Binary</td>
<td>The University determined this variable to be a proxy for, and a predictor of, risk and potential failure and attrition. There is strong support in the literature for this assumption.</td>
<td></td>
</tr>
<tr>
<td>(Based on postcode)</td>
<td></td>
<td>0 = Not deriving from a low SES Background</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>1 = Deriving from a low SES Background</td>
<td></td>
<td></td>
</tr>
<tr>
<td>9. Gender</td>
<td>Independent Variable</td>
<td>Binary</td>
<td>Literature determined use of this variable.</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>0 = Female</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>1 = Male</td>
<td></td>
<td></td>
</tr>
<tr>
<td>10. Age</td>
<td>Independent Variable</td>
<td>Continuous</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Data</td>
<td>Used as a Dependent Variable</td>
<td>Type of Variable</td>
<td>Reasoning for Inclusion</td>
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</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Literature determined use of this variable.</td>
<td></td>
</tr>
<tr>
<td>11.</td>
<td>Credit Points taken towards the Bachelor of Business Degree during the semester enrolled</td>
<td>Independent Variable</td>
<td>Categorical (10-50)</td>
<td>Literature determined use of this variable.</td>
</tr>
<tr>
<td>12.</td>
<td>Non-Attendance at Orientation (Marker 1 - Engagement)</td>
<td>Independent Variable</td>
<td>Binary 0 = Attendance 1 = Non-Attendance</td>
<td>The University determined this variable to be a proxy for, and a predictor of, risk and potential failure and attrition. There is strong support in the literature for this assumption.</td>
</tr>
<tr>
<td></td>
<td>Data</td>
<td>Type of Variable</td>
<td>Reasoning for Inclusion</td>
<td></td>
</tr>
<tr>
<td>---</td>
<td>----------------------------------------------------------------------</td>
<td>------------------------</td>
<td>-------------------------------------------------------------------------------------------------------------------------------------------------------</td>
<td></td>
</tr>
<tr>
<td>13.</td>
<td>Non-attendance online with the first two weeks of semester (Marker 2 - Engagement)</td>
<td>Independent Variable Binary 0 = Attendance 1 = Non-Attendance</td>
<td>The University determined this variable to be a proxy for, and a predictor of, risk and potential failure and attrition. There is strong support in the literature for this assumption.</td>
<td></td>
</tr>
<tr>
<td>14.</td>
<td>Attendance at a tutorial within the first three weeks of semester (Marker 3 – Engagement – with tutorials starting in Week 2)</td>
<td>Independent Variable Binary 0 = Attendance 1 = Non-Attendance</td>
<td>The University determined this variable to be a proxy for, and a predictor of, risk and potential failure and attrition. There is strong support in the literature for this assumption.</td>
<td></td>
</tr>
<tr>
<td>15.</td>
<td>Whether the student had submitted their first piece of assessment in</td>
<td>Independent Variable Binary 0 = Submitted</td>
<td>The University determined this variable to be a proxy for, and a predictor of, risk and potential failure and attrition. There is strong support in the literature for this assumption.</td>
<td></td>
</tr>
<tr>
<td>Data</td>
<td>Used as a Dependent Variable</td>
<td>Type of Variable</td>
<td>Reasoning for Inclusion</td>
<td></td>
</tr>
<tr>
<td>------</td>
<td>-----------------------------</td>
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<td>-------------------------</td>
<td></td>
</tr>
<tr>
<td>designated course (Marker 4 - Engagement)</td>
<td></td>
<td>1 = Not Submitted</td>
<td>proxy for, and a predictor of, risk and potential failure and attrition. There is strong support in the literature for this assumption.</td>
<td></td>
</tr>
<tr>
<td>16. Whether the student had passed their first piece of assessment in designated course (Marker 5 - Outcome)</td>
<td>Independent Variable</td>
<td>Binary 0 = Passed 1 = Not passed</td>
<td>The University determined this variable to be a proxy for, and a predictor of, risk and potential failure and attrition. There is strong support in the literature for this assumption.</td>
<td></td>
</tr>
<tr>
<td>17. SSA Attendance</td>
<td>Independent Variable</td>
<td>Attendance Tested as Binary (Attendance)</td>
<td>The University determined this variable to be a proxy for, and a predictor of, risk and potential failure and attrition. There is strong support in the literature for this assumption.</td>
<td></td>
</tr>
<tr>
<td>Data</td>
<td>Used as a Dependent Variable</td>
<td>Type of Variable</td>
<td>Reasoning for Inclusion</td>
<td></td>
</tr>
<tr>
<td>----------------------------------------------------------------------</td>
<td>-------------------------------</td>
<td>----------------------------------------------------------</td>
<td>----------------------------------------------------------------------------------------</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Categorical (Number of Attendances)</td>
<td>attrition. There is strong support in the literature for this assumption.</td>
<td></td>
</tr>
<tr>
<td>18. AS Attendance Independent Variable</td>
<td>Attendance Tested as Binary (Attendance) &amp; Categorical (Number of Attendances)</td>
<td>Attendance Tested as Binary (Attendance) &amp; Categorical (Number of Attendances)</td>
<td>The University determined this variable to be a proxy for, and a predictor of, risk and potential failure and attrition. There is strong support in the literature for this assumption.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Data</td>
<td>Used as a Dependent Variable</td>
<td>Type of Variable</td>
<td>Reasoning for Inclusion</td>
</tr>
<tr>
<td>---</td>
<td>-------------------------------</td>
<td>-----------------------------</td>
<td>-------------------------------------------------------</td>
<td>-----------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>19.</td>
<td>PASS Eligibility</td>
<td>Independent Variable</td>
<td>Attendance Tested as Binary &amp; Categorical (Number of Attendances)</td>
<td>The University determined this variable to be a proxy for, and a predictor of, risk and potential failure and attrition. There is strong support in the literature for this assumption.</td>
</tr>
<tr>
<td>20.</td>
<td>PASS Attendance</td>
<td>Independent Variable</td>
<td>Attendance Tested as Binary &amp; Categorical (Number of Attendances)</td>
<td>The University determined this variable to be a proxy for, and a predictor of, risk and potential failure and attrition. There is strong support in the literature for this assumption.</td>
</tr>
</tbody>
</table>
Appendix D - Figures -11-13

Figure 11: Scatter plot of the standardised predictor value against the standardised residual.

Figure 6: Partial regression plots for each of the predictor variables
Figure 73: Normal Q-Q plot of standardised residuals
Appendix E - Ethical Clearance (Part A & B)

GRIFFITH UNIVERSITY HUMAN RESEARCH ETHICS COMMITTEE

21-May-2014

Dear Mr French

I write further to your application for ethical clearance for your project "NR: Bachelor of Business Student Success and Retention Project" (GU Ref No: AFE/04/14/HREC). This project has been considered by Human expedited review 1.

The Chair resolved to grant this project provisional ethical clearance, subject to your response to the following matters:

This application has been reviewed administratively by the Office for Research via a mechanism applied to research that has been assessed as involving no more than negligible risk.

Your response to question E1 does not provide sufficient information relating to: a) a summary of the literature review that informed the research questions and/or established issue to be explored by the research, and the methods that will be employed; and b) how this research design will allow the research questions / issues to be explored. The information provided in this Section assists the Human Research Ethics Committee in assessing whether the project meets the values and principles relating to scientific merit, integrity, justice, beneficence, and respect as required by the National Statement on Ethical Conduct in Human Research. Please note that the submission of and/or reference to confirmation documents, research proposals, grant applications, etc. in lieu of responding directly to Question E1 is not acceptable.

Access to identified student records for research purposes is arguable a legal privacy issue. Nevertheless, it is accepted that this work is negligible risk, is consistent with the original purpose for which the data was collected, and there is a tangible benefit to assessing the efficacy of existing strategies. The researchers must obtain appropriate institutional authority for the access for research purposes.

Can the applicants please advise if there is a possibility for the potential participant pool to include persons who are aged under 18 (e.g.
many undergraduate students are under the age of 18), and the approach that will be adopted with regard to consent. Please refer to Booklet 24 of the Griffith University Research Ethics Manual for guidance on these matters.

Please ensure the informed consent materials will be distributed with the Griffith University logo. Information relating to the logo can be found at: http://www.griffith.edu.au/web-style-guide/creating-branding/griffith-logo-usage

Please ensure the informed consent materials list the principal supervisor as the chief investigator and the student as the student researcher. The materials should provide contact information for the principal supervisor.

Please correct the contact details of the Manager, Research Ethics to 373 54375 or research-ethics@griffith.edu.au.

Please ensure the Contact Officer signs Section F1 of the Expedited Ethical Review Checklist (in the case of Student Research, Section F1 must be signed by the Student). If you did not generate a hard copy when you first submitted your application we can email a PDF copy to you. Please scan the signed form and return to the Office for Research as an email attachment.

Please ensure the Primary Supervisor signs Section F1A of the Expedited Ethical Review Checklist. If you did not generate a hard copy when you first submitted your application we can email a PDF copy to you. Please scan the signed form and return to the Office for Research as an email attachment.

Please ensure an appropriate authorising officer (i.e. the Head of School or Centre Director), who is not a member of the research team, signs Section F2 of the Expedited Ethical Review Checklist. If you did not generate a hard copy when you first submitted your application we can email a PDF copy to you. Please scan the signed form and return to the Office for Research as an email attachment.

This decision was made on 21-May-14. Your response to these matters will be considered by Office for Research.
The ethical clearance for this protocol runs from 21-May-14 to 31-Dec-14.

Please forward your response to Dr Gary Allen, Senior Policy Officer, Office for Research as per the details below.

Please refer to the attached sheet for the standard conditions of ethical clearance at Griffith University, as well as responses to questions commonly posed by researchers.

It would be appreciated if you could give your urgent attention to the issues raised by the Committee so that we can finalise the ethical clearance for your protocol promptly.

Regards

Dr Gary Allen
Senior Policy Officer
Office for Research
Bray Centre, Nathan Campus
Griffith University
ph: +61 (0)7 3735 5585
fax: +61 (0)7 3735 7994
email: g.allen@griffith.edu.au
web:

Cc:

Researchers are reminded that the Griffith University Code for the Responsible Conduct of Research provides guidance to researchers in areas such as conflict of interest, authorship, storage of data, & the training of research students.

You can find further information, resources and a link to the University's Code by visiting
Dear Mr French,

I write further to the additional information provided in relation to the provisional approval granted to your application for ethical clearance for your project "NR: Bachelor of Business Student Success and Retention Project" (GU Ref No: AFE/04/14/HREC).

The additional information was considered by Office for Research.

This is to confirm that this response has largely addressed the comments and concerns of the HREC.

This decision is subject to:

Access to identified student records for research purposes is arguable a legal privacy issue. Nevertheless, it is accepted that this work is negligible risk, is consistent with the original purpose for which the data was collected, and there is a tangible benefit to assessing the efficacy of existing strategies. The researchers must obtain appropriate institutional authority for the access for research purposes.
Please ensure the Contact Officer signs Section F1 of the Expedited Ethical Review Checklist (in the case of Student Research, Section F1 must be signed by the Student). If you did not generate a hard copy when you first submitted your application we can email a PDF copy to you. Please scan the signed form and return to the Office for Research as an email attachment.

Please ensure the Primary Supervisor signs Section F1A of the Expedited Ethical Review Checklist. If you did not generate a hard copy when you first submitted your application we can email a PDF copy to you. Please scan the signed form and return to the Office for Research as an email attachment.

Please ensure an appropriate authorising officer (i.e. the Head of School or Centre Director), who is not a member of the research team, signs Section F2 of the Expedited Ethical Review Checklist. If you did not generate a hard copy when you first submitted your application we can email a PDF copy to you. Please scan the signed form and return to the Office for Research as an email attachment.

However, you are authorised to immediately commence this research on the strict understanding that these matters are addressed and that you provide details of how they were addressed.

Please note that failure to provide a timely response to these matters may result in this authorisation being suspended or withdrawn. The standard conditions of approval attached to our previous correspondence about this protocol continue to apply.

It would be appreciated if you could give your urgent attention to the issues raised by the Committee so that we can finalise the ethical clearance for your protocol promptly.

Regards

Dr Gary Allen

Senior Policy Officer

Office for Research

Bray Centre, Nathan Campus
Researchers are reminded that the Griffith University Code for the Responsible Conduct of Research provides guidance to researchers in areas such as conflict of interest, authorship, storage of data, & the training of research students.

You can find further information, resources and a link to the University's Code by visiting http://policies.griffith.edu.au/pdf/Code%20for%20the%20Responsible%20Conduct%20of%20Research.pdf

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This email and any files transmitted with it are intended solely for the use of the addressee(s) and may contain information which is confidential or privileged. If you receive this email and you are not the addressee(s) [or responsible for delivery of the email to the addressee(s)], please disregard the contents of the email, delete the email and notify the author immediately.