Common Unit Monitoring Project: first year student progress and the success of the Common Unit Program

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Acknowledgements

EXECUTIVE SUMMARY

This report presents the findings of a ten year survey of student success in the Common Units and the influence of student demographics on this success (Part A). It also presents findings of more recent data (2006-2010) examining the overall success, at a course level, of students who completed the Common Units compared to those who did not and students' perceptions of the common units (Part B). The inclusion of a summary of the literature relating to the profile of contemporary universities and students provides an important context for these findings.

Part A of this study tracked patterns of student attrition, satisfaction and academic success as these are affected by equity (demographic) and situational (Part-Time Status, External Mode, First Year of Study) factors.

In **Part B**, because of the complexity and range of variables affecting student success, results were aggregated by categories to account for students existing academic confidence and capability. These included grouping by basis of course entry or admission (BOA) and by age cohorts (identified later in terms of "generations"). Students were also surveyed to investigate whether their views, of the Common Unit Program's success for them personally, correlated with the analysis of retention and success data.

Key findings indicate that, over the decade, measures of retention and progress have improved, as a decline in rates of Early Withdrawals has been accompanied by a statistically significant improvement in the Pass Rate. There is also a satisfactory return to higher rates (now over 80% of the intake) of participation by the target population, students in the first year of their course. Within this pattern of stability and gradual maturation as a program, there are however, students in the Non-Traditional category who continue to indicate vulnerability for attrition:

- Persistent lower Pass Rates for Indigenous enrolments (15-20% lower than the average) and for Males (6-10% lower than average)

- Instability in the rates of Early Withdrawal for students in the "vulnerable" age group 20-24 yrs, fallen since early years, now increasing

- Persistent high rates of Withdrawal Before Census Date for both external and part-time enrollments

In **Part B** of our study, student performance (Mean GPA), attrition and student satisfaction was tracked for a cohort of 3068 thousand students over 3 years from their admission to CDU in 2006. Student performance as a function of entry pathway was examined and exposure vs. no exposure to the CUC program was tested over the period 2006-2008.

Our **key findings** were:

- Variables associated with student's retention and successes are many, factors including personal and institutional background

- In general, students who gain exemption have superior performance, as one would expect, given their existing content knowledge and/or tertiary institutional experience. In other words, the exemption process is working well

- VET entry students overall have a higher retention than other students

- Over time, the success gap (GPA and retention) closes between students who completed Common Units and those who were given exemptions (who are higher performing students in Year 1 of study)

- VET entry students were of interest. For these students, the gap was more than closed – by Year 3, those who did CUCs outperformed VET entry students who got exemptions. In Year 1, the GPA differential was 1 between VETs who did and those who did not do CUs. By Year 2 this is reduced to 0.5 and by Year 3, students exposed to the CU program achieved an equivalent GPA or even higher (0.2, not significantly different)

- VET students exposed to the CU program shifted their GPA by 1.2 units, a significant improvement but this took 3 years - Change Your World!

Thus, data suggests exposure to the CUC program enhances student performance. This may not be manifest until Year 3 when higher levels of literacy are expected in all degrees. Additionally, a survey of students, as part of this study, found a clear 70% agreement about the importance of the Academic Skills Common Units in assisting their success. 2011 SELTS for Common Units further support students' approval. For all three units they are typically high, >5.5 on a scale of 0-7, with CUC 100 recording > 6 in all categories.

Given that the CDU student body includes large numbers of external, part-time and "first in family at university" students (all factors for early attrition because of personal, financial and/or family factors) we would expect an initial higher drop out of the cohort who do not qualify for Credit Transfer. However for those who stay, the Common Units clearly make a difference in the ongoing success and retention. In fact, they assist them to operate at the same level as the Credit Transfer group who began with superior skills, knowledge and experience.

While there are outside factors relating to the student situation (i.e. the personal context) which the institution cannot affect directly, incentives for assisting academic and social integration, such as the Common Units program, can improve students' experience in the first year and, in doing so, ameliorate the effect of other outside stressors experienced by students. The report reveals a definite effect of Common Units in leveling the playing field for success.

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1. INTRODUCTION

1.1 Background

The Common Unit Program is designed to: develop students' practical Academic Skills; provide an induction to theoretical and practical aspects of university culture; build an understanding of the cultural complexities of the increasingly diverse communities we live and work in; and introduce and develop graduate attribute skills, including practical skills and citizenship skills. As part of this, the program aims to provide a level playing field to enable success in first year for our students who are drawn from a broad demographic, including high numbers from first in family backgrounds.

This report presents the findings of a ten year survey of student success in the Common Units and an analysis of the effect of student demographics on this success. It also presents findings of more recent data (2006-2009) examining the overall success, over the course of three years, of students who completed the Common Units compared to those who did not. A summary of the literature provides an overarching context for understanding the tensions and challenges for university students and staff in the current climate.

The basic research infrastructure for the student outcomes project was created over the past eight years (1999-2006), resulting in three periodical reports (1999-2002, 2003-4 and 2005-6), presentations and workshops to the Common Unit Management Group, as well as occasional specialised investigations for the VCMG. These reports presented analyses of the trends, risk factors and market segments in the Common Unit Program 1999-2002 and then in 2005 for years 2003-4, with a special presentation for 2005-6 data on 25th September 2007.

This project has assembled an impressive continuous database of almost 16,000 individual enrollment records and provides essential monitoring services, not only to the Common Units Committee, but also has provided important information for marketing and recruitment, and first year student attrition, retention and progress across all University programs. The Attrition Monitoring project was also prioritised in the Teaching and Learning Operational Plans from 2005 onwards.

This fourth phase of the project includes an additional investigation into the enduring effects of Common Unit participation on Withdrawal Rate over the later years of course enrollment (based on the 2006 first year intake). The team has also responded to a request by university management to investigate the possibility of measuring the effect of the Common Units on students' academic success. Data includes students' grades as well as perceptions with regard to their success. To account for the complexity and range of variables affecting student success, results were aggregated by categories to account for students' existing academic confidence and capability. These included grouping by basis of course entry (BOA) and by generation.

1.2 Aims of this investigation

This phase, of reporting presents the fourth of the series. It has been was designed as two distinct investigations

Part A: An extension of the Attrition Monitoring Project for inclusion of the funding for the years 2008-9;

Part B: An exploratory study of the long-term effects of Common Unit participation of student survival and academic progress. Additionally, students were surveyed to gauge an understanding of their perceptions about the Common Units program in facilitating their success at university.

The philosophical and pragmatic factors underpinning the provision and design of our Common Unit Program are examined in Section 2 with regard to the 21st century context for university learning. This review of the literature also captures the tensions and challenges of enabling the success of our students.

2. UNDERSTANDING THE CONTEXT: UNIVERSITY LEARNING IN THE 21ST CENTURY

The increasing body of literature on retention and success at university supports the notion that students' success is affected by a range of compounding factors. These issues can be usefully categorised and understood through Tinto's (1975) seminal model for interpreting student retention. His interactionist model maps the students' experience of transition to university as:

> Phase 1 *Separation*: Student Entry;
>
> Phase 2 *Transition*: Academic Integration & Social Integration;
>
> Phase 3 *Integration*: Persistence (Tinto, 1975 in Tinto 1982)

The literature reviewed in our previous reports has provided a broader context of retention and success in universities has thus far used Mackie's (2001) proposed interplay of forces for success as a framework. These build on Tinto's model and include: "personal, institutional and contextual/external" factors. In Chapter 2 of this report the literature focus will capture the 21st century university context and the nature of the students we now teach.

2.1 Introduction

The current economic, social, educational, and philosophical conditions of university learning are unique and dynamic. Thus, in attempting to explore patterns of retention and success in Common Units (and the first year) at CDU it is important we understand the conditions for university learning in the 21st century, particularly as they relate to small regional universities such as CDU.

In addition, we need to understand who our students are and what they need to succeed beyond the first year of their studies so that we can gauge whether the current design of the program meets these needs.

Our student demographics, especially at small regional universities such as Charles Darwin University (CDU), are increasingly diverse in age, socio economic background, culture and educational attainment compared to the students of the traditional university, who represented a more homogenous, exclusive group. Consequently, finding ways of supporting students' transition into higher education has become an increasing preoccupation of university managers and teaching staff. Commonly cited causes of first year attrition in universities can be summarised as:

- Financial problems
- Pastoral/cultural problems
- Family commitments
- Problems with teaching quality
- Insufficient support from teachers
- Lack of interest in course content
- Lack of academic orientation
- Literacy levels
- Insufficient English language (for overseas students)

(McInnis & James 1995; Baldwin & McInnis 2000; Mariani 1997; Barthel 2000; Mackie 2001)

More recently, Longden (2004) cites UK studies from Yorke (1999) which report the following reasons for why students leave:

- "wrong choice of field
- academic difficulties
- financial problems
- poor quality of student experience
- unhappiness with the social environment
- dissatisfaction with institutional provision"

And Davies and Elias (2003)

- "wrong choice of course
- financial problems
- personal problems
- academic difficulties
- wrong choice of institution"

In order to understand the context for these tensions, this section will briefly examine 21st century university learning in relation to three key aspects of the current context: the socio-political climate, global learning trends, and the current student profile. The effect of these on the expectations, learning success and retention of our students will then be discussed. In the literature regarding university learning, trends and retention, a number of terms are used interchangeably. This is important to flag at the outset to minimise confusion. For example, overseas students may also be referred to as international students, online learning may be also called external or distant mode learning, and finally, first in family, low socio economic and equity students are often used to refer to the same demographic of students.

2.2 The socio-political climate

The commodification of university learning and the economic models applied to funding universities affect who we accept into university and how we deliver learning. Funding models also affect the capacity of staff to develop their knowledge specialties as well as delivering a quality educational experience to students. Herein lies something of a contradiction where on the one hand universities are under financial and political pressure to accept students from Non-Traditional backgrounds but at the same time staff are required to teach more students, using increasingly complex learning modes and in compliance with ever more intricate, mostly bureaucratically driven, quality measures. Hood's (2001:8) speech on "The Research-Led University: reflections from New Zealand", eloquently sums up these tensions:

> Vice-chancellors and their colleagues find themselves straddling an overt institutional pluralism that requires of them the delicate balancing of the organic and the deliberate, the collegial and the managerial, the pure and the commercial, teaching, scholarship and research – basic and applied, while at all times protecting the academic freedom of members and the autonomy of the institution.

"Quality" education is a key preoccupation of educational policy makers in the twenty first century and is an imperative dictated by global economic, technological and social changes. Education, now firmly established as a commodity to increase productivity, is modeled as a business enterprise with human and economic inputs and outputs. Rowe (2006) remarks on the considerable emphasis in the last thirty years on reform and change, driven by standards-based Performance Indicators (PIs) which are focused on measuring literacy, numeracy and science. In most developed countries: "*accountability*, *standards monitoring*, *benchmarking*, *school effectiveness* and *reform* dominate the education vernacular (e.g., Buckingham, 2003; Chapman *et al*., 1991; Dorn, 1998; Hill & Crévola, 1999; Forster, Masters & Rowe, 2001; Rowe, 2001a, 2005a; Tucker & Codding, 1998; Visscher & Coe, 2002; Williams, 2000).

As seen more recently in the Bradley (2008) review of higher education, universities are being challenged to consider how the "inputs and processes of educational systems (e.g., physical resources and curriculum provision)" link with the "outputs (e.g., improvements in student achievement outcomes, as well as in school and system performance)" Rowe (2006:1). We are being urged to be accountable for the ways resources are utilised in terms of improved efficiencies, while at the same time, within these more restricted economic conditions, we are expected to provide a high quality learning experience that is measurable in student outcomes. Added to this, is the challenge of providing for increasingly globalised communities of learners as a consequence of technological and social changes.

Balancing all of these demands has become part of day to day business for academics. Inevitably, in the maelstrom, our ability to deliver quality pedagogy, with minimum resources, to an ever-changing community is demanding and challenging. Thus, an understanding of the interplay between audience, technology and pedagogy seems to be an essential component of survival for students and university teachers alike.

Expanding participation and social inclusion are key factors driving the Australian government's most recent higher education reform agenda, adding yet another criterion for universities to respond to (DEEWR 2010 in James et al 2010). To achieve this, the government's targets for the higher education sector include: a bachelor level or above qualification for 40 per cent of all 25-34 year-olds by 2025 and by 2020, an undergraduate student body made up of 20 per cent low socio-economic status background students. These key goals will drive the current focus on enhancing the quality of higher education and universities will be rewarded for their ability to achieve increased participation of low SES and retention of students in general (DEEWR 2010).

These targets reflected in the Bradley review (Bradley et al 2008) were supported by a pledge in the Federal government's 2009 budget of an increase of $5.4 billion for higher education and research in order to support this new HE agenda. Thus, the race is on for universities to establish administrative frameworks, infrastructure and pedagogy that attracts low SES students and hangs on to them.

Understanding the political and economic dynamics in the current university learning arena is an essential aspect of understanding the dynamics of the student experience. Equally, the impact economic imperatives have had on the burgeoning industry in globalised virtual learning has dramatically effected student diversity and the increase in external, online options for university study. These in turn affect students' experience, success and retention.

2.3 Trends for learning

2.3.1 Globalised learning

It is important to explore the global learning phenomena to identify how this affects our student populations both in terms of diversity and academic readiness. Altbach (2004) views globalised learning "as the broad economic, technological, and scientific trends that directly affect higher education and are largely inevitable. Politics and culture are also part of these

new global realities." The components of globalisation which directly impact on universities are information technology, the use of a common language for scientific communication, and the mass demand for higher education (massification) and educated personnel to drive our knowledge economy (Altbach 2004; Laurillard 2002).

Globalised learning has developed as a consequence of and as a conduit for globalisation and is enabled by ever sophisticated technologies for promoting opportunities for learning. Globalised learning relates to, on the one hand, the globalised demographic of in situ classrooms which are increasingly culturally diverse, and on the other hand, the global reach of education as geographic boundaries are dissolved with the use of information communication technologies. Universities now draw more students from the global market due to domestic fiscal pressures to increase numbers and socio-political pressure to liberalise education and allow access to students from Non-Traditional backgrounds. Not only do we look to attract foreign students to our universities but also to reach them in situ with the help of technology.

The knowledge economy, a theme integral to the globalization phenomena, has increased the imperative for globalised learning. The knowledge economy refers to necessary creation of new knowledge and the currency of this new knowledge in response to a world which appears increasingly complex politically, social, and environmentally on local and global levels (Altbach 2004). As university policy makers and the literature constantly remind us, universities are now charged with providing students not only with disciplinary knowledge but also with the ability to create new knowledge in response to ever changing scenarios in professional workplaces (Laurillard 2002, Altbach 1998a). Increasingly, universities are competing with growing knowledge industries which provide a burgeoning array of post-education corporate training programs for the continuous update of skills and knowledge within individual workplaces. It has even been suggested that the value of universities, given their cost, is in question and the pressure is for university management to understand and manage the knowledge/skills nexus. (Laurillard, 2002)

Dearing (1997:5.11) in his report for the National Committee of Inquiry into Higher Education suggested four main purposes of higher education in a learning society: "(1) inspiring and enabling individuals to develop their capabilities to the highest levels: (2) increasing knowledge and understanding; (3) serving the needs of the economy; and (4) shaping a democratic and civilized society."

The achievement of these purposes will, according to the committee, "enable society to maintain independent understanding of itself and its world" (Dearing 1997:72).

Laurillard (2002:18), in her analysis of the report, reminds us that "society" refers to a global concept of society and that therefore the knowledge referred to is "widely owned, fully disseminated and not located within some elite ...". Such rhetoric encapsulates the shifts in the role, ownership and intended recipients of higher learning in the last half of the twentieth century.

The challenges that have arisen in delivering effective globalised learning could be viewed under the broad headings of technological challenges and cultural and linguistic challenges. The reliance on technology for delivering globalised education necessitates a mastery of technology by students and pedagogues as well as sufficient access to the tools (personal computers, broadband connections, etc). From a cultural and linguistic point of view global education must somehow traverse a broader spectrum of cultures and students must have adequate mastery of the language of global education.

In the global learning market English is the lingua franca, and students for whom English is not the first language are expected to have sufficient mastery of the language if they are to participate. However, given the enormous diversity globalised education brings to our body of students, it can no longer be assumed that first year students have the common foundation in cultural capital and literacy to engage equally and effectively with the abstract world of academia (Altbach, 2002).

Altbach (2002) refers to English as "the Latin of the 21st century". English is the principal language worldwide for communicating knowledge, for instruction and is the language used for almost all scientific journals and those for most other academic fields both hardcopy and on the internet. It is the mostly widely used and indeed the most commonly required second language in most countries. English speaking countries attract the largest number of international students and it is the most common medium of instruction in many academic systems in countries other than English speaking ones. This includes Singapore, Ethiopia and much of Anglophone Africa, India, Pakistan, Bangladesh, and Sri Lanka. Other countries are increasingly offering courses in English to attract overseas students and domestic students who wish to develop their English for use in the international arena.

Thus, the relationship between student success and engaging with academia through a second language cannot be ignored (Crystal 1997). It dictates an additional level of challenge for a large number of our students in terms of interpreting meanings, structures and logic that may differ from those in the mother tongue culture (Hood 2004; Kroll 2003; Ravelli & Ellis 2004).

Pennycook (1994:305) warns that students (particularly those from English as a second language backgrounds) encounter problems where their "assumptions and beliefs are not heard", and "the complexities of the meanings [they]are trying to produce are not acknowledged". These problems often arise through "conflicting cultural values and identities embedded in new language, new registers, and also in much EAP pedagogic practice". Hood (2004) cites a number of advocates (Pennycook 1994; Benesch 1996, 1999; c.f. Ivanic 1998, Clark and Ivanic 1997) for pedagogies that, by acknowledging culture, and power relations, help students find a voice in a new language. Belcher and Braine's (1995), plea for pedagogy that provides an explicit metacognition of academic texts and their context encapsulates the imperatives of such a pedagogy that, rather than replacing or undermining students' cultural identities, allows them to expand these identities to encapsulate new ways of knowing and communicating.

While ironically "International students at CDU and other Australian universities continue to enjoy a higher retention and success than domestic students, these students represent a

relatively small proportion of our students from NESB backgrounds. Further, there is a growing recognition that the fiscal incentive to retain International students affects standards imposed on this group (Birrell 2006).

2.3.2 Virtual learning

The Australian National Training Authority (ANTA) describes virtual learning as learning that happens across geographical boundaries. It also refers to the virtual environments provided for students in real time classrooms to enhance their learning (ANTA 2003a). A globalised approach to learning is enabled by technology which allows a virtual education for students regardless of where they are (assuming they have access to the technology). Virtual learning encompasses the dominant twenty first century themes of online learning, e-learning and flexible learning. The notion of flexible learning is economically and morally driven in its aims to "expand choice on what, when, where and how people learn" (ANTA 2003a). It is responsive to different learning styles and needs of students and the training requirements of communities and industries. Flexible learning is largely enabled by technologies, thus the concepts of online learning and e-learning have become synonymous with flexible learning.

In order to understand the technological and pedagogical challenges of virtual learning it is worth exploring the different vehicles of virtual learning and what these currently entail. Online learning refers to learning that is delivered either remotely or in the classroom via computer networks, which may be local area networks, intranets or public internet applications (ANTA2003b, p.5). It utilises a range of tools including email, chat, newsgroups, and text, audio and video conferencing. These are delivered through various platforms which range from public web pages to online learning systems which provide students with learning content, course information, readings, group interaction opportunities, online assessment (quick tests etc) and functions such as student grades.

KPMG (2002, p. 54) note that online learning as a sole mode of learning is increasingly less common since mixed modes of learning (which include face to face and paper based delivery) are generally believed to be more beneficial that pure online delivery. E-learning, on the other hand, is a concept that encompasses a broader range of applications and processes than online learning to make learning more flexible for students. In this way, both learning virtually and learning in the classroom are supported by electronic media, i.e. "internet, intranets, extranets, satellite broadcast, audio/video tape, interactive TV and CD-ROM to make learning more flexible for clients". (ANTA 2003b, p. 5)

Extending beyond these definitions for the platforms of virtual learning, it is useful to consider the various instructional modes for virtual education as a way of understanding the form of texts modern students are expected to engage with. Leu, Kinzer, Coiro & Cammack (2004) highlight the gaps in research on the literacy requirements of engaging with online texts. They cite the RAND Reading Study Group report (2002:4) that suggests, "... the Internet makes large demands on individuals' literacy skills; in some cases, this new technology requires readers to have novel literacy skills, and little is known about how to analyse or teach those skills". Similar concerns are mirrored by the United States National Institute of Child Health and Human Development (2000).

2.3.3 Instructional modes for virtual education

A large number of virtual learning programs still use text to transmit ideas, usually in the form of HTML, PowerPoint, or PDF documents. However, interactive tools and visual data also play a large part in virtual learning. Communication in virtual learning environments is often asynchronous except where specific synchronous virtual classrooms have been established, so students rely on email, discussion forums and the telephone to ask questions and share ideas. Consequently, scaffolding through discussion with peers or the teacher generally involves considerable lapses of time in discussion of ideas. Thus, in online learning environments scaffolding of knowledge through discussion with the teacher is sporadic and needs to be supplemented with other forms of scaffolding.

2.3.4 Implications of virtual learning

Virtual learning at its best favors visual cues, variety of media and interaction to promote learning, however, students still need to read and comprehend to learn. They need to read written text on-screen and the academic articles and readings they download. They also need to read and interpret images. Thus, a multimodal literacy becomes an important precursor for successful online learning.

A combination of technology and multiple modes invariably adds a level of complexity and challenge particularly to students new to online learning. The high level of attrition among online students compared to face to face students can in part be attributed to the complexities of this mode although other factors also contribute to attrition. These include Part-Time Status and the more flexible entry requirements for online students (Tyler-Smith, 2006; Turner & Crews 2005; Tyler & Rolls 2008). Taking all of these into account, it could be argued that as students (many Non-Traditional) grapple with new technologies they are afforded less time for engaging with and understanding academic texts which are likely to be extremely unfamiliar to a large number of students. Hence, a requirement for clear scaffolding becomes even more important.

2.4 Our student profile

This section will begin with a general discussion of the nature of the 21st century university student and then refine the discussion to examine the particular features of various student demographics, especially those found at small regional universities. As suggested in the previous section, a key feature of the 21st century university is the widening demographic, a trend inspired by more liberalised policies towards education in the mid 1900's and reinforced by more recent economic and political imperatives.

2.4.1 Increasingly diverse

Governments continue to actively encourage increased diversification and pathways to university for Non-Traditional students in recognition of the economic imperative of an educated population (Bradley et al 2008, James et al 2010, U.S. Census Bureau Reports, 1996). The report on "The First Year Experience in Australian Universities" (James, Kraus and

Jennings, 2009:7) suggests that, given this trend, an "increasing number of students who enter higher education will be unfamiliar with its character and will have lower levels of achievements in their previous experiences. The following table indicates the diversity of students' backgrounds and mode of study at Australian universities in general and at CDU (an example of a small regional university). Most interesting is the much higher numbers of Non-Traditional students (mature age, Indigenous, low socio economic status) at CDU as well as the high percentage (60%) of part-time students.

Table 2.1: Breakdowns (%) of first year higher education enrollments in Australian universities compared with Charles Darwin University (CDU) for 2008. Data from James et al (2009), DEEWR (2010) and Charles Darwin University (2010).

Category	Australia	CDU
External Mode	13	60
Part-time	28	44
Male	56	32
Female	44	68
International	32	6
NESB	4.2	15
Indigenous	1.5	4
School leavers	53	16
Under 25	81	21
Over 25	19	63
TAFE entry	9.4	19
Low SES	15	16

An additional breakdown of mature age students indicates that 19% of CDU first year students entered university on the basis of TAFE certificate completion. Figures available for the OECD and the USA indicate between 17% and 22% of students in these countries are over 25, reflecting the figures for Australia in general (OECD 2010).

The most significant factor shaping the nature of university student populations relates to the increasing accessibility of university education inspired by a liberalised approach to education by governments since the 1960s and consequently the increasing diversity of students (Baldwin and McInness 2000). Affirmative action policies actively encouraged university doors to be opened to people from "underprivileged" backgrounds and, despite funding for university operations and student support flowing less freely in Australia than in the 1970s and 1980s, university is still accessible to people from (almost) all socio economic backgrounds.

Another factor, relating to the increased accessibility of universities to a wider range of students, is economic rationalism. In Australia, smaller universities particularly are increasingly forced to lower the requirements for university entry in order to enrol enough students to keep the universities afloat. Subsequently, students are being allowed into university without having to reach even a bare pass in their final year of secondary study. Also fiscally related, is the increasing number of international students accepted into universities.

This laudable shift, moving universities from being the privilege of the monied classes to being theoretically accessible to all, presents a number of challenges, one of the principal challenges is being literacy related. Research consistently shows that literacy levels of students from low socio economic backgrounds, where parents are not tertiary educated, are often lower than the literacy levels of students from wealthier more formally educated backgrounds (Rose 1999, 2004; Dearing 1997). This discrepancy relates to a number of factors including: the laying down of frameworks for abstract thinking, exposure to books and wider knowledge and thus the acquisition of cultural capital, among other things.

Further, in many western countries, people who are included in the brief for affirmative action are migrants and people from Indigenous cultures whose literacy in a western paradigm is challenged by their different cultural and language backgrounds. On top of this they too often fit into the low socio economic framework. Like migrants and Indigenous students, international students arrive with a rich cultural capital but one that is not necessarily related to the western university paradigm. The literacy problems for this group of students are compounded by the fact that English is generally a second or third or fourth language.

The alternative pathways to university through TAFE courses also mean that TAFE graduates who enter a first year higher education course, while possessing excellent practical skills, may not have been exposed to academic literacies within their TAFE course and may not have completed their final years at school.

Oblinger and Oblinger (2010:8) note the increased influx of Non-Traditional students in the US, suggesting three-quarters of undergraduate students in the US are "non traditional". Their definition of this group includes:

- *Delayed enrolment* – did not enter post secondary education in the same year they graduated from high school;
- *Attend part-time* for all or part of the academic year;
- *Work full time* – 35 hours or more - while enrolled;
- *Financially independent* as defined by financial aid;
- *Have dependents* other than a spouse, which may include children or others;
- *Single parent*, having one or more dependent children;
- *Lack of a high school diploma.*

This profile highlights the educational, social and economic disadvantage we can expect many of our Non-Traditional students to be challenged by.

This is reflected in findings from the US, the UK and Australia, that this group of students tends to have a higher attrition rate in the first year (Oblinger 2010; Wylie 2005; McInnis 2001; Dearing 1997). While there are a number of other factors that impact on students' success and retention in the first year of university (Tinto 1997; Mackie 2001; Wylie 2005), the challenge of academic culture is likely to be a significant one that compounds other factors for attrition (economic, confidence levels, motivation). Northedge (2001) suggests that universities need to be helping students acquire the ability to participate in specific knowledge communities, both vicariously, as listeners and readers in ongoing debates and generatively as speakers and writers.

2.4.2 Increasingly from the Net Generation

As important as understanding the literacy and learning features and requirements of our increasingly diverse student body is the recognition that within this diverse student body a significant proportion (approximately 80%) of university students are under 25 and can therefore be classified as belonging to the "Net Generation" (Oblinger and Oblinger, 2010). The literacy strengths characteristic of this generation of students suggest they bring with them many useful tools for learning and communicating in an electronic age, but at the same time their digital literacy and preferred ways of engaging with knowledge and ideas clash to some degree with traditional ways of presenting knowledge and teaching. This is clearly the subject of considerable enquiry within the academic community and the growing dominance of e-learning as a way of delivering university courses flexibly has become a standard mandate for most universities. This is in part in response to globalised learning communities but is also an attempt to reach this new cohort.

However, for the purpose of this report, it is particularly important to examine the characteristics of this generation in order to understand their experience and response to traditional academic culture and discourse. This understanding will allow a considered proposal for engaging these students in their terms, while expanding their literacy skills to include mastery of the literacy of the academy.

The term 'net generation' refers to young adults who were born in the early 1980's when personal computers were first introduced into mainstream society. Twenty per cent of this generation began using computers between the ages of five and eight and virtually all of them were using them by the ages of sixteen to eighteen (Oblinger and Oblinger 2005:1). A key feature of this generation is the central role of electronic media as their text of choice. As Oblinger and Oblinger (2005) suggest, internet technology is so integrated in the lives of net generation children that they "probably don't think of it as technology. Computers, the internet, online resources and instantaneous access are simply the way things are done… [they] have never known life without the internet."

Computers, digital media (computer games, the internet) and television are utilised considerably more often for entertainment and information than traditional texts (books, magazines) and other recreational activities. Television is viewed an average of 3.1 hours a day and digital media 3.5 hours by thirteen to seventeen-year-olds (Jones 2002).

Younger children (six and under) spend as much time on average engaging with electronic media as they do playing outside and significantly less time reading traditional hardcopy texts (Grunwald 2004).

Eighteen to twenty two-year-old college students (sometimes called Millenials) have been characterised by Howe and Strauss (2000) as racially and ethnically diverse students who: tend towards group activity, are close to their parents and share their values, see the value in being "smart", are interested in new technologies, focus on grades and performance, and are busy with extracurricular activities. (Oblinger and Oblinger, 2005)

As a reflection of the multitude of texts this group customarily engage with (sometimes simultaneously), the net generation tend to deal with information differently from previous generations. They are less linear in their thought processes and used to building their understanding of concepts through exploring multiple sources (Oblinger and Oblinger, 2005). Prensky (2001) in his explorations of how digital natives think suggests the following characteristics: they are intuitive and visual communicators; they have good visual-spatial skills especially with regard to integrating the virtual and the physical; they learn better through inductive discovery than by being given facts up front; they can shift their attention rapidly from one task to another, but equally have trouble paying attention to things that don't immediately interest them; finally, they tend to have a fast response time and expect the same in return. Profiles such as these are helpful in our reflections on why this generation might be less inclined and able to engage meaningfully with traditional academic texts and modes of learning.

2.4.3 Increasingly first in family and/or low socio economic students

In Britain, middle-class children have benefited far more than their working-class counterparts from the expansion of university education over the past twenty years. The chance of a young person from a well-off background becoming a graduate has grown at a higher rate than that of a child from a less advantaged home. Bright working class females actually had less chance of getting a degree after the rapid university expansion of the 1980s than they did before it. Conversely, the chances of low ability females from a wealthy background increased from 5% to 15%. Reasons for dropping out were believed to relate to problems with integration with university culture (The National Literacy Trust, 2005).

A similar pattern has emerged in Australia where a 2002 study by the Australian Council for Educational Research (ACER) has also found connections between low socio economic status and tertiary entrance performance. These insights are confirmed and elaborated on by James (2002), who finds that students' belief in their potential for achieving a higher education is affected by their socio-economic background, gender, and geographical location. His study reveals appreciable social stratification in the opinions of senior secondary students about the relevance and attainability of a university education. Though the overall attitudes of young people towards secondary school are similar in many ways, their aspirations and intentions regarding higher education are strongly influenced by socio-economic background, gender, and geographical location. Socio-economic background is the major factor in the variation in student perspectives on the value and attainability of higher education.

Rose (1998, 2004) suggests the education schooling system fails to prepare a large proportion of Indigenous and Non-Indigenous students for a vocational and professional future because it fails to acknowledge the socio-economic and cultural context of all of its students and thus fails to provide these students from low literacy backgrounds sufficient literacy scaffolding. According to Rose (1998), the inequalities in current education systems stem from the sequencing and pacing principles of the literacy curriculum that assume all students are privy to orientations to written meaning acquired through parent-child reading proper to commencing school.

Hillman's (2005) report on the first year university experience confirms previous studies (DEST, 1996 & James et al, 2004), which find an adverse correlation between low-socio economic status, rural and isolated backgrounds, Indigeneity and educational attainment. To compound this disadvantage, Hillman (2005) claims that "close to 40% of low SES groups were from remote or isolated backgrounds" and from her sample of Indigenous students, 16% were from low socio-economic backgrounds and 37% were from rural/isolated backgrounds.

Hillman suggests these difficulties may be related to a "dual equity group membership". This is confirmed by James et al (2004), who report that over a third of students in higher education were members of an additional equity group, either rural or isolated or lower socio economic. In the case of the Northern Territory Indigenous population there is likely to be a high proportion who fit into all three groups: Indigenous, isolated and lower socio-economic.

The following data from the DEST National Indigenous English Literacy and Numeracy Strategy (2005) highlights the challenges faced by Indigenous students who do make it to higher education and provides some insight of the wide but interrelated range of issues that may affect their ability and/or motivation to persist at university study. According to DEST (2005, p.9) Indigenous students tend to be from backgrounds where they:

> Are less likely to get a preschool education; are well behind in literacy and numeracy skills development before they leave primary school; have less access to secondary school in the communities in which they live; are absent from school two to three times more often than other students; leave school much younger; are less than half as likely to go through to Year 12; are far more likely to be doing bridging and basic entry programmes in universities and vocational education and training institutions; obtain fewer and lower-level education qualifications; are far less likely to get a job, even when they have the same qualifications as others; earn less income; have poorer housing; experience more and graver health problems; and have higher mortality rates than other Australians.

Indigenous and Non-Indigenous students who fit into additional equity group categories in being from a rural/isolated low socio economic background face further challenges that can severely impact on their overall university experience.

These include having to move to a new community for their education and suffer not only course related costs but additionally: accommodation costs, the anxiety of leaving behind friends and family, and the challenges of adapting to a new culture, operating independently, establishing good study habits, as well as possible facing challenges related to poor literacy (Hillman, 2005).

Van Loon (1999) examines the fate of students who have failed tertiary entrance English and still gain entry to university. She confirms the increasing decline in literacy in universities (and 'decline' of English in school and in higher education) especially in the context of students gaining entry with lower scores and/or through bridging programs (especially at regional universities). ACER (2002) report a correlation between Year 9 literacy and tertiary entrance scores. We can infer from this that students who enter university with lower tertiary entrance scores can be predicted to have lower literacy levels. Wylie (2005) proposes a pattern of attrition for Non-Traditional students where a student's poor adjustments in academic and social self-worth results in a re-evaluation of and spiralling separation from their course participation.

In response to a widely perceived decline in literacy levels in Western societies (Agger, 1991) a number of university faculties in Australia have begun to integrate remedial, Academic Skills and study skills programs into mainstream degree courses, additional to the provision of such courses in bridging and enabling programs (Desierto, 1998). This attempt to address the gap in students' literacy at first year as well as the increasing focus on academic literacy in global and local conferences (e.g. National Tertiary Literacy Conference 1996 Victoria University of Technology and Proceedings of the Conference held at La Trobe University, November 21-22, 1994 on Integrating the Teaching of Academic Discourse into Courses in the Disciplines) provides strong evidence of declining literacy levels.

2.4.4 Increasingly mature age

As part of the liberalisation of university study and the drive to build "knowledge communities", mature-age students are encouraged to attend university, providing either a second chance for those who did not qualify with university entrance scores or pathways from more skills-oriented tertiary qualifications through vocational courses. Swails (2002) provides a profile of adult learners, who in the US represent a significant number of Non-Traditional learners (on average 35 percent of undergraduates are adult learners). He profiles adult learners as being 70% female, 80% employed and having a median age of 38. He concludes that the motivation for studying for these students is often quite different to that of the net generation, being much more focused on a specific outcome.

Many adult learners, particularly those from low socio economic and rural backgrounds, suffer demonstrable educational disadvantage (Baynes, Kilpatrick and Abbot-Chapman, 2002). They may have had interrupted schooling, may not have a tertiary entrance score or have studied formally for a number of years. Consequently, in terms of cultural and academic literacy they may be at considerable disadvantage in their first year at university. However, this disadvantage is generally countered with the advantage of life skills and knowledge, emotional maturity and perhaps most importantly, motivation. Abbott-Chapman, Braithwaite

& Godfrey (2004) in their study of the effect of mature age alternative entry, found that orientation, academic and social support were more important factors for success than tertiary entrance exam achievement or prior academic experience, thus the suggestion is that this group respond well to academic and social scaffolding as they make the transition into academia.

2.5 Effect on literacy, learning and success

2.5.1 Academic literacy

The results of a survey by ACER (2001) of graduate skills of over 2000 students from 20 Australian universities indicate the levels of literacy of 60% of first year university students were sufficient for them to comprehend, analyse and evaluate explicit meanings and relationships in texts that are between *straightforward* and *moderately complex* text. From these findings we might infer that many of our first year students are not well equipped for engaging with academic discourse, which is generally presented in the form of highly complex texts. Rose, Lui-Chivizhe, Mcnight & Smith (2004, p. 42) explain that tacitly university students are expected to:

> ...read complex academic texts with a high level of understanding, and be able to critically analyse such texts in order to present coherent analysis, argument or discussion in their own written work. They must also be able to structure their [writing] appropriately, using academic conventions and objective academic language, to demonstrate their mastery of a topic or inform and influence their readers.

Nearly half the university staff surveyed for the Dearing (1997) report on higher education expressed concern about the quality of higher education entrants relating to the standard of their academic work. Staff perception may be a reflection of a reaction to the diversified student demographic and the lack of fit between outmoded pedagogy and the new students, but it is just as likely to reflect higher numbers of students who do not possess sufficient cultural capital for traditional university learning.

Added to this lack of readiness to engage with complex texts is a lack of preparation to engage with texts in an academic way. As (Geisler 1994 in Hood 2004) explains, literacy practices in the tertiary context are characterised by the creation and transformation of knowledge, and by engagement with texts as rhetorical constructions whereas in secondary school, texts are treated as "autonomous representations of knowledge". Thus, the shift from high school to university literacy is problematic for many of our mainstream as well as Non-Traditional university (Hood 2004).

2.5.2 Cultural literacy

The other interrelated component of literacy required for students to meaningfully engage in university discourse is cultural literacy. Hirsch's influential and controversial (1989) work "Cultural Literacy" is devoted to examining the consequence of forty years of liberal education on the literacy of society. Based on the assumption that formal or institutional texts embody the language of the historically dominant culture, he suggests that an inextricable link exists between cultural literacy and the ability to read, write and learn. He believes cultural literacy is the possession of "the basic information needed to thrive in the modern world" (Hirsch 1989, p.2).

> World knowledge is essential to the development of reading and writing skills ... cultural knowledge is the background information stored in [people's] minds that enables them to take up the newspaper and read it with an adequate level of comprehension, getting the point, grasping the implications, relating what they have read to unstated context which alone gives meaning to what they have read (Hirsch 1998, p.2-3).

Theories about learning and understanding confirm that to understand what someone is saying we must understand more than the surface meanings of the words, we must understand the context as well. Hirsch provides evidence of the decline of background knowledge by citing studies with American high school students. In many cases he believed these students were not "mentally prepared" to participate positively in society because they "did not understand the society well enough to value it" (Hirsch, 1998, p. 6). While Hirsch acknowledges the intrinsic value in what young people already know he is concerned that the ephemeral and narrowly focused nature of their existing cultural capital confines its relevance and application to their own generation. Clearly this could raise loud objections from cultural theorists, but the suggestion being made by Hirsch is extremely relevant if one understands that he is referring to young people's ability to engage with society's formal traditional structures, such as presented by schools, universities and professional work environments.

Thus in general universities, despite the hard work of the deconstructionists and postmodernists, are still based on historically dominant structures and theoretical frameworks. Thus, in order to engage effectively with these, participants need to know at least some aspects of the knowledge and ideas on which they are based. In order to participate in society students more than ever, in Hirsch's words (p8) "... need a profound conception of the whole of civilisation". For example, Hirsch claims that "Many young people strikingly lack the information that writers of American newspapers and books have traditionally taken for granted among readers from all generations." He goes on to say "that children lack the intergenerational information is a serious problem for the nation" (p.8). Presumably the depth at which people can participate socially and politically is affected by their possession of this background knowledge.

Hirsch further believes that the decline of literacy and shared knowledge are closely related, interdependent facts. He makes two important suggestions with regard to the literacy of current generations. First, we cannot assume young people know the things that are known by literate people of previous generations. Second, reading and writing are not "empty" skills that are independent of specific prior knowledge. Also, importantly, he reminds us that levels of literacy vary from context to context, so a young person may be extremely literate in a context that requires the background knowledge they possess and not literate in other contexts. Further, this narrow field of literacy has a limited benefit even in the related context because as Patterson (1980 in Hirsch 1998: p110) argues, in the modern world we need general knowledge to enable us to keep up with new ideas, events and challenges which inevitably impact on our local world.

2.5.3 New literacies

While Hirch's (1989) concerns with the decline of historical knowledge are a vital factor in understanding and addressing the challenge of enhancing students' access to university discourse, the new literacies that 21st century students bring with them must also be acknowledged. Understanding how our students preferentially engage with texts and learning allows us to build strategies for scaffolding academic discourse (both spoken and text-based) that will "speak" to our students and capitalise on their strengths.

As described previously, the Net generation is characterised as having a stronger preference for visual literacy than their predecessors. They are experienced at integrating images, text and sound and tend to favor images as a way of expressing themselves. (Prensky, 2001). However, although they move comfortably and frequently between real and virtual text, their text-based literacy tends not to be as well developed as that of previous cohorts (Frand, 2000). Importantly, despite the fact that they appear to be antisocial in real-time because of the distractions of technology they are in fact believed to be far wider and more constant in their social connectedness: they are always switched on to their network (Oblinger and Oblinger 2010).

Another relevant learning characteristic of this generation is their preference for immediacy: they want things to happen now. In fact, Oblinger and Oblinger (2010:3) suggest more value may be placed on speed than accuracy, which has implications for the depth of their commitment and engagement with knowledge, particularly where texts are difficult to comprehend. Rather than being given volumes of written or spoke text, Oblinger and Oblinger (2010) suggest that this generation prefer to learn experientially. They prefer to learn by seeking answers and devising strategies.

In response to this (alleged) preferred way of learning is the potential for bringing texts alive for these students by approaching texts from a meta-cognitive point of view: searching for answers to questions and understanding how texts are structured in order to seek answers and meaning from texts. This approach lends itself to another important characteristic of this generation: a preference for peer-to-peer team work.

Additionally, their preference for structure, rules and procedures (Phalen, 2002) indicates the enormous potential for capturing their interest by building understanding of genre and text structures as a way of mastering texts.

Prensky (2001) warns us that the predilection of this generation for interactivity exposes an opposite tendency; a discomfort with stillness and reflection. Further, they are often unwilling to read large amounts of text, either a long reading or lengthy instructions. Oblinger and Oblinger (2010:3) cite a study that found students' willingness to do an assignment and their post-test scores increased when instructions were changed from a text based step by step approach to a graphic layout. Prensky's (2001) research concludes that by the time the Net Generation are 21 they have spent twice as many hours playing video games than reading and that these students, being strongly visually literate, retain only 10% of the words compared to 30% of images read. Additionally, since much of what they read is on the web they tend to scan rather than read for detail (Manuel 2002).

One might wonder, given the above profile, whether traditional texts have become completely redundant as vehicles for passing on knowledge to undergraduates. However, at this point, traditional academic texts are still the principal currency for knowledge exchange amongst peers in the academy and thus the centrality of these texts for students' learning is guaranteed, particularly as they progress beyond first year.

2.5.4 Student expectations

An understanding of students' preconceptions and perhaps misconceptions about what and how university education works is essential in providing us insight into what motivates students' engagement with learning and therefore how we might motivate their engagement with discourse. According to Hillman (2005), students are not only more diverse and more consumer-minded; they increasingly seek choice in subjects, delivery mode and assessment and in time spent on campus. The Australian Universities Teaching Committee (James & McInnis, 2001) reveals a strong perception from university staff that this increased consumerist attitude to study strongly correlates with the increase in the cost of education to students.

Interestingly, staff report that an alarming aspect of this new attitude is students' expectation that they should play a more passive role in their education. Hillman (20005) further reports a belief by staff that: "a growing proportion of students are predominantly instrumental in their outlook, avoiding intellectual challenge and adopting narrowly reproductive approaches to assessment".

Related to expectations is the social and economic situation of 21st century students who juggle far more complex lives than the majority of students forty years ago. McInnis, James and Hartley (2000) and James, Krause and Jennings' (2009) studies of first year students across a ten-year period (1999 to 2009) reveal that the proportion of students studying full-time and working part-time has increased by nine per cent. They also report that the number of part-time hours worked has increased considerably compared with 1994. This corroborates the aforementioned claims by staff that increasingly students look for a less

intense engagement with university study to make room for the extensive commitments in other parts of their lives (McInnis, 2001). Anecdotal evidence of students at CDU suggests a number of students enrolled in full-time external study while working full-time in the mistaken belief that distance-mode study requires less time. Understandably these students are a high risk for failure and/or withdrawal, especially where they are mature students with families to care for as well.

A natural consequence of these outside economic pressures is the effect of time on task. For example, James et al (2009) found a significant decline in students' course contact hours (averaging 15 hours per week) and time spent in private study. It is unlikely that many of these students are allocating the time required to unpack difficult written and spoken texts.

In terms of what students would like for teachers, Zimitat (2006) in his survey of first year undergraduates at Griffith University found significant differences between the views of males and females, disciplines, and passing and failing students in what aspects of good teaching were most important. However four aspects of good teaching which were consistent across these groups were: (i) being good at explaining things, (ii) being approachable, (iii) having enthusiasm for the subject matter, and (iv) providing helpful feedback. The next most important aspects were: making expectations clear, making subject matter interesting and using assessment strategies that did not reward memorisation. These findings are supported by Ramsden's (1991) six principles of good university teaching: interest and explanation; concern and respect for students and student learning; appropriate assessment and feedback; clear goals and intellectual challenge; independence, control and active engagement; and learning from students.

Sander (2003) cites Laurillard's (1993) suggestion that effective education relies on our engaging in a two-way dialogue with students in order to respond to students' learning needs. Greater student diversity increases the imperative of teachers knowing and responding to students' individual knowledge and skill base and also students' conceptions and perceptions of learning. This level of individual exchange with students has implications for class sizes, pedagogy and staff professional development.

2.5.5 Trends and factors for attrition in first year

Completing the first year is recognised as the most challenging stage of university study and consequently the first year is the year where attrition and academic failure are most prevalent (McInnis, 2001; Williams, 1982 in Hillman, 2005). Tinto (1988 in Hillman, 2005) suggests that if students manage to complete the first year they have won a major part of the battle towards completing their degree. Studies of universities in America and the UK suggest rates of first year attrition there are similar to those in Australian universities (Porter 1990; Tinto 1993 in Rau & Durand 2000). Rau & Durand (2000) claim that less than half the students who begin college in America actually graduate. Longden (2004) cites UK completion rates as ranging from 50% to 95% depending on the institution and Bird and Akerman (2005) report an average 25% dropout rate at UK universities.

Further, of particular interest for the CDU context, an examination of the percentage rates of first-year students expected to graduate shows that universities with the highest success rates continue to be those that are the most academically eminent. DEEWR figures for 2009-2010 student retention show Melbourne University, ANU, UNSW, Monash and Sydney University with the lowest attrition rates of between 6.21 and 10.22%. On the other hand, SCU, USC, CDU, CQU and Bachelor college have the highest attrition rates of 26.30-39.77% (DEEWR 2011). The UK experience mirrors the Australian example with Bird and Akerman (2005) reporting that without exception, those universities with the lowest success rate are the least academically selective, undertake little research and have expanded fastest to meet the UK Government's aim of "widening participation"

The complexity of factors for attritions is reflected in the commentary from experts from a range of Australian HE institutions in response to these recent DEEWR figures. James (2011) suggests that retention is in part related to perception of the market worth of an institute rather than program quality. While low SES students tend to have lower TER scores, once students have a "foot in the door", students may move to more prestigious institutions. Krause (2011) adds that attrition includes those who follow especially designed pathways across institutions. She further adds that multi campus universities with high external numbers tend to higher attrition because of the challenges providing adequate support to students. Added to this she suggests, in the case of distant education students, a proportion may be simply testing the water.

Many first year students not only lack the requisite skills for university learning, they also lack abstract theoretical frameworks for organising the information they encounter. In addition, many students enter university and find that their world views, or common sense understandings, are in conflict with that of the university culture as a whole and with the philosophical stances and underpinnings of their fields of study in particular. For example, students imbued with a modernist world view entering the social sciences and humanities do not readily understand post modernist theories, which inform much contemporary thinking in these disciplines (McInnis et al 2000 p.31).

Wylie in his 2005 investigation of Non-Traditional students in higher education posits two important aspects of student success: "Perceptions of Utility and Course Demands, and Existing Academic Self worth". In terms of perceptions of utility and course demands, students' motivation is affected by how useful they believe completing the course will be. Conversely, their motivation diminishes when the course becomes too challenging. Academic and social self worth are additional factors which affect their ability to withstand the challenges of the first term at university. Students from Non-Traditional backgrounds are likely to be particularly vulnerable to these factors effecting motivation and success, particularly their academic and social self worth. Further, where they are from non university educated family backgrounds they may lack the familial or social support to maintain their focus on the utilitarian advantages of a university degree.

Wylie (2004) suggests that non-persistence behaviour occurs at various critical points. For the Non-Traditional student this is in the first 6 to 8 weeks of the new student's study

program and accounts for the largest single episode of attrition (Kambouri & Francis, 1994; Malicky & Norman, 1994; Quigley, 1995; White & Mosely, 1995 in Wylie 2004). Wylie (2005), drawing from the work of Tinto (1997) and Bean (1980), hypothesises a process of evaluation undertaken by students prior to and on commencement of course enrolment that is affected by five factors: "background, academic, environmental, course utility and self worth." Wylie claims that a combination of poor adjustments in academic and social self-worth results in a re-evaluation of and separation from their course participation and believes this process is spiraling in nature and continues until complete disengagement from the study commitment is reached. Hence, the importance of providing intervention and support which includes strategies to maintain self-concept is viewed as critical in the first weeks of study rather than retrospectively after the students have begun to fail (Jackson et al, 1996 in Wylie 2005).

Mackie (2001) proposes an "interplay of forces, *personal, institutional* and *contextual/external*", which affects student withdrawal. These she correlates with the three stages of Tinto's (1997) model, *separation*; *transition*; *integration*, as a way of understanding the forces that enable or disable these three stages. Her study of first year students in the Business School of a new university reveals that a complex interplay of these forces leads up to the decision by a student to leave or to stay. She found commitment to the university experience, homesickness, levels of perceived control over events and alienation played a role in the decision to withdraw.

Mackie (2001) suggests that "all students arrive with some level of commitment and an intention to complete their course of study, it is the concern that by the beginning of the second term we succeed, for some, in turning this `expectant hope' into `fears realised' and may have failed to exploit the potential within that initial commitment." These enabling/disabling forces are described by Mackie (2001:267) in more detail as:

1. SOCIAL FORCES ENABLE/CONSTRAIN SOCIAL INTEGRATION: Meeting people, integrating, finding support and establishing a social group. Participating in university social life.

2. ORGANISATIONAL FORCES ENABLE/CONSTRAIN ORGANISATIONAL INTEGRATION: Understanding and coping with course content, pace and style. Finding the organisation supportive.

3. EXTERNAL FORCES ENABLE/CONSTRAIN INTEGRATION WITHIN THE EXTERNAL UNIVERSITY: Forces in the environment that aid or impede the ability of the student to cope with the change: financial, accommodation, part-time work, family, relationships.

4. INDIVIDUAL FORCES ENABLE/CONSTRAIN THE INDIVIDUAL'S COMMITMENT TO CHANGE: The motivation, commitment, feelings and attitudes of the individual involved in the change: long term goal, initial commitment, homesickness, the availability of alternatives.

McKenzie and Schweitzer (2001) and Rickinson and Rutherford's (1995) investigations also suggest that strong predictors of attrition are students' levels of social integration and academic performance as well as their general satisfaction with university life. McInnis and James (1995) note that the "social nature of the university experience has the potential for contributing positively to academic performance, and more generally should influence the individual's sense of competence". Yet Hillman's (2005) study reports an increasing disengagement from university life due to the increasing numbers of students studying full-time and working part-time. Consequently, a quarter of those surveyed claimed not to have made friends at university. Thus, the opportunity to provide students with a positive social experience of university tends to be restricted to ensuring their tutorial time interactions (face-to-face and online) provide them with a sense of belonging.

Rau and Durand (2000) have found the effect of students' motivation to learn, or "academic ethic", has a significant effect on attrition. Rau and Durand's research suggests present study effort, as defined by study hours and reduced alcohol consumption, and a proxy for past effort (at high school) and high school percentile rank, account for most of the explained variance in Grade Point Average. They conclude that the ability of colleges to graduate learned, individuated, and ethical human beings may depend on the commitment students make to their own education - i.e. they believe members of the "academic oriented" subculture make this commitment; members of the "party oriented" subculture do not.

2.5.6 Trends and factors for attrition for external/online students

Tyler-Smith (2006) reports attrition rates for students studying online off campus of up to 70% and there is considerable consensus that attrition is higher for online off campus learners than those who attend university face to face. Simpson (2004:83) claims "that 35% or more of online learners withdraw before submitting their first assignment" in UK Open University.

McVay Lynch (2001), in her examination of high dropout rates at a small, private, urban university of approximately 5000 students (a high proportion with an average age of 33), found drop-out rates for online students were between 35% and 50% compared with 14% for on-campus students.

Reasons for drop-out include: excessive time spent by students and staff troubleshooting technological issues and students' feeling of social isolation with regard to completing assignments. For many of the students online learning is new and many lack fundamental computer skills. Consequently, the students have difficulty integrating technology with human interaction, necessary functions for online learning. Many report that without human interaction they "quickly felt disconnected from the campus, their motivation dwindled and they appeared unable to initiate any self-direction in learning" (McVay Lynch, 2001). A compounding factor comes into play where students choose to study off campus so they can maintain full-time work, and consequently experience the added pressure of being time and energy poor.

The challenges faced by e-learners are easy to underestimate by the champions of this learning mode, who necessarily are already accomplished users of the medium. Whipp &

Chiarelli, (2004 in Tyler-Smith 2006) list a range of challenges which may severely impact new students confidence and success in e-learning as: "… technical access, asynchronicity, text-based discussions, multiple conversations, information overload and isolation." Eshet-Alkalai (2004 in Tyler-Smith 2006, p.93), confirms this by suggesting: "Digital literacy involves more than the ability to use software or operate a digital device; it includes a large variety of complex cognitive, motor, sociological and emotional skills, which users need in order to function effectively in digital environments." H e reminds us that many mature adults lack the confidence, experience and skills in digital literacy that younger students have. In addition, they face a further challenge of constructing knowledge from vast amounts of non linear, independently presented information.

Ryan (2002 in Turner & Crews, 2005) confirms higher drop-out rates for online students, the principal cause being problems with the technology. Terry (2001 in Turner & Crews, 2005) also corroborates McVay Lynch's (2001) findings that students had difficulty adjusting to studying independently in an unfamiliar mode. He also cites faculties' inexperience with online teaching as part of the problem. More recent figures from universities across the globe suggest this trend of high attrition for off campus online students continues (Frankola 2010).

Boyles (2000, cited in Tyler-Smith 2006) developed a model that identifies three sets of variables that relate to retention in eLearning from the point of view of perseverance or withdrawal. These variables are identified as first, *defining variables* regarding learner's backgrounds, including maturity, personal circumstances and experience. The second variable is *environmental,* which includes family, social and work commitments. The third variable described by his model is *academic*. This includes the learner's previous academic track record and the suitability of the subject being studied for the learner. These sets of variables are allied to other individual variables such as academic self-confidence, academic outcomes and ease of integration with the institution, along with institutional size, social integration abilities and the learner's psychological make-up.

Frankola (2001 in Tyler-Smith 2006) reports lack of time, lack of motivation, poorly designed courses and incompetent instructors as the reasons for attrition in her survey of online learners. However, Tyler-Smith (2006) suggests students' responses to surveys may be ad hoc as a result of a learner's inability to identify the more personal psychological issues related to the increased levels of anxiety and a sense of feeling overwhelmed by technology and unfamiliar modes of learning. He views this "cognitive overload"' as being a principal cause of online attrition.

Where students are mature eLearners new pressures arise since they are often employed full-time and tend to do their learning in their personal time somewhere in between work and family commitments. Studying in personal time can have a harmful effect on an employee's home life and family and may contribute to attrition statistics (Thalheimer, 2004 in Tyler-Smith 2006). This is particularly so if feedback and institutional support is slow or inadequate, thus exacerbating their feelings of isolation and frustration.

2.6 Conclusion

As university study has become more accessible to a wider range of students who vary in age, culture and language as well as socio-economic and educational background it cannot be assumed that all students possess the required literacies for academic study (Northedge, 2001). Northedge further suggests that: "universities need to be helping students acquire the ability to participate in specific knowledge communities, both vicariously, as listeners and readers in ongoing debates and generatively as speakers and writers".

The arrival of approaches like flexible learning, constructivist learning, e-learning and student-based learning is certainly an indication that dramatic shifts are already taking place in many disciplines towards more students centred approaches to teaching and learning. However, these approaches do not necessarily address the gaps in academic skills, confidence and literacy of our non-traditional students. Northedge (2001) argues that neither traditional nor student-centred models adequately address this diversity of students. He suggests that learning must involve an entry into a knowledge community which is facilitated by good teaching. We need to help them become active participants in what Swales (1990 in Northedge 2001) refers to as "discourse communities" where participants share a particular way of talking and understanding issues.

Despite increasing rhetoric regarding the first year experience, assisting university transition, and providing access and equity for Non-Traditional students, the internal systems of academic curriculum, discourse, pedagogy and evaluation in many cases still perpetuate old codes and in this way old class relations (Bernstein 1999). Further, Hood (2004) questions whether current rhetoric referring to students as apprentices or novitiates into the academic community actually translates in real terms. Although these terms imply a guided entry into the academic community, studies suggest few students "perceive themselves as being apprenticed" (Candlin 1998:21 in Hood 2004).

The significantly higher attrition rate of universities with high numbers of first-in-family students is testimony of the difficulty these students have in adapting to and functioning successfully in the academy. While evidence previously mentioned (Wylie 2004 et al) cites a range of issues affecting students' success in the first year, their academic experience effect is a consistent theme raised (McInnis & James 1995; Baldwin & McInnis 2000; Mariani 1997; Barthel 2000; Mackie 2001; Davies and Elias 2003; Longden 2004; Yorke 1999). Importantly, while outside effects like financial pressure and family issues are difficult for institutions to address, academic preparedness is one that we can assist students with. Further, the empowerment students experience from achieving academic success may well mitigate other factors for attrition.

Socio-politically we are at a time where knowledge is seen as an essential driver of economies and the sharing of knowledge is burgeoning. This is because of and a cause of our globalised world where economies and people exist more and more beyond geographic borders. Added to this, liberalised policies for education have contributed to the diversification of university

student communities but ironically this has also promoted inequalities in access to university knowledge as policies for inclusion fail to meet practices for inclusion.

It is not only the diversity of 21st century students, in terms of socio economic background, culture, age, English language, and socio economic status that effects their ability to access university learning but also a disjunction between net generation literacy and learning and traditional university discourse and pedagogies. This includes issues relating to how students learn and use language as well as the disjunctions between their cultural literacy and the historical bodies of institutional knowledge on which academic discourse is based. Added to this is the suggestion that there is a widening gap between students' ability for high-level reasoning and what is required for reading and writing complex academic texts.

Thus, the literature supports the need for different approaches to enabling student success at university. Courses that explicitly build students' academic literacy and cultural capital, such as the Common Unit Program are an effective organisational response to the challenges faced by universities such as ours. By providing students with an induction to the discourse of academia, the use of online learning tools and the opportunity to interact across disciplines in a supportive and inclusive way, the university goes a long way to addressing the forces for student success. In addressing students' need for social and organisational integration, the Common Unit Program may also assist students to deal with external and individual forces that may negatively impact on their success.

3. STUDENT OUTCOMES IN COMMON UNITS 1999-2009: EQUITY AND PROGRESS

3.1 Overview/purpose

This component of the present phase replicates the existing methodology and reporting of student outcomes in the Common Unit Program to the years 2007-8, focusing on patterns of student attrition, satisfaction and academic success as these are affected by equity (demographic) and situational (Part-Time Status, External Mode, First Year of Study) factors[1].

3.2 Method
3.2.1 Research questions

(1) For all Common Unit enrollments in the years 1999-2009, what have been the trends in (a) enrollments (b) student intake composition and (c) rates of attrition and academic success?

(2) What have been the patterns and trends in the associations between student intake composition, attrition rates and completions over the ten year period 1999-2008

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[1] Comparisons at the first year level with other large Common Units (a focus of the previous report), was subsumed into the broader issue of course-related survival for the years 2006-9.

While the first question leads to description of the patterns and trends in intake and outcomes (rates of unit withdrawals, completions and Grade Awarded in the Common Units (GPAs were not available for the years before 2007) (Section 3), the second question implies a more explanatory approach, where the associations between individual background or situational factors and outcomes are explored.

For this second, exploratory approach (Section 4), we may be interested in comparing the trends in the impact of external study on outcomes as the proportion of students in this category expanded dramatically over the decade. This may also involve the *estimation*, by rigorous statistical methods, of the relative effect of each of the explanatory factors on both Early Withdrawal and Pass Rates.

3.2.2 Research strategy: charting and predicting outcomes

The design framework for the quantitative methodology follows the broad pattern of prediction set out in Fig.3.1. This model represents an attempt to capture the patterns of causal influence on student outcomes in the Common Units, at the level of individual student enrolment, within each observation period and over the course of the previous decade. Each of the measurable effects are specified in this model, beginning with the background that the student brings to the program and following through to institutional context through which the experience of the program is mediated (e.g. mode of study, semester and year, parent course).
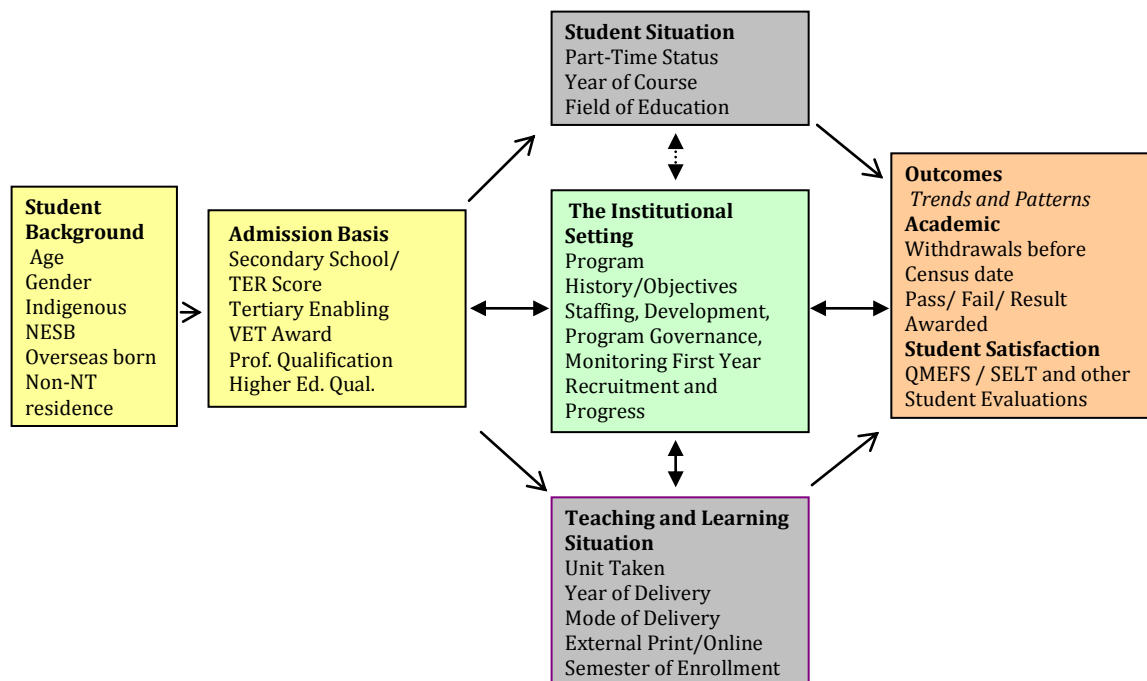
Figure 3.1: Predicting student outcomes: a generic model

This model (Fig. 3.1) is "recursive" in that its causal relationships move in one direction, from background through institutional effects and onto outcomes. In modeling terms, student background variables are termed "exogenous" or outside the University sphere of direct

influence while the contextual effects are "endogenous" in that they are affected by policy and pedagogical decisions and processes associated with the program. The unit of analysis for Part A of this and previous phases is that of the individual enrollment. While these records (rows in a spreadsheet or data file) are specific to the semester, year and unit taken, it is possible they may be aggregated to the student level for some comparative purposes. For Part B this aggregation will be necessary, since the two outcomes for comparison (Course Withdrawal, Grade Point Average) are measured at the individual student level.

3.3 Findings and discussion

3.3.1 Attrition rates in Common Units: patterns and trends

(1)   Intake trends: total enrollments[2]

Fig. 3.2 below shows the gross number of students enrolling in the Common Unit Program has doubled since the second year of its inception (1999), with an uncharacteristic "blip" in the year 2003 when the total number of units available for new students fell from five to only two. After this event, numbers "plateaued" for the years 2003-6, when they returned to the steep upward trend of the first four years, now peaking at over 3,000 enrollments. The accumulation of enrollments in the present database is therefore impressive for a relatively small university, totaling 21,616 with the addition of the 2007-8 intakes. This large database provides not only the opportunity for the monitoring of the Common Unit Program, but also a convenient "map" of the changing profile of the University's client base as the challenges of increasing diversity of student background and situation, as well as emerging patterns of student demand and modes of teaching and learning.
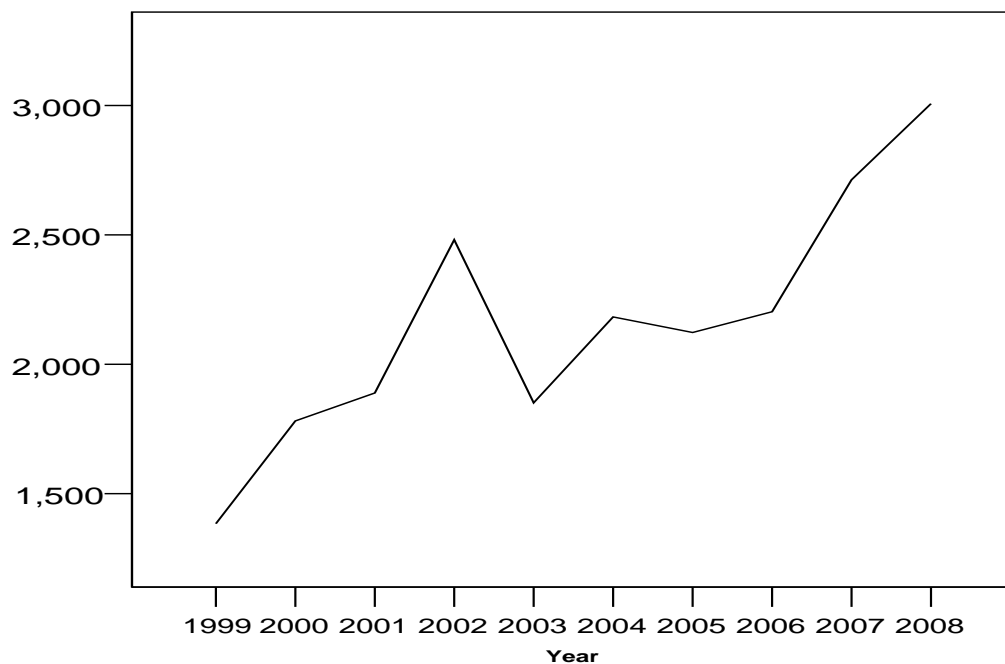
Figure 3.2: Trends in enrollments in the Common Units: 1999-2008: All Common Unit enrollments (n=21, 616)

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[2] In Part A these do not include enrollments which have been granted a Credit Transfer

(2) *Intake composition 1999-2008: trends in student characteristics*

Perhaps the most salient feature of changing intake composition charted in Fig. 3.3 appears to be the trebling of the proportion of External Mode enrollments, from just over 20% in 1999 to 73% in 2008. This dramatic, quasi-linear trend parallels the demand and supply of externally-delivered courses in fields of health and social sciences among others, as well as the emergence of the new technologies of delivery and assessment. The Part-time decline in 2004-5 reflects a more rigorous and exclusive definition of that status for recording purposes.
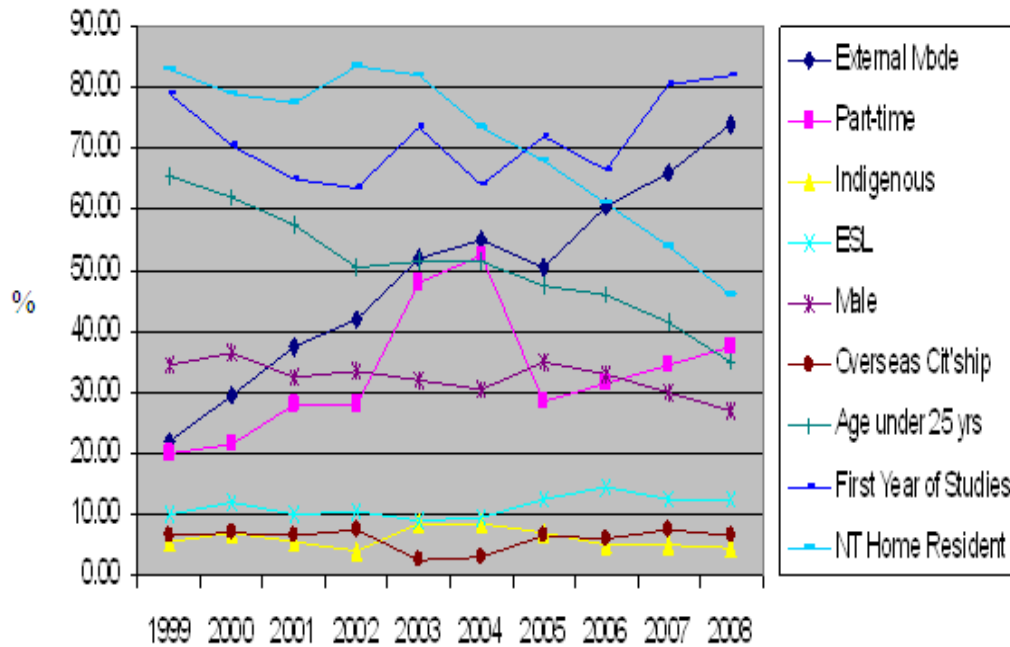
Figure 3.3: Trend chart of Common Unit intake characteristics (%) 1999-2008

Accompanying the rise in the external delivery mode is the decline in NT home residency, as well as in proportions of students Aged Under 25 Years. This more mature, externally-enrolled profile is not inconsistent, however, with the recent rise on the proportion of first year enrollments, an encouraging trend reflecting a decline in the numbers and proportions of students who defer Common Unit enrollments to the second and third year of course enrollment when the benefits of the program are less likely to be felt. Against these increases and declines over the decade is the relative stability of the proportions of minority group students in categories of ESL, Overseas Citizenship and Indigenous Status. The proportion of Male enrollments has declined in recent years, a reflection of the gender bias in the increase in enrollments in externally-delivered courses in the fields of health and education.

(3)   Student outcomes: attrition and academic success in the Common Units

Trends in student outcomes will be defined in terms of: rates of withdrawal before the Census dates in each semester; rates of unit completion (i.e. award of passing grade or higher); Grade Awarded to completing enrollment. The unit of analysis will be the individual enrollment rather than the individual student and will include all units on offer over the ten year period. As for the previous section, the trends in these outcomes will be examined before the more analytical investigation in Section 2 which will match intake characteristics with outcomes. In this subsection we will:

(a)   examine trends in rates of Early Withdrawal, Pass Rates and Mean Grade Awarded (line charts);
(b)   explore the relationship between higher rates of Early Withdrawal and increases in the Pass Rate? (curve fit);
(c)   chart trends in the average level of grades awarded - are assessment standards declining or becoming more stringent, given the range of explanatory factors available? (error bar charts).

(3a)   *Trends in rates of Early Withdrawal Before Census Date and unit completion*
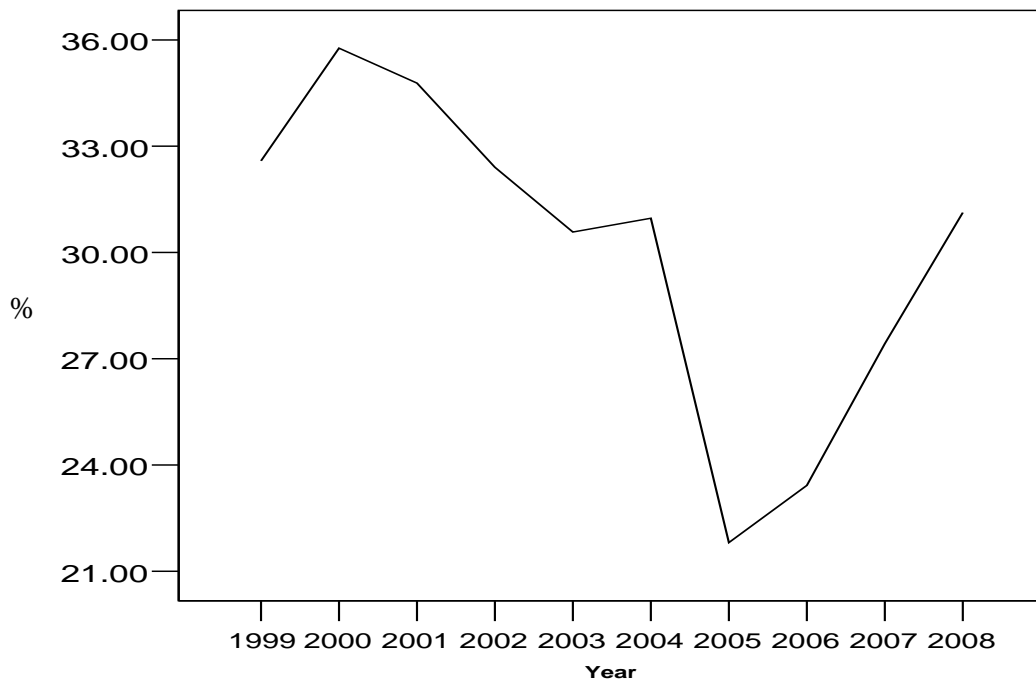
Figure 3.4 Trends in withdrawals before Census date (%): 1999-2008: All Common Unit enrollments (n=21, 616)

Since Withdrawal Before Census Date is one of the principal sources of student attrition in the Common Units, it is instructive to examine the trends in this measure. Fig. 3.4 shows that from a high of almost 36% in the year 2000, the rate declined almost uniformly, except for a slight halt in the years 2003-4, to a low of just of over 21% in

2005. This achievement of a decline of over 50% has, however, been reversed in recent years, climbing back to 30% and perhaps beyond, in the years 2005-2008. This reversal may be partly explained by the match between the increase of over 50% in the number of enrollments (Fig. 3.5) in the period 2006-8 and the upswing of in Early Withdrawals since 2005 of over 40% (25% since 2006).

The dramatic decline in withdrawals in the middle period just noted, however, was achieved in the face of stable enrollment numbers. In this case, it may be more fruitful to explore other reasons for this return to higher rates of this form of withdrawal, such as the rapid increase in External Modes of study (see Fig. 3.3, also Section 3.3.2 following). We turn now to examine trends in unit completions (i.e. using the Pass Rate as the main measure), and then at their correlation with rates of Early Withdrawals, on which they may partly depend.
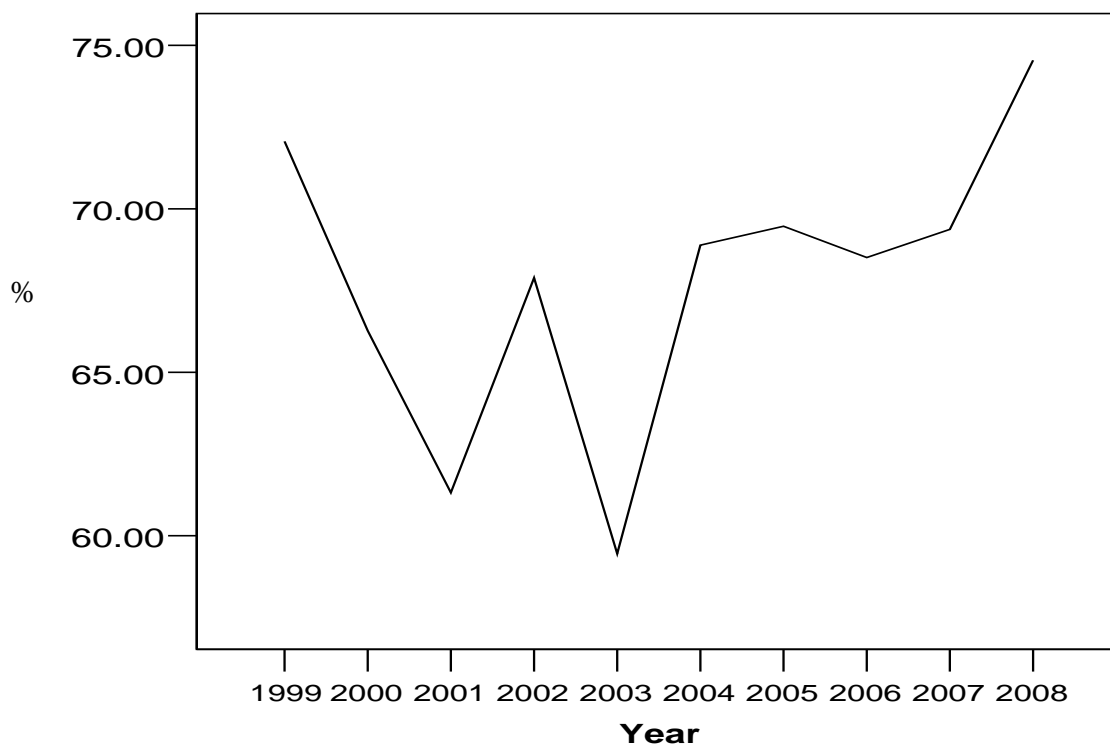
Figure 3.5: Trends in Pass Rate 1999 – 2008: continuing enrollments (n=14, 525)

Fig. 3.5 shows a considerable fluctuation over a 10 to 15 percent range, over the observation period. The steep decline in the first period (1999-2001), one of the major concerns that prompted the setting up the monitoring project, was reversed in consequent years, to plummet again at the time of unit restructuring in 2003-4), then returning to a more normal rate (i.e. compared with that of other large core units, see 2005-6 report), to enjoy a significant boost to almost 75% in the latest round of observations.

It may appear that this volatility in the rate of passing (i.e. obtaining the 10 credit points, including Pass Conceded and other marginal passing grades), is a source of concern, though the present upward trend provides some reassurance that the years of up to a 40% failure rate are well in the past.

(3b)   *Relationships between higher rates of Early Withdrawal and increases in Pass Rate*

It is plausible that the greater the proportion of early withdrawal students, the higher the proportion of students who finally pass the unit will be. This hypothesis depends on the assumption that those who withdrew early are also more likely to have failed, should they have persevered with their enrollment, whether because they have lower levels of motivation, greater time pressures and possibly lower levels of academic ability. The view that Early Withdrawal may be a kind of "natural attrition" would not seem therefore to be an unreasonable assumption. In order to test this relationship, the rates for the two aggregated measures for each of the ten years of observation were subjected to a "curve fit" procedure in order to estimate the size and significance of their statistical association (Fig. 3.6).
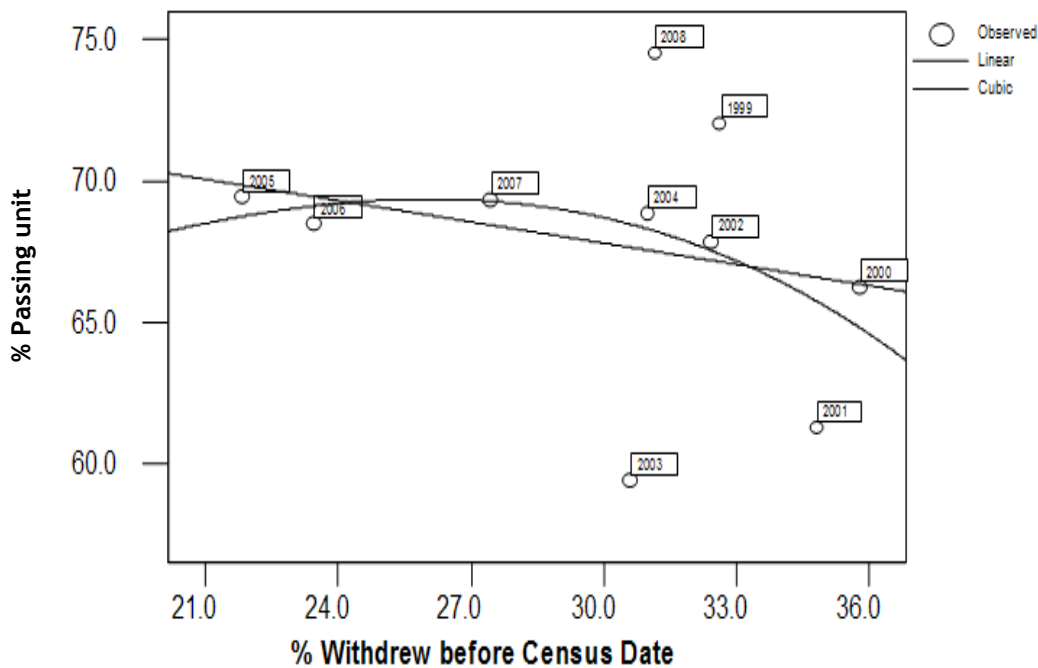
Figure 3.6: Trends in withdrawal and Pass Rates (%) Common Units 1999 – 2008

The "curve fit" graph in Fig. 3.6 indicates that there is a low, *negative* linear relationship (r= -.25, not significant) between these two measures over this small sample of years (n=10). This relationship is not significantly improved by the cubic (non-linear) fit of the same trend. In other words, any hypothesis that there may be a positive association between these two measures (i.e. that higher rates of Early Withdrawal would result in higher rates of passing a unit) is not supported.

In fact, one might claim that a converse hypothesis could apply, since this low association is produced for the six out of the ten years, while four of these years (including a mix of the earliest and the most recent) show no consistent trend. By inference, the assumption behind the positive association hypothesis, that Early Withdrawal are more likely to be "at risk" of failing the unit, should be rejected. If these withdrawing students were just as likely to pass, should they have continued in the unit, they represent a greater loss to the program (and to the University) than hypothesized under the assumption of "natural attrition".

(3c)   *Are assessment standards declining or becoming more stringent*

In order to investigate the trends in marking and assessment standards over the decade, an error bar chart was constructed (Fig. 3.7) showing, within a range of 95% confidence interval, the Mean Grade Awarded using numerical equivalents ranging from 3= Pass Conceded through to 7 = High Distinction
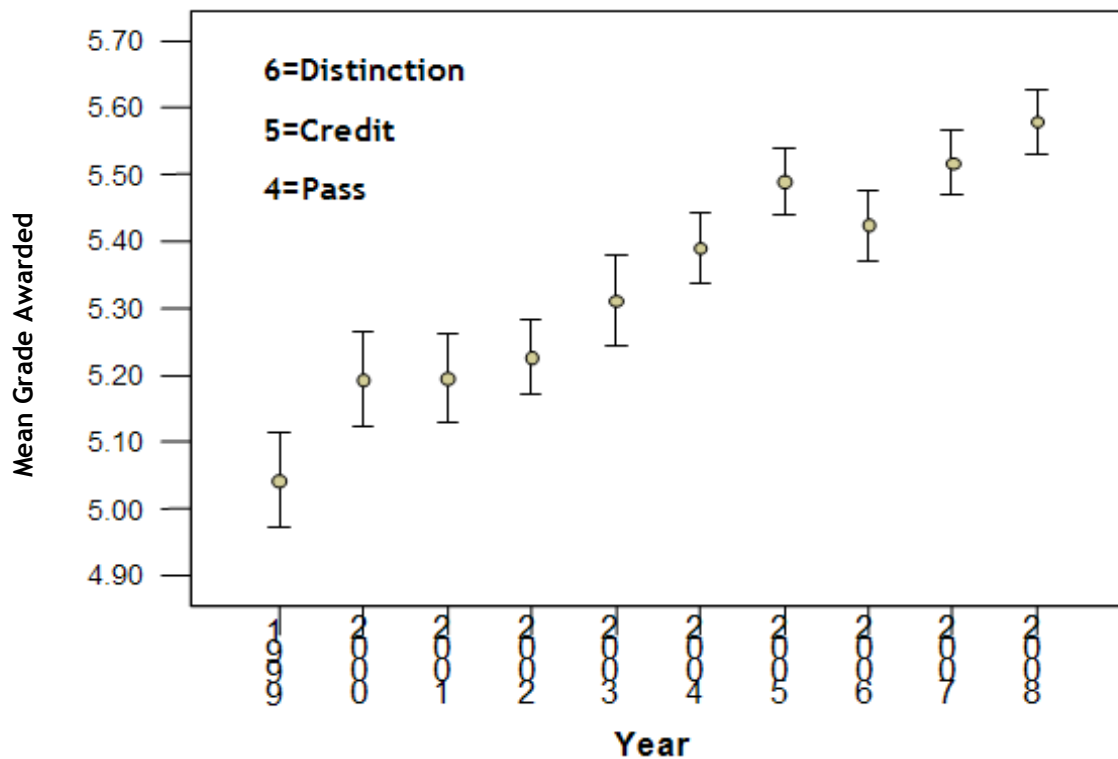
Figure 3.7: Error bar trends in Mean Grade Awarded in the Common Units (all passing grades 1999-2008; n=9912)

This figure shows a monotonic decadal trend within the Credit band, from a low mean level of 5 in 1999 to a high of 5.55 in 2008. The only exception, where mean grade actually fell, was for 2006, where the decline was small and not significant (i.e. the error bars overlap with those for 2005).

Although this was one of two years (along with 2005) with very low rates of withdrawal before the Census date, it is not likely that this contradicts an overall negative relationship between Grade Awarded and early attrition observed in the case of completions. Average Grade Awarded for these years was still significantly higher, despite their much higher rates of retention (up to 10%), than those recorded for the earlier years of the program (1999-2004). A more general perspective, the strong monotonic trend towards higher grade contrasts with the 'trendless fluctuation' in the rates of Early Withdrawal. It seems safe to infer, therefore, that the rise on average Grade Awarded could not be attributed to similar uniformity of trends in levels of early attrition. The decadal trend is far too uniform and persistent for this, as well as being probably slightly negative overall.

For further explanation of the trend towards higher grades, we might look to improved standards of presentation, delivery and assessment, as well as the response and performance in the trend within the diverse first year student intake segments outlined in Figs.3.9 and 3.10. In this connection, a comparison of average grades awarded between internal and External Modes of unit delivery may provide some insight into the ways in which this important "segment" has performed over the decade (Fig.3.8).

Figure 3.8: Error bar comparison average grade: Internal and External Modes (all passing grades, 1999-2008; n=9912)

For this "continuing enrollment" sample (as distinct from the total enrollment sample), the performance in terms of average Grade Awarded seems to favour External over Internal modes of delivery in most years of observation. In contrast to the pattern of higher initial attrition, where Externals tend to withdraw earlier (see following subsection), those who do complete outperform their Internal peers.

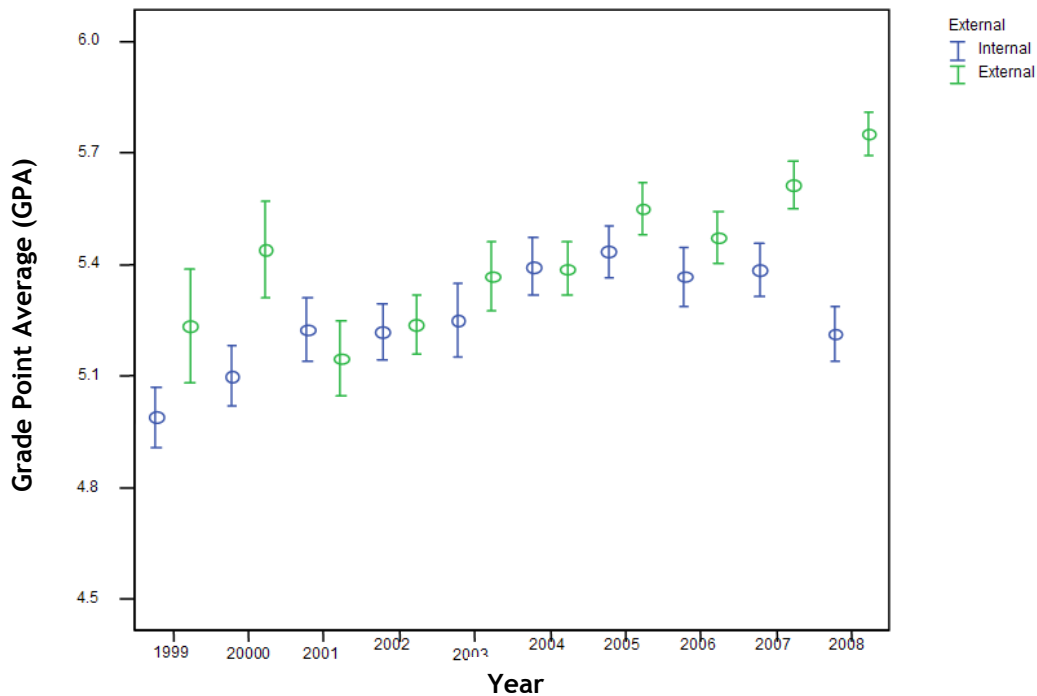The trends in Fig. 3.8 underline this "gap", which appears to be widening in more recent years. While this "gap" was significant in the earlier years, it tended to disappear between 2001-4, only to reassert itself post 2005, increasing in each year. In 2008, the mean difference has high statistical significance (p <.001), in real terms representing over half a full assessment grade. Is this widening disparity in the performance between Internal and External Modes due to age, gender or residential factors, for example? Or may it be a specific instance where the "natural attrition" factor may still apply, in that Externals will tend to self-remove at a greater rate than Internals? In this connection, we turn to the explanatory analysis of the second question.

3.3.2 Student survival and success: impact of the Common Units

What have been the patterns and trends in the associations between student intake composition, attrition rates and completions over the ten year period 1999-2008? In this subsection we will examine trends for this period in the relationship between student "equity group" intake and situation profiles; (a) rate of Withdrawal Before Census Date (or "Early Withdrawal"); (b) the rate of completions/passes; (c) the effect of each intake or situational variable on a student's chances of Withdrawal before the Census date and passing a Common Unit (i.e. obtaining a grade of PC or above).

An exploration of these trends and patterns may not only provide the basis for insight into the impact of changes in intake on rates of retention and completion, but may also allow for explanation of different levels of academic performance, such as the widening gap between external and internal modes of delivery noted in the previous subsection. This will be particularly important for the analytical section of (c) where multivariate methods will allow the estimation of the effect of each of the predictor variables while all the others are "held constant" at their mean values.

(1)　*Withdrawal Rates and intake profiles: trends 1999-200* A comparison of rates of Early Withdrawal over the decade shows a rather contradictory pattern. Before 2005, with the exception perhaps of Part-Time Status, rates across a number of student background ("equity") and situational (Part-Time Status, External Mode, First Year of Study) groups, shows a changing, though converging "mix" of effects from years 1999 to 2005, after which they tend to diverge quite noticeably. In this latter period, the rank order of Withdrawal Rates has, however, tended to stabilise, with increasing disparities between the highest and lowest groupings. This disparity is most apparent in the rank order of Withdrawal Rates for 2008: Indigenous Status (almost 40%), followed by External Mode of delivery and Part-Time Status (35%), Male Gender and First Year of Studies and NT Home Residence (28-30%), Age Under 25 Years and English as a Second Language (ESL) (23-25%), Overseas Citizenship. It is noteworthy that the instability in

rank order of rates combined with their tendency to converge in the pre-2005 period has been replaced by an opposite dynamic since that year.
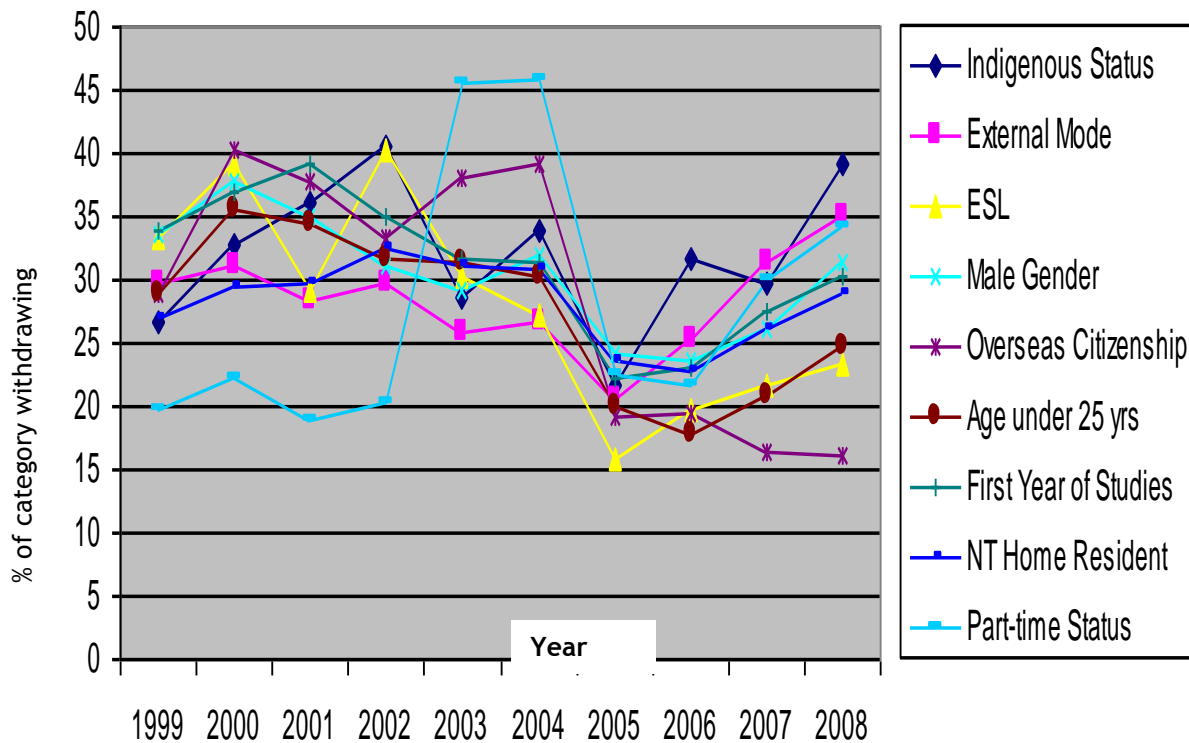
Figure 3.9: Trends in Withdrawal Before Census Date by intake characteristics (all Common Unitenrollments 1999-2009; n=21, 616)

(2)   This tendency for rates of Withdrawal before the Census Date seems to be generating higher and increasing levels of disparity between the higher and the lower rates for these enrollment groups. Indigenous Status, for example, has rates more than double those for Overseas Citizenship (the only group that shows an actual decline. The implications for this new dynamic for charting continuing trends in the patterns of attrition are considerable, particularly if it is replicated across a range of first year courses.

 (3)   *Successful completion[3] rates and intake profiles: trends 1999-2008*

The rank order by category of Pass Rates for two thirds of students who continue their enrollments in a Common Unit is a mirror image of that for withdrawal before the Census date (Fig. 3.10). This order underscores the findings above of an absence of any "natural attrition" effect that might eliminate the more vulnerable students in the first few months of enrollment.

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[3] For these purposes and elsewhere "successful completion" is measured by the rate of enrollments awarded a Pass Grade (PC) or higher
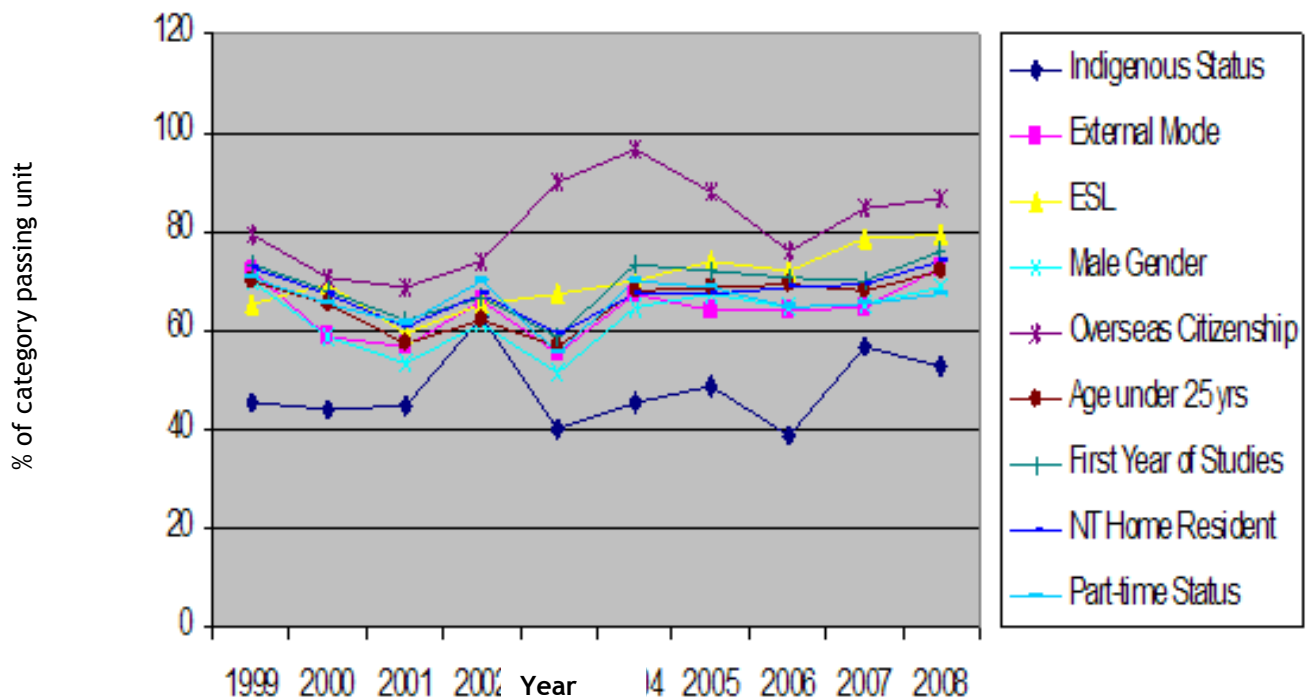
Figure 3.10: Trends in Pass Rate (continuing enrollments): 1999-2008 (all continuing Common Unit enrollments 1999-2009; n=14,525)

The trends in the rank order of these equity and situational factors hold some interesting insights. As for Fig. 3.10, the contrast in rates between the two "outlier" groups, Overseas Citizenship and Indigenous Status, is quite marked, with the mean difference over time of about 25%. The differential falls to its lowest (about 15%) in 2002, only to peak at almost 40% in 2004. Given the relatively small numbers in these categories, these kinds of variations are not unusual. However, the "gap" in between Indigenous and Non-Indigenous enrollments in completions is, in the average, well over 25% although it shows some narrowing (to about 15%) in the two most recent years.

Despite these stabilities in rank order, the overall trend is towards higher successful completion rates since 2003, the year that the restructuring of unit offerings came into effect. There is here a notable improvement in the rate for English as a Second Language (ESL) enrollments, whose Pass Rate now falls just below 80%. As found in the previous subsection, this consistent upward trend has been achieved in the face of wide fluctuations in the rates of Early Withdrawal. The contrast in the patterns of the trend lines between these two measures is quite marked.

While the rates of Early Withdrawal have shown a disturbing tendency to diverge since 2005 (with the implication of 'gap-widening' between categories) the differences between the Pass Rates across the categories have remained relatively stable, if not actually convergent. As seen in Fig. 3.8, in the case of External Mode trends in the grade averages, this stability in overall

successful completion rankings may conceal more the subtle effects of student background and situational factors on academic outcomes.

(2)   Predicting Early Withdrawal and Pass Rates 1999-2008: a regression approach

As an alternative to the charting of trends over the decade, logistic regression analyses were carried out with both attrition outcomes (Early Withdrawal and Pass/Fail), using the year of enrollment as a separate predictor, together with the equity and situational variables plus the year of enrollment (Table 3.1). This analysis, as for that of the previous reports, will produce precise weights for estimating the independent effect of each predictor on a measure of the "odds ratios" of a student's Early Withdrawal and passing or failing a unit. These ratios represent the probability of say passing a unit over not passing and allow for comparing the effects of each predictor. For example, an odds ratio of less than unity indicates a lower probability of the outcome, while a ratio of greater than unity represents a higher probability, though these "chances" cannot be expressed directly in common language of, say, gambling (a chance of one in three, for example, or "odds on 2-1" etc. to indicate a probability of greater than evens. An odds ratio of 1, the expected value for the entire sample, indicates that the predictor has no effect on outcome. The statistical significance of an odds ratio value also depends on the size of the predictor group - the same value for two groups (e.g. Indigenous Status and Male Gender) may yield quite different results from a test of their statistical significance.

Table 3.1: Results of logistic regression analysis: withdrawals and passes (all enrollments commencing and continuing: 1999-2008)

	Withdrawal Before Census Date (n=21,616)		Passing Grade in Unit (n=14,525)	
	*Sig.**	*Exp(B)*	*Sig.**	*Exp(B)*
External Mode of Delivery	**0.00**	**0.56**	**0.00**	**0.56**
Indigenous Status	n.s.	1.00	**0.00**	**0.38**
English as a Second Language.	n.s.	0.95	n.s.	0.97
Male Gender	n.s.	1.01	**0.00**	**0.65**
Overseas Citizenship	n.s.	0.94	**0.00**	**1.75**
Under 25 yrs	n.s.	1.04	**0.00**	**0.66**
First Year of Course	n.s.	1.06	**0.03**	**1.10**
NT Resident	n.s.	0.95	n.s.	0.94
Part-Time Status	**0.00**	**2.69**	n.s.	0.93
Year of enrolment in Unit	n.s.	1.00	**0.00**	**1.04**
* n.s. = not significant at p<.05 level (Constant not shown)				

A broad comparison of the independent effects of these ten (nine plus year of enrollment) predictors on student outcomes shows a relative paucity of significant effects (2 only- External Mode and Part-Time Status), compared with the seven statistically significant effects for the prediction of passing the unit. External Mode of delivery shows the same low odds ratio (.56) for both Early Withdrawal and for passing a unit. In this instance, there may be some kind of connection, but this has proven difficult to demonstrate. Indigenous Status shows only an average value for Early Withdrawal but the lowest value for passing. Other categories with no significant values for Early Withdrawal but below expected values for passing are Male Gender, and Age Under 25 years. Overseas Citizenship shows the highest positive effect for expectation of passing (a very high value of 1.75), as it did in the trend lines.

The year of enrollment has no apparent effect overall on the expectation of Early Withdrawal but a small but significant effect on the odds ratio of passing. These results put into a more rigorous statistical perspective the rates represented by the trend lines. This model, since it treats time as a linear effect, does not capture either the non-linear changes seen in the charts, nor does it estimate the effects of unique combinations of year with each of the other nine predictors. The strong lines of cause and effect here can be delineated clearly for the purposes of program development and planning.

The contrasting pattern of regression weights between these two attrition outcomes demonstrates the advantage of a multivariate, over the bivariate, approach that characterises the associations of the trend line charts. A shift to External Mode of Delivery may mask effects from changes in the gender and age composition of an intake, just as the recent increase in First Year of Course may indicate a greater diversity of intake and spreads of ability than those of previous years when participation tended to be deferred to the later years in their course.

The contrasting patterns of independent effects also underline the need for recognition of the populations over which the equity and situational effects are being estimated. In effect we have been using three different populations: original intake (total enrollments excluding Credit Transfers, n=21, 616;14), continuing enrollments (those who have achieved a result; 114,525) and successful enrollments (those who have achieved at least a pass grade, n=9,912). Each population has its unique composition. It is important therefore, as we will see in Part B, to apply consistent definitions of the background sample, particularly for comparisons between Common Unit and Credit Transfer populations.

3.4 Conclusion

The analysis of student attrition in the Common Units over the past decade has revealed clear and persistent patterns, trends and effects flowing from an application of the causal framework of Fig. 3.1 ("Predicting Student Outcomes"). This general pattern of stability and growth (including a doubling of enrollments) has been achieved in the context of a linear trend towards External Modes of delivery and subsequent increase in non-NT residents and a radical internal restructuring of unit offerings.

Over the decade, measures of retention and progress have improved, as a decline in rates of Early Withdrawals has been accompanied by a statistically significant improvement in the Pass Rate. There is also a satisfactory return to higher rates of participation (now over 80% of the intake) of the target population of students in the First Year of Course. Within this pattern of stability and gradual maturation as a program, there are, however, some points of concern:

- Persistent lower Pass Rates for (i) Indigenous enrolments (15-20% lower than the average) and for Males (6-10% lower than average).

- Recent (post 2005) increases in rates of Withdrawal Before Census Date. Though fallen from an average of 33% in 2000 to 21% in 2005 these are now returning to around 30%, accompanied by a trend towards greater disparity between equity groups.

- A trend towards a higher average Grade Awarded, from a low to a high Credit level among pass level students (i.e. excluding Early Withdrawals and fails), together with a recent divergence in average grade since 2005 in favour of External Modes of delivery.

- Instability in the rates of Early Withdrawal for students in the "vulnerable" age group 20-24 yrs, fallen since early years, now increasing.

- Persistent high rates of Withdrawal Before Census Date for both external and part-time enrollments. Given the lack of evidence that this may be a kind of "natural attrition", high rates for these categories represent a loss to both the program and to the University.

In summary, the Common Units Program, after a difficult and often contested introduction in the late 1990s has matured to the point of being an accepted and valued feature of the First Year experience at CDU. The Monitoring Program, in both its quantitative and qualitative components, has provided some insights into this process and success of the program's integration into the first year of studies, as well as into the changing environment of teaching and learning in an innovative Higher Education institution.

4. IMPACT OF COMMON UNIT PARTICIPATION ON STUDENT PROGRESS AND SURVIVAL (STUDENT AGGREGATED DATA)

4.1 Overview/purpose

This will be a separate and original extension of the Monitoring Project which examines the effects of participation on later student progress in either one of the "Academic Skills" units - CUC100 (Academic Literacies) or CUC106 (Design and Innovation: Communicating Technology) offered in the Common Units program (Grade Point Average) and survival (course withdrawal) in number of selected courses over a number of years.

This second project involves a comparison of rates of attrition and academic performance between students who participated in the Common Units ("treatment group") and students who were granted exemptions from the Common Units (control group) in 2006.

The performance of these 2006 enrolments is measured over the years from 2006 – 2009. Covariate analysis allows for adjustment for the effects of student background demographic variables, admission status and student situation in those courses in fields of education such as Teaching, Nursing, Law, and Business.

4.2 Method

4.2.1 Research questions

In this exploratory, quasi-experimental design, attrition rates and average academic performance (GPA) will address the following questions (expanded below into six working hypotheses):

(1) Over the years 2006-9, what has been the effect of completing an "Academic Skills" Common Unit in 2006 on a student's later chances of course survival or achievement (Grade Point Average), compared with students who have either discontinued enrollment ("Withdrawn before Census Date" or Failed (or Failed to Attend))?

(2) Does Common Unit participation benefit "Non-Traditional" entrants" in particular, those who may be admitted to a Higher Education undergraduate course from vocational and tertiary enabling programs?

(3) More broadly, do students' demographic characteristics (e.g. Age, Gender, Indigenous Status, Part-Time Status) as well as Basis of Admission category, explain variations in observed differences in rates of course survival and academic achievement?

(4) Does the degree to which students have participated in the Common Units affect the average length of time that they "persist" in enrollment in their original course.

(5) How do the rates of retention and academic achievement of those who have Passed an Academic Skills Common Unit compare with those of students who have been granted a Credit Transfer?

(6) Does a student's Basis of Course Admission (BOA) have any additional effect (beyond either Credit transfer or attending and passing a common unit) on students outcomes.

An exploration of these questions with the comprehensive data base now assembled will provide unique insights into: (a) the way that the Common Units have interacted with the changing intake over the past decade; as well as (b) helping to identify which groups have benefitted most from exposure to, and participation in, the Common Unit Program. In sum, to what extent do these possible effects explain a student's decision to "drop out" and to achieve in their present course, or conversely, to "persist" in the face of these influences?

This investigation, given the comprehensiveness of the database, will therefore provide an important platform for University-wide performance across indices of retention, course completion and student progression.

4.2.2 Research strategy

While the first component of this analysis charts students' progress using well-established methods such as regression analysis with combined samples of the first year intake population, the second invokes a quasi-experimental design that attempts to isolate the effect of Common Unit participation, among a host of other factors (covariates), on later student progress and survival. If students had been randomly assigned to either 'treatment' or 'control' groups on first year admission, then there is every expectation that these effects would have been, on the average, evenly distributed between the groups, as in the classical Randomised Controlled Trial (the RCT of clinical and drug-related research). In contrast to the clinical trial, however, there is no equivalent here of either a "placebo" simulation of the treatment or the "double blind" experimental strategy that disguises the administration of the treatment experience. In this case, an innovative approach to the estimation of the effect of the Common Unit on later student performance was required.

Comparing "like with like"

This investigation must therefore depart radically from the classical RCT design assignment of subjects to either "treatment" (Common Unit) or "control" (Credit Transfer) groups in that assignment to one or other group is systematic and subject to procedural criteria, rather than random allocation. Students are able to claim exemption on the basis of either prior learning as individuals or an assumed standing within the accreditation rules for admission to particular courses (e.g. business studies, environmental science).

These criteria may carry the markers of individual background factors such as variations student ability, higher education readiness (perhaps reflected in the Basis of Admission category) and individual motivation and maturity. At the course level, performance may be due to variations in difficulty of course materials (including the literacy demand of a particular course), teaching quality and marking standards. While some demographic and situational factors may be controlled or "held constant", many, if not most, of these covariates are either unknown or, if known, unmeasured (e.g. academic ability, socio-economic background). A crude comparison of survival rates, for example, is therefore likely to favor the Credit Transfer group, since assignment to this group may well be a disguised form of academic selection.

Building 'dosage/ 'level of participation' into the research design

Where there is no possibility of following the design model of the classical RCT of clinical research, then it may be possible to develop alternative forms of comparative analysis that can estimate the effect of participation in an "Academic Skills" Common Unit (i.e. either CUC100 or CUC106). In this design, there will be two sources of comparison of survival and performance over the later years[4] of their course of studies:

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[4] The confounding the effect of a simultaneous unit and course withdrawal, particularly in the first year, is discussed in Section 4 ("Research Design")

- Within the Common Unit group between those students who have completed and/or passed a Common Unit and those who have Withdrawn and/or Failed that unit (typically because they "Failed to Attend" or complete the assignment work).

- Between the students who have successfully completed an Academic Skills unit and students who have been granted a Credit Transfer.

Behind each of these inter-group comparisons lie a number of effects ("covariates") that may be strongly correlated with both the student's assignment to either group and/or more directly, with the chances of survival and success, as set out (Fig. 4.1) . Among the more important of these covariates, the category of student's Basis of Admission is particularly useful for program planning and developmental purposes. In addition to controlling for student's individual socio-demographic (Age, Gender, Indigenous and NESB statuses) and situational variables, the effect of a student's Basis of Admission (particularly from Non-Traditional backgrounds such as VET and TEP) on the survival and success will be explored by statistical procedures.

"Relative gains": Estimating the impact of Common Unit participation

This design framework set out in Fig. 4.1 provides a heuristic device for exploring the impact of the Common Unit Program over these metrics, based on readily available data on individual student records. Comparison of rates between students who completed a Common Unit in 2006 and other groupings based on their exposure to, or mode of participation in the Common Units, will in the first instance provide an exploratory estimate of the "relative gains" attributable to different levels of program participation, expressed as a ratio of rates of Course Withdrawal or as differences in students' Mean Grade Point Average.

While the expectation of the University has been that all students should take Common Units in their first year of enrollment, a minority may be granted an exemption (a Credit Transfer) from at least one of the Academic Skills Common Units (i.e. CUC100 or CUC106). Exemption from the Common Units may be either on the basis of recognition of prior attainment, or "en bloc", under course accreditation procedures. In the years being investigated, it is significant to note that courses where students automatically gain exemption as part of a VET feeder articulation are technically oriented courses like Bachelor of IT, Science and Business. These courses tend to focus on technically oriented, rather than high literacy demand assignments in the first two years. On the other hand, the Bachelor of Nursing and Education, which also attract high numbers of VET feeder students, insist their students complete Common Units.

These we have recognised as high literacy demand courses as they require students to complete written, researched academic assignments from the first year of study. Having been assigned to one or other of these two over-arching paths (Common Unit or Credit Transfer), students may be: exempted from, complete (which includes grades Fail or Failed to Attend), or Pass an Academic Skills Common Unit. Further, each of these groups of students, having survived the first year, may either withdraw or continue in their later years of studies, while recording varying levels of academic success represented by their Grade Point Averages. This process is modeled in the diagram below (Fig. 4.1)
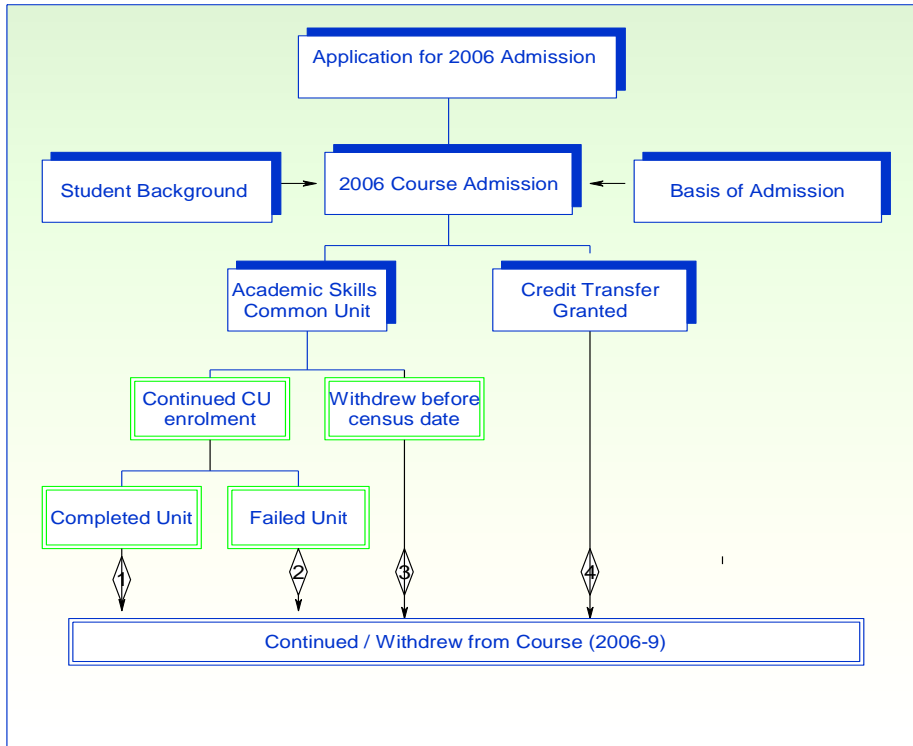
Figure 4.1: A design framework for Common Unit/ Credit Transfer comparisons

Mapping retention and performance

Fig. 4.1 is set out in the form of a flow diagram representing the effect that the Common Unit Program has on various pathways that structure a student's chances of course survival (and by analogy, a record of academic progression). This 'roadmap' begins at the top of the diagram, where a student applies for, and is admitted to a course at CDU for the academic year 2006 and has an endpoint in the decision to either withdraw from a course of study or to "persist" till completion.

"Dosage" or "modes of participation"?

Apart from allowing an estimation of the effects of different levels of the "treatment" ("dosage"), this framework provides a basis for controlling for the background variables identified in Fig. 3.1 on the survival chances of students who have participated, however minimally, in the Common Unit Program. The measurement of "dosage" in this context cannot be calibrated as it might be in a formal experimental design. In such a controlled experiment, we might be comparing outcomes for individuals randomly assigned to various levels of "treatment". In such a naturalistic study as this, however, we are limited to estimating effect by comparisons of outcomes between groups that have been exposed to, and participated in the Common Units as defined by the official categories of enrolment.

Three distinct modes of participation that are used as proxies for different levels of program exposure and/or participation, were identified as: (a) students who were enrolled in an

Academic Skills Common Unit but who withdrew before the official Census Date; (b) students who continued their enrollment but either Failed (Failed to Attend) that unit'; (c) students who Passed an Academic Skills Common Unit. As each category or mode of participation was defined against the other two groups as a dichotomy, these represent a partially ordered, rather than a fully ordinal set of levels of exposure or participation to the Program. The advantage of this strategy is that it allows for comparison of the effects at the extremes – i.e. for group (a) vs. group (b) in a fully ordinal sense, it allows for the isolation of the unique determinants of the anomalous group (b). Further analysis could apply a more formal, quasi-experimental model, with more refined psycho-social definitions of "dosage" in terms of "engagement", "involvement or "immersion", especially in relation to the media of instruction.

The predictors of students' retention and academic progress, mediated through these modes of participation in the Program, include both their own characteristics (socio-demographic variables such as Age, Gender, and Indigenous Status) as well as the category under which they were admitted. In this investigation, one important determinant or predictor was prior academic experience are indicated by a student's Basis of Admission category - entrants with prior higher education, mature age students coming from a professional background as against students coming from "Non-Traditional" backgrounds such as Vocational (VET), Foundation Studies and Tertiary Entry Programs (TEP).

Joint course and unit withdrawal: "confounding" effects

One of the more difficult features of this design is due to simultaneous Withdrawal Before Census Date from both course and Common Unit, particularly in the first year of studies. Just how important are these cases in the design framework? A detailed breakdown of the "joint withdrawals" cases (where a student withdraws from both an Academic Skills Common Unit and course within a span of six days) showed that these cases comprise about a quarter (62 out of 242, see Fig, 4.1) of all cases in the Withdrawal Before Census Date category. These cases, clustered as they are among the "treatment" groups may confound the interpretation of the causal relationships between program participation and retention. They also interfere with the estimation of the effect of program participation on a student's "persistence", defined as the length of time between course enrollment and withdrawal (see Hypothesis 4 below).

GPA and "modes of participation"

In the case of the average GPA outcome however, the case for taking the later effects is clear cut, since the inclusion of a Fail grade in a Common Unit in the calculation of a Grade Point Average will contaminate its status as a measure of "dosage" for the first year of enrollment.. The use of 2006 data for GPA would have a particularly depressing effect on the GPA's of part time students, a significant proportion (35.6%) of the 2006 intake. For this reason, GPA for the following year (2007) will be used as the index for student academic performance[5].

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[5] The choice of the main criterion year of measurement of outcomes is complicated by the interaction between the Year of Withdrawal and Year of GPA, since a higher level of Course Withdrawal in the initial year will tend to both depress retention rates and elevate the level of GPA in subsequent years.

4.3 Expectations and hypotheses

The numbered paths at the base of Fig. 4.1 indicate whether students' have decided on Course Withdrawal or Continuation and provide the basis for estimating the relative gains in desired student outcomes as a function of the level of Common Unit participation. Here the paired comparisons of each of the destination groups in terms of their respective rates of attrition and average levels of academic achievement (Grade Point Average or GPA) in the subsequent years will be used to estimate the "relative gains" attributable to Common Unit participation.

The distribution of any observed gains might then be compared across groups by their Basis of Admission and then in terms of student's socio-demographic characteristics and situation (e.g. Full-Time, Part-Time Status - (comparing "like with like")). Finally, since it is expected that students who pass a Common Unit will have attained the same level of academic literacy as those who were granted a Credit Transfer, some form of 'convergence' between the outcomes for these two groups may also be expected.

These comparisons allow a detailed exploration of the three key questions this section of the investigation seeks to answer. Further, these questions may be now formulated as six working hypotheses relating the careers of University entrants in the year 2006 and their retention/progression in years (2006-9):

(1) Does passing an academic Common Unit improve later student outcomes*?*

Students who have successfully completed an Academic Skills Common Unit in 2006 will have lower rates of attrition and higher average grades over the years 2006-9 than those who have either Withdrawn from, or Failed to Attend, that unit.

(2) Does passing an Academic Skills Common Unit benefit "Non-Traditional" entrants?

Students with backgrounds indicating a "Non-Traditional" Basis of Course admission (BOA) will show relatively higher levels of "gain" in both retention and academic performance from successfully completing an Academic Skills Common Units than those from other admission categories.

(3) Does a student's background and situation affect a student's response to the Program?

Any measurable differences attributable to the effect of successful completion of an Academic Skills Common Unit will be partly explained by the effects of individual student background (Age, Gender, NESB) and student situation (Part-Time Status) characteristics.

(4) Is passing an Academic Skills Common Unit associated with higher rates of course retention?

Different levels of participation in an Academic Skills Common Unit will be associated with a "persistence" factor, measured by average number of years from base year (2006) to a decision to withdrawal.

(5) Are rates of course survival and performance for students who have Passed an Academic Skills Common Unit comparable with those who have been granted a Credit Transfer?

Rates of course withdrawal and in Grade Point Average between students have passed an Academic Skills Common Unit will be similar to those who were granted a Credit Transfer in 2006.

(6) Are differences between the outcomes of Common Unit and Credit Transfer groups associated with a student's Basis of Course Admission (BOA)?

Differences in outcomes between Credit Transfer and Common Unit groups will be associated with a student's Basis of Course Admission (BOA).

Students admitted through "Non-Traditional" BOAs who have Passed an Academic Skills Common Unit will show superior outcomes (lower Course withdrawals and higher GPAs) to those who have been granted a Credit Transfer.

4.3.1 Data and variables

The data for Part B have been supplied in the form of two worksheets:

(1) The first sheet (Part Ba) listed individual student records for students who had enrolled in, or been granted an exemption from, a Common Unit in 2006 (n=3068). Variables included unit and course enrollment and Early Withdrawal data, as well as a set of individual student characteristics (demographic, Basis of Admission and situational data, similar to those effects investigated for Part A)

(2) The second worksheet (Part Bb) records were listed at the individual student, rather than unit-enrollment level for years 2006 through to August 2009). This sheet contained course withdrawal and GPA and other academic performance information (including percentage courses passed in each year). The counts for each comparison group by Common Unit participation and Credit Transfer exemption are given in Table 4.1.

Table 4.1: Counts[6] of student-aggregated Common Unit enrollments 2006

	Frequency	*Percent*	*Valid Percent Common Unit Group*
Withdrew CU before Census Date	264	17.6	23.9
Failed Unit	220	14.7	19.9
Passed Unit	619	41.3	56.1
Total Common Unit (CUC100 and 106)	**1103**	**73.6**	**100**
Credit Transfer	**396**	**26.4**	
Missing	22		
	1499	100	

[6] The aggregation to the student level across years produced a small number of cases (32) who fell in both Credit Transfer and Common Unit categories for the definitional year (200). The great proportion of these (29 or 90.6%), however, were students who withdrew before the Census Date.

For the purposes of hypothesis-testing, relevant data (e.g. socio-demographic, Basis of Admission, Common Unit results for the units CUC100 and CUC106 only) were aggregated at the student level using SPSS V.16.0 (n=1495). This file was then merged with the student-based records of the second sheet (Part Bb). Since Basis of Admission and Course Title data are non-numeric in the first worksheet, their string values were converted to dummy variables (e.g. scored "traditional" =1 while "Non-Traditional"=0. Grade Point Average is a mean taken for each year on the same scale of result awarded (1=Fail; 2=Pass Conceded; 3=Pass; 4=Credit; 5=Distinction; 6=High Distinction).

4.3.2 Estimating program effects: statistical methods

The first three hypotheses were tested using a combination of t-tests and "error bar" graphs for comparison of means of the dependent variables: Course Withdrawal or GPA for years 2006-9). The bars on these graphs represent the Confidence Interval of these two mean values. Since each bar represents, within a 95% level of probability, the upper and lower values where the mean for each of these two outcomes may lie, we may be confident that, in the absence of 'overlap' between a pair of bars, that those two groups are drawn from two different populations.

For testing the fourth hypothesis, which includes a number of covariate effects, multivariate approaches (GLM univariate Analysis of Variance) were employed in which "dosage" or "treatment/participation" levels were treated as fixed effects and student characteristics (background and situation) were treated as covariates (see Appendix B for a visual illustration of an analysis of variance approach with more than one predictor).

While this aggregated and merged data set formed the main resource for the hypothesis testing, the first data sheet (Part Ba) provided the only means at some stages for estimating the "global" effect of categorical variables such as Basis of Admission (i.e. as "random" variables in mixed effect Analysis of Variance models). The task ahead, then, is to employ these multivariate methods in an attempt to explain the observed relationships among student background, student career and outcomes displayed in Table 4.1.

4.4 Findings and discussion

Hypothesis 1: the "dosage/participation level" effect

"Students who have successfully completed an Academic Skills Common Unit in 2006 will have lower rates of attrition and higher average grades over the years 2006-9 than those who have either Withdrawn from, or Failed (i.e. Failed to Attend) that unit."

To test this hypothesis, error bars showing the 95% level of confidence for the upper and lower bounds of estimated mean values Course Withdrawal (2006-August 2009) and Grade Point Average in 2006 over three levels of participation in an Academic Skills Common Unit in 2006 (enrolled but withdrew before census date, remained enrolled but Failed or, more usually, Failed to Attend the unit, Passed the unit).

This method displays the degree of separation of "overlap" between the estimated mean values for each outcome for each mode of participation in the Program (Figs. 4.2 and 4.3).

Figs. 4.2 and 4.3 indicate that: (a) the first hypothesis is supported in that the differential rate of survival and success between the students who have passed a Common Unit and those who have either Failed or withdrawn early from that unit is statistically significant; (b) the hypothesis, however, is not supported in the case of the different levels of the two "modes of Program participation", in that the early unit withdrawal group has a lower (rather than a higher, as predicted) rate of course withdrawal over the three and half years of enrollment. This is perhaps to be expected, since Early Withdrawal may reflect Recognition of Prior Learning (RPL) or Credit Transfer, with the likelihood that a high percentage of this group would perform well in terms of retention and GPA.
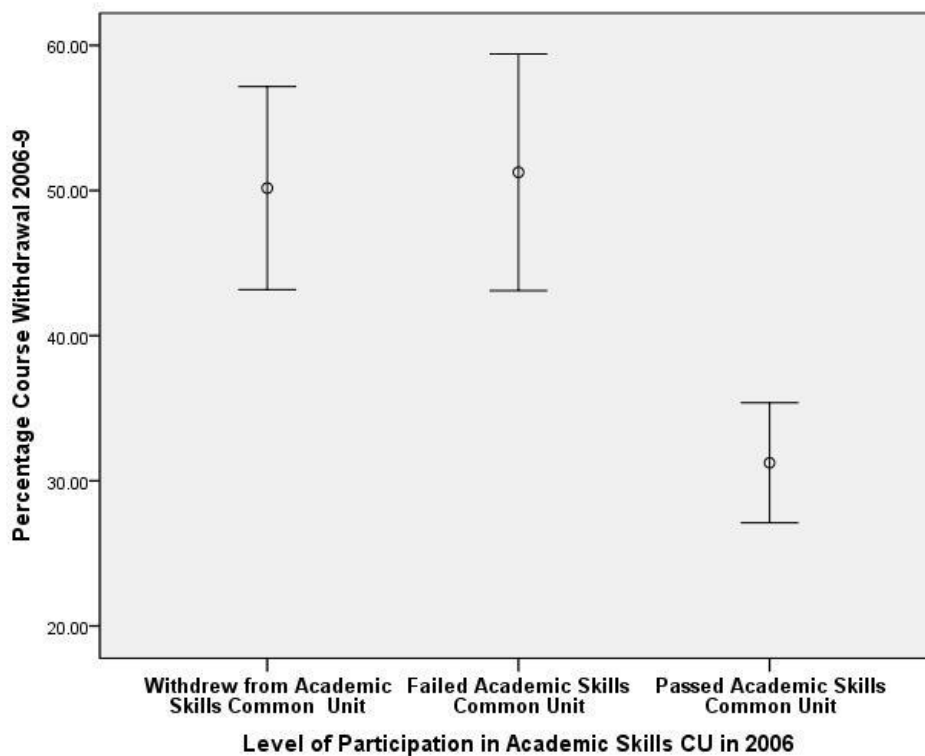

Figure 4.2: Error bar comparison of mean percentage course withdrawal by level of Common Unit participation (95% Confidence Interval for Mean)

The main point of interest in this comparison is the statistically significant 20%-26% 'gap' between those who persisted in, and passed the Common Unit and the other two groups. This pattern is repeated for Mean Grade Point Averages in the second year of enrollment (2007) which was higher than those for the other two groups. This difference was statistically significant when compared with that for the Failed unit group (a "gap" of more than two grades) but not when compared with the early unit withdrawal group (though the difference was just over a half a grade (p = .11[7)

[7]Based on a One-way ANOVA followed by a Bonferroni post hoc comparison of means

Again, it is important to note that a significant percentage of the withdrawal group were granted Credit Transfer.
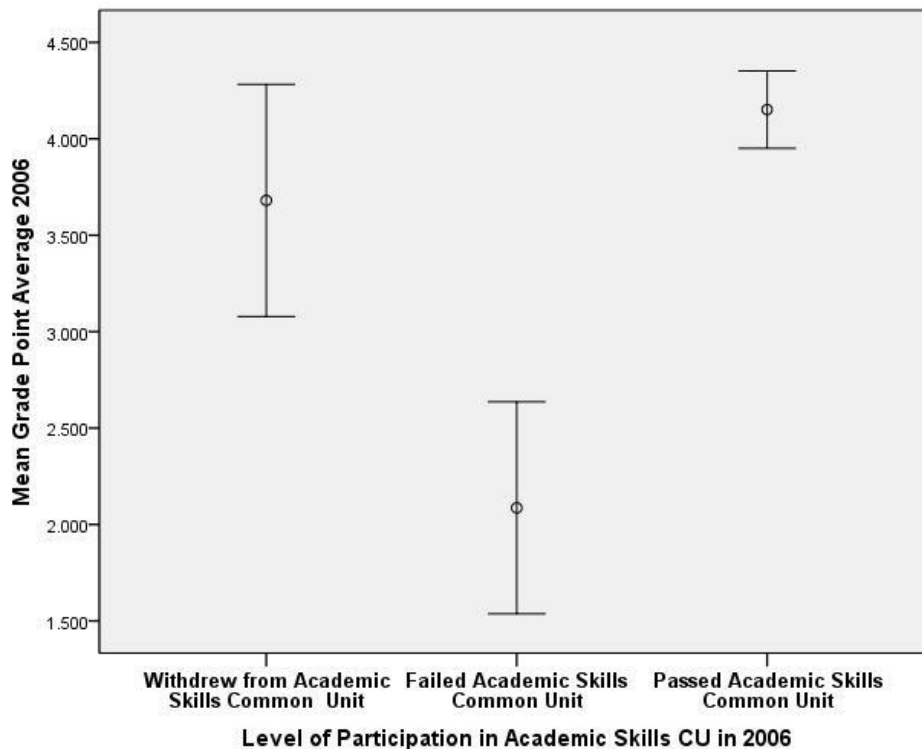

Figure 4.3: Error bar comparison of Mean Grade Point Average in 2007 by level of Common Unit participation (95% Confidence Interval for Mean)

Findings: Hypothesis 1 is substantially supported; students who Passed an Academic Skills Common Unit in 2006 had a 26% lower Course Withdrawal Rate than those who withdrew early from the Unit in that year and a 26% lower rate than those who Failed that unit. Furthermore, those who passed an Academic Skills unit had a statistically significantly higher GPA than those who Failed (or Failed to Attend) a Common Unit. While the difference was not significant for those who passed and those who withdrew, this can be partly explained by (a) the number of Credit Transfers represented in the withdrawal group (see Footnote 5); the indeterminate number of students who withdrew within the baseline year of 2006 but who may have taken an Academic Skills unit in later years (2007-9). As mentioned earlier, these possible confounding effects are problems for further research.

Comments: While this analysis shows a strong statistical association between level of participation in Academic Skills Common Unit and a student's course survival and academic performance, this link may be explained by other factors such as a student's background characteristics, including his or her basis of admission to a course. The following tests of the remaining hypotheses will "unpack" this first level of association between Common Unit participation and student survival and performance in greater explanatory detail in the following section.

Hypothesis 2: "drilling down" by admission category – who benefits?

"Students with backgrounds indicating a "Non-Traditional" Basis of Course admission (BOA) will show relatively higher levels of "gain" in retention and in academic performance from successfully completing an Academic Skills Common Units than those from other admission categories".

This test compared the rates of Course Withdrawal and Grade Point Average of students who came into their course through "Non-Traditional" backgrounds (n=378) such as a VET qualification, Foundation Studies, Tertiary Entry Program and "Other" (undefined) backgrounds (n=693) with those from all other admission categories according to their level of "dosage" or participation in an Academic Skills Common Unit.

Findings: Fig. 4.4 and Fig. 4.5 provide contrasting evidence for the effect of Common Unit participation. On the one hand, Course Withdrawal Rates for students who completed an Academic Skills Common Unit (Fig. 4.4) are significantly lower for the "Non-Traditional" group. On the other, there appears to be no significant difference between the levels of academic performance for this group. This is predictable given the academic disadvantage associated with this demographic. Further, it confirms the Common Units meet their objective of leveling the playing field for the students by assisting them to perform at the same level as their counterparts. In summary, it appears that the effect of Common Unit participation is to retain students in their parent courses, and assist students who may have otherwise performed at a lower level, achieve comparable grades to other groups.
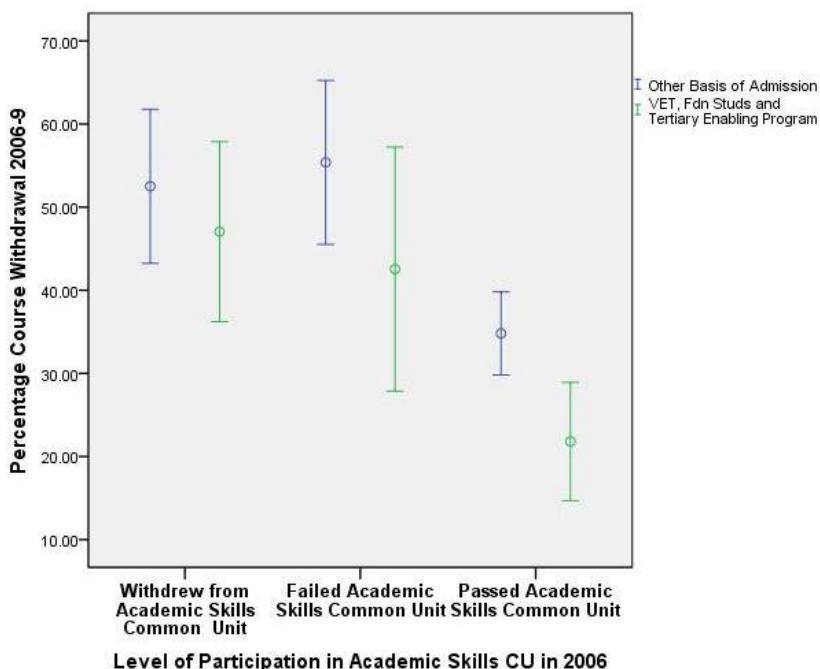

Figure 4.4: Error bar comparison of percentage course withdrawals Non-Traditional and Traditional Basis of Admission (BOA) by level of Common Unit participation (95% Confidence Interval for Mean)
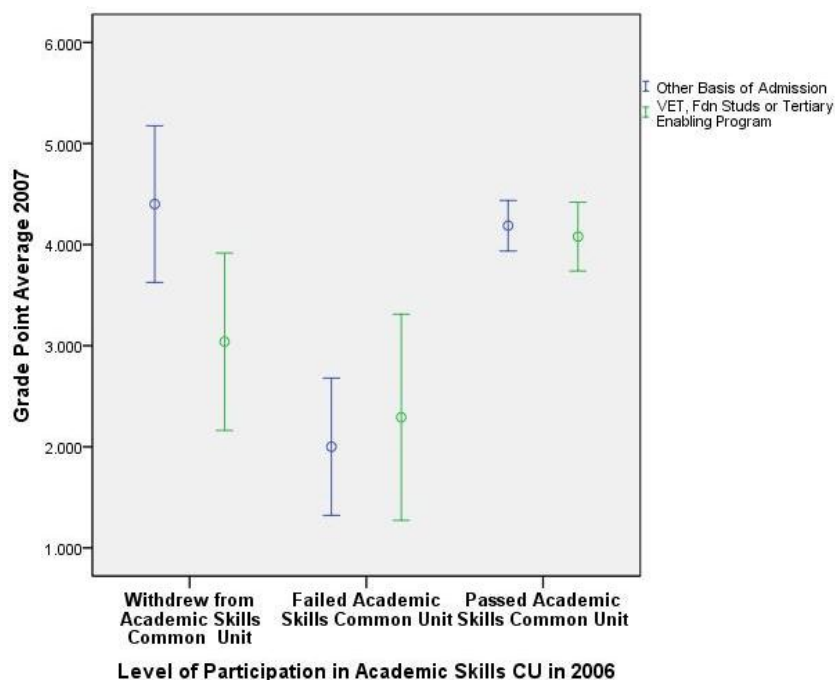
Figure 4.5: Error bar comparison of Grade Point Average in 2007 Non-Traditional and Traditional Basis of Admission (BOA) by level of Common Unit participation (95% Confidence Interval for Mean)

Comments: While the lower rate in Fig. 4.4 of Course Withdrawal for "Non-Traditional" admissions may be a result of VET students effectively entering a second year of the parent course on the basis of prior achievement, this advantage seems to be confined to those students who have Passed an Academic Skills Common Unit. Any effect of a BOA category on student outcomes will need to be further explored after the differences in student Age, Gender and Background are 'held constant' in a multivariate model (see following section and Appendix B).

Hypothesis 3: exploring the effects of student background

"Any measurable differences attributable to effect of successful completion of an Academic Skills Common Unit will be partly explained by the effects of individual student background (Age, Gender, NESB) and student situation (Part-Time Status) characteristics".

In this model (tested with SPSS Univariate General Model), the effect of Academic Skills Common Unit participation is estimated while a range of student characteristics are "held constant" (see Appendix B). The point of contrast is between students who have passed a Common Unit in 2006 vs. those who have Withdrawn, rather than against those who have Failed. This is a much more specific test, given the generally poor academic performance of those who have Failed (Fig. 4.2). *Effects with statistical significance $p <= .05$ are in bold type; noteworthy effects ($p <= .1$) are in italics.

Table 4.2: Predicting course withdrawal 2006-9 and Grade Point Average 2006 parameter estimates* of effect of Common Unit participation and student background

Parameter	Withdrew from Course 2006-9				Grade Point Average 2007			
	B	Std. Error	T	Sig.	B	Std. Error	T	Sig.
Intercept	0.52	0.08	6.82	0.00	2.76	0.42	6.55	0.00
Male	0.00	0.04	-0.04	0.97	*-0.35*	*0.19*	*-1.82*	*0.07*
Age	**-0.01**	**0.00**	**-3.69**	**0.00**	**0.04**	**0.01**	**3.91**	**0.00**
Part-Time Status	**0.11**	**0.04**	**3.12**	**0.00**	-0.30	0.19	-1.63	0.11
Indigenous Status	-0.03	0.10	-0.31	0.76	**-1.61**	**0.51**	**-3.15**	**0.00**
Overseas Citizenship	-0.06	0.08	-0.69	0.49	0.26	0.40	0.65	0.51
NESB	0.06	0.05	1.14	0.25	*-0.44*	*0.26*	*-1.69*	*0.09*
NT Residence	**0.09**	**0.04**	**2.63**	**0.01**	*0.30*	*0.18*	*1.66*	*0.10*
Passed vs Withdrew Common Unit	**-0.14**	**0.04**	**-3.21**	**0.00**	*0.48*	*0.25*	*1.90*	*0.06*

Overall, the effect of passing an Academic Skills Common Unit versus an Early Withdrawal from that unit retains its predictive power after adjustment has been made for a range of student background factors. This contrast exhibits statistical significance at a high level of confidence (p <.0001) for prediction of Withdrawal Rate, while it just exceeds the statistical level for GPA in the following year (p<.06) with an average grade improvement of about a half a result awarded (.48) over those who withdrew from the Common Unit.

Findings: As hypothesised, student demographics exert an independent effect on these outcomes. Age has a negative effect on course withdrawal and a positive effect on GPA, while Part-Time Status increases the probability of course withdrawal. Indigenous Status, Male Gender and NESB have negative effects on GPA (Indigenous Status by far the most powerful, reducing the GPA by 1.6 grades). Age overall is the most consistently "beneficial" effect, though its substantive effect on GPA is relatively small. Most significantly, after Age, ***passing a Common Unit was found to be the second most important effect on course retention, and the third most important for GPA.***

Comments: While these effects are interesting and positive indicators of the usefulness of common units , neither model has a great collective predictive power (about 5% of variance of adjusted R-sq), though this parametric method tends to underestimate the effect of binary variables. More analyses with logistic regression and perhaps a survival analysis model would perhaps yield more detailed results for the purposes of strategic planning.

Hypothesis 4: timing and course withdrawal: the "persistence" effect

 "*Due to the "persistence" effect, average time to Course Withdrawal will be associated with different levels of participation in an Academic Skills Common Unit".*

Do the effects of both Common Unit participation and student background vary across the years of course enrollment?
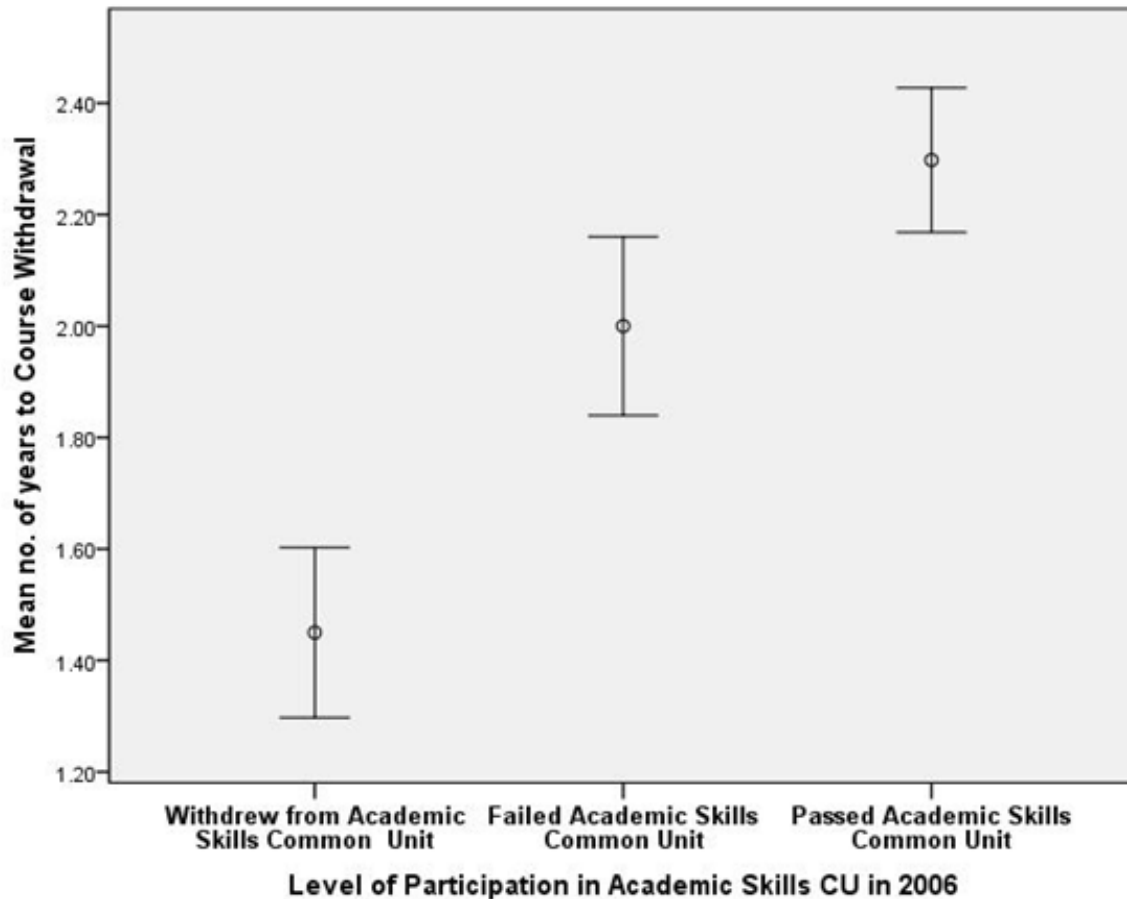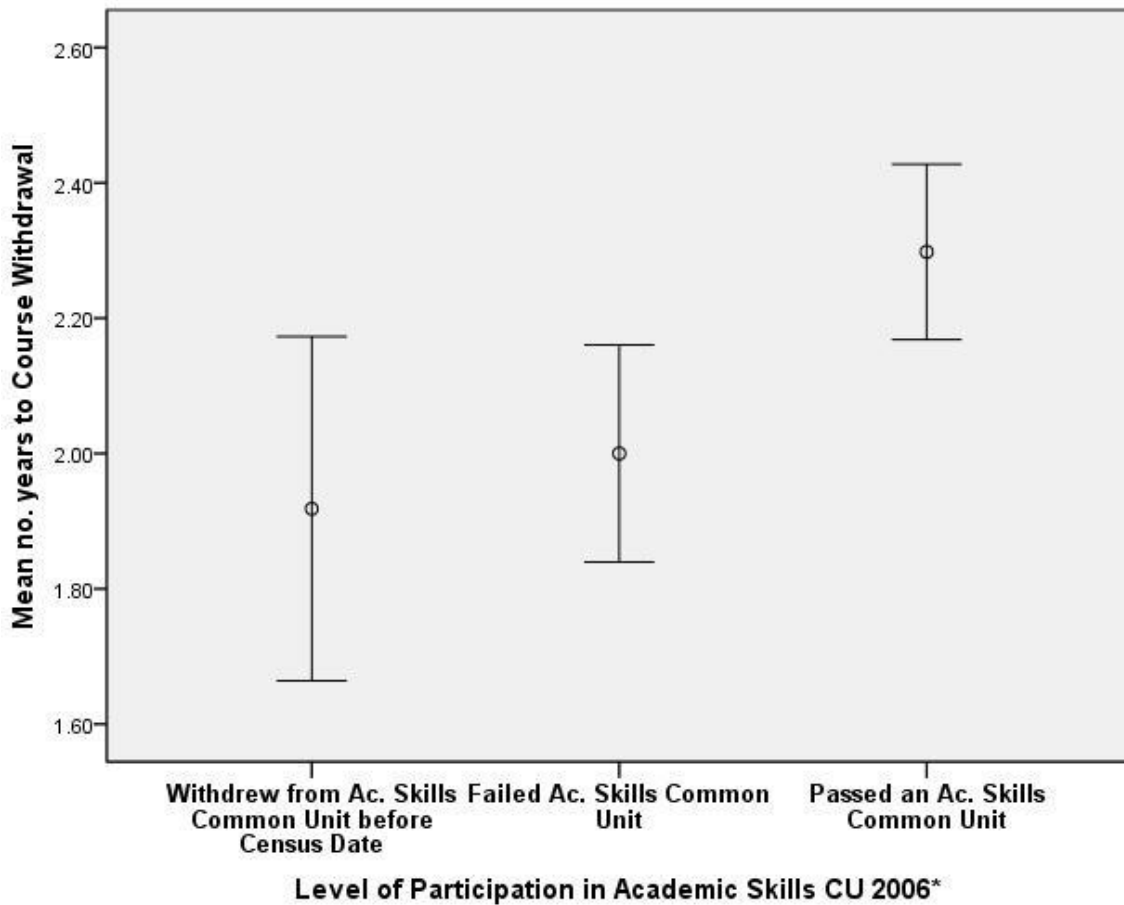

Figure 4.6: Error bar comparison of "persistence" in course by levels of participation mean time (in years) to course withdrawal (95% confidence interval)

If we were to measure "persistence" by the average time (in years) from base year to Course Withdrawal for the subsample of Common Unit enrolled students who withdrew from their courses over the four years of observation (n=323), then it is clear that there is a linear trend for each level of exposure the Common Units (Fig. 4.6). Though this pattern indicates a positive association between success in the Common Unit and a tendency to "persist" in a chosen course, it should be treated with caution.

Among the number of background factors that may be associated with participation in the Common Units is the "confounding" effect of joint withdrawal discussed above, when some students (n=62) withdrew from an Academic Skills Common Unit in 2006 within a week of withdrawal from the parent course. If these 62 cases are excluded from the full number of course withdrawals (n= 402), then the comparisons may produce a more balanced estimate of the "persistence" effect of Common Unit participation (Fig. 4.7).

*Excluding 62 cases of joint withdrawal from both Common Unit and Parent Course in 2006

Figure 4.7: Error bar comparison of "persistence" in course by levels of participation mean time (in years) to course withdrawal (restricted sample*) (95% confidence interval)

The effect of excluding the possibly "confounding" effects of the cases of joint withdrawal has produced a near-equality of the "persistence" outcome for the Early Withdrawals and the "Failed Common Unit" groups. However, the "gap" between these and the group that has Passed an Academic Skills Common Unit is still significant, at about 4 months (i.e. at just over a third of a year). This is a significant finding in itself, though it perhaps needs to be moderated by the small, though still significant effect of student characteristics and situation explored earlier.

Findings: There is clear evidence of a linear relationship between levels of participation in an Academic Skills Common Unit and persistence in Course enrollment.

Comments: This relationship should be treated with some caution, since there may be a range of unmeasured factors for which participation in the Common Units may be merely a proxy.

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The exclusion of the number of "joint withdrawals" from both a Common Unit and parent course in the base year of 2006 indicates how this kind of confounding effect may be approached. In this instance at least, after exclusion of these cases, persistence rates for those students who had Passed an Academic Skills Common Unit were still statistically superior to those for the other two groups.

The question remains, then, as to whether "persistence" may be due to the effect of participation in the Common Units, rather than a more complex factor in which Common Unit success may be only one component. Since the direction of causality in the case of the "joint withdrawals" is particularly difficult to model, a fuller explanation of the average time to course withdrawal deserves further analysis, supported perhaps by evidence arising from the qualitative sections. Further exploration of the complex of factors that may constitute "persistence" in course enrollment is therefore strongly recommended.

Hypothesis 5: "Closing the gap?" – Credit Transfers and Common Units compared

As argued in Section 1, it is important that any comparison of the outcomes between the Common Unit and Credit Transfer groups be carried out under the principle of comparing "like with like". However, since the skills of the students in the Credit Transfer group are by definition recognised as the equivalent of the standard required of at least a passing grade in an Academic Skills Common Unit, this equivalence may form the basis of a valid point of comparison and investigation. There are two questions under which this comparison might be conducted:

Rates of courses withdrawal and in Grade Point Average between students who have passed an Academic Skills Common Unit will be similar to those who were granted a Credit Transfer in 2006.

(a) *Differences in student outcomes (Course Withdrawals and average GPA) between those students who have been granted a Credit Transfer and those who passed/participated in an Academic Skills Common Unit will tend to decline over the later years of course enrollment.*

(b) *Differences in rates of Course Withdrawal will benefit "Non-Traditional" course entrants (e.g. VET BOAS) over those from "Traditional" entrant categories.*

The following tables 4.3 and 4.4 compare the two main outcomes between the Credit Transfer group and those for each of the levels of participation ("dosage") in the Common Unit Program in 2006.

Table 4.3: Comparison of counts and percentages of course withdrawals 2006-9 Credit Transfer and participation levels in an Academic Skills Common Unit

Persistence or Withdrawal	*Credit Transfer*	*Withdrew Unit before Census Date*	*Failed Common Unit (Failed to Attend)*	*Passed an Academic Skills Common Unit*	*Total*
Did not withdraw from Course 2006-9	301	112	99	433	945
	72.50%	47.70%	45.20%	70.20%	63.60%
Withdrew from Course 2006-9	**114**	123	120	**184**	541
	27.50%	52.30%	54.80%	**29.80%**	36.40%
Total	**415**	**235**	**219**	**617**	**1486**
	100.00%	**100.00%**	**100.00%**	**100.00%**	**100.00%**

Table 4.4: Comparison annual Mean GPA 2006-2008 (2009 not available) Credit Transfer and level of Academic Skills Common Unit participation

Year of Course	*Credit Transfer*	*Withdrew Unit before Census Date*	*Failed Common Unit (Failed to Attend)*	*Passed an Ac. Skills Common Unit*
	Mean	Mean	Mean	Mean
2006	4.32	2.29	0.74	4.51
2007	4.48	3.46	1.95	4.13
2008	4.55	3.81	2.60	4.40

The comparisons over the years 2006-2009 for course withdrawal and for year 2006-8 for mean GPS support the hypothesis of similarity in these two outcomes between students who Passed an Academic Skills Common Unit and those granted a Credit Transfer (both in 2006). While the overall rates of Course Withdrawal for the former is a few percent greater than those for the latter (29.8% vs. 27.5%), the difference is not significant (p=.44 in an independent means *t* test).

In the instance of the GPAs, it is the Common Unit group that has a slight though non-significant advantage, though the "gap" in the following year does significantly advantage the Credit Transfer group by about thirty percent of a full grade. While these results show an overall similarity, they do not allow the researcher to identify the incidence of withdrawals over the four years. In what years, for example, might there be a greater concentration of Course Withdrawal for the Common Unit as against the Credit Transfer groups. The annualised breakdowns of rates for the course withdrawal sample are shown in Table 4.5.

Table 4.5: Comparison of composition of annual course withdrawals 2006-9: participation level in academic skill Common Unit vs. Credit Transfer

Year of Course Withdrawal	Credit Transfer	Withdrew before Census Date	Failed Unit (Failed to Attend)	Passed Ac. Skills CU	Total
2006	40	83	25	27	**175**
	41.70%	67.50%	20.80%	14.80%	**33.60%**
2007	33	25	79	97	**234**
	34.40%	20.30%	65.80%	53.30%	**44.90%**
2008	12	13	13	42	**80**
	12.50%	10.60%	10.80%	23.10%	**15.40%**
2009	11	2	3	16	**32**
	11.50%	1.60%	2.50%	8.80%	**6.10%**
	96	**123**	**120**	**182**	**521**
Total	**100.00%**	**100.00%**	**100.00%**	**100.00%**	**100.00%**

Comparison between the distributions of Withdrawal Rates (inflow table 4.5) broken down across the four years between Credit Transfer and Passed Common Unit groups reveals a large disparity (by a factor of three) in the first year between the low rate (14.8%) of Course Withdrawal for students who Passed an Academic Skills Common Unit (14.8%) and the Credit Transfer group (41%). This disparity is to some extent reversed in the second year of observation (2007), however, where the bulk of withdrawals for the Passed Common Unit group tend to be concentrated (53% vs. 33% for Credit Transfers).

On the whole, the pattern of Course Withdrawals for students who Passed an Academic Skills Common Unit shows a more gradual loss, with the inference of a higher rate of retention in the first year and a much higher rate of delay.

Comments: Comparison of Credit Transfer and the "Passed Common Unit" groups illustrates the support for the hypothesis of comparability in two key student outcomes over the four years of observation. Not only are rates of Courses Withdrawal almost identical, an annualised breakdown shows that those students who passed a Common Unit have a much lower rate of withdrawal in their first year, but that their overall retention rate tends to be subject to greater delay, with about a quarter (as against 10%) withdrawing in the third year of observation. Of some concern here is the evidence of poor performance on both counts of the Failed Common Unit group, over half (55%) of whom withdrew from their parent course in the period, and whose average grades fall to the lower passing levels. It is important to note, however, that the comparability of outcomes takes into account the effect of "persistence" and other unknown factors involved in passing a Common Unit, but in this exploratory study are not estimated in the case of the Credit Transfer group.

Hypothesis 6: Common Unit success, Credit Transfer and Basis of Course Admission (BOA)

1) *Differences in outcomes between Credit Transfer and Common Unit groups will be associated with a student's Basis of Course Admission (BOA).*

2) *Students admitted through "Non-Traditional" BOAs who have Passed an Academic Skills Common Unit will show superior outcomes (lower Course Withdrawals and higher GPAs) to those who have been granted a Credit Transfer.*

In this section we investigate the variability within the two groups (Credit Transfers and Passed Common Unit) are necessarily disguised by the findings of broad comparability. This issue involves first a comparison of the outcomes of their relative success according to the student's Basis of Course Admission (BOA) and then a more detailed comparison of the effect of Common Unit participation versus Credit Transfer of one group of interest, students who have been admitted through "Non-Traditional" routes to their course degree. In other words, which students, on the basis of their Course Admission, seem to benefit most from participation in the Common Unit Program?   Figs. 4.8 and 4.9 show error bar comparisons of the differences in the rate of Course Withdrawal and the Mean Grade Point Average in the ensuing year (2007) between these two groups in order to "unpack" the gross differences tabulated in the previous subsection.
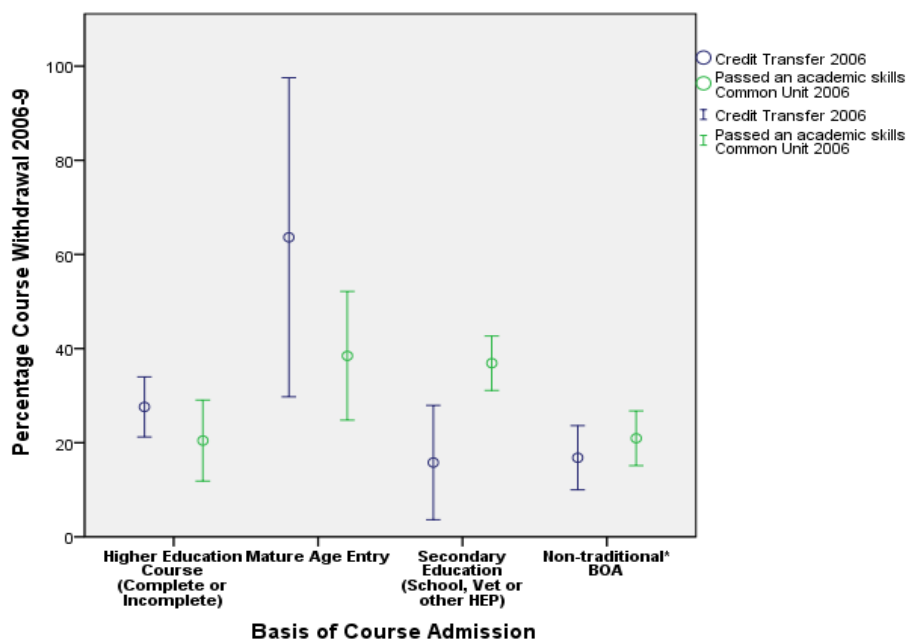

Figure 4.8: Comparison Withdrawal Rates: Credit Transfer and Passed Common Unit (all Academic Skills enrollments 2006-9) (Note: Non-Traditional is predominantly admissions through VET but also includes small numbers of students admitted through Tertiary Enabling and Foundation Studies programs).
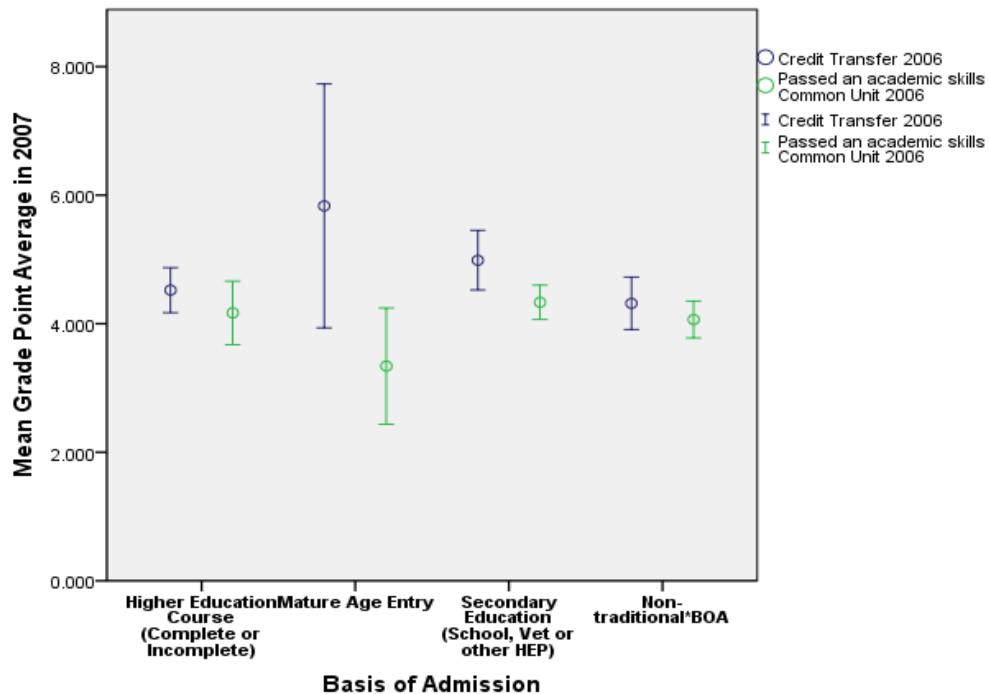
Figure 4.9: Comparison of Mean GPA: Credit Transfer and Passed Common Unit groups (all Academic Skills Common Unit enrollments 2006-9)

Findings: The error bar comparisons indicate a higher rate of course withdrawal and the lower Mean GPA for the Common Units group is concentrated within the Secondary Education (or equivalent) Basis of Admission. All of the other BOA groups show no significant difference, with the exception of mature age entry which shows a small, but not significantly different, lower rate of withdrawal.

Comments: The Secondary Education BOA group constitutes almost a third (446 out of 1577), See Appendix A) of the total enrollments for all the Academic Skills Common Units (including those granted a Credit Transfer). The statistically significant higher performance of those who were exempt from Common Units is predictable, as the relatively small numbers of students from this group who gain Credit Transfer (3%) are high achieving students who have completed the International Baccalaureate and thus would be expected to gain a high GPA from the outset.

An analysis of VET BOA over three years indicates an effect from Common Units in leveling the playing field for VET students who were not eligible for Credit Transfer. In this investigation, we imposed the most rigorous test by including all VET enrollments, including those who may have either Withdrawn of Failed (or Failed to Attend) a skills Common Unit. To test our hypothesis that the effect of Common Units on VET groups might only be felt by those enrolled in courses requiring a strong academic reading and writing component (high literacy demand) VET groups were categorised into high and low literacy course enrolments.

Low literacy demand courses (IT, Science, Accounting) are those that tend to focus on practical skills and assessment in the first two years and analytical reading and writing skills in the third. Additionally, it was recognised that VET feeder students who are not automatically exempt from completing Common Units are those enrolling in the Bachelor of Nursing and Bachelor of Education. Both courses have relatively high literacy demands from year one (i.e. 2006). This analysis of the VET group over three years of study was limited by the reduction in the numbers of the original cohort by the third year. This effect appears to result from the third year having such a wide spread of outcomes that it prohibits definitive conclusions. Despite this, the predictable patterns are evident i.e. for those in high literacy courses who had to complete Common Units the effects for leveling the playing field are evident (see Fig. 4.10 and Fig. 4.12).

For those in low literacy courses the disadvantage of not doing a Common Unit is registered in the third year when the literacy demands in the course "kick in". While the GPA of those VET students who completed Common Units steadily increases over time, those VET students who were exempt from the unit, experience a decline in average GPA.
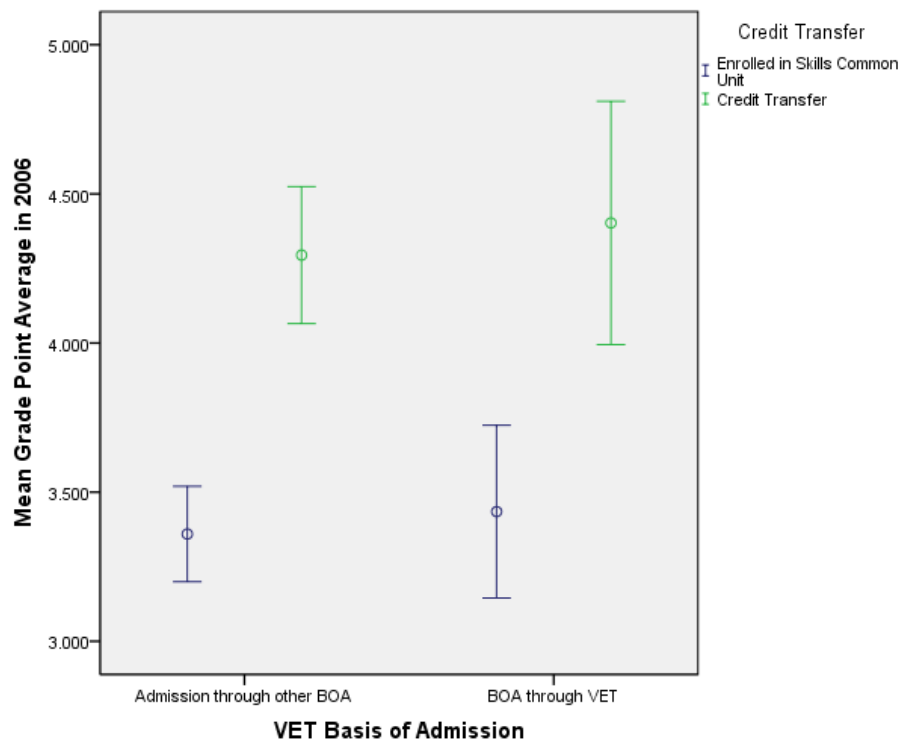

Figure 4.10 VET BOA by Common Unit/ Credit Transfer error bar comparisons for GPAs 2006
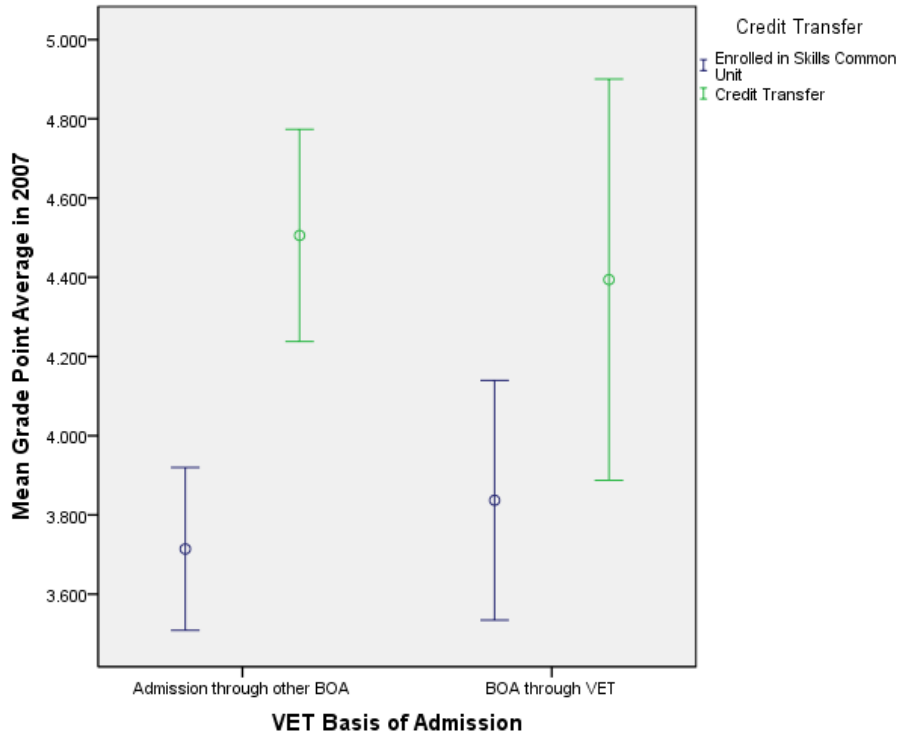
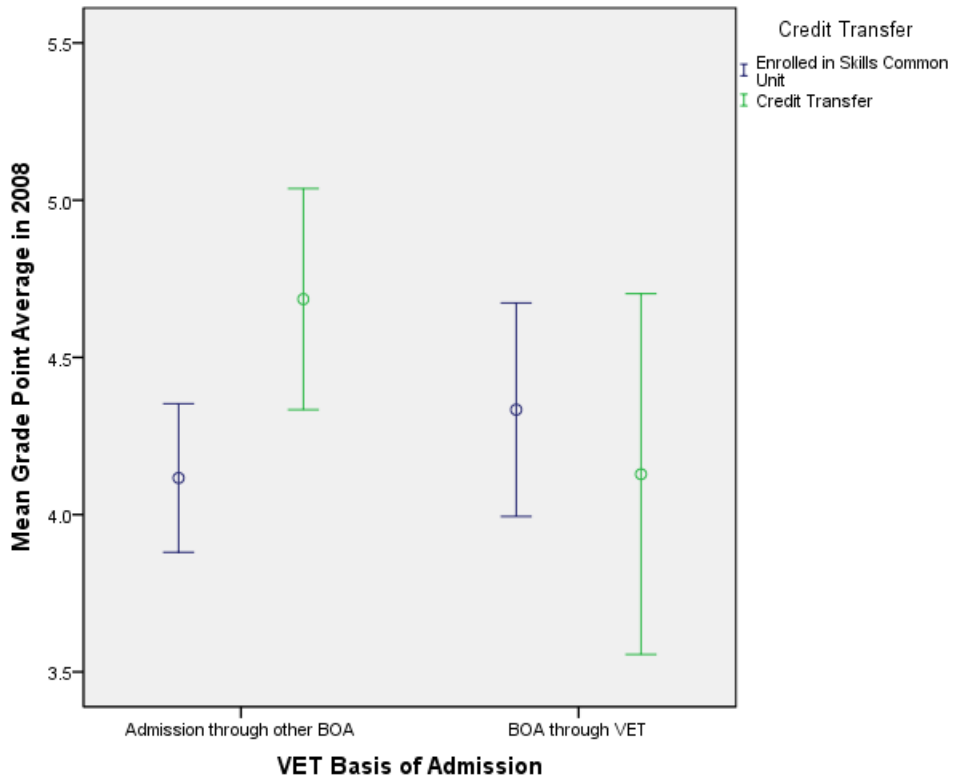**Figure 4.11: VET BOA / Common Unit or Credit Transfer error bar comparisons for GPAs 2007**

Figure 4.12: VET BOA / CU or CT error bar comparisons for GPAs 2008

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4.5 Conclusion

In summary, this component of our investigation has succeeded in establishing a positive effect for Common Units on students' course retention and GPA. Importantly, results have indicated that the Common Units do achieve their aim of leveling the playing field for students from Non-Traditional backgrounds. However, the effects of individual student background (Age, Gender, NESB) and student situation (Part-Time Status) characteristics need to be factored in to calculations as variables which also influence student success.

5. STUDENT PERCEPTIONS

5.1 Overview/purpose

5.1.1 Background

During the development and ongoing improvement of the Common Units, student perceptions have, and continue to, play a significant role in our decisions about how the units should evolve to ensure their continued relevance and usefulness. The SELT process and accompanying questionnaires ensure the collation of semester based student feedback which is continually used to inform changes to the Common Unit curricula.

While this data is a very valuable source of information, and indeed from 2007-2009 the Common Unit SELT responses are on par with other CDU units, it is somewhat restricted in that it only surveys students who are actively enrolled in particular units. Further, the SELT surveys do not directly ask students whether students believe the learning objectives of units are met. Therefore, as part of the longitudinal study of retention and success and in order to assist our ongoing concern to ensure the continuing relevance and usefulness of the program, the research team felt that it was important to gain a broader understanding of undergraduate students' perceptions about the Common Units and the Academic Skills they encompass.

To this end, an online questionnaire was designed by the team to assess students' perceptions about whether the Common Units do indeed meet their aims in preparing students for successful academic study. In addition, the student perception survey was designed to further investigate some of the findings of the independent "Review of the CU program" at CDU by Baldwin (2008:7) and to probe the findings from Part B of the retention and success project.

5.1.2 Aims

This research component of the project aims to triangulate the quantitative data by correlating the withdrawal and success patterns with student perceptions of the usefulness of the Common Units, to confirm that measures of success as a result of Common Unit exposure are matched with perceptions of success because of the completion of Common Units. The survey focused specifically on the Academic Skills Common Units as the skills they impart are more tangible than those in CUC107 the content oriented unit. The quantitative section in Part

B examined the effects of the Common Units (Academic Skills) on students' overall grades and Withdrawal Rates. Thus, by surveying students about whether they perceived the Common Units as an important part of their success and retention in their course we hoped that the students' views would mirror our findings about the effect of the Common Units on success in Part B. The background issues, methodology, results and discussion will be presented to explicate this component of the project below.

5.1.3 Research questions

For the qualitative section of the project, the research team was interested in finding out:

(1) What proportion of students believe that discrete Academic Skills units are necessary for success at university?

(2) Which Academic Skills did students think were the most important?

(3) Which skills if any did they have when they began university?

5.2 Method

5.2.1 Participants

One thousand, two hundred and sixty four undergraduate students were invited to participate in an online survey. Students were drawn via CDU's online student management system from all disciplines, courses and stages of study, and comprised both those who had successfully completed an Academic Skills Common Unit (n= 529) and those who had not (n=735). The latter group consisted of those students who had either received an exemption or Credit Transfer for CUC or had planned to complete the CUC units at a later date. Further, in order to obtain a diverse range, students were invited from both single and double degree courses who had achieved at least 120 and 160 credit points respectively.

Students were offered an incentive to participate. Those who completed the questionnaire were entered in a draw to win either an IPod, cinema tickets or a datastick. One hundred and eighty five students, approximately 15% of those originally invited, including 155 female and 30 male chose to participate in the online questionnaire.

5.2.2 Measures

On 31st March 2010, students were emailed a link to an online survey aimed at gauging their perceptions of the usefulness of Academic Skills Common Units. The survey consisted of a custom built questionnaire with 13 questions. The first seven questions established key demographic and background information and the remainder were designed to prepare and prompt students in order to provide answers to the key questions outlined in the introduction. The complete questionnaire is included in the appendix.

5.2.3 Analytical approach

The analysis specifically focused on those parts of the questions that were structured and closed and which lent themselves to quantitative analysis. Open comments were invited at the end of some of the structured questions (however these are not reported as part of this project). A mixture of Likert scale and closed nominal category response questions were used throughout.

Student's perceptions were also examined across Age and basis of admission. Generational groups were formed based on Oblinger and Oblinger's (2005:2.9) discussions regarding the net generation and other generational groups. Namely: generation z (18-25 years) n. 45, net gen (26-35 years) n. 48, gen x (36-45 years)n. 46, baby boomers(46-55 years) n. 41 and matures (over 55 years) n. 5.

Students were categorised into one of four mutually exclusive groups derived from their basis of admission data: Higher Education students, n. 47, mature age/professional study students n. 21, Non-Traditional students n. 63 and school leavers n. 50.

To ensure the sample was representative of the student population, the respondent sample was checked against whole selected population. As shown in Fig. 5.1, Fig. 5.2 and Fig. 5.3 below, similarities existed between respondents and the sample as a whole.
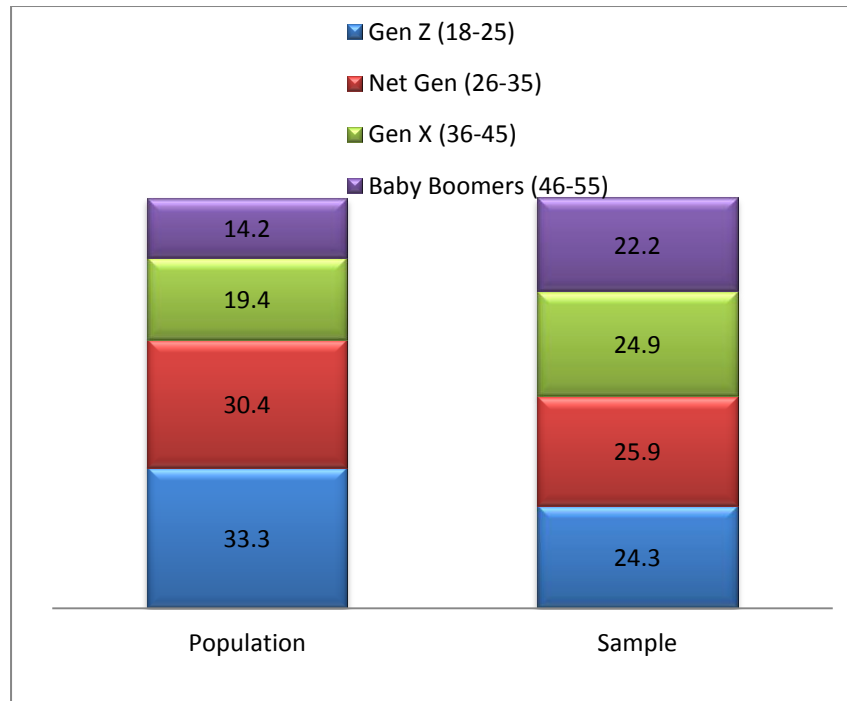

Figure 5.1: Comparison (%) by Age group of selected population and survey participants
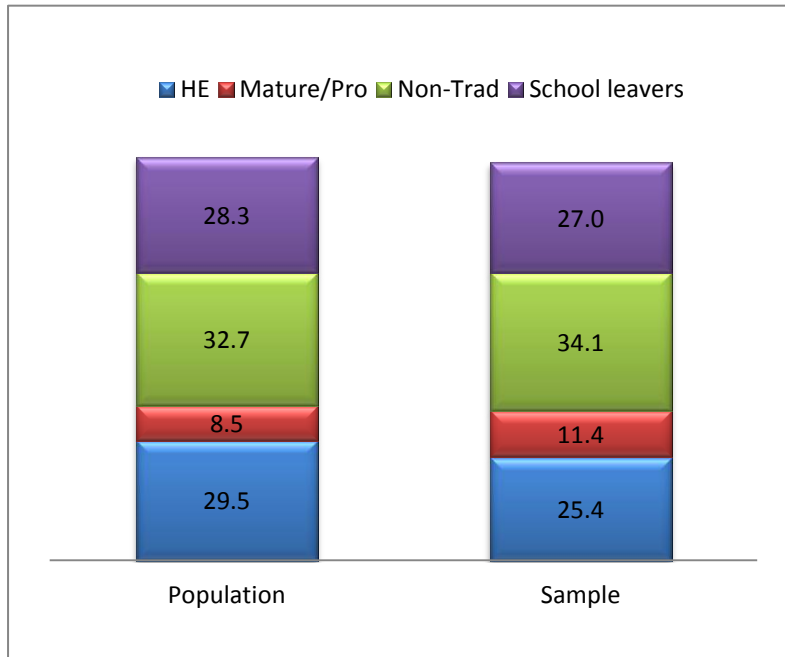
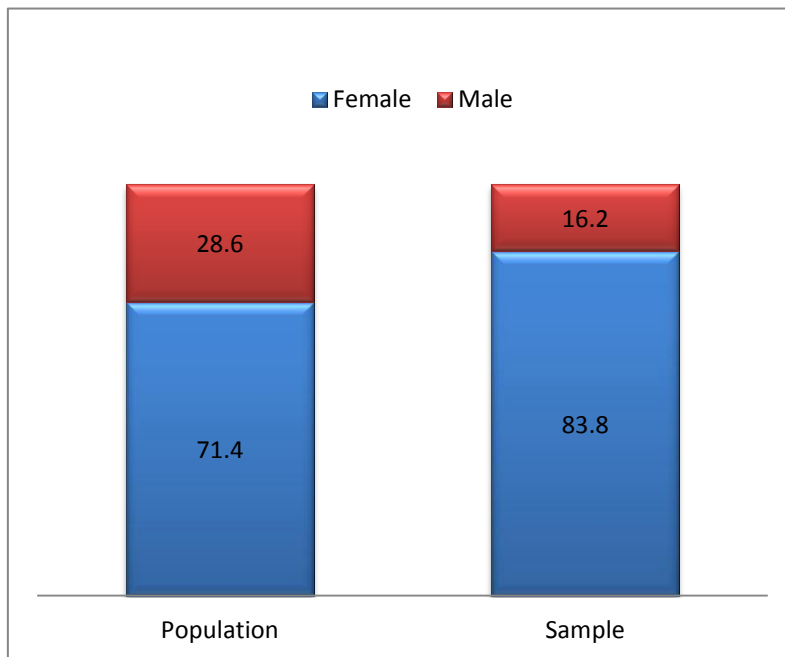**Figure 5.2: Comparison (%) by BOA of selected population and survey participants**

Figure 5.3: Comparison (%) by Gender of selected population and survey participants.

5.3 Findings and discussion

5.3.1 Findings and analysis in relation to key research questions

Key question 1: What proportion of students believe that discrete Academic Skills units are necessary for success at university?

The first key question explored the extent to which students perceived Academic Skill Units as important. This question was addressed with two independent measures. First, students who had completed one or more of the Academic Skills based Common Units were asked to report how important the CUC units have been in giving them the necessary skills to succeed in their course. It was found (as illustrated in Figure 5.4) that 73% of participants, both those who had completed an Academic Skills Common Unit and those who had not, thought that the inclusion of an Academic Skills unit was important for providing the necessary skills for success in university study.
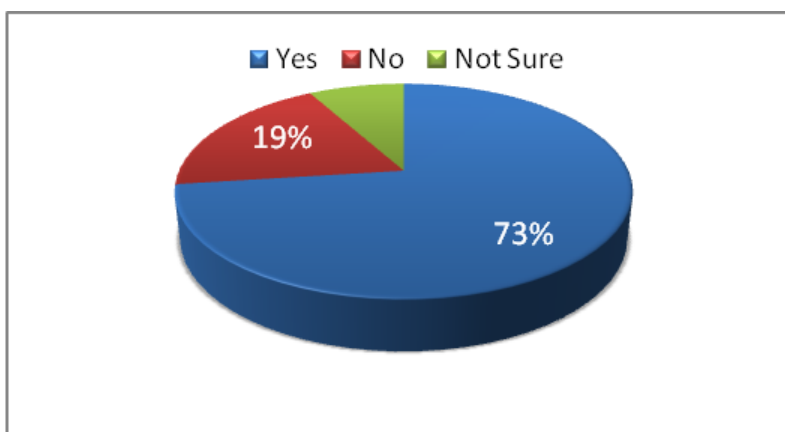

Figure 5.4: Perceived importance of Academic Skills unit.

We then sought to establish whether this level was stable across basis of admission. There was some variance in generational categories, however in all groups (as indicated in Fig. 5.5) more than 56% agreed on the importance of the units and over 80% of students over 26 years of age reported the importance of such a unit.
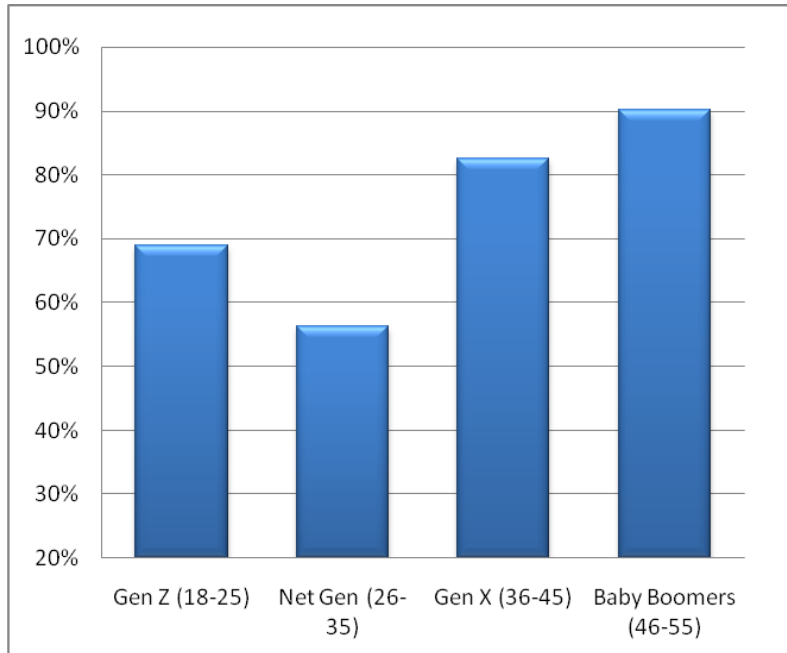
Figure 5.5: Percentage of students, by generation, who think it is a good idea to learn Academic Skills.

Finally, as indicated in Fig. 5.6, 85% of students indicated that they would prefer to undertake an Academic Skills Unit in their first year of study.
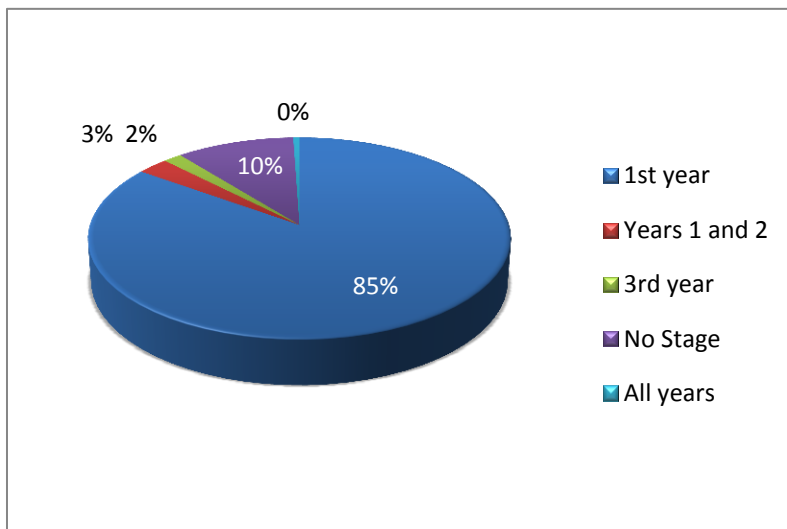

Figure 5.6: Year students prefer to undertake an Academic Skills based unit.

Key question 2: Which Academic Skills did students think were the most important?

Students were asked to consider a range of Academic Skills (research, referencing, reading for assignments, academic writing, critical thinking, computer skills, using Learnline, project management, oral presentations and group communication) and indicate the extent to which they considered each one important for achieving success at university.

In response to this survey question the first interesting finding was that despite the fact that the survey participants were diverse, 95% of students reported that they did appreciated the value of learning Academic Skills in general (researching, academic writing, referencing etc). This level of support was constant across basis of admission (90-96%) and whether or not students had completed a skills-based Common Unit (95-97%).
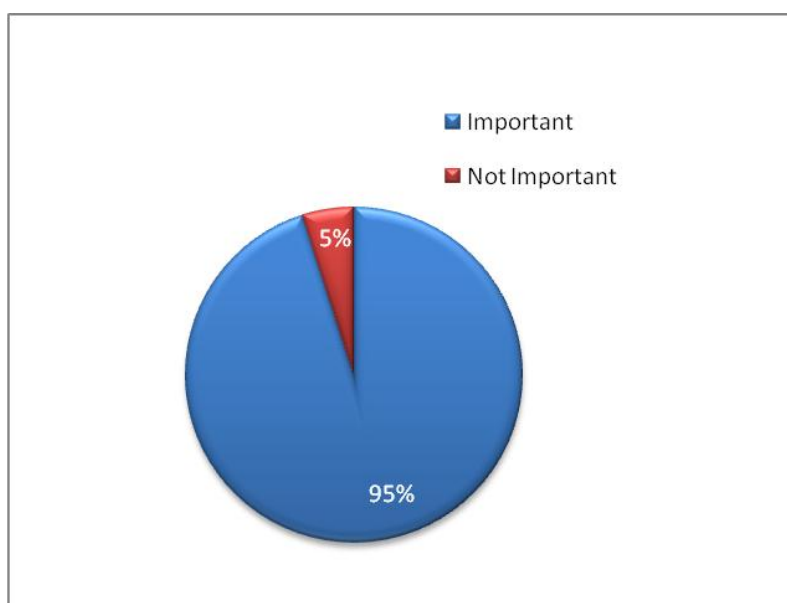

Figure 5.7: Proportion of students who considered it valuable to learn Academic Skills

Secondly, although students reported that all of the skills were important, the skills students perceived as the most important, in order of importance were: researching, referencing, academic writing, and critical thinking (see Fig. 5.8).
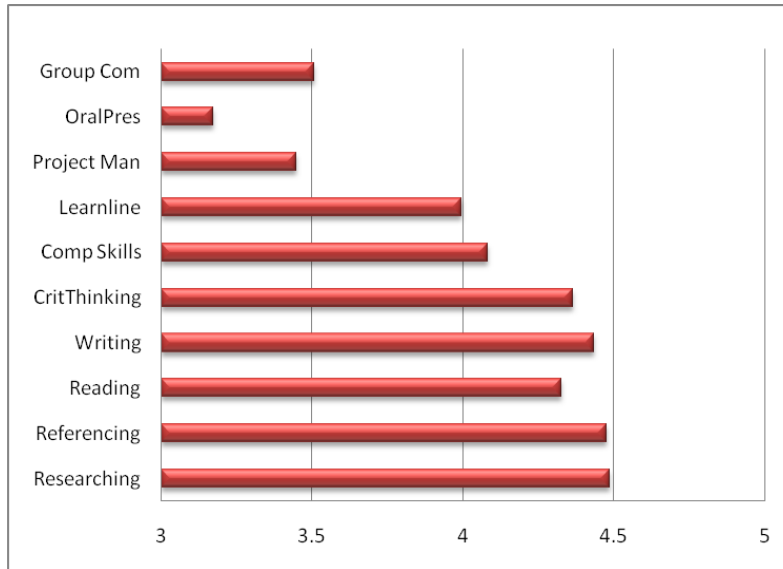
Figure 5.8 Relative importance of specific Academic Skills. (Note: Higher scores indicate greater perceived importance).

Key question 3: Which skills if any did they have when they began university?

Finally, the research team felt it was important to establish whether students perceived that they already possessed Academic Skills at the time of undertaking their university studies. Students were therefore asked to consider a range of Academic Skills shown in Fig. 5.8 and indicate which of these they felt they already possessed when they started university study.

As Fig. 5.9 indicates, over 80% of students reported that they have computing skills, yet conversely 80% do not have sufficient skills in the use of Learnline, CDU's Online Learning environment. More specifically, over 50 % of students reported that they possessed the following skills prior to undertaking their university studies: Computing, group communication, oral presentations, reading, critical thinking and writing. In contrast, the majority of students indicated they did not possess the Academic Skills of referencing, project management or Learnline (see Fig. 5.9).

Figure 5.9: Skills students believed they already possessed when they commenced their degree.
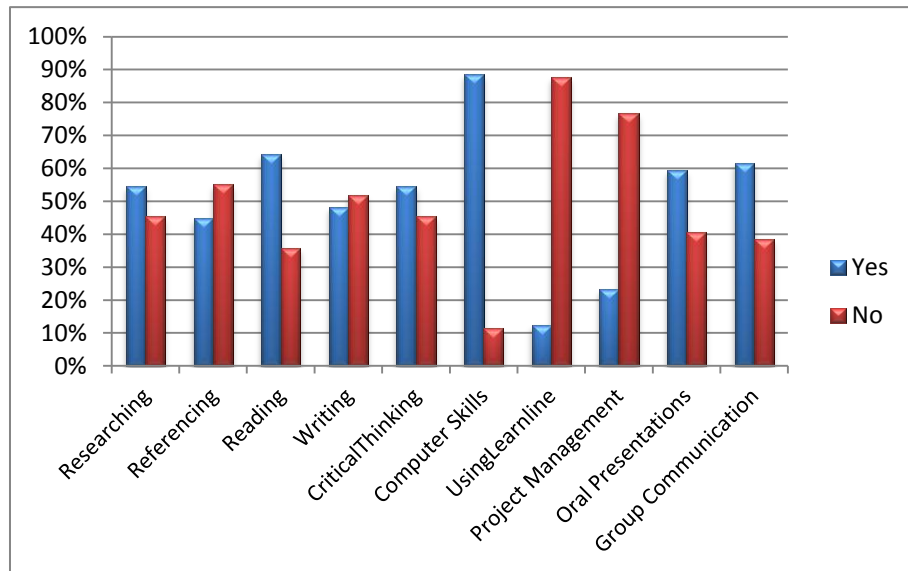
It should be noted that because the question is eliciting students subjective assessment of their skills, whether their real level of skill is relevant and appropriate for an academic context is unknown. For instance, students who felt they possessed reading skills may not be able to read for meaning or critically analyse an academic text.

5.3.2 Discussion

CDU uses a range of methods to enable students to give feedback on their experiences while studying. SELTS is the key tool used to gather feedback from students on individual units. Given this, the questionnaire used in this study does not attempt to evaluate how well the Academic Skills based Common Units are conceived or taught as this information is already gathered and available. Rather, this component of the project sought to establish which skills students believe will enable them to achieve success throughout their studies at university and whether they thought these skills should be taught in units discrete from their discipline specific units.

Perhaps not surprisingly, given their exposure to Academic Skills, over 60% of Higher Education students and school leavers indicated that they thought they already possessed the skills of researching, academic writing and reading for assignments. This was in contrast to the Mature Age Student group where less than 40% felt they had the skills. In response to a further question about the need for a separate Academic Skills based unit (survey question 10), a high percentage (up to 90%) of students Aged Over 36 years indicated that they thought it was a good idea; whereas less of the students (56-69%) Aged 35 Years or Under concurred. These views resonate with the anecdotes from Baldwin's (2008:7) study where some students felt that the Common Units were better suited to those "returning to study or those who had come to university through alternate pathways" and that they were not as relevant for school leavers.

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While there may be some validity to the claim that school leavers may already possess some of the requisite Academic Skills needed for success at university, the transition from school to undergraduate studies can be difficult and their expectations and perceptions regarding academic reading and writing can, and often do, differ from those of their university lecturers (Barker 1999:1). In addition, even in instances where students' basic writing and reading skills are adequately honed, there are many more academic genres to be mastered both at the outset and during the course of undergraduate study. Interestingly, the fact that GPA and retention rates for school leavers (Figures 4.9 and 4.10) are not significantly better than for mature age students suggests that school leavers may not be as prepared as they may think)

5.3.3 Qualifications/limitations

Students' perceptions need to be canvassed on an ongoing basis to keep abreast of changing perceptions as the nature of student populations and technologies evolve. Therefore, it is recommended that the instrument developed to measure students' perceptions of the Academic Skills Common Units continues to be administered each year. This will also help to determine whether they vary over time and/or remain consistent (albeit that the units undergo continuous development).

5.4 Conclusion

This section of the project aimed to correlate the withdrawal and success patterns with student perceptions regarding the usefulness of Academic Skills based units, the Common Units. The results of the survey suggest that the majority of CDU students regardless of age find Academic Skills units important for success. This is also consistent within the key findings from Part B where successful completion of a CUC unit predicts greater retention rate. All of the skills currently taught via Academic Skills based Common Units are regarded by students as important. Further, these findings are consistent with Baldwin's (2008:8) qualitative research, which included a limited number of student interviews and focus groups and found that "students were strongly of the view that the program was helping with preparation for university study".

6. CONCLUSIONS AND FURTHER CONSIDERATIONS

6.1 Summary of findings for all sections

A review of the literature has confirmed that contemporary universities are faced with exciting and challenging issues with regard to students' successful engagement and retention. While advances in communication have opened up universities as globalised technology-enabled spaces, and student communities have become increasingly diverse, issues of success and retention have in turn become an increasingly complex preoccupation for all universities.

Students' economic, social, cultural and academic backgrounds are all recognised factors which affect students' successful transition into the academy. Programs such as Common Units have the potential to ensure all students have greater access to success in the first year. By explicitly imparting the skills and access to the cultural capital required for university learning, the Common Units address the needs of students for successful academic and social integration. In so doing, the Common Unit Program positively affects students' ability to persist and succeed in their studies.

The first part of investigation examined the progress of student retention and success within the Common Units by tracking the relationships between student demographic and rates of retention and success in the program over a period of ten years. This investigation also tracked the development of the program (including content, structure and pedagogies) and the students' response to the Common Units through formal evaluation over the same period. A general pattern of stability and growth (including a doubling of enrollments) has been achieved. A steady increase in numbers of external and part-time students, as well as a significant restructuring of the program has all been noted, as has a steady improvement in student's success and retention in the three Common Units. Persistent lower Pass Rates for Indigenous enrolments (15-20% lower than the average) and for Males (6-10% lower than average), as well as high rates of Withdrawal Before Census Date for both External and Part-Time enrollments are a source of ongoing cause for concern and areas for further investigation.

The second component investigated the effect of Common Units on students overall success and identified a range of explanatory factors. Students who have successfully completed an Academic Skills Common Unit in 2006 showed lower rates of attrition and higher average grades over the years 2006-9 than those who had either withdrawn from, or Failed (and "Failed to Attend") that unit. However, it is conceded that other unexplored factors also determine students' persistence in their study, which in turn may impact on rates of retention and GPA levels.

Students from "Non-Traditional" (TEP or VET feeder course admissions) who successfully complete an Academic Skills Common Unit are enabled to achieve levels of retention and success that are on par with those of students from "Traditional" admission categories (school leavers, other higher education courses).

VET students who gained a Credit Transfer from Common Units perform better than those who did not in the first year and second (low literacy demand) years of course enrollment but gradually lose this advantage by the third (higher literacy demand) year where VET students who completed Common Units were found to achieve a higher GPA.

More generally, a comparison between the success of students who did Common Units and those who received a Credit Transfer showed a convergence in their respective rates of retention and achievement, despite the initial advantages of Credit Transfer students in terms of background status and admission category. Interestingly, course withdrawal was overall higher for school leavers and for mature age entry. These quantitative findings in terms of student GPA and retention have been further supported by findings from student surveys

which indicate strong support from students from all identified generational groups for the provision of specific Academic Skills units in the first year.

6.2 Questions for further research

Because of the complexity of variables in a study such as this a number of questions have arisen that may warrant investigation to further verify some of the findings in this study.

(1) What is the full profile of the Credit Transfer Group and how does it compare in student background, situation and Basis of Admission with those who participate in various levels of "dosage" of the Common Unit Program?

(2) How many of the Early Withdrawals from the Common Units in 2006 returned to the program in later years? What might have been the effect of this later return on their rates of withdrawal and Mean GPA, over the period 2006-9?

(3) What are the risk factors associated with the consistently underperforming "Failed (Academic Skills) Common Unit"?

(4) What are the strongest predictors of the "persisting students" in both the Credit Transfer and the Common Unit groups (using data mining techniques)?

(5) Why do Common Unit students coming from a Secondary Education background have a much higher rate of course withdrawal when compared with their peers who have been granted a Credit Transfer

(6) What are the characteristics of the "joint withdrawal" group who constitute about a half of all Course Withdrawals in the first year of enrolment?

(7) What are the implications of these findings for first year students for investigating the wider patterns of retention, completions and progression through the University?

(8) Are the two drivers of student retention[8] – vulnerability on the basis of background and situation and "persistence" to remain in the chosen course - independent dimensions or simply different expressions of a common underlying factor?

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[8] See L. Hagedorn (2005) "How to define retention; a new look at an old problem" . Center for Higher Education Policy and Analysis, Rossier School of Education, USC, Los Angeles CA.

BIBLIOGRAPHY

Agger, B. (1991) Critical Social theory post structualism Post modernism: Their sociological relevance, *Annual review of sociology*, 17, 105-131.

Altbach, P.G. (1998a) *Comparative higher education: Knowledge, the university, and development.* Greenwich, CT: Ablex.

Altbach, P.G. (2002) Knowledge and education as international commodities: The collapse of the common good. *International Higher Education*, *28*, 2–5.

ANTA (2003b) *Implementation Plan 2003: Australian Flexible Learning Framework for the National Vocational Education and Training System 2000-2004*, retrieved from http://flexiblelearning.net.au/aboutus/implementationplan2003.pdf

Baldwin, G (2008) *Review of the Common Units Program at Charles Darwin University*, Melbourne: Centre for the Study of Higher Education, University of Melbourne.

Barker, G (1999) *First year students' perceptions of writing difficulties in science: "I didn't expect it to be so different to school"*, Melbourne: Department of Communication, Language and Cultural Studies, Victoria University.

Baldwin, G., & McInnis, C. (2000) *Report on an evaluation of the Common Units at the Northern Territory University.* Melbourne: Centre for the Study of Higher Education, University of Melbourne.

Barthel, A. (1993) *Language Support and Cultural Issues.* In, Proceedings of the HERDSA National Conference 1993, University of NSW, Sydney, pp. 431-434.

Barthel, A. (2003) Language support and Cultural Issues. In G. Ryan, P. Little & I. Dunn (Eds.), *Selected Contributions: Higher Education and Research and Development Society of Australia*, Higher Education Research and Development Society of Australasia, NSW.

Bean, J. (1980) Dropouts and turnover: the synthesis and test of a causal model of student attrition. *Research in Higher Education* 12, 155-87.

Belcher, D & G. Braine (eds). (1995) Academic writing in a second language: Essays on research and pedagogy. Norwood N.J.: Ablex.

Benesch, S. (1993) ESL, ideology and the politics of pragmatism. *TESOL Quarterly 27*, 705-717.

Benesch, S. (1996) 'Needs analysis and curriculum development in EAP'. In TESOL Quarterly, 23. (421-445).

Benesch, S.(1999) 'Rights analysis: Studying power in an academic setting'. In English for Specific Purposes 18(4). (313-327)

Bernstein, B. (1986) On Pedagogic Discourse. In Richardson J.G. (Ed.), *Handbook of Theory and Research in the Sociology of Education*. Connecticut: Greenwood Press.

Bernstein, B. (1990) *The Structuring of Pedagogic Discourse: Vol IV Class, Codes and Control*. London: Routledge.

Bernstein, B. (1999) Vertical and Horizontal Discourse: An Essay. *British Journal of Sociology of Education 20*, 157-173.

Bird, V. & Akerman, R. (2005) *Every Which Way We Can: A literacy and social inclusion position paper.* London: National Literacy Trust.

Birrell, B. (2006) Implications of Low English Standards Among Overseas Students at Australian Universities. *People and Place 14*, 53-64.

Blanden, J. & Machin, S. (2004) Educational Inequality and the Expansion of UK Higher Education. *Scottish Journal of Political Economy, Special Issue on the Economics of Education 51*, 230-49.

Brabazon, T. (2002) *Digital hemlock: Internet education and the poisoning of teaching.* Sydney: University of New South Wales Press.

Castells Manuel, (2002) *The rise of the network society*, Wiley-Blackwell, San Francisco, CA

Charles Darwin University (2002) *Statistics Report*, retrieved October 26, 2002 from http://www.NTU.edu.au/planning/documents/2002StatisticsReport.pdf

Clark, R. & Ivanic, R. (1997) *The politics of writing*. London: Routledge.

Clark, T. (2001) *Virtual schools: Trends and Issues,* retrieved September 12, 2003 fromhttp://www.WestEd.org/online_pubs/virtualschools.pdf

Clark, R.E. & Sugrue, B.M. (1991) "Research on instructional media, 1978-1988" in G.J.Anglin (ed.) *Instructional technology: past, present, and future.* ch.30, Englewood, Colorado: Libraries unlimited. *Journal of Verbal Learning and Verbal Behavior. 8*, 240-247

Considine, G., & Zappalà (2002) The influence of social and economic disadvantage in the academic performance of school students in Australia. *Journal of Sociology 38*, 129-148.

Crystal, D. (1997) *English as a global language.* Cambridge: Cambridge University Press.

Cunha, F. & Heckman, J. (2007) *The Technology of Skill Formation*, IZA Discussion Paper No. 2550, University of Chicago Press.

Davies, R. and Elias, P. (2003), *Dropping Out: A Study of Early Leavers from Higher Education.* Research Report 386. Department for Education and Skills.

Dearing, R. (1997) Higher education in the learning society. *National Committee of Inquiry into Higher Education*. London: HMSO.

DEEWR (2008) Review of Australian Higher Education. In *Final Report Commonwealth of Australia*, retrieved from: http://www.deewr.gov.au/HigherEducation/Review/Documents/PDF/Higher%20Education%20Review_one%20document_02.pdf

Desierto, A. (1998) *UWA expectations of academic writing at Australian universities: Work in progress.* Graduate School of Education, The University of Western Australia, retrieved from http://lsn.curtin.edu.au/tlf/tlf1998/desierto.html

DEST (1996) *Literacy Standards in Australia*, retrieved from http://www.dest.gov.au/archive/schools/literacy&numeracy/summary.htm

DEST (1997) *Mapping Literacy Achievement: Results of the 1996 National School English Literacy Survey*. Department of Education, Science and Training, Canberra, retrieved from http://www.dest.gov.au/mla

DEST (2005) *National Indigenous English Literacy and Numeracy Strategy*, retrieved from http://www.dest.gov.au/sectors/indigenous_education/policy_issues_reviews/national _indigenous_english_literacy_and_numeracy_strategy.htm

DiFiore, L., (2003) *Financial Aid Strategies For Non-Traditional Students, Part I, What is a Non-Traditional Student?,* retrieved from http://collegehelp.info/scholarship/nonTraStu_ptI.htm

Donnelly, K. 2007) *Dumbing down: Outcomes-based and politically correct - the impact of the Culture Wars on our schools.* Melbourne: Hardie Grant Books.

Elliot, A. (2002) *Factors affecting first year students' decisions to leave university.* Paper presented at the Sixth Pacific Rim First year in higher education conference, Christchurch, New Zealand.

Frand, J.L. (2000) The information age mindset. *Educause Review*, 35, 14-20.

Frankola, K. (2001) [Why Online Learners Drop Out](). In *Workforce,* retrieved October 25, 2010 from http://findarticles.com/p/articles/mi_m0FXS/is_10_80/ai_79352432/

Gerber, R., Lankshear, C., & Bishop, C. (1997) *First-year AVTS Students' Experience of Learning in Different Contexts.* Paper presented at the Good Thinking, Good Practice: Research perspectives on learning and work. 5th Annual International Conference on Post-Compulsory Education and Training, Gold Coast, Queensland.

Grunwald, P. (2003)"Key Technology Trends: Excerpts from New Survey Research Findings," Exploring the Digital Generation, Educational Technology, U.S. Department of Education, Washington, D.C., September 23–24, 2003.

Hagedorn, L. (2005) "How to define retention; a new look at an old problem". Center for Higher Education Policy and Analysis, Rossier School of Education, University of Southern California, Los Angeles CA. available at: http://www.honolulu.hawaii.edu/intranet/committees/rrc/pdf/How_to_Define Retention.pdf

Hamp-Lyons, L., Hood, S. & MacLennan, C. (2001) Promoting quality teaching in the tertiary context. *Higher Education Review 34*, 60-76.

HEFCE (1999) *Higher Education in the Learning Society: Report of the National Committee of Inquiry into Higher Education.* National Committee of Inquiry into Higher Education Great Britain.

HEFCE (2005)*Young Participation in Higher Education,* retrieved from www.hefce.ac.uk/pubs/hefce/2005/05_03/05_03.pdf

Hillman, K. (2005) *The First Year Experience: The Transition from Secondary School to University and TAFE in Australia.* Report for Longitudinal Surveys of Australian Youth, ACER, Victoria, Australia.

Hirsch, E.D. (1987) *Cultural Literacy*. Melbourne: Bantam Schwartz.

Hood, J. (2001) The Research-Led University: Reflections from New Zealand. Te Whare Wananga O Te Rapunga Korero: Nga Hurihuringa O Aotearoa. University of Melbourne*,* accesssed May 29.

Hood, S. (2004) *Appraising Research: Taking a stance in academic writing*, PhD Thesis. Faculty of Education University of Technology, Sydney, Australia.

House of Commons Committee of Public Accounts (February 19, 2008) *Staying the course: the retention of students on higher education courses*, 10th Report of Session 2007-08, House of Commons, London, UK.

House of Representatives Standing Committee on Education and Training (2002) *Boys: Getting it right. Report on the inquiry into the education of boys.* Commonwealth of Australia, Canberra.

James, R., Baldwin, G., Coates, H., Krause, K., & McInnis, C. (2004) *Analysis of Equity Groups in Higher Education 1991-2002*. Department of Education, Science and Training, Canberra.

James ,R., Kraus, K & Jennings., C. (2009),*The First Year Experience in Australian Universities: Findings from 1994 to 2009*, Centre for the Study of Higher Education, The University of Melbourne, March 2010

Jones, M. G, & Brader-Araje, L (2002). The impact of constructivism on education: Language, discourse, and meaning. *American Communication Journal*. *5*.

Knowledgerush.com., (1999–2003) *Non-Traditional students*, retrieved from http://www.knowledgerush.com/kr/encyclopedia/Non-traditional_students/

KPMG Consulting Australia & Lifelong Learning Associates (2002), Evaluation of the Australian Flexible Learning Framework 2000-2001, ANTA. Retrieved from http://flexiblelearning.net.au/aboutus/keydocuments.htm#evaluation

Kramarski, B. and Feldman, Y. (2000) Internet in the Classroom: Effects on Reading Comprehension, Motivation and Metacognitive Awareness. *Educational Media International 37*, 149-155.

Krause, K. (2005). Engaged, inert or otherwise occupied? Deconstructing the 21st century undergraduate student. Keynote presented at the James Cook University Symposium, 2005: *Sharing Scholarship in Learning and Teaching - Engaging Students*. James Cook University, QLD, 21-22 September 2005.

Kroll, B. (ed). Exploring the dynamics of second language writing. Cambridge: Cambridge University Press.year? and the one below too?

Laurillard, D. (2002a) Rethinking Teaching for the Knowledge Society *EDUCAUSE Review, 37*, 16–25.

Laurillard, D. (2002b) *Rethinking University Teaching. A conversational framework for the effective use of learning technologies*. London: Routledge.

Leu, D. J., Jr., Kinzer, C. K., Coiro, J., & Cammack, D. (2004). Toward a theory of new literacies emerging from the Internet and other information and communication tecnologies. In R. B. Ruddell & N. Unrau (Eds.) *Theoretical models and processes of reading, fifth edition*. 1568-1611, Newark, DE: International Reading Association.

Loutchko, I., Kurbel, K., & Pakhomov, A. (2002) Production and Delivery of Multimedia Courses for Internet Based Virtual Education. *The World Congress Networked Learning in a Global Environment: Challenges and Solutions for Virtual Education*. Technical university of Berlin,May 1 2002.

Longden, B. (2006) An Institutional Response to Changing Student Expectations and their Impact on Retention Rates, *Journal of Higher Education Policy and Managemen*t *28*, 173-187.

Macdonald, D. (2003) Curriculum change and the post-modern world: Is the school curriculum-reform project an anachronism? *Journal of Curriculum Studies 35,* 139-149.

Machin, S. & Vignoles, A. (2004) Educational Inequality: The Widening Socio-Economic Gap. *Fiscal Studies 25,* 107-128.

Mackie, S.E. (2001) Jumping the hurdles - Undergraduate Student Withdrawal Behaviour. *Innovations in Education and Teaching International 38*, 265-275.

Masters, Geoff N. and Forster, Margaret, (1997)"Literacy Standards in Australia" *Monitoring Learning.* ACER, Melbourne.

McInnis, C., Hartley, R., Polesel, J & Teese, R. (2000) *Non-Completion In Vocational Education And Training And Higher Education: A Literature Review Commissioned By The Department Of Education, Training And Youth Affairs.* Centre for the Study of Higher Education, The University of Melbourne.

Mariani, L. (1997) Teacher Support and Teacher Challenge in Promoting Learner Autonomy. *Perspectives (TESOL-Italy), 23, No. 2.*

Marks, G., McMillan, J. & Hillman, K. (2001) Tertiary Education Performance: The Role of Student Background and School Factors. *LSAY Research Report 22*. Melbourne: ACER.

Marsh, H.W. (1987) Student's evaluations of university teaching: research findings, methodological issues, and directions for future research. *International Journal of Educational Research 11*, 253–388.

McGivney, V. (1996) *Staying or Leaving the Course: Non-Completion and Retention of Mature Students in Further and Higher Education.* National Institute of Adult Continuing Education, Leicester, UK.

McInnis, C. & James, R. (1995) *First year on campus: Diversity in the initial experiences of Australian undergraduates.* Melbourne: University of Melbourne Press.

McInnis, C., James, R., & Hartley, R. (2000) *Trends in the first year experience in Australian universities.* Canberra: Department of Education, Training and Youth Affairs.

McInnis, C. (2001) Researching the first year experience: Where to from here? *Higher Education Research and Development 20*, 105-114.

McKenzie, K., & Schweitzer, R. (2001) Who succeeds at university? Factors predicting academic performance in first year Australian university students. *Higher Education Research and Development 20*, 21-33.

McVay, L. M. (2001) Effective Student Preparation for Online Learning. In *The Technology Source,* retrieved from<http://ts.mivu.org/default.asp?shows=article&id=1034>

National Centre for Vocational Education Research, (2003) Defining generic skills: At a glance. In *Australian National Training Authority, Adelaide,* retrieved from http://www.ncver.edu.au/research/proj/nr2102b.pdf

Neil Howe and William Strauss (2000) *Millennials Rising*, Vintage Books, New York.

Northedge, A. (2003) Rethinking Teaching in the Context of Diversity. *Teaching in Higher Education 8, 17-32.*

Oblinger, D. G & Oblinger, J. L. (eds) (2005), Educating the Net Generation, Educause, www.educause.edu/educatingthenetgen/ Chapter 2, Is it age or IT: First steps toward understanding the Net Generation, p. 2.9

Oblinger, D.and Oblinger, J. (2010) Is It Age or IT: First Steps Toward Understanding the Net Generation. In *Educause 1999-2010*, retrieved from http://www.educause.edu/Resources/EducatingtheNetGeneration/IsItAgeorITFirstStepsTowardUnd/6058

OECD 2011, *Education at a Glance 2011: OECD Indicators* © OECD, retrieved from http://www.oecd.org/document/2/0,3746,en_2649_37455_48634114_1_1_1_37455,00.html

Parker, Q. (2007) A second look at school life. *The Guardian*, retrieved from
    http://education.guardian.co.uk/elearning/story/0,,2051195,00.html

Phalen, K. (2002) Self-Assured, Stressed, and Straight: Millennial Students and How They Got
    that Way, retrieved from
    <http://www.itc.virginia.edu/virginia.edu/fall02/student/home.html>.

Prensky, M. (2001) Digital Natives, Digital Immigrants. *On the Horizon* MCB University Press,
    Vol. 9 No. 5, October 2001, retrieved from
    http://www.marcprensky.com/writing/prensky%20-
    %20digital%20natives,%20digital%20immigrants%20-%20part1.pdf

Prigogine, I. & I. Stengers (1984) *Order Out of Chaos*. New York: Bantam Books.

Prigogine, I. (1980) *From Being To Becoming*. San Francisco: WH Freeman and Co.

Quinn, J. (2004) Understanding Working-Class 'Drop-out' from Higher Education through a
    Socio-cultural Lens: Cultural narratives and local contexts. *International Studies in
    Sociology of Education, 14*, 57-74.

Ramsden, P. (1992) Approaches to Learning. In *Learning to Teach in Higher Education.* 38-61,
    London: Routledge.

Rau, W., & Durand, A. (2000) The academic ethic and college grades: Does hard work help
    students to 'make the grade? *Sociology of Education, 73*, 19-38.

Reeves, T.C (1997) Established and emerging evaluation paradigms for instructional design.
    In C. R. Dills & A. J. Romiszowski (Eds.), *Instructional Development Paradigms* (pp 163-
    178). Englewood Cliffs, New Jersey: Educational Technology Publications.

Reeves, T. (2002) The future of academic staff: Visions of tertiary teaching in the 21st century,
    in Quality Conversations, Proceedings of the 25th HERDSA Annual Conference, Perth,
    Western Australia, 7-10 July 2002: pp 1.

Rickinson, B., & Rutherford, D. (1995). 'Increasing undergraduate student retention rates'
    British Journal of Guidance and Counselling, 23, 161-171.

Rose, D. (1999) Culture, Competence and Schooling: Approaches to Literacy Teaching in
    Indigenous School Education, in Christie (Ed),*London: Cassell (Open Linguistics Series),
    217- 245*

Rose, D. (2004) Sequencing and Pacing of the Hidden Curriculum: how Indigenous children
    are left out of the chain. In J. Muller, A. Morais & B. Davies (Eds.) *Reading Bernstein,
    Researching Bernstein.* London: Routledge Falmer.

Rowe, Ken. "Assessment during the early and middle years: getting the basics right" (2006).
    Student Learning Processes.
    http://research.acer.edu.au/learning_processes/9

Sheils, M. (1975) Why Johnny Can't Write, *Newsweek*, Dec 8, pp 58-65.

Slattery, L *(2008)* Uncritical elevation of a loopy fad. *The Australian* Higher education
    Supplement*, 28 November, p.28.

Steele-Johnson, D. (2000) Goal orientation and task demand effects on motivation, affect, and
    performance. *The Journal of Applied Psychology* 85, 724-728.

Swail, W. S. (2002) Higher Education and the New Demographics: Questions for Policy*,
    Change*, vol. 34, no.4, pp. 14-23, Via ERIC

Tinto, V. (1988) Stages of student departure: Reflections on the longitudinal character of student leaving. *Journal of Higher Education 59*, 438-455.

Tinto, V. (1997) 'Classrooms as Communities: Exploring the Educational Character of Student Persistence' *The Journal of Higher Education*. Vol. 68 No 6 November/December 1997, 599623.

Turner, F. & Crews, J. (2005) Bricks and clicks: A comparative analysis of online and traditional education settings. *International Journal of Instructional Technology and Distance Learning.* 2(4), pp. 3-8.

Tyler-Smith, K. (2006) Early Attrition among First Time eLearners: A Review of Factors that Contribute to Drop-out, Withdrawal and Non-completion Rates of Adult Learners undertaking eLearning Programmes. *Journal of Online Learning and Teaching,* *http://jolt.merlot.org/vol2no2/tyler-smith.htm*

Tyler, B. & Rolls, N. (2008) *The Common Unit Program 2005–2006Trends, Risk Factors and Market Segments*, Report for the Common Unit Management Group Charles Darwin University October 2008.

van Loon, J. (1999) What happens when a student who has failed TEE English enters an Australian university? In K. Martin, N. Stanley & N. Davison (Eds.) *Teaching in the Disciplines/ Learning in Context*. Proceedings of the 8th Annual Teaching Learning Forum, University of Western Australia, Perth: UWA, February 1999.

Webb, J. (1993*) Academic Support for Non-Traditional Students*. CSHE Research Working Papers 93.7, Centre for the Study of Higher Education, The University of Melbourne, Parkville.

Wylie, J. R. (2005) *Non-Traditional Student Attrition in Higher Education: A Theoretical Model of Separation, Disengagement then Dropout*. SELF Research Centre, University of Western Sydney, Australia.

Yorke, M. (1999) *Leaving early: undergraduate non-completion in higher education*. London: Falmer.

Zimitat, C. (2006) First year students' perceptions of the importance of good teaching: Not all things are equal. In *Critical Visions*, Proceedings of the 29th HERDSA Annual999 Conference, Western Australia, 10-12 July 2006.

APPENDIX A

Table A.1: Enrollments in Academic Skills Common Units 2006 by Basis of Admission

|	*Frequency*	*Percent*	*Valid Percent*	*Cumulative Percent*
Invalid	42	2.7	2.7	2.7
A higher education course (Australian or overseas equivalent; complete or incomplete)	416	26.4	26.4	29
A professional qualification	19	1.2	1.2	30.2
A VET award course other than a secondary education course (Australian or overseas equivalent)	361	22.9	22.9	53.1
Foundation studies program	2	0.1	0.1	53.3
Mature age	115	7.3	7.3	60.6
Non commencing student, including transfers	13	0.8	0.8	61.4
Other basis	94	6	6	67.3
Secondary education undertaken at school, VET or other Higher Education Provider (Australian or overseas)	446	28.3	28.3	95.6
Tertiary enabling program	69	4.4	4.4	100
Total	1577	100	100	

APPENDIX B
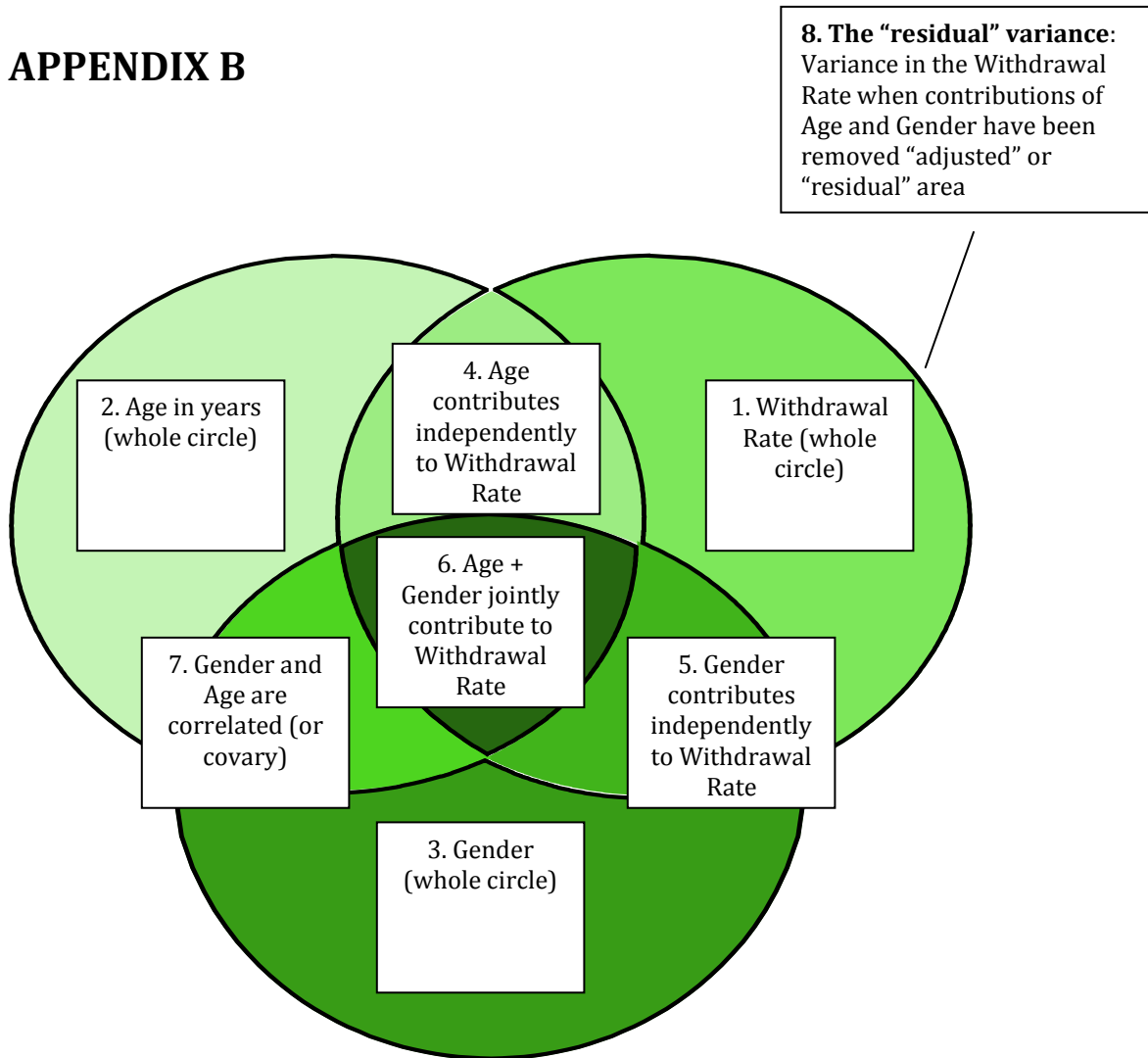
Figure B.1: Predicting withdrawals with two variables – identifying "residual" or "adjusted" Scores

Example: Mapping the variance and covariance

- We have three inter-correlated variables, Age, Gender and Withdrawal Rate.

- For the sake of argument, we will treat "Withdrawal Rate" as dependent on the other two "independent" variables, Age and Gender.

  (1) Covariance is represented by the "overlap" or shared variance. There are three main types of "overlap" or covariance among these variables: The amount of variance that each of the two variables Age and Gender individually explain in the Withdrawal Rate; these are : area 4 (Age) and area 5 (Gender)

  (2) The amount of variance that Age and Gender jointly explain in the dependent variable, Withdrawal Rate: area 6

(3) The amount of variance shared by Age and Gender that lies outside the area of the dependent variable: area 7.

From knowing the quantities involved here, we can estimate the following and see what "adjusted" or "residual" scores come from:

The "adjusted" variance in Withdrawal Rate is the remaining section of area 1 when all three of the "overlap" areas (ie areas 4, 5 and 6) have been taken out (area 8). This is the sometimes called the "residual" variance (coloured in lime green).

The ratio of the areas taken out to the total area of 1 is give as the statistic "R squared" or as a percentage of the "variance explained by the model eg an R squared value of .45 means that the model explains 50% or the variance in the dependent variable.

The statistic used to represent the contribution of each of the covariates is the estimate of "effect size" (partial eta squared), given as a ratio of areas 4 or 5 to the total variance in the dependent variable, ie area 1.