

CHARLES DARWIN UNIVERSITY

DIVERSITY AND DEVELOPMENT

THE COMMON UNITS PROGRAM AT CDU 2003-4

A REPORT TO THE COMMON UNIT
COMMITTEE ON STUDENT DIVERSITY AND
PROGRAM DEVELOPMENT 2003-4

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EXECUTIVE SUMMARY

This monitoring project began as a specific investigation into the differential rates of withdrawal and failure between internal and external enrollments in the Common Unit Program. Under direction from the Committee, the initial inquiry which covered the years 1999-2002 was subsequently developed into a much more comprehensive analysis of the relationships between modes of unit delivery and a host of other student characteristics, both socio-demographic and situational. To meet the challenges of an established program facing changing first year student composition and transitional requirements, this second report, which covers the years 2003-4, extends to the development of a generic model of prediction of student outcomes which is firmly grounded in Australian and International research literature.

The study for this period concentrated on estimating and interpreting the effects of dramatic increases in the diversity of student characteristics on the two main measures of attrition; early withdrawal and pass rate. In this period, the effects of diversity were compounded by developmental issues, since it also coincided with a radical restructuring of Common Unit offerings and organisation. In this restructured program five units which integrated skills and general education components were reduced to just two units specialising respectively in academic skills (Academic Literacies, CUC100) and regional knowledge (Northern Exposure, CUC106). During 2005-6 the results of this study were disseminated through an active and ongoing program of staff involvement, principally through the feedback of results to workshops and Management Group meetings, unit development meetings and follow-ups.

The results of this study, being based on 2003-2004 data, must be viewed in the context of this period of demographic and program change. Preliminary analysis of 2005-2006 data (for the next phase of reporting) already reveals a considerable improvement in retention (10% decline in Early Withdrawals and a 5% increase in Passes). More recent evidence of the significant progress the program has made in refining its teaching and learning approach, is its success in winning the Vice Chancellor's teaching and learning award in 2007 for a submission entitled: *Enhancing the Quality and Success of our Students' Learning Journey through Best Practice in Curricula, Teaching, Assessment, Support and Research*

The report first examined the trend in enrollments towards a more diverse student intake by examining the changes in student profile characteristics and their study situations since 1999 based on a combined data base covering both periods of observation (n=7535 for 1999-2002 and 4034 for 2003-4). This analysis revealed a surge in part-time and external enrollments in the Common Unit program which, combined with the already diverse mix of student characteristics in terms of age, citizenship, gender and location, set the scene for the a detailed analysis of its effects on attrition outcomes.

A comprehensive review then updated the current literature on first year attrition in University, which suggests that students' demographic; personal attributes (learning style, commitment); mode of study; and the levels of scaffolding and support from the institution are major factors in student success. As a consequence the value of similar transitional programs in common or core areas of skill formation and general education are stressed by the literature.

An analysis of trends in attrition outcomes in the Program since 1999 showed a *significant decline in the rate of early withdrawals*, but a *fluctuating trend in the pass rate*, first peaking in 2002 but apparently declining by about 9% in 2003, the year in which the restructured program was rolled out. However, the following year, 2004 saw a recovery of the pass rate to its pre-restructuring level, accompanied by a slight rise in the rate of withdrawals.

The relationships between student background, study situation and attrition outcomes were put through a rigorous analysis using regression and data-mining procedures. This was carried out in order to: (a) identify the most important or key predictors of each outcome (withdrawal before or after census date, failure or pass, and grade) and (b) to determine the combination of values that identify those enrollments most “at risk” or early withdrawal or failure. Early withdrawal in this period was predicted most prominently by part-time status. However, this was not paralleled by an increase in students taking the units in external mode..

The most powerful *predictor of passing* was *overseas citizenship*, while *failure* was most strongly *predicted by Indigeneity*. A high rate of failure for indigenous students, unfortunately, appeared to increase over the two periods of observation, 1999-2002 to 2003-2004. Apart from these prominent effects, the predictor profile over the two periods remained fairly stable over these two periods, with the *negative prediction on pass rates* persisting at about the same levels for the following predictor groups: *male gender, under 25 yrs, external mode of study and course of study being social and cultural*.

The unique surge in the rate of overseas citizenship enrollments (20% between the two periods) merited further scrutiny. This revealed that the *pass rate for overseas enrollments with English as a Second Language (ESL) backgrounds* was *significantly higher than for domestic students with ESL*. The grades for *overseas/ ESL enrollments* were also found to have a deviant distribution in that they *clustered around the pass grade*, suggesting either differences in ability and performance for this group or a tendency for examiners to be more lenient with this group, allowing them a minimum grade to get over the line.

The dynamics of attrition were next explored by (a) a cluster analysis of the equity group trends on early withdrawal and pass rates and (b) an investigation into the impact of the program restructuring on the pass rate in the second period of observation (ie 2003-4). The cluster analysis suggested a contrasting pattern based on the combination of their rates of withdrawals and passing, which were identified as:

- (a) stable decliners - reduced withdrawals and pass rates (eg. 1st yr of study, Indigenous)
- (b) stable improvers - reduced withdrawals and increased pass rates (ESL)
- (c) unstable decliners - increased withdrawals and reduced pass rates (eg Natural Sciences)
- (d) unstable improvers – increased withdrawals and increased pass rates (Overseas Cit’ship)

For the second analysis, the effect of the period of observation (a proxy for the 2003 break between the two unit organisation regimes) on each of the two measures of attrition revealed a contrasting pattern of prediction in that the *introduction of the new program* was associated with a statistically significant *reduction in the rate of withdrawal* (in both its main effect and in combination with the relevant equity group). However, no significant effect was found for the prediction of the pass rate. In combination with the results of the cluster analysis mentioned above, this finding suggested that a *decline in the rate of withdrawals in 2003* may have been responsible for the large *drop in the pass rate in 2003* (down to only 58% from historical levels of 67%), as a higher proportion of students in “at risk” categories continued their enrollment, only to fail. This effect underlines the need for vigilance in anticipating the impact of the introduction of a restructured unit program, as much as it

reinforces the enduring effects of the markers of under-performance across the two periods of observation. Finally, the extent to which Common Unit withdrawals were linked with general course withdrawal was investigated through analysis comparing course withdrawal rates with common unit withdrawal rate. This analysis found that up to 45% of early withdrawals in Common Units 2003-2004 were course-withdrawal related (30% of the linked withdrawals occurred in the same semester, and 15% occurred in the form of an FA followed by full course withdrawal in a later semester).

Conclusion

Over the period of observation therefore the Common Units Program has exhibited remarkable resilience in the face of the twin challenges of increased diversity of student characteristics and study situations and a radical restructuring of its unit offerings. The causes for concern still persisted in terms of issues of both equity and performance, with high withdrawal and failure rates, both hovering around 30% levels, which may not be untypical of those for other large core units in parent courses which share the same diverse intake characteristics. Grounds therefore exist for the expansion of the methodology of this monitoring program to include wider sections of the first year intake and to identify those aspects of recruitment, contact and program delivery which have most impact on levels of student satisfaction and retention.

Recommendations for Extension of the Monitoring Project

This study has opened up a number of possibilities for further action and investigation:

1. Extension and maintenance of the enrollment database over 8 yrs 1999-2006
2. Broaden scope to compare attrition in large core first yr units in Nursing, Education, Business and Law
3. Broaden scope to:
 - compare data for course success after Common Units against those who didn't complete them because of CT or PA for them and correlate this with basis of admission to course and TER;
 - correlate basis of admission and TER with success in Common Units.
4. Establishment of focus groups and development of measures of student satisfaction
5. Extension of Staff Workshops.
6. Regular reporting and of monitoring results to Common Unit Management Group
7. Monitoring background of early withdrawals, particularly among part-time students
8. Scrutiny of ESL overseas and domestic rates for equity purposes
9. Detailed research on Indigenous students in withdrawal and progress rates
10. Further monitoring effects of unit restructuring on attrition rates
11. Detailed study of media impact on rates of attrition (esp. online learning /“Tablet PC”)
12. Comparative study of academic literacy improvement for those who do CUC100 and those who don't
13. Development of a monograph reviewing the common unit experience at CDU

1. DIVERSITY AND DEVELOPMENT: DEFINING THE PROBLEM

1.1 BACKGROUND

In the second semester of 2005 the Australian University Quality Agency (AUQA) submitted its report and recommendations to the Charles Darwin University. Among these was a recommendation specific to the Common Unit Program, namely:

“that CDU ensure that the intended outcomes of the Common Unit Program are achieved and that it is catering for different ability levels and knowledge of different students”

This recommendation points to the central feature of the Common Units, which attempts to address the different needs of the variations in ability and knowledge of the complete first year student intake through (a) development of basic skills of academic literacy and (b) an awareness of the cultural and physical aspects of the environment of Northern Australia. The focus on differences in ability and knowledge could well be supplemented by a range of other factors such as knowledge of English, mode of study, Indigenous status, socio-economic background, as well as the obvious demographic factors of gender and age.

Differences are not however, merely statistical dimensions which neatly describe the student body at Charles Darwin University since all of these dimensions can intersect in complex and often unpredictable ways in any one faculty, course or teaching situation. Difference across easily defined dimensions of advantage or disadvantage, in other words, generates diversity - a rather complex and catch-all term. One way of looking at this effect might be define diversity as *difference expressed in context*. While there are an infinite number dimensions which may differentiate students from one another, diversity has a specific meaning in Higher Education policy, in that it brings into focus a university's responsibility to pay attention to a range of factors which generate the particular “mix” which characterises its student body. So complex are these combinations that it is often more convenient to identify student bodies by institutional groupings.

The response to the AUQA report acknowledged that these issues have been addressed by the continuing monitoring program that resulted in a previous report by this Project Team on the Common Units (Tyler asst. by , 2003). The present phase of the Common Unit attrition monitoring project extends this initiative for two further years, 2003-4, with particular attention to the development of the program in light of the AUQA recommendations. What are the implications of the diversity issues for this report and how may they be addressed? We will now consider (a) the results of the 1999-2002 study of the factors which generate student diversity; (2) the background of program reform in 2003-4 when the offerings were reduced from five to two units; and (3) the issues that emerge from the possible impact of this reform, as well as from the continuing trends and patterns in student outcomes.

1.2 DIVERSITY AND STUDENT OUTCOMES: THE EVIDENCE FROM THE 1999-2002 STUDY

In the second semester of 2001, the Common Units Committee of the NTU/CDU noted the high failure rates in externally-delivered Common Units While the proportion of internal enrollments awarded a passing grade exceeded failures by a ratio of almost 2:1 (64.4% vs 35.5%), the ratio for

external enrollments was far less favourable (56.8% vs 43.2%). Because failure to complete a Common Unit is often linked to general course failure, student outcomes in the program are seen to reflect a systemic retention problem of the University. As a result, the term “attrition” was adopted to encompass the high rates of both of these undesirable outcomes (failure and withdrawal). For comparative and developmental purposes, a more inclusive study of the performance of students across the whole program was commissioned to look at the risk factors behind both types of attrition in terms of a range of demographic, situational, and cultural and linguistic variables across all units and years of availability and modes of delivery.

The terms of reference for the 1999-2002 study were therefore framed in terms of the following questions:

1. What are the main factors that are likely to affect attrition rates in the Common Units program?
2. How might the relationships between these factors be spelt out in the form of a testable model?
3. Can such a model help to identify types of student who appear to be most “at risk” of either failure or withdrawal?
4. In the light of the findings of 3, what strategies are available for reducing rates of attrition in the Common Units program? (Tyler and Prichard, 2003: 8).

An integrated database was assembled from the student administration and reporting records of enrollments (held by the University, combining (anonymously) results in all Common Units over a four-year period, against a range of factors: situational (mode of study, year of course, field of education, parent course), demographic (age, gender, place of residence during term), and personal (Indigenous status, country of birth, English as second language, overseas citizenship). The main dependent variable was either early withdrawal from a common unit or success (pass/fail) in a completed unit. Enrollments rather than student numbers were the base unit of analysis. A combination of logistic regression (which shows the effect of each predictor when all of the others are held constant) and data mining techniques (showing the unique combinations of predictors that predict withdrawal or passing a unit) were applied to this comprehensive database. This yielded 7535 total enrollments and 3147 unit completions. The major results from this investigation were as follows:

1.2.1 Predicting Rates of Withdrawal and Academic Success

These two aspects of student attrition have different causal backgrounds, each with its own unique pattern of prediction. Higher incidence of failure in the unit (among those who completed the unit) was predicted by Indigenous identity, external mode of delivery, male gender, being under 25 yrs and enrollment in a social or cultural studies field. On the other hand, higher incidence of early withdrawal was associated with an internal mode of delivery, full-time status and age 25+ yrs at time of enrollment in the unit. Student background did not predict the category of fail grade awarded (i.e. F vs FA/WF) and therefore do not appear to be a factor inflating the failure rate of groups with lower rates of withdrawal. However, it should be noted that the exception to this was Indigenous enrollments; where there appeared to be a strong link between a lower withdrawal rate and higher failure rate. Enrollments from courses in the Health Sciences field had a lower rate of failure and a

lower rate of withdrawal. Affiliation with a course in a Social and Cultural field predicted a higher rate of failure but a lower rate of withdrawal, while overseas citizenship was associated with a *lower* rate of failure. However this was not statistically significant. English as a second language was found to have a slight and non-significant association with a lower pass rate and a lower rate of withdrawal but was not a significant factor in this analysis.

1.2.2 Clusters of Disadvantage

When the various factors were combined, a risk analysis of factors leading to failure in the Common Units, based on regression modelling, indicated that an enrollment from a student who is Indigenous, male, under 25 yrs and studying in the external mode of delivery will have 2.5 times the probability of receiving a failed grade in a Common Unit than an enrollment by a student who is non-Indigenous, female, 25+ yrs and studying internally. This analysis was supplemented by data-mining methods which provide a more precise definition of groups at risk of failure. This procedure revealed wide discrepancies in the pass rates of fifteen subgroups segmented by unique combinations of age, gender, mode of delivery and Indigeneity. Some of the most salient gaps in pass rates found in combinations of predictors were: (i) a 38% gap between Indigenous non-Indigenous (higher) and Indigenous enrollments in the 35 + yrs age group, (ii) a 25% gap between internal (higher) and external enrollments in the 17-19 yr age group and (iv) a 17.5 % difference between female (higher) and male enrollments in the 25-35 yr age group.

The findings from this study indicate that not all the differences that may be submerged beneath the surface of diversity of student characteristics are desirable. If outcomes entrench disadvantage and restrict opportunity, then these must be understood and addressed. Again, if the gaps in performance in these gateway units to University life were to be repeated across the whole of the First Year of studies, then the implications for student progress towards the second and third years are quite disturbing. The promise of the Common Units program, however, is its potential to identify the sources disadvantage at the earliest point in the University experience and to develop strategies by which these can be successfully addressed. It remains to be seen then, how the findings from the first study have been fed into the developmental process in light of the changes in its structure and delivery over the two years in question.

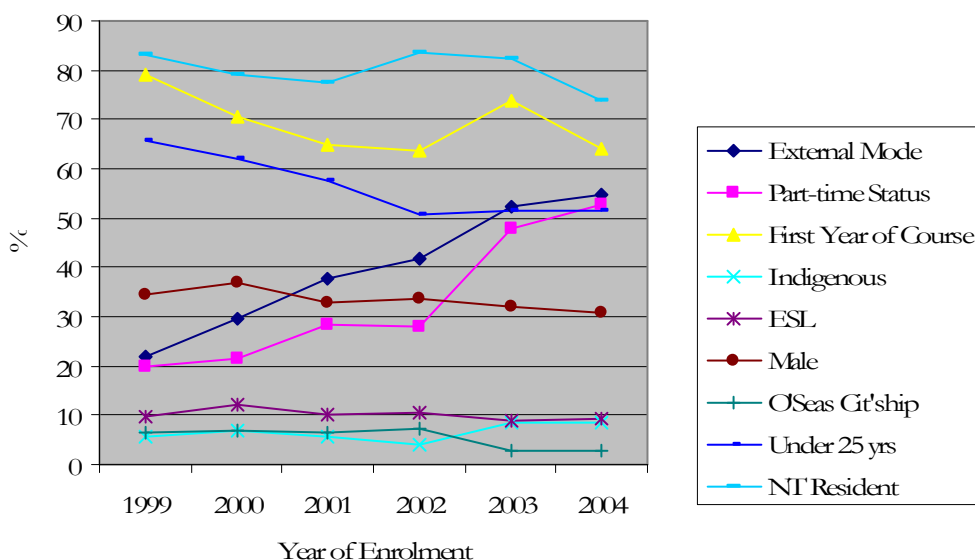
1.3 PROGRAM REFORM 2003-4

During the years 2003-4 the Common Unit Committee, under the initiative of the Vice-Chancellor, undertook a major simplification of the Common Unit program offerings with aim of restoring an emphasis on skills acquisition and an interdisciplinary introduction to the University's region. In effect, this meant that the five major units that had been developed since 1998 were now reduced to two, with another third, more specialised unit in Technology and Environment in the pipeline. These two principal offerings were Academic Literacies (CUC 100) and Northern Perspectives (CUC107), normally taken by the bulk of students sequentially in the first and second semesters respectively. The rationale for the former unit can be traced to the Baldwin and McInnis report (2000), which recommended that there should be a skills-based unit at the centre of the Common Units, from which students should be eligible to claim exemption on the basis of demonstrated competence. This unit was offered in the first semester of 2003. The second unit, introduced in the second semester of 2004, combined elements of social sciences and environmental studies from CUC101 and CUC104, and added a strong Indigenous emphasis. At the same time elements from the five original units were either discontinued (CUC102, CUC105) or phased out (CUC101, CUC104) over this period. By the end of 2004, therefore, the two principal objectives of the Common Unit program were being addressed by more focused, though internally differentiated,

units which allowed for greater economies of scale. All of the new units are offered in both external and internal modes.

The restructuring of unit offerings over the two years in question provided a convenient focus for the ongoing evaluation of the program. Although not all variations in attrition trends could be automatically attributed to the restructuring, at least the rates of early withdrawals, unit failure and student satisfaction will provide some evidence as to an overall effect. When any changes in attrition outcomes are placed against any variations in the diversity of intake, then statistical analysis that allows for controls (such as covariate and regression analysis) is the appropriate evaluative methodology. Program performance in attrition terms can then be set against the challenges presented by considerations of equity. Some of these challenges can be seen quite explicitly in the changing face of diversity over the years 1999-2004.

Fig. 1.1 Enrolment Trends in Common Units
1999-2004 (incl. early withdrawals n=11448)



1.3 DEFINING THE PROBLEM

As can be seen in Fig. 1.1, over the six years 1999-2004, the socio-demographic profile of students in the Common Unit program has changed. The average student has become older, more likely to be female than male, less likely to be foreign born and from a non-English speaking background. Indigenous representation, however, has risen slightly. In terms of student situation, however, the dramatic shift has been towards external mode of delivery, part-time status and interstate residence. Both of these categories have approximately doubled in proportion, from about a quarter to over a half of the total number of enrolments (which include early withdrawals). How have these radical changes in the student situation been met in terms of unit delivery and support, design and content, apart from the more global restructuring of unit offerings just described? What has been the impact of all these changes on rates of early withdrawal, academic success and student satisfaction? As for the first study, how have program adjustments and development mediated the changing socio-demographic characteristics that accompany a shift away from young school leavers towards a more mature and female intake profile? Would we expect, for example, that the risk factors of early withdrawal and academic failure to be less associated with student background factors and more with mode of study and part-time status? Again, how are these possible effects on student attrition

rates distributed across the various fields of education, particularly when a large number of external enrolments are meeting off-campus and interstate demand in health sciences, education and law? These issues can be explored in the more general terms of the following questions:

1. What changes are observed in the rates of attrition (early withdrawals, unit failures) in the Common Units for 2003-4 compared to those examined in the report (1999-2002)?
2. How are rates of attrition related to the patterns and trends in changing student characteristics, as well as in student study situation (mode of delivery, year of course, field of education)?
3. What effect, if any, has the introduction of the restructured program had on attrition in the Common Units and the prediction of student outcomes by equity and situational factors?
4. How have the findings of attrition research informed program development and with what outcomes?
5. What recommendations can be made for the future development of the Common Unit program in the light of the findings of this report?

1.4 PLAN OF THIS REPORT

Before answering these questions, we will examine findings from the literature of first year student experience, updating rather than replicating the comprehensive review of the previous report. This will cover the salient issues relating to student success and failure in the first year of study, with an emphasis on the place of transition, access and support programs. This will be followed by a chapter which will develop a model of the components of the diversity, informed by this review, again with an emphasis on the various sources of difference. The impact of these factors will then be expressed in terms of a predictive model of attrition, in which the socio-demographic, situational and program-specific variables on which data are available are integrated. A description of the database for will follow. In the next section the empirical evidence relating to the changes in the patterns of attrition will be addressed. These will attempt to answer the questions 1-3 directly above, requiring an analysis of the trends in outcomes and intake, as well as bivariate and multivariate analysis of the database. The next chapter will document the planning, preparation, execution and follow-up to the November 2005, based around the preliminary release of the 2003-4 results, together with extensive online resource data base of literature. The concluding chapter will summarize the findings and outcomes of the 2003-4 study within the context of this monitoring project, with recommendations for its widening to include a comparative study of Common Units with large-intake first year units in mainstream courses in health, education, business, law and the natural sciences.

2. LITERATURE REVIEW: STUDENT DIVERSITY AND ATTRITION

2.1 INTRODUCTION TO THE ISSUES

The first stage of this project, the 1999-2002 report, *Student Outcomes in Common Units: Predictors of Attrition in the Common Unit Program* (Tyler, 2003) , included an extensive review of the literature in relation to student outcomes in first year university. Through this, a comprehensive picture was provided which drew on major studies by the Australian Council of Educational Research on patterns of participation in Year 12 and Higher Education (Marks et al., 2000, n=13,000) and the studies of social and economic disadvantage in academic performance by Considine and Zappalà (2002) as well as literature relating to gender, Indigenous status, location, ethnicity, Non English Speaking Backgrounds (NESB), achievement in literacy and numeracy and the interplay between these and mode of study. These were examined, through a review of the evidence for:

- i. the general socio-demographic influences on student participation and success
- ii. the impact of these factors on the first year experience of university study

In correlating demographic factors with mode of delivery Tyler concluded in the 2004 report that:

There are some important lessons to be taken from this literature, namely that (a) technological innovation cannot compensate for good pedagogic method (b) until its pedagogic principles have been established, the promise of the “virtual classroom” will not be fulfilled (c) student demand for online delivery as a single medium is relatively weak (d) traditional forms of print-based delivery will remain popular, as well as face-to-face learning (e) student needs have become diverse and varied so that the “one size fits all” model of instruction should evolve into a more flexible, individualised form guided by close monitoring of their learning processes and outcomes.

As this study shows, the causes of attrition vary considerably in relation to the quantifiable data (demographic) and in relation to a wide range of more qualitative factors ranging from attitude, motivation, learning style, self efficacy and the quality and methods of teaching. Some of these qualitative factors may be predicted from demography while others can be predicted from the experience of teaching and learning provided by the institution.

Longden (2004) indicates a correlation between universities with high numbers of students from low socio economic groups and high attrition. He does however note exceptions and poses an important question; what experience are some universities offering their students from low socio - economic groups that facilitate high completion rates. At the same time, as Elliot (2002, p. 5 in Hillman, 2005) reminds us, it is important to acknowledge that attrition does not necessarily indicate a failure on the part of the university or the student. For some students, withdrawing is simply an indication that university does not suit them as well as they originally thought and that alternatives like TAFE and the work force are preferable options.

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”.

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, 1982)

The following summary of the literature suggests that how students experience each phase is effected by: their demographic; personal attributes (learning style, commitment); mode of study; and the levels of scaffolding and support from the institution. Although detailed examination of the socio-demographic factors for success in first year reveals multifaceted qualitative and quantitative variables, clearly, the most effective way to reduce attrition rates at an institutional level is by addressing the *way* we deliver knowledge and skills to the current student demographic, thus,

understanding what issues students face is an essential step in adjusting the design and delivery of our programs in first year. Although many tertiary education institutions (including CDU) have introduced programs to provide skills, orientation and support in recognition of the challenges faced by first year students, according to Hillman (2005) these may not necessarily be adequate in content or length of time offered to address these issues sufficiently.

In this chapter we will continue the discussion by briefly summing up demographic factors, personal factors and mode of delivery in relation to literature that has more recently come to light. Particularly useful for the Australian context are the 2005 study by Hillman and one by Longden (2004) for a more global context. Although it seems apparent that the current literature simply confirms the findings of the previous investigation, through this ongoing review we are able to refine our understanding of the issues and more importantly refine an appropriate pedagogical response to the problem of attrition.

2.2 CHANGING UNIVERSITY CULTURE

The socio demographic nature of first year students and the culture of universities have changed significantly in the last 40 years, hence the preoccupation of researchers with these cultural shifts in their efforts to understand attrition rates at universities. Longden (2004) provides a useful comparison of the changes in university culture from a UK perspective which reflects many aspects of the evolution of Australian universities and provides a snapshot of the current factors that influence attrition:

From: University (60's)..... **to:**.....Uni (04)

• Elite entry: 10% participation	• Massification: 40% participation
• Binary HE system with 150,000	• Unitary system with 1,000,000+ students
• 18 year old entrants	• Increased mature entry
• Maintenance grants	• Student loans
• HE funded from Treasury	• Student contribution fees
• Monolith course	• Modular programs
• 3 year term	• Semester year
• 3 year full time study	• Mixed mode/P/T mode
• Residential/collegiate	• Commuter students
• More male students than female	• More female students than males
• “going to university ”	• “going to uni ”

2.3 FIRST YEAR ATTRITION TRENDS – BEYOND CDU

Completing the first year is recognised as the most challenging stage of university study and consequently the year where attrition and academic failure are most prevalent. (McInnis, 2001; Williams, 1982 in Hillman, 2005). Thus, as Tinto (1988 in Hillman, 2005) suggests “completion of the first year is ‘more than half the battle’ in persistence to degree completion”.

Studies of Universities in America, the UK and Australia suggest rates of first year attrition are similar to those in Australian universities (Porter 1990; Tinto 1993 in Rau & Durand 2000). Rau &

Durand (2000) claim that 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 the Guardian (2005) reports an average figure of 1/4 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 are largely those that are the most academically eminent. Without exception, however, 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" (Guardian, 2005).

A recent study of attrition rates in Australian Universities (Macnamara, 2007) placed CDU ninth from the bottom with a retention rate of 79.16%. Interestingly, University of Technology, Sydney and Melbourne University had the lowest attrition rates of 10 and 18 % respectively and in both cases this was attributed to their well established and funded student support infrastructure. However, the article did conclude that causes of attrition are complex and wide ranging and often related to a number of social factors outside of students' experience at university. The fact that attrition is not necessarily attributed to students' experience at university does not let us off the hook. If our students are experiencing significant outside factors (financial, personal and social pressures) that impact on their ability to study, we need to be thinking of ways we can help them cope with these pressures while they study. This includes helping them make realistic choices about their study load.

2.4 STUDENT BACKGROUND EFFECTS

2.4.1 Non traditional students

It is important in understanding attrition levels at regional universities such as CDU to acknowledge that our students are drawn from diverse and *non-traditional* backgrounds. CDU student demographic includes VET & HE students ranging in background from NESB, Indigenous, and mature students to school leavers. CDU 2003 statistical data reports: Female 73%, Male 27%, Aboriginal and Torres Strait Islander 4.1%, LOTE 8.7%, Under 25 -33%, Over 25 - 67%, Over 35 - 48% .Added to these differences are factors relating numbers of students from low socio-economic, and rural and isolated groups. (Charles Darwin University, *Annual Report* 2003) Each of these factors are characteristics of *non-traditional* students and each factor brings with it particular preferences, needs, and vulnerabilities

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 the first, students' motivation is affected by how useful they believe completing the course will be as well as the effects of course pressures, while the second, regarding academic and social self worth, is an additional factor effecting their ability to withstand the challenges of the first term at university. For CDU where a large percentage of our students are from non-traditional & non academic backgrounds there is a strong likelihood that their literacy and possibly social confidence in the academic community will be low. 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.

2.4.2 Literacy levels

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 programmes 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.

Van Loon (1999) examines the fate of students who have failed TEE 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 TER scores, thus students who enter university with lower TER 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.

2.4.3 Students from Other Language Backgrounds

In the context of university enrolment, students from other language backgrounds fall into two categories; those who are Australian citizens and those who are on overseas visas. Those on overseas visas have become increasingly important to the survival of universities because they are fee paying. In our investigation into student success in Common Units, the results of Australian students from non English speaking backgrounds show a pattern of higher failure in contrast to non Australian students from non English speaking backgrounds who have the highest success rate of all students. This finding is surprising until one considers the possibility that because of the importance of overseas fees to a universities survival, overseas students may receive preferential treatment (free tutors and more lenient marking) and/or may be using deviant means to get through their courses (plagiarism, buying assignments, paying other students to do their assignments for them).

These speculations are corroborated by the findings of a recent study by Birrell (2006) which indicates that at least a third of overseas students who went on to apply for permanent residency had English language levels below that required for students to enter university (i.e. IELTS 6). In other words, somehow students are being allowed into courses with inadequate English and somehow they are graduating with inadequate English. In his report, Birrell (2006) suggests that although students are required to have a total IELTS 6 or above on entry to university, they do not always need 6 across all bands (Reading, Writing, Listening, Speaking) so strength in speaking, for example, may not be matched by adequate reading and writing. Additionally overseas students can enter university via a foundation course, high school or ELICOS all of which require only an IELTS 5. Students may also be allowed into degrees without inadequate IELTS scores at the discretion of course coordinators.

Given this evidence of low English language ability in our overseas student cohort, it appears that there may be a pattern across Australian universities where overseas students from other language backgrounds are given preferential treatment to their domestic counterparts and may also be prone

to achieving results through deviant means. This revelation needs serious consideration in relation to offering equitable language support to all our students in need and ensuring that the support is designed to assist students in continuing to develop their literacy rather than just editing their assignments.

2.4.4 Low Socio-Economic Background

In Britain according to a report by *The Guardian* (2005), middle-class children have benefited far more than their working-class counterparts from the expansion on university education over the past 20 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 more disadvantaged 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%. Further, the council said the reasons for dropping out "may be unconnected with the course or the institution" and could include problems with integration with university culture.

A similar pattern has emerged in Australia where a 2002 study by ACER has found the connection between low socio economic status and tertiary entrance performance. These insights are confirmed and elaborated on by James (2002) who finds that "socio-economic background, gender, and geographical location all effect students attitudes to the attainability of Higher education". 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.

With an increasing trend to provide alternative entry to university and/or lower entry levels, there is a strong likelihood that a significant proportion of our students have weak literacy skills especially where they come from low socio economic, low literacy family backgrounds. Correlations between literacy and low socio economic status and Indigeneity are confirmed in extensive studies by DEST (1996) of years 3-5 at school. As Rose (1999) 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.

2.4.5 Low socio economic status, isolated location and Indigeneity

Hillmans (2005) report on the first year university experience confirms previous studies (DEST, 1996 & James et al, 2004) which found a correlation between low- socio economic status, rural and isolated backgrounds, Indigeneity and educational attainment. To compound this disadvantage, Hillman 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's sample includes only 1% of Indigenous students (a reflection on the low numbers represented in university). Her study reveals 17% of the Indigenous sample withdrew from study compared to 6% of non- Indigenous sample. The main reason they cited for withdrawing was "The

course turned out to be not what you wanted”. However this very non specific reason (which reveals the inherent flaws in the design of many survey questionnaires) is somewhat contradicted by additional data in Hillmans report that 10% more Indigenous students experienced difficulty with paying course fees and finding time for other commitments. Indigenous students nominated caring for children or other family members as their main problem 2% compared to 0.3% of non-Indigenous students.

Hillman suggests these difficulties may be related to a “dual equity group membership”. This is confirmed by James et al who reports 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 NT Indigenous population there is likely to be a high proportion that fit into all three groups: Indigenous, isolated and lower socio-economic.

It is useful to reflect on the following data from the DEST *National Indigenous English Literacy and Numeracy Strategy (2005) Indigenous Australians* to gain a broad picture of the challenges faced by Indigenous students who do make it to higher education. This provides some insight of the wide but interrelated range of issues that may affect their ability and/or motivation to persist at university study. In the context of this report, these issues relate to all three categories being discussed in this chapter: the *students backgrounds, situation and teaching and learning* issues. According to the DEST (2005) study, Indigenous students will 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. ”

Hillman provides us with a scenario of the challenges faced by a student from a rural/isolated low socio economic background who must 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, the challenges of; adapting to a new culture, operating independently, establishing good study habits as well as facing the like challenges related to poor literacy.

2.5 STUDENT SITUATION EFFECTS

2.5.1 Students' Expectations

Hillman (2005) finds that student expectations of higher education are changing. According to Hillman, students are not only more diverse (James & Beckett, 2000 in Hillman) and more consumer minded, they increasingly seek choice in subjects, delivery mode and assessment and in

time spent on campus. Australian Universities Teaching Committee (James & McInnis, 2001) reveal 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 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".

2.5.2 External forces (work/financial/family)

McInnis & James, 1995; McInnis, James & Hartley (2000) studies of first year students across a five-year period (1994 to 1999) 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 enrol 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.

Evidence from an ad hoc telephone survey of early withdrawals from units conducted by CDU Academic Liaison Units in semester 1, 2005 confirms Hillman's findings. Students' reasons for withdrawal from units at CDU were financial, family and work priorities rather than dissatisfaction with the course or units. This obviously requires more careful examination and analysis, as it could be argued that had these students received adequate advice, support in this transition to higher learning they might have maintained their focus on university as their priority.

2.5.3 Ability to Integrate with University Culture

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 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 effected by five factors: "Background, Academic, Environmental, Course Utility and Self-worth." He 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 spiralling 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 are 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*", effecting student withdrawal which can also be correlated with the three stages of Tinto's model *Separation: Student Entry; Transition: Academic Integration & Social Integration; Integration: Persistence*" as a way of understanding the *forces* that enable or disable Tinto's *stages*. Her study of first year students in the Business' School of a new university reveals a complex interplay of these forces lead 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. She 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 realized’ and may have failed to exploit the potential within that initial commitment.” These forces are described by Mackie (2001) 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. ORGANIZATIONAL FORCES ENABLE/CONSTRAIN ORGANIZATIONAL INTEGRATION

Understanding and coping with course content, pace and style. Finding the organization 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 & Schweitzer (2001) and Rickinson & 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 & 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 insuring their tutorial time interactions (face-to-face and online) provide them with a sense of belonging.

2.5.4 Uncertainty about Course Choice

Other reasons for first year attrition may be found in students’ uncertainty about their choice of course and their general preparedness to make the right choices about course and units. (McInnis & James, 1995; McInnis, James, & Hartley, 2000). The proportion of students reporting these problems has been found to remain stable over time (McInnis et al., 2000). Elson-Green (2006) in her investigation into whether low cut off rates effect retention at CQU, reveals that for CQU’s large mature student cohort, managing full-time work, study and family commitments as well as financial pressures are commonly cited problems. Her findings indicate students who are highly motivated but uncertain about what university entails (course choices, study loads etc). In response

to these findings CQU has established a case management approach (both face-to-face and online) where students set up a support plan through a structured interview at enrolment which covers educational, financial and personal issues and provides advice about course/unit choices in the light of these and ongoing support. One common unit coordinator has become aware of considerable numbers of external, mature age students from non academic backgrounds, who work full-time and have families and enrol in fulltime online study unaware of the time and academic commitment. This lack of access to advice and counselling from course coordinators is of great concern and the common answer when asked if they sought such advice was “I rang and rang but no one got back to me”.

2.5.5 Motivation

Rau and Durand’s (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 GPA. 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.

2.6 TEACHING AND LEARNING EFFECTS

2.6.1 Retention through good teaching

In a survey of first year undergraduates at Griffith University Zimitat (2006) found significant differences between the views of males and females, disciplines, and passing and failing students with regard to those aspects of teaching considered 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 support 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.

2.6.2 Responding to student diversity

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 and staff professional development.

2.6.3 Responding to lower literacy levels

The results of a survey by ACER (2001) of Entry Literacy Trends of over 2000 students from 20 universities indicate the levels of literacy of the majority of first year university students is not up to

coping with the traditional level of academic text many first year students are faced with. The survey assessed: critical thinking, problem solving, written communication, interpersonal understandings and found 60% of students scored between 270 and 400 on the literacy scale from 1-3. i.e. their literacy level ranged between Level 1 and Level 2. The Level 1 Descriptor of Critical Thinking (an essential component of reading and writing text at university) asserts that the student should be able to comprehend, analyse and evaluate explicit meanings and relationships in straight-forward text and makes inferences about these. The Level 2 Descriptor on the other hand requires students to be able to comprehend and analyse implicit meanings in moderately complex text. This hardly equips them with the requirement for tertiary students to, in Rose's (2004) words: "be able to read complex ... 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".

2.6.4 Democratising diversity in classrooms

As a way of addressing low literacy levels, Rose (2004) advocates an approach to teaching (particularly in first year) in university that "democratises" the classroom by scaffolding reading and writing academic texts in an explicit way that is inclusive of all students, particularly those from non literate backgrounds. If unit texts are not carefully chosen for students literacy level (i.e. too hard too soon) and tutorials are conducted in the traditional way (i.e. expecting students to read and comprehend text on their own prior to lectures and tutorials lectures and tutorial groups (include online ones) are in danger of excluding students who are not from highly literate backgrounds.

Rose et al's (2004) *Leading to Read* project promotes teaching strategies which "democratise" the HE classroom by scaffolding reading of academic text so **all** students can read the text with an understanding and at the same time learn to become effective independent readers and writers in the discourse of their discipline. The strategies enable students to: read high level texts with accuracy and comprehension; learn the essential skills of paraphrasing and summarizing; use what they learn about the genres of the texts they are reading to develop their writing skills. Over time this supported practice enables learners to all work at the same high level independently. The Common Units program is currently involved in this project and adapting learning materials and teaching practices accordingly.

2.7 ASSESSMENT AFFECTS

Where promoting retention is concerned, assessment success undoubtedly has a major impact on first year students' perception of self and their ability to integrate into the academic environment and thus has a mitigating effect on decisions to stay or go (see above discussion on general causes of attrition). If students' first experience of university assignments is a positive one in terms of the above criteria we have a far greater chance of students continuing. Bradshaw et al (2004) found that students showed much higher levels of achievement, satisfaction, self efficacy, skill transfer and optimism for continuing success where certain principles of effective formative learning were applied. These principles were: *Meta cognition* should be encouraged by giving students a clear explanation about the value of the learning task in relation to where they were on the learning continuum and where they needed to get to; *feedback* should incorporate explicit information for the student about their desired goal, present position and how to close the gap.

As well as being explicit, the importance of prompt feedback is an essential component of this success especially for online students. Ongoing feedback from CUC students confirms this where

students become anxious if assignments are not marked promptly and are extremely appreciative of careful explicit feedback. The assignment return policy for Common Units of a maximum two week turn-around is generally adhered to but where it is not students soon inform coordinators.

Studies of students perceptions of what constitutes good assessment indicates that students have a clear idea of what works for them and that this view is reflected by the literature. James et al (2002), from the Centre for Study of Higher Education, found from their surveys that students want the following from assessment:

- They want to know what they are working towards
- To be provided with authentic tasks
- Some choice and flexibility of tasks and modes of assessment
- Explicit outcomes/instructions/criteria
- An indication of what level of commitment they need to apply
- Explicit feedback about their level of achievement against intended learning outcomes

In Zimitat's (2006) survey of perceptions of good assessment, first year Griffith University students described believe good assessment as assessment that which "[makes] expectations clear, [makes] subject matter interesting and [uses] assessment strategies that did not reward memorisation".

2.8 EFFECTS OF STUDENTS LEARNING APPROACH

The way students approach learning and the effects of this on retention warrants investigation and has implications for the way students are taught. Ramsden (1992) claims that numerous research studies, both qualitative and quantitative, show the success of student outcomes is influenced by how they approach learning, regardless of the discipline. Further, the way students approach learning has an effect on how satisfying their experience of university is. He suggests that "Deep" approaches to learning are related to higher quality outcomes and better grades. They are also more enjoyable. "Surface" approaches on the other hand tend to be a dissatisfying; and they are associated with poorer outcomes.

These approaches are defined by Ramsden as:

Deep approach

Intention to understand. Student maintains structure of task

Focus on 'what is signified' (e.g. the author's argument, or the concepts applicable to solving the problem).

Relate previous knowledge to new knowledge.

Relate knowledge from different courses.

Relate theoretical ideas to everyday experience.

Relate and distinguish evidence and argument.

Organise and structure content into a coherent whole.

Internal emphasis: 'A window through which aspects of reality become visible, and more Intelligible' (Entwistle and Marton, 1984 in Ramsden 1992).

Surface approach

Intention only to complete task requirements.

Student distorts structure of task.

Focus on 'the signs' (e.g. the words and sentences of the text, or unthinkingly on the formula needed to solve the problem).
Focus on unrelated parts of the task.
Memorise information for assessments.
Associate facts and concepts unreflectively.
Fail to distinguish principles from examples.
Treat the task as an external Imposition.
External emphasis: demands of assessments, knowledge cut off from everyday reality.

2.9 EFFECTS OF ONLINE LEARNING

In the current iteration of the common unit program, the compulsory common unit CUC107 *Northern Perspectives* is principally an online course to the extent that, for internal students, tutorials are augmented by the online materials and conducted in the tablet PC lab. The Literacy units CUC100 & CUC106 are less reliant on online technology and, apart from the online information literacy workshop, use it mainly to introduce students to online learning skills and as a tool for communication, discussion and sharing of ideas.

The increasing use of online learning technologies, as exemplified in Common Units necessitates investigation as to how online learning may enhance or detract from students' experience of first year HE. This investigation has not thus far isolated a trend for an increase in withdrawal from external students, however this may be due to external students' lack of awareness about withdrawal formalities so that where they have "dropped out" but not formally they will show up as FA.

2.9.1 Online attrition rates

Reports of eLearning attrition rates vary from 70% - 20%. Regardless of where the truth lies along this continuum there is considerable consensus that attrition is higher for online learners than non traditional ones (Tyler-Smith 2006). Simpson (2004 in Tyler-Smith 2006), claims: "that 35% or more of eLearners withdraw before submitting their first assignment (p. 83)" 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% - 50% compared with 14% for on campus students. Related issues were excessive time spent by staff trouble shooting technological issues and students' feeling of social isolation with regard to completing assignments. For many of the students online learning was new and many lacked fundamental computer skills. Consequently the students had difficulty integrating technology with human interaction, necessary functions for online learning. Many reported 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".

2.9.2 Causes of online attrition

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), 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.” (p.93) He further reminds that that many mature adults lack the confidence, experience and skills in digital literacy that younger students have. The 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 principle cause being problems with the technology. Terry (2001 in Turner & Crews, 2005) also corroborates McVay Lynch’s (2001) findings that students had difficult adjusting to studying independently in an unfamiliar mode. He also cites faculties’ inexperience with online teaching as part of the problem.

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:

- (A) Defining variables related to the learner’s background, which include the learner’s maturity, personal circumstances and previous experience,
- (B) Environmental variables, such as family, social and work commitments and
- (C) Academic variables, which include the learner’s previous academic track record and the fit between the learner and the subject being studied.

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) suggest 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 principle 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.

2.9.3 Teaching and Learning Implications

2.9.3.1 Orientation to technology

Tyler-Smith (2006) suggest an approach to online teaching and learning in response to the following identified list of challenges faced by the learner from the moment they embark on the e-learning journey: “(1) negotiating the technology; (2) negotiating the course website; (3) negotiating the course content (4) becoming an eLearner (5) negotiating computer moderated communication (CMC) interaction”. He attributes this complex range of tasks as contributing to cognitive overload

and suggests that to insure this does not result in students giving up and withdrawing students need an appropriate induction which should include: a face-to-face introductory workshop (if possible), simple activities that scaffold later more complex tasks and meaningful discussion board tasks which assist with feelings of isolation and reluctance to engage with online learning.

Salmon (2004) similarly advocates content specific work should be limited initially in favour of relationship building e-activities to promote students online identities and a sense of community. She also suggests navigation options should initially be simplified/limited allowing students time to build their technical confidence.

In response to her findings McVay Lynch (2001) and colleagues established an orientation course with similar objectives to those found in CUC100 Academic Literacies but completed prior to, and separately from, the students' main course of study. The course enjoyed high success and retention rates and 92% of the students elected to enrol in further online learning. Significantly, where these students enrolled in only one online unit, attrition rate dropped to 7.6% whereas amongst students who enrolled in three or more units attrition was over 34%.

Fletcher (2005 in press) confirms the importance of IT competency and a specific orientation course in his findings of a correlation between instruction in the use of technology (through CUC100) and self efficacy in online learning environments (in CUC107). He concludes that students should "participate, not only in the computing and technical aspects of learning to learn online, (which may be appropriately exempted for some), but also in the collective and collaborative aspects of this new emergent modality of higher education". He also suggests completion of CUC100 (in which IT skills are specifically taught) before CUC107 would increase students' confidence and achievements in the predominantly online learning environment of CUC107.

A consistent theme in online teaching methodology is the importance of tutors' maintaining a consistent presence as mentors for the students. Jiang (2002) claims the two essential functions of distance mode tutors are first to maintain regular contact with individual students through email, phone and online to provide general support and help with developing and staying on track with their study timetables. Second, the importance of immediate feedback for assignments to motivate their progress is also seen as essential.

2.9.3.2 A student centred approach

The importance of a student centred approach to e learning is cited by Kaliym (2002) as the answer to the high drop out rate in students who engage in an e-learning - 70% according to Forrester Research (www.forrester.com). According to Islam the characteristics of this student centred pedagogy (Androgogy) are that it is:

- Practical and problem centred;
- Promotes their positive self esteem;
- Integrate new ideas with existing knowledge;
- Shows respect for the individual learner;
- Capitalises on their experience; and
- Allows choice and self direction.

In other words, online learning pedagogy should mirror the general principles of good pedagogy regardless of mode. We could add to this list the previous characteristics of adequate tutor support and training in ICT. In designing online-learning course Hines and Pearl (2004 in Turner & Crews 2005) suggest four levels of learning interaction need to be considered; interaction with instructor, technology/content, classmates, and self.

The students surveyed in McVay Lynch's (2001) study suggested that not only should they receive an orientation to how to use web technology but the course should also: "provide assistance in becoming aware of adult learning theory; elicit awareness of personal suitability for online learning; analyse and discuss adjustments needed for success in their studies; extensive opportunities for web-based discussion with tutors and peers; significant time for reflection in this new environment". All of these mirror the aims and activities to a more or lesser extent in *CUC100 Academic Literacies* apart from explicit examination of students' suitability for online learning which could be easily incorporated within the existing workshop on learning styles.

2.9.3.3 Establishing online readiness

Bernard, Brauer, Abrami and Sturkes (2004) suggest students' readiness for online learning is a successful component of success and identify four dimensions of readiness:

1. Online skills, such as computing, Internet and online communication via email or discussion forums;
2. Self-management of learning and learning initiative, which includes time-management, personal organisation and effective cognitive strategies;
3. Beliefs about online learning, which suggest that a learner's attitude about the relative efficacy of online learning as compared to classroom based teaching has an effect on their overall performance in an online course;
4. The degree of interaction with the tutor¹ and other students in an online course, and a high expectation of timely feedback on performance and support and involvement from tutors and fellow students. (p.33)

The UK's Lansing Community College (2006), sum up the required attributes of an online learner as being "*goal-oriented, able to study independently and willing to devote the same amount of time that you would to any college credit course.*" Their approach to ensuring students are adequately prepared and skilled for online learning is to ask them to self assess their suitability for online learning by asking them to complete a questionnaire before they choose their study mode. This can be viewed at <http://www.lcc.edu/online/quiz.htm>. A pre-course questionnaire such as this allows students to choose the appropriate mode or, if there is no choice, establish what strategies and support they will need to be successful. Ideally this should be offered at the enrolment stage.

2.9.3.4 Readiness of Teaching Staff

Additionally, it is important, in considering the challenges faced by students in online learning, to consider those faced by teaching staff which may affect their ability to provide students with the necessary support. Turner and Crew's (2005) suggest common problems for staff are: the extra time required for preparing online courses and the extra time required for teaching them where ideally

staff need to be available to answer individual students' questions and respond comprehensively to online discussion 5-7 days a week. Indeed it is estimated that online teaching staff have double the amount of contact with the students' then traditional staff (Sakura, 2002 in Turner & Crew, 2005). The implication for management is that the extra effort and time needs to be built into workloads and appropriate training in online teaching provided.

2.10 GENERAL EFFECT OF INSTITUTIONAL APPROACH

Longden in his 2004 report *Student Retention and Success: from Macro to Micro Analysis* integrates the institutional characteristics that deliver student success from research by Bean (1980); Tinto (1993); Braxton et al (1995). He suggests the best retention programs from the US have the following general characteristics.

At a managerial level:

Whole Institutional commitment: Acknowledgement that there is a problem

Success is About being proactive: Institution responsible for creating a success structure

Extended intensive contact with individual students: student-centred focus central to success.

Interlock program with all other services: seamless integration of services – 'one-stop shop' concept.

At the level of teaching and learning:

Strategy of engagement ensures staff take the initiative: Avoid passive engagement

Quality of staff engage with first year: select the best, gregarious and social first year tutors,

Promote and acknowledge "effective teaching": shape classroom behaviour to achieve success.

Focus on how students are coping: is the risk associated with transition period acknowledged.

Most importantly he suggests that the establishment of a task force that has authority from the top and a plan of action that moves beyond more detailed analysis of reasons for poor retention and more towards detailed analysis of student exit comments. He urges us to turn the data from student surveys into action not through "fuzzy pilot projects" but through a unified integrated approach to make the first year experience a seamless.

Shaik (2005) reports on a successful project at the University of Illinois to increase student retention by improving students' impressions and experiences of the institution. He suggests (in his highly commended paper) that we should embrace the corporate concept of *relationship marketing* a "marketing attitude of mind" which focuses on establishing relationships with clients based on "mutual trust and commitment" as a way of maintaining long term relationships. The results of this approach are that "students feel that [all university] staff are interested in addressing their concerns spontaneously and in a professional and friendly manner". The key to effective service management is a service centre that houses an information system with student profiles of relevant, consistent and, meaningful information that can be shared across university service centres to insure students receive appropriate and informed support across all aspects of course life. To be successful this requires a well managed service process, dedicated service-minded staff and a good physical or virtual environment.

2.11 CONCLUSIONS

It seems clear from the literature that first year attrition rates of 20% and above are common place in western universities and that there are myriad factors which cause these including: the impact of: the *diversity of students' backgrounds* (literacy, socio economic status, culture, Lote, location), *situation* (motivation, ability to integrate, outside forces), and *teaching and learning* factors (learning approach, assessment, online learning).

The literature highlights the need for an integrated approach to first year transition that recruits the combined energy and awareness of tutors, coordinators, discipline areas, student services and management. Students need support and assistance from their first point of contact with the university, across all areas of their engagement with the university and the best, most highly motivated staff, so that they make informed choices about what and how to study and receive the required academic and pastoral assistance from the beginning of their academic experience.

These issues are beginning to be addressed through the Teaching and Learning Development Groups (ILDG) *learning support* and *assessment projects* as well as various mentoring and tutor support incentives operating in different sections of the university. However, as Longden (2004) suggests, an organised, integrated and pro-active approach is essential if we are to successfully address student attrition. This might be effectively augmented by with an effective central data base of information about individual student needs and staff committed to building helpful relationships with students (Shaik, 2005).

In terms of online learning, the literature reminds us of the importance of training for online teaching staff and recognition by management that online teaching requires double the contact hours with students. Evidence also suggests that, before they commence any other online study, students should receive assistance in establishing their suitability for studying online and should complete an orientation (CUC100). Further, the suggestion is students who are inexperienced and lacking in confidence with distance and ICT learning should be advised to attempt no more than two online units in their first semester. A practical interpretation of these recommendations would be to suggest that *external online* students consider completing CUC100 first (potentially in the first semester of the year of commencement) or a maximum of CUC100 and CUC107 in their first semester of study.

It seems Common Units at present embody many of the principles of good practice espoused by the current literature but there is a need for Common Units to work more closely with discipline areas to insure that the good practice, skills and support are consistently provided by teaching staff within each discipline to insure that in their first year students receive seamless, comprehensive and consistent learning experience.

3. DIVERSITY AND PROCESS: EXPLORING STUDENT OUTCOMES

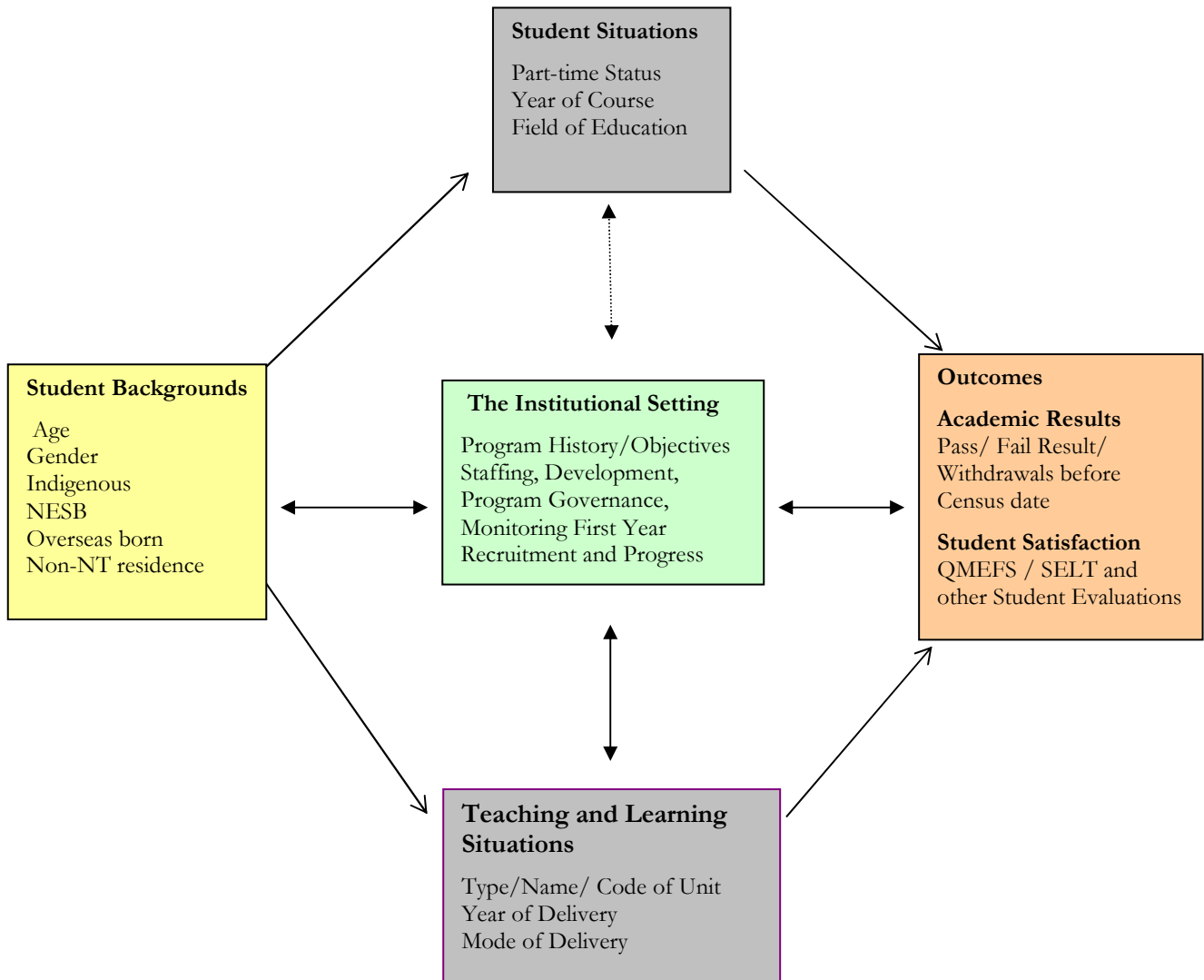
How might a researcher translate the myriad of issues raised in the literature into an evaluative model of the Common Units? This question appears to have two possibilities for the uses of the research literature: (a) as the basis for development of a predictive model of individual student variations in outcomes such as early withdrawal and academic failure; (b) as the source of evaluative mechanisms for feeding into the processes of program development. The predictive model points to the statistical analysis of the effects of factors, which individually or in combination with others, can help to identify risk factors. Methods such as logistic regression can be invaluable tools in this respect, and can bring to bear an epidemiological and causal rigour to the study of attrition. In the evaluative domain, the literature can point to areas where the results of predictive analysis may be most effectively applied. Here, however, the tools are not so clearly quantitative, since they depend on institutional factors such as levels of staff and material resources, climate, student mix and volatility, as well as decisions relating to the positioning of the program within University priorities (the Common Unit program itself was originally a senior management initiative).

In the former instance, the predictive model employed in the 1999-2002 study (Tyler, 2003, Fig. 7.1, p. 53) will serve as a starting point. This was specified as generic, recursive model which implies a predictive relationship between student background characteristics such as age, sex, ethnicity etc and individual outcomes such as early withdrawal (i.e. before the census date, normally without penalty) and passing or failing the relevant unit or levels of student satisfaction. This relationship was then seen to be mediated by situational variables, whether parent-course or Common Unit-specific. Course-related variables refer to a student's part-time or full-time status, year of study etc., while the Common Unit-specific variables refer to the student's mode of study, mode of delivery (print/ lecture/ online/ face-to-face), as well as unit content (e.g. skill- or general education-oriented). This model is flexible and can be used not only to identify not only the individual effects of both student and situational variables, but also the unique combinations of values across these variables (e.g. older male students in external modes of study) which may elude an additive model which assumes a uniform effect for each variable. This latter technique (interaction analysis) was used effectively in the previous study, particularly in disaggregating effects of age, gender and Indigeneity.

The results of these predictive relationships in turn inform the program development process, by showing up areas for improvement, intervention or adjustment. There are different levels of analysis to which these results may be applied. At the individual level, used judiciously, they provide tutors and lecturers with a basis for identifying students who may be most at risk of failure and in need of extra support. While these global relationships must be moderated at the pedagogic level, they nevertheless can alert program deliverers of those risk factors which may not be part of lecturers' body of knowledge and may, in some instances, contradict it. At the unit coordination level, the research literature provides a good basis for building on the experiences of other first year programs and of identifying what changes may be more likely to "work". The results of the predictive analysis are equally instructive in revealing aspects of interaction between certain kinds of content, modes and types of delivery in relation to certain categories of student intake. At the developmental level, that of the Common Units Committee and its associated bodies such as the Teaching and Learning Development Group, the analysis of outcomes is a valuable source of information available nowhere else. This asset has been utilized most notably in this instance, at the November 2005 workshop for management group members as well as all CUC lecturers and tutors. At an institutional level, that of governance, the results are not only a tool for evaluating the Common

Unit experience, but because of its compulsory and universal properties, for monitoring all aspects of student recruitment and retention in the first year of University.

Fig. 3.1 Exploring Common Unit Issues 1999-2004: An Integrated Model



These two dimensions of this monitoring process can therefore be integrated in a formal model which combines the results of the predictive analysis of student progress, with a feedback loop into the processes of development and governance (Fig 3.1). On the first account, the predictive dimensions are specified in terms of the relationships between student characteristics, their situations and outcomes. The description of these relationships then provides the raw material for the evaluation of the program. This model therefore positions the developmental and governmental aspects of this study at the centre of the evaluation process. While the analysis of results relating to student recruitment, progress and satisfaction provide a unique source of empirical findings, it is in their interpretation and incorporation in program development and governance that they find their most important use.

3.1 DATA, VARIABLES AND SAMPLE PROFILES

It therefore remains for this model to be translated into an operational form. On the precedent of the previous study, it will be necessary to provide a description of (a) the sources of data for the student progress analysis, (b) the characteristics of the sample and (c) of the individual variables included in the regression analysis and their distributions. This will then provide some basis for the reformulation of the questions posed at the end of the first chapter into a set of precise operational hypotheses. The objective for this report is not to replicate exactly the previous 1999-2002 report, but to use the results of that report as a benchmark against which the impact of the restructuring and other changes to the program may be systematically evaluated.

3.2 DATA COLLECTION AND QUALITY

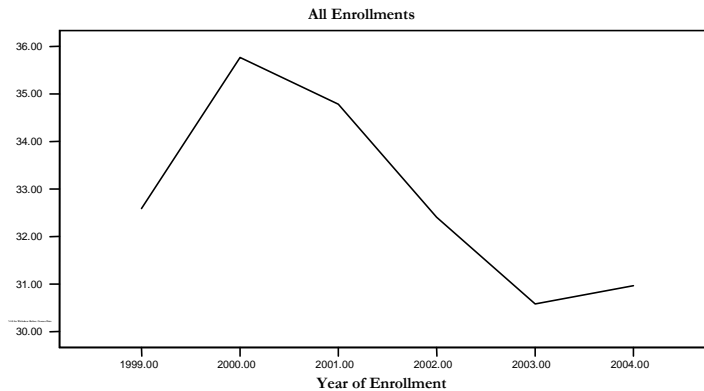
In a manner similar to that of the previous study, the data for this study were drawn from Common Unit enrollments gathered across databases, though taking CALLISTA as the main source, held by that section and provided by Mr. Michael Kyr. For the years 2003-4, this produced a sample of $n=4034$ valid enrollments (6 had no result recorded), including 1242 of early withdrawals or 30.7% of the total. "Passed Unit" referred to all grades ranging from PC to HD. Accordingly, the results recorded variously as Fail (F), Withdrawal Fail (WF), and Failed Absent (FA) and Pass Terminal (one only, PT) - were all coded as "Failed Unit". Withdrawals referred therefore only to those enrollments withdrawn before census date, where no penalty was applied. The Withdrawal without Penalty (WW, $n=94$) and the Incomplete (I, $n=150$) which referred to continuing enrollments were coded as missing. To summarise, out of 4034 enrollments in 2003-4, 1242 were withdrawals before the census date, 244 were either WW or I, leaving a usable total of 2548 continuing enrollments, which were the basis of the main analyses of results in the following chapters. There were very few missing values, the most notable exception being for the Indigenous category (32 or .8% of total enrollments). In this case, as in all variables in the predictor set, a positive response was recorded to the value of 1, an alternative response was coded 0 and missing values were coded "System Missing" under the SPSS protocol.

As for the previous 1999-2002 study, all data were anonymously collected, the only identifier being the student number. These data were processed under the strict provisions for guaranteeing both the privacy and confidentiality of individual students as specified by the University's Human Ethics policy. Though the term "sample" is used to describe the base for data-collection and analysis, this is an enumerated population for the students taking Common Units over the years 2003-4. It is the equivalent, in a sense, to a census-method of gaining data from that population, rather than a probe or polling exercise. When pooled with the database of the 1999-2002 study, the total enrolments for trend analysis for the period 1999-2003 was as follows: total enrolments $n = 11,569$, of which 3,791 were early withdrawals and $n=7778$ for valid completions (i.e. codable as either pass or fail). The size, quality and comprehensiveness of the data base for this study therefore provides a very sound basis for the analysis of the performance and equity aspects of the Common Units program over the five of its six earliest years of operation (inaugural year 1998 omitted due to data quality problems).

3.3 TRENDS IN STUDENT OUTCOMES 1999-2004

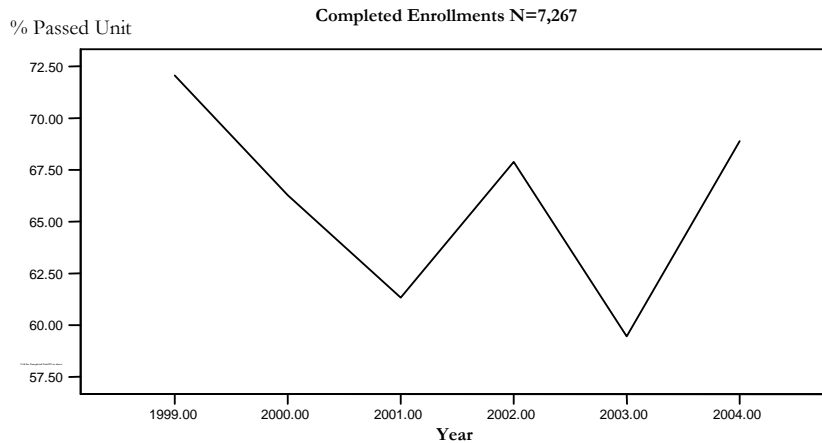
Trends in the performance aspects of the Common Units may be tracked by the analysis of changes in rates of early withdrawal and student failure over the six years in the combined sample 1999-2002 (Figs. 3.2 and 3.3). The trend line for early withdrawals reveals a gradual decline from a high rate of almost 36 percent of enrolments in 2000 to a low of just over 30 in 2003.

Fig. 3.2 Trends in Early Withdrawal Rates 1999-2004



On the other hand, the trend line for pass rates over these six years (Fig. 3.3) shows a much more uneven pattern, with a gradual decline from over 70 per cent in 1999 to a low of about 62 per cent in 2001, followed by a “spike” to another high of 67.5 per cent in 2002. The following year, which coincided with the introduction of the new units, the rate plummeted again to a low of just below 58 per cent, which righted itself to a trend average of about 68 per cent in the following year. This unevenness suggests a disruptive effect of the restructuring in 2003, but perhaps also the resilience of the program in the face of a fairly radical reorganisation.

Fig. 3.3 Trends in Pass Unit Rates 1999-2004



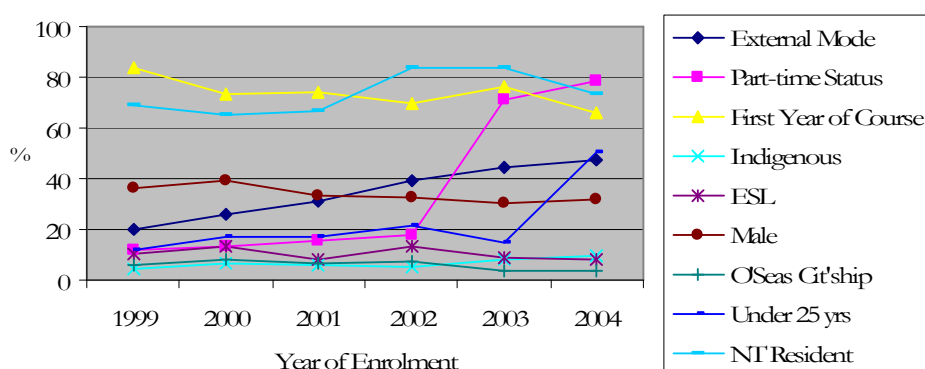
However, these trends, when combined, show a real problem with the retention of students from enrolment through to success. For every 100 enrolments (note, not students) in an average year, the loss of about 33 (32.8%) through withdrawal before census date, followed by the loss of another 23 (34.2% of those staying on). The result is that the pool of students who have passed their Common Units is well under half (about 44%) of those who originally enrolled. Of course, these are fairly crude calculations, since enrolments do not equate to students and Common Units may be taken beyond the first year of university courses. Part-time students often withdraw from a total program when they find they are over-committed. When they decide to stay on, they may often give priority to the core units of the parent course. There is always a degree of “churning” in the first year of a

program, and the Common Units may not be untypical, or indeed, particularly exposed to lower levels of attention, given the centrality of the core units to student survival. Given these factors, the immediate question that arises from these trends is what students are at most at risk of contributing to the attrition statistics – in terms both of their study situation and their individual socio-demographic profiles. This leads us to consider the trends in the same years of these predictors of withdrawal and failure.

3.4 TRENDS IN PREDICTORS: EARLY WITHDRAWALS AND “FAILED”

While Fig. 1.1 showed the trends over the years 1999-2004 for all enrolments, it may be instructive to disaggregate these in terms of their four principal outcome groups – i.e. the early withdrawal and “failed” categories. Do these two kinds of attrition attract different profiles of student in terms of both situation and individual socio-demographic markers? This question may be addressed by an examination of the trends in the distribution of these predictor variables over the full period of observation (Figs. 3.4 and 3.5)

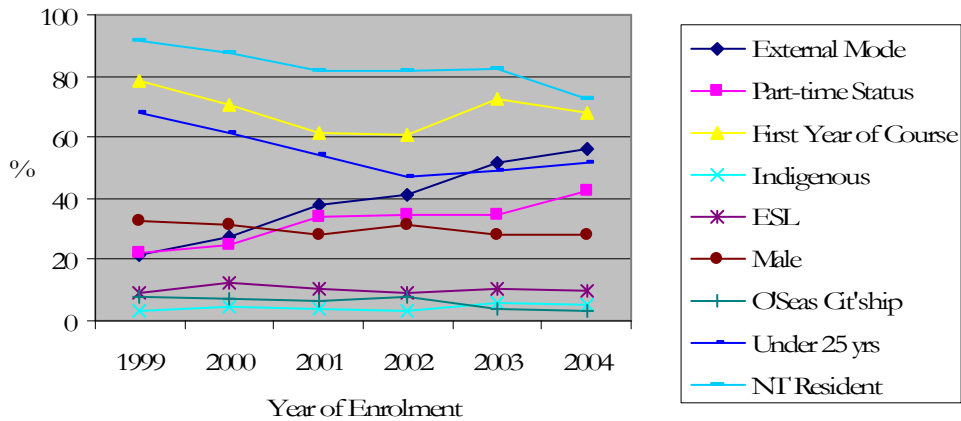
Fig. 3.4 Trends in Early Withdrawals 1999-2004
All Enrolments N=3743



3.4.1 Trends in Early Withdrawal

Trends in the composition of early withdrawals displayed in Fig. 3.4 indicate a general stability in rates of overseas citizenship and Indigeneity and declining rates of male gender, first year enrolments and, recently, NT residence. The main source of instability in the trends would appear to be due to the dramatic increases in early withdrawals in the two recent years 2003-4 among part-time students, which showed an almost fourfold increase. This was accompanied in the year 2004 by a doubling of early withdrawals among the under 25 yr age group. It must be stressed that these rates refer to the specific sub-population of early withdrawals, are theoretically independent of the composition of total enrollments displayed in Fig. 1.1, although they must be interpreted against the background of changing intakes. The reasons for the jump in early withdrawals in the two recent years may be explained by the doubling of recruitment of part time enrollments over these years shown in Fig.1.1. The discrepancy between a two-fold increase in enrollments vs a four-fold increase in early withdrawals, needs to be explained, however, perhaps in terms of the structure and content of the new degrees which were offered for the first time in 2003, particularly in health sciences, education and law.

Fig. 3.5 Trends in Pass Rate 1999-2004
Enrolments with Pass Grade or Above N=4782

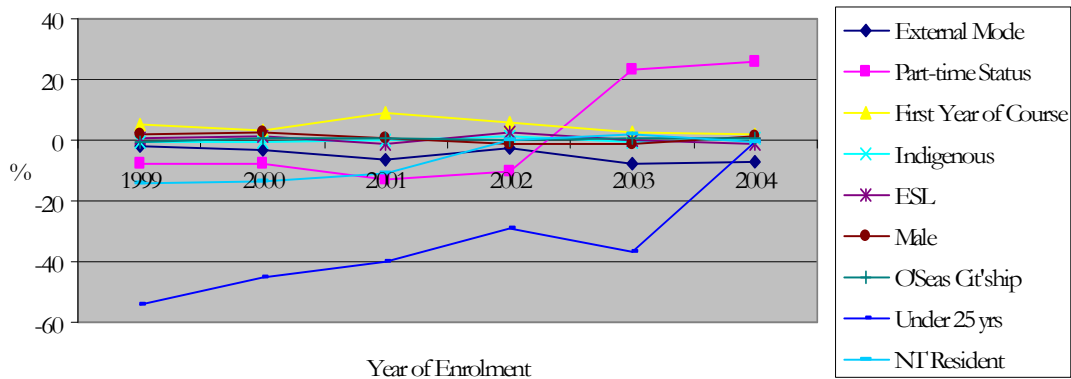


The changing composition of the successful (pass grade or above) enrolments is illustrated in Fig. 3.5. Here we see again a relative stability in the minority group (ESL, Indigenous) representation, though a relative decline in the percentage of overseas (non-Australian or New Zealand) citizenship, accompanied by a trebling of the percentage external enrolments and a doubling of part-time enrolments. Male enrolments continued to decline as a proportion over the years, while the percentage of first-year enrolments fluctuated a good deal, between sixty and seventy percent of the total for the year. The percentage of younger enrolments declined between 1999 and 2000, though were recovering in 2003-4.

3.4.2 Trends in Attrition, Diversity and Stability

These trends in composition of early withdrawals and passing grades, as mentioned earlier, do not reflect the overall patterns of attrition of equity groups unless set against the broader changes in intake for each year. While a more detailed study of the individual effect of each equity category will await the more sophisticated analysis of the following chapter, it might be instructive to examine the general trends of over- and under-representation of each group in withdrawals and passes based on to that group's representation in total enrolments. This would open the way for another, broader analysis, namely an investigation of the effects of gross measures of the diversity and stability of the overall intake on the rates of early withdrawal and passing a unit.

Fig 3.6 Trends in Over/Under-Representation
Early Withdrawals 1999-2004 (N=3,743)



The trends in early withdrawal rates when standardized against intake proportions for each equity group again indicate a fairly stable pattern, with the outstanding exception of part-time enrolments in the final two years. First year enrolments are consistently over-represented, as are internal enrolments (externals fall under the line of proportional or average representation). There is a remarkable increase in the representation of under-25 yr enrolments, from beginning of almost minus 45% to a near average representation in 2004. This lower level of withdrawals may be due to a tendency of younger or school leaver age groups to take advantage of the skill formation aspects of the Program, a positive sign, since it was designed primarily as a transitional device. It will be interesting to see whether the trend towards average rates of early withdrawal continues for this younger age group, or falls back to its historically lower level. Again, the surge in early withdrawals for the part-time population has yet to be explained, indicating as it does a rate in excess of 20% of its expected proportional value.

Fig 3.7 Trends in Over/Under-Representation
Pass Grade or Above Enrolments 1999-2004 (N=4782)

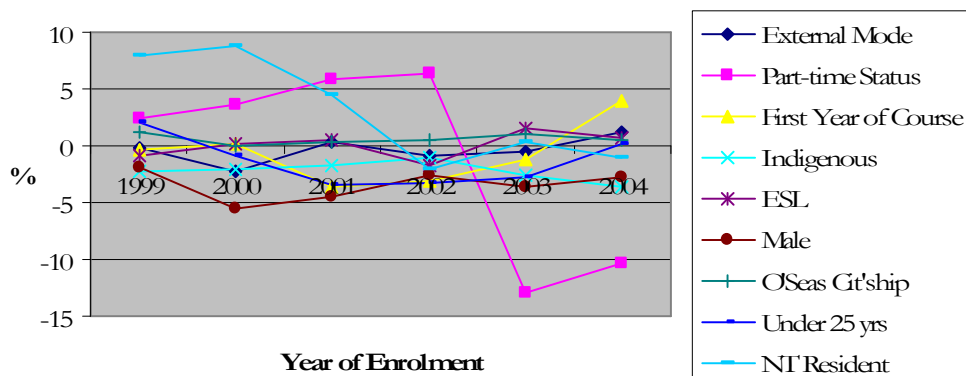
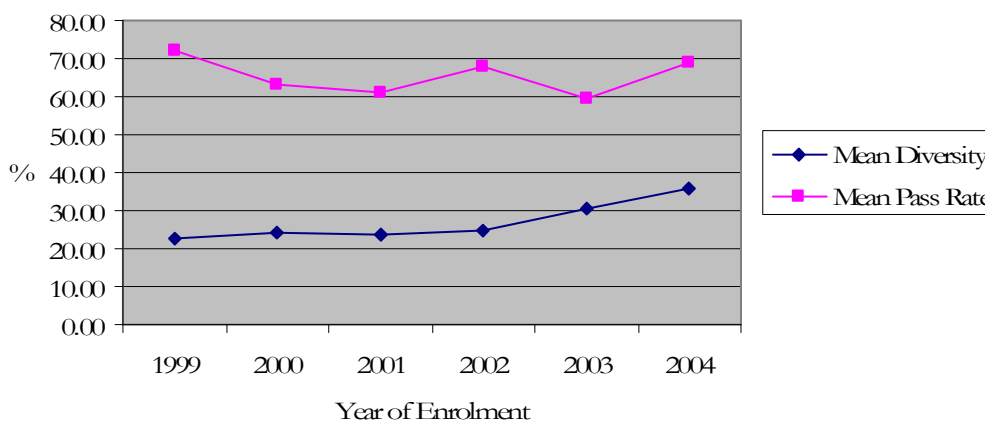


Fig. 3.7 shows the representation of equity groups in passing a Common Unit based on the initial total enrolments, including early withdrawals. The two groups that appear to suffer wide fluctuations over the period appear to have been among NT residential and part-time enrolments. The part-time decline, which is quite pronounced, could well be a function of the disproportionate rate of early withdrawals in that group. The relationship between withdrawal rates and pass rates is therefore a question that should be explored further – do groups that “stay on” for example, tend

to have also higher pass rates? For the other equity groups, there are not such wild fluctuations in rates of representation, males, for example, are consistently under-represented in the pass categories while external enrolments show a slight reversal of performance in the latter years, perhaps as a result of the restructuring. It is encouraging to see the first year enrolments have trended back to above average in pass rate, after a distinct dip towards an under-representation in years 2001 and 2002.

Do trends in the diversity of the intake by year and by equity group affect the pass rates? In this case we might take a crude indicator of the diversity in any one year by its mean score across the nine equity groups for all enrolments (with “NT residence” reverse-scored as “interstate residence”). Despite this being a rough measure, it may still provide some initial indication of the effects of different degrees of “mix” within years on the trends in rates of academic success. This measure or indicator was plotted against the relevant mean pass rate (Fig. 3.8).

Fig. 3.8 Trends in Mean Diversity and Pass Rates 1999-2004

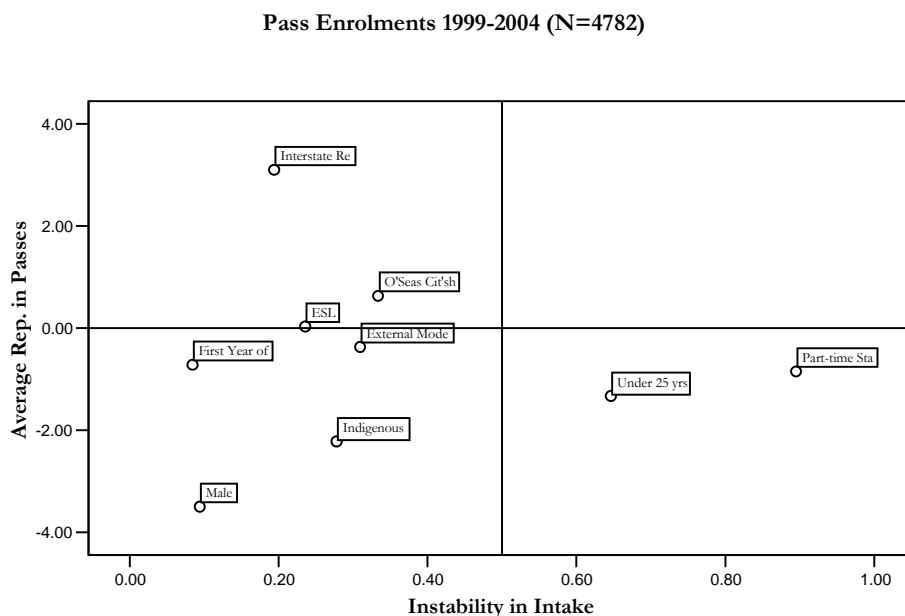


3.4.3 Diversity and Stability

The display of the joint trends of pass rate and diversity of intake indicate that the reduction of choice (restructuring) of unit offerings described in Chapter 1, did not affect the performance of the bulk of students enrolling in the Common Unit program. Indeed, although accompanied by an increased diversity of intake of the years of the phasing in of the new units, the pass rate recovered by 2004 to just above its pre-restructuring average. This speaks well of the response of the design and delivery systems of the two new units, suggesting that flexibility in content, method and assessment was able to compensate for the loss of variety in unit choice. From another perspective, it is possible to examine the surface effects of instability in enrolment proportions across the equity groups on the average group representation in the passes for combined years. Here we are looking at the variation between years, rather than the variation within years. The appropriate statistic here is the “coefficient of variation”, obtained by dividing the mean standard deviation for each group over the six years in initial enrolment by the mean enrolment percentage for that group (in order to eliminate differences in scale). The relationship between this statistic and the mean or representation rate of each equity group across the six years is displayed in the scattergram (Fig. 3.9). This shows a slight negative relationship between instability values and the level of over- or under-representation in the pass grade population. The groups that fit this relationship best are interstate and overseas enrolment (low instability, higher than average pass representation) on the one hand and the under 25 yrs and part-time status groups (high instability, lower than average pass representation) on the other. Although this relationship is only indicative, since there are other

factors besides enrolment instability that may contribute to pass levels, it deserves further exploration in a multivariate context.

Fig. 3.9 Scattergram of Intake Instability and Pass Rate Representation



3.5 TRENDS IN STUDENTS QUALITATIVE RESPONSE TO COMMON UNITS

3.5.1 Feedback via formal evaluation

In terms of qualitative data of students' responses to Common Units our most consistent source of qualitative data for the period of this report has been through the university's official student evaluation tool SELT (Student Experience of Teaching and Learning) introduced in 2004.

In order to provide a broad enough picture we include below the SELT data for 2005 although this data spills into the time frame for the next phase of reporting 2005/2006. The response rate for 2004 and 2005 (unweighted for student load) overall was 23.7%, which is not unusual in surveys that include a large number of external students. Although this rules out statistical treatment, there are some points of interest in these graphics with regards to student response over time and across domains. The SELT asks students to rate their responses on a scale from 0-7 with 7 being the most positive.

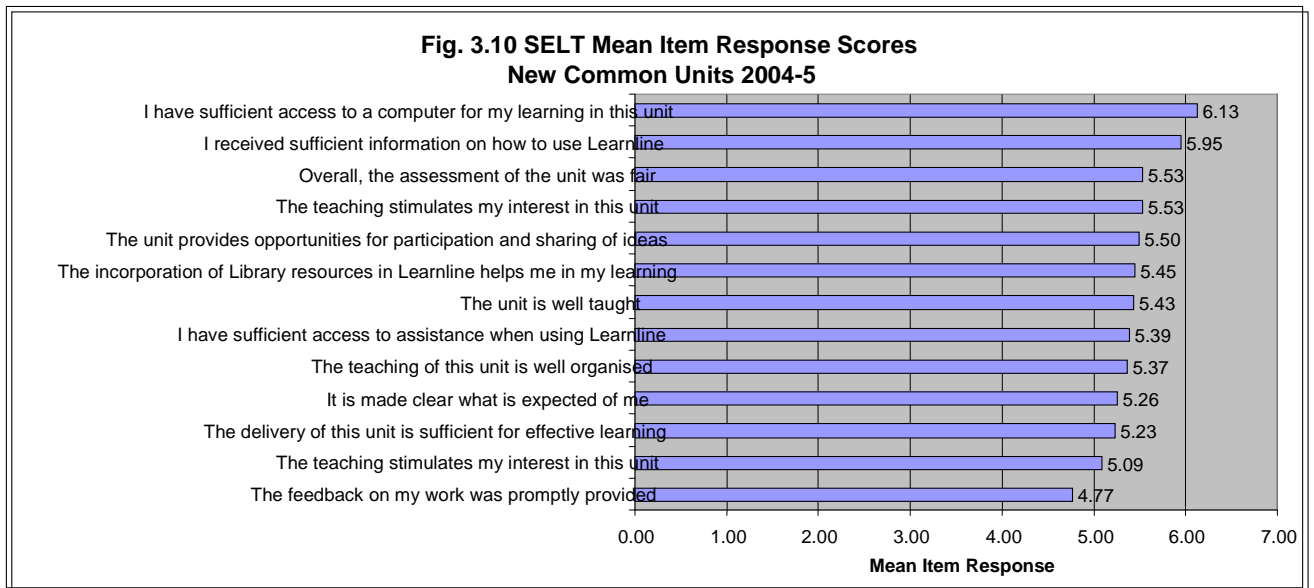
As with any such questionnaire responses need to be viewed in the context of a range of subjective elements including:

- The Common Units being compulsory interdisciplinary units and therefore not always popular
- The tendency for students who bother to respond having polarised views
- The content of the different Common Units appealing more or less to different students

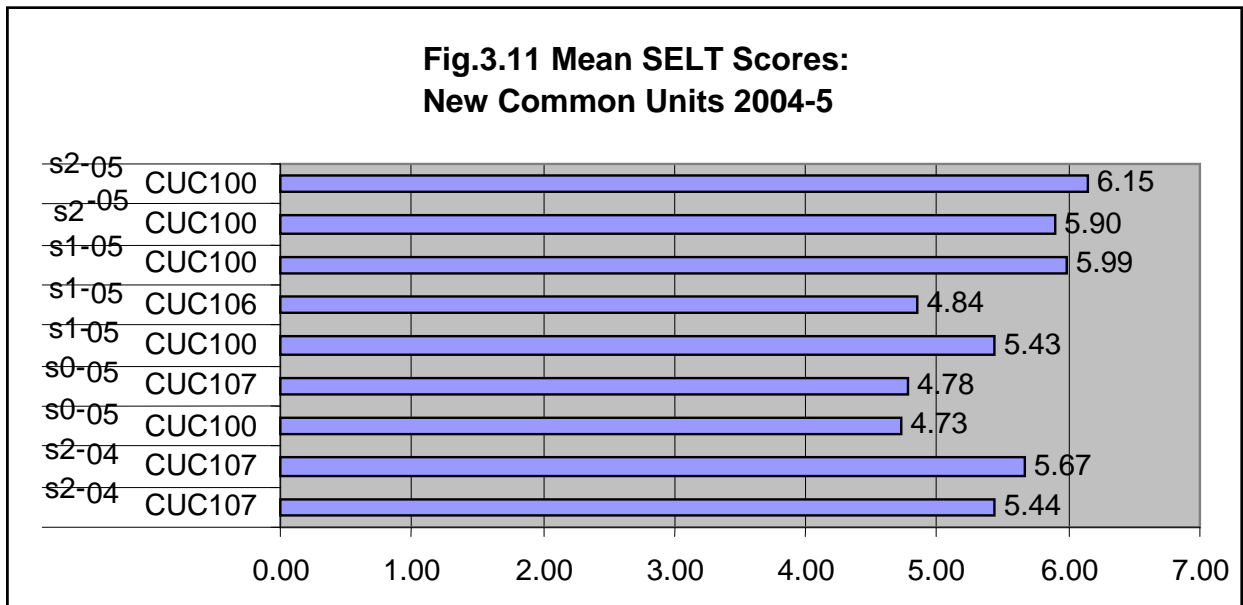
- The performance of one rogue staff member skewing results (for example feedback on marking in the chart below), and not reflecting general performance.

However this is not to deny we have much to learn from such surveys, in this instance, as illustrated below, this includes: the importance of vigilance about marking turnaround, the need to examine the Semester 0 teaching and learning experience and review CUC106 delivery.

The following two global charts illustrate students' responses to various components of the units with items ranked in the second chart in order of average rating. The first chart reveals each item with a mean response across all Common Units with responses indicating that for all items, students were affirmative with the exception of *prompt feedback for work* which at 4.77 took this score close to undecided.



The second chart provides the mean SELT score for the each Common Unit from 2004-2005. A couple of interesting patterns emerge. First it appears students' response to the units in the 0 semesters for both units was lower than in other semesters, CUC100's mean score moving from 4.73 in Semester 0, 2005 to 6.15 in Semester 2, 2005. CUC107 moving from 5.67 in Semester 2, 2004 to 4.78 in Semester 0, 2005. CUC100 had a slightly higher overall mean score to the other two units. It appears students responses to CUC106 were lower than the other two units which may be related to the fact that the unit was in its first semester of delivery. However, in general none of the three units (CUC100, CUC106 or CUC107) fell below the mean score of 4.73 (a response of 4 being undecided and 7 strongly agree in response to each item).



3.5.2 Verbal Feedback from Students

In terms of anecdotal data, responses emailed to coordinators from students have been recorded below under the two units CUC100 and CUC107 as they provide a valuable indication of what students find useful about Common Units. This feedback only covers students' positive responses as negative verbal feedback thus far relates to: indignation at having to do the units in which case the student is often eligible for exemption, misunderstandings with a particular tutor that are resolved by coordinators.

3.5.2.1 Response to CUC100 Academic Literacies

"Having left school at 15 (20 years ago) I found this unit invaluable. The information on how to reference properly came in very handy for my other unit. The easy-to-follow method used to teach us how to formulate and layout an assignment correctly was great. I feel this helped me to achieve a good result in my other studies so thank you. I will definitely benefit from this unit through the rest of my studies and continue to use the material as a guide. I found this [Communications learning resource] valuable and will keep the entire text to the unit as it will assist me in future for further studies and essays."

"I thought that I was already a confident and skilled communicator, which I had learned over 44 years. This unit has made me realise that I was lacking a little and has helped me change. I now listen better and hear more. I am gaining confidence in writing and already I have seen the difference in my writing at work."

"The reading and critical thinking part of the unit definitely clarified some issues and certainly developed these important skills. The readings were wide-ranging and varied and gave us an opportunity to read others' views, [and] to see how change and development is occurring still in academic learning and research. All my notes are being kept for future reference."

"These [online discussions] are extremely helpful. I loved the fact that I could look and see that other people were in this with me. It is really hard to stay focused externally but having this discussion board helps you with your assignments and motivation. I have another online course that

did not have this facility available and I fell behind, finding it hard to finish the work with no support.”

“As a mature-aged student who has essentially never used a computer before, every aspect of this module was a new experience for me. The step-by-step (almost idiot-proof) instructions were a great relief, although I can understand how people with greater ability may have been frustrated by this simple approach. Tables, spreadsheets and PowerPoint presentations! Wow! I've already used my new-found knowledge to achieve good results in my other units. I rated my computer skills at the beginning of this module as being 2 out of ten. Now I would say I'm about a 6. I have definitely benefited and will continue to build on what I have gained.”

“I have gotten a lot out of [CUC100] and will refer back to the material many times over during my Uni Studies. Keep up the good work.”

“I am just sending you a quick, though heart-felt THANK YOU for the researching skills I have gained during this unit.”

3.5.2.2 Response to CUC107 Northern Perspectives

“Apart from the fact that I hate sitting in front of computers I found the ideas were explained really well online and this helped me understand the readings better”

“Even living in the NT does not make you fully aware of decisions being made by the Government. The materials gave plenty of interesting info about a variety of topics, but they were also relevant to the assignments, which I liked. I learned new info in this unit.”

“The material was easy to access, and very interesting to read. Very conscious of the fact that we are sitting behind computer screens and therefore made the readings comparable to things we could all relate to.”

“This is my first attempt at Uni study and external study. I found the information relevant and easy to access, and appropriate to the course.”

“I have found this common unit to be very informative and I certainly have learnt a lot from doing this subject. The information presented has been interesting and the extra resources suggested have also provided some interesting learning. As a 1st time mature external student I have found this course enjoyable.”

“I found the group assignment excellent. I was lucky enough to get into a fantastic group. We worked together extremely well.”

3.6 QUESTIONS FOR FURTHER ANALYSIS

This investigation has opened up wider possibilities for further analysis of the predictive basis of attrition. While the trends of over- and under-representation of equity groups in the attrition rates are indicative of the patterns of changing student outcomes, it has several limitations. First, while the decomposition of an outcome group of survivors or successes, it does not represent the “outflow” figure calculated on the basis of the proportion of the enrolments in that category who survive. It is the latter estimate which is of most interest sociologically, usually represented by the

regression of outcomes on predictors. Second, while there are some clear relationships between equity groups and outcomes (e.g. the recent low achievement of part-time students), a firmer basis of this link can only be established through controlling of the other covariates which may be associated with any one predictor. Are the part-time students, for example, more likely to be older, male, studying externally, resident outside the NT and enrolled in certain courses? Third, what might be the risk factors which are not fully captured by an additive model of prediction – are groups “at risk” or either withdrawing or failing best identified from unique combinations or “mixes” of values sprinkled among the equity groups (interaction analysis). The relationships between student characteristics and early withdrawals needs to be examined (are the Common Unit withdrawals a collateral of course withdrawal), as well as the relationship between early withdrawal and academic success across the equity groups.

These questions will therefore be explored in the following chapter:

1. What are the independent predictive effects of each of the equity groups on the two attrition outcomes for years 1999-2002 vs. those for 2003-4?
2. What can account for the disproportional increases in early withdrawal rates and lower pass rates among part-time enrolments in the years 2003-4?
3. Can “at risk” students be more effectively identified according to unique combinations of predictor values (e.g older, internal mode, male)?

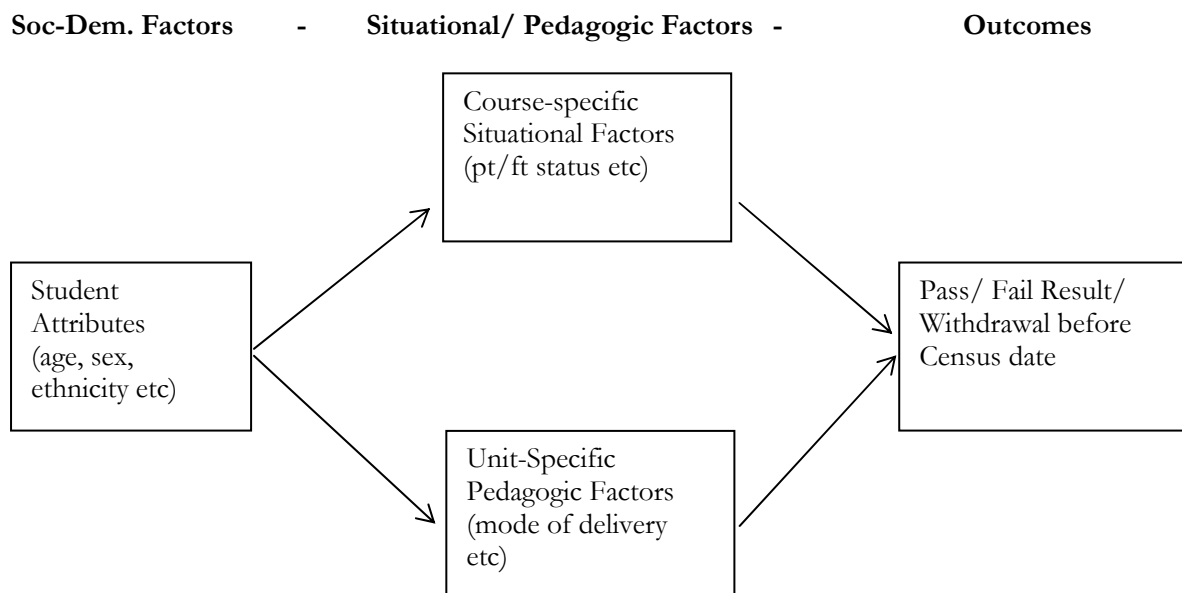
4. EQUITY AND OUTCOMES IN COMMON UNITS: 1994-2004

The review of the literature and the analysis of trends in equity and outcomes have generated a set of specific research questions that may be explored on similar lines to those in Chapters VII and VIII of the previous report for 1999-2002 data (Tyler, 2003). First the individual and independent effects of each of the equity groups and student situations on the two main attrition outcomes (early withdrawal and academic success) need to be estimated for the whole of the sampled years i.e. 1999-2004. Second, the impact of the unit restructuring of 2003-4 on these effects needs to be explored. Third, the identification of groups at risk by way of predictor terms which pick up unique combinations or “mix” of predictor values should be carried out. Along the way, some side questions of particular interest may be explored, such as the connection between early withdrawal from the Common Units and concurrent course withdrawal. There may also be other issues emerging from this analysis which resonate with recent debates and controversies, such as the language competencies of overseas students (Birrell, 2006), and the recent public debates over the evaluation of teaching and learning quality. These will receive further discussion in the latter sections of this report, particularly in issues arising from the November 2005 workshop.

4.1 ESTIMATING INDEPENDENT EFFECTS: STUDENT CHARACTERISTICS AND STUDENT SITUATIONS

Figure 4.1 sets out the terms of Fig. 3.1 in the form of a recursive (i.e. effects go one way) predictive model that allows for the effects from student attributes or characteristics and their situations on attrition outcomes to be statistically estimated. This model is identical to that employed in the previous report (Tyler, 2003) and it is included here for convenience, with explanatory notes based on those in that section of the report.

Fig. 4.1: Predicting Outcomes in the Common Unit Program: a Generic Model¹



¹ This figure is identical to Figure 7.1 from the previous report *Student Outcomes in Common Units, 1999-2002* (Tyler, 2003)

In estimating the parameters of this type of predictive model, the researcher first of all assigns the predictor factors (i.e. all those in the boxes to the left of the “result recorded” box) into one of four classes or types:

(1) Fixed effects such as the mode of delivery of a unit, the content orientation of a unit (i.e. towards science or humanities/social sciences). Within the external mode, these include the option to deliver the unit by print-based or online-based media. Random factors can be identified as the semester in which the unit is taken.

(2) Covariates or background effects, such as the linguistic background of the student, the year of the student’s course cycle in which the unit was taken (supposing a maturation effect that might give students an advantage), or demographics such as student’s ethnicity, age and gender or state of home residence. The field of study of the parent course (e.g. education, health science, social sciences) are also important covariates.

(3) Random effects such as the year or semester of enrolment, the unit taken (in any one year), the tutorial group (not included here), or the order of units taken (again not estimated but of later interest perhaps).

(4) Interaction terms which are produced from combinations of predictor values across these three classes. For example, gender may interact with age or mode of delivery to produce a larger “gap” (e.g. generating a higher success rate for older female than for younger female students relative to their male peers). These interaction terms are the basis for the segmentation analysis which can rank combinations of values with probabilities of an outcome.

In the same manner as the previous report, this analysis will employ logistic regression techniques to produce precise weights for estimating the independent effect of each predictor on the “log odds” of early withdrawal and passing or failing a unit. These are the logarithms of the “odds” which are ratios of the probability of say passing a unit over not passing and allow the effects of each predictor to be compared. It remains, then, to describe the operational procedures which generated the data against which this type of model can be tested.

The generic model in Fig 1 was tested against a data set which included all enrolments over the six years of observation, 1999-2004. The primary unit of analysis was taken in the first instance to be the enrolment record in a specific unit, rather than the individual student’s performance history in the program. This strategy has the advantage of decoupling student overall performance from unit performance and is administratively the more attractive option, since that is the way the data was recorded and reported by the University. However, this approach has certain limitations and could at a later date be usefully supplemented by a student-level strategy which takes into account individual histories such the number of units in which a student has enrolled, a student’s average performance in the program, and the ratio of withdrawals to completions in the enrolment record. These student-level issues represent not only important considerations for unit development and planning but also raise statistical issues such as possible distortions in the sample arising from the over-representation of students with higher numbers of enrolments. However, for the present analysis, since each enrolment event is unique, it was decided to treat this as the primary unit of data and to leave the student-level analysis to more sophisticated methods such as multi-level and variance component modelling at a later date.

The following methods were employed:

- (1) An analysis of bivariate and multivariate (i.e. controlling for other relevant variables) relationships between predictors and outcomes. For the multivariate analysis, logistic regression techniques, described in the preceding chapter, were used for estimating risk factors for success or failure, completion/withdrawal).
- (2) An exploration of interaction effects that often elude the methods of (1) in order to identify the unique and often “quirky” combination of values which may at time go “against the grain” through multiplicative, rather than additive, effects e.g. while Indigenous status may be a disadvantage factor, it may acquire further force by unique combinations with age and gender are not captured by simply adding together the weights for these individual predictors.

4.2 VARIABLES AND THEIR DISTRIBUTIONS

Although the trends displayed in the previous chapters provide an indication of the composition of the sample, individual variables and their distributions have not yet been described. All data was anonymously collected at the enrolment level, the only identifier being the student ID number. The predictors were coded into dummy variables (i.e. 1 for possessing that trait or characteristic and 0 for its absence in the enrollment record). As an example, gender was coded 1 for male and 0 for female; age was coded as 1 for under 25yrs and 0 for 25 yrs and over. This coding method applied to all the predictors displayed in the trends and regression analysis, both demographic and situational. Outcome variables, withdrawals before census date and passing the unit of enrollment were also coded as dichotomies. Except for the small numbers of missing or unusable data (whose highest rate was .8% for the ATSI identifier), the 2003-4 sample represents an enumerated population of common unit enrollments. The distribution of all variables included in the logistic regression analysis is shown in Table 4.1. As for the trend analyses, the 2003-4 data were merged to provide a combined data base for all years 1999-2004 and then disaggregated for the comparisons as required for the second of the questions set out at the end of the previous chapter. As for the previous study, the denominator for pass percentages excluded Incomplete (I, n=150), or Withdrawn without Penalty (WW, n=94). The distribution of outcomes by equity groups is displayed in Table 4.1.

**Table 4.1 Attrition Outcomes by Equity Predictors: Common Unit Enrolments 2003-4
(incl.Passes,1999-2002)**

<i>% of Predictor Category</i>	<i>Total N (%)</i>	<i>Early Withdrawals</i>	<i>Continuing Enrolments</i>	<i>Continuing Who Passed*</i>	
<i>Predictor</i>	<i>2003-4</i>	<i>2003-4</i>	<i>2003-4</i>	<i>2003-4</i>	<i>1999-2002</i>
External Mode	2161 (53.6%)	568 (26.3%)	1593 (73.7%)	883 (61.8%)	1043 (62.5%)
Part-time	2034 (50.4%)	928 (45.6%)	1106 (54.7%)	638 (63.4%)	902 (67%)
First Year of Course	2759 (68.4%)	871 (31.6%)	1888 (68.4%)	1144 (65.9%)	2098 (67.5%)
Health Field	748 (18.5%)	200 (26.7%)	548 (73.3%)	330 (68.9%)	281 (71%)
Education Field	627 (15.5%)	192 (30.6%)	435 (69.4%)	266 (65.8%)	372 (71.3%)
Social & Culture Fld	280 (6.9%)	84 (30%)	196 (70%)	104 (56.8%)	453 (62.2%)
Natural & Phys Sci	181 (4.5%)	66 (36.5%)	115 (63.5%)	62 (57.4%)	177 (69.1%)
Male	1261 (31.3%)	386 (30.6%)	875 (69.4%)	460 (57.9%)	966 (60.3%)
Under 25 yrs	2073 (51.4%)	640 (30.9%)	1433 (69.1%)	823 (62.5%)	1770 (64.1%)
Indigenous	350 (8.7%)	110 (31.4%)	240 (68.6%)	91 (42.5%)	118 (48.4%)
O'seas Citizenship	111 (2.8%)	43 (38.7%)	68 (61.3%)	58 (93.5%)	231 (73.1%)
ESL Background	368 (9.1%)	105 (28.5%)	263 (71.5%)	167 (69%)	317 (64.7%)
NT Home Residence	3126 (77.5%)	969 (31%)	2175 (69%)	1255 (63.2%)	2694 (66.8%)
Totals	4033	1242 (30.8%)	2791 (69.2%)	1638 (64.3%)	3147 (67.7%)

*Excludes Incomplete (n=150) and Withdrawn without Penalty (n=94) and Field of Education for 2002

4.3 SINGLE PREDICTORS OF ATTRITION

Table 4.1 displays the raw frequency and percentages behind the trend analyses of the previous chapter and the distribution the dichotomous variables which will become the basis of prediction in the following section. However, this table also holds the basis for the estimation of bivariate relationships between these predictors and the two main attrition outcomes. Going through the columns from left to right, we see that:

- (a) The 2003-4 sample is almost 70% female, about half part-time, two-thirds or so in first year of studies over half now studying in external mode, about a half aged over 25 yrs, overwhelmingly resident in the Northern Territory, a third of who are enrolled in a course in either a health science or education field. Minority groups are ESL and Indigenous, both under ten percent of the total, with overseas citizenship at under 3%.
- (b) The main changes over the 1999-2002 sample are the doubling in part time (up from 25% to 50.4%), the fifty percent increase in external enrolments (up from 34.1%), the increase in Health science (up to 18.5% from 11.4%) and a decline in overseas citizenship enrolments (down from 6.8%).
- (c) As noted in the trend analysis, the increase in part-time enrolments has flowed through into a much higher rate of early withdrawals. These also have doubled, up from 23% in the 1999-2002 samples. Externals, however, have slightly decreased their rate of early withdrawal (from 29.6% down to 26.3%), an indication that the Darwin residents in internal part-time studies are more prone to early withdrawal than their full-time external counterparts. The low rate of withdrawals in the Health field supports this observation.
- (d) Among the pass figures, notable declines to well under 60% of the presenting group appear among the Social and Cultural field enrolments, Natural and Physical Sciences, males. Most disturbing is the very low pass rate among Indigenous enrolments, down to 42.5% from 48.4%. All these equity groups show a decline in pass rate over these years over the years,

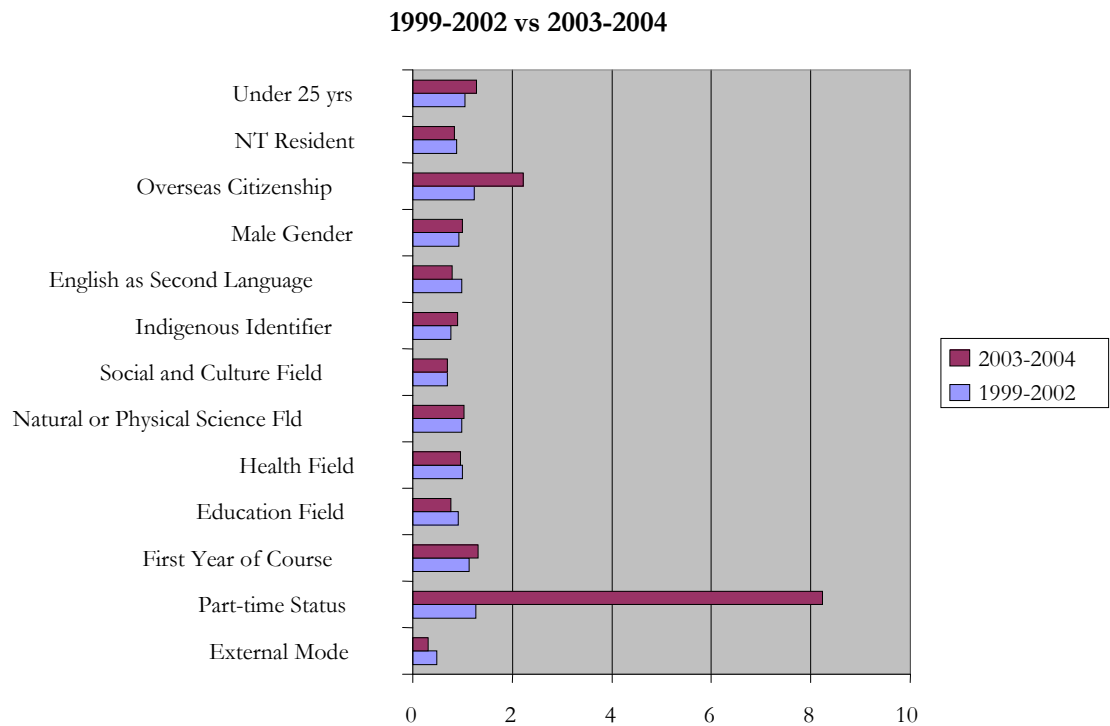
perhaps exacerbated by an uneven effect of the introduction of the new units in 2003, which was associated with a steep fall in the overall pass rate (see Fig. 3.3). The small group of overseas citizenship enrolments seems to have performed exceptionally well, with a pass rate of over 90%, up from 73%. The ESL group has also performed at just below an average level in each sample, though the recent debate initiated by the findings of Birrell (2007) would prompt further investigation into the relative performance of domestic and overseas ESL students (this point will be taken up later in this Report).

What are the independent predictive effects of each of the equity groups on the two attrition outcomes (early withdrawal and passing the unit) for years 1999-2002 vs those for 2003-4?

We can now turn to the analysis of the independent effects of this set of predictors on these two attrition outcomes. An “independent” effect refers to the singular effect of the predictor variable in each outcome, when values of all the other predictors have been held constant (usually at their mean or average). The estimation of this effect, as mentioned earlier, requires the application of a statistical regression analysis, similar to those carried out in Chapter VIII of the previous report (Tyler, 2003). The statistical significance of each effect is given by the probability value of the predictor from the results of the analysis occurring by chance alone (the null hypothesis). If the probability of the unique predictor value is greater than .05, then it can be assumed that the effect is significant and not the result of random or sampling errors.

The following figures display the size of the **relative** effect for each predictor, when the mean or average effect (i.e. the constant term) is held constant. This effect is given by the “odds ratio” value, which is the probability of the event (such as passing a unit), divided by the probability of it not occurring. An “odds ratio” value of less than 1 indicates that the odds ratio independent effect of that variable is negative, relative to the average odds ratio of withdrawal or passing, while a value greater than 1 indicates a positive effect or a better than average odds ratio. As an example, we might expect from male gender would have an Exp (B) value lower than 1 for predicting a pass grade, but that an Overseas citizenship predictor would have a value much greater than 1. We cannot be sure of this however, since each of these variables may be simply “proxies” for other variables (such as mode of study, course of study etc), and may lose their predictive power, when these others are controlled for or “held constant” in the model.

Fig. 4.2 Comparison of Odds Ratios* of Early Withdrawal



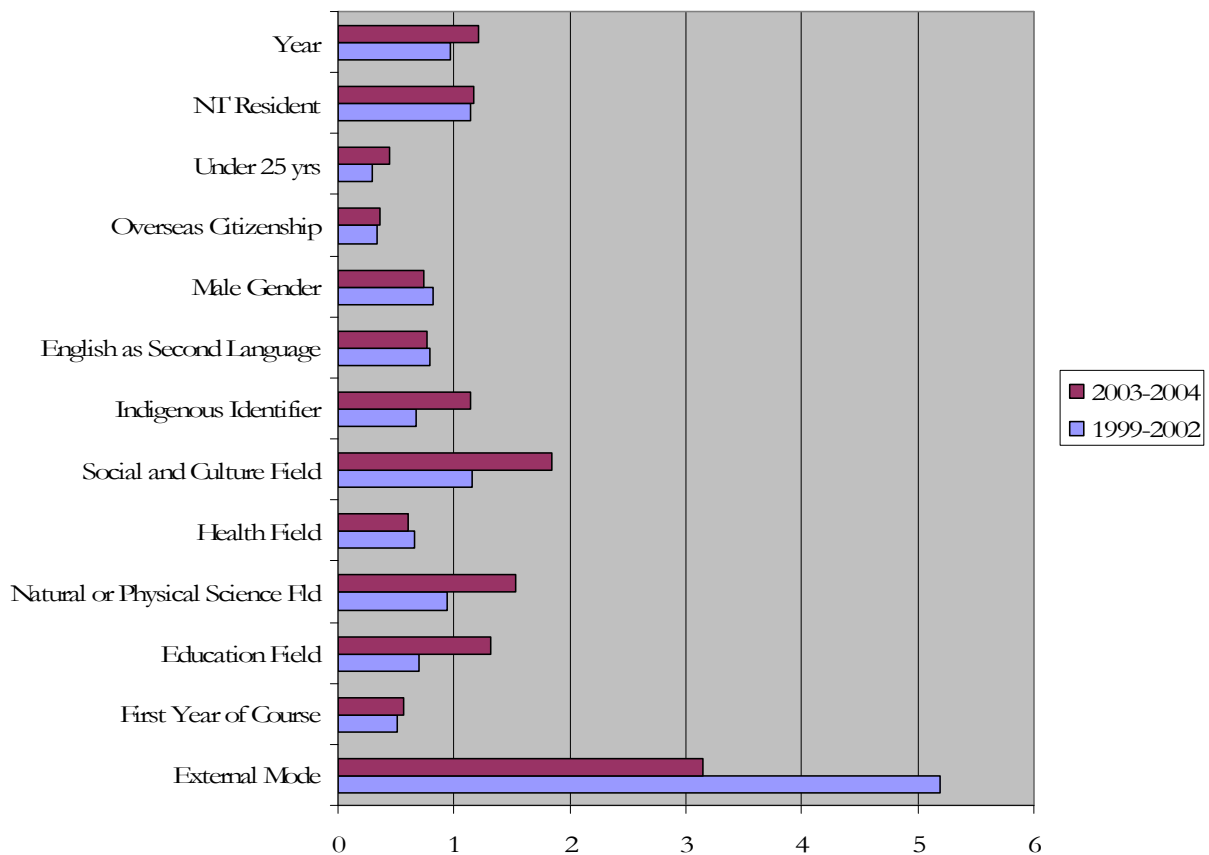
*Constant terms not shown – estimates of predictor effects are for comparative purposes only

The comparison of odds ratios of early withdrawal between the two periods indicates a generally stable pattern, with the outstanding exception of the part-time status, which shows an odds ratio increase of over six times its earlier figure. This can be compared with the next increase, that for enrolments from overseas citizens, of about twice its earlier average rate. This can no doubt be partly explained by the introduction of a number of new courses, though the part-time status effect persists when this effect is controlled for. Therefore, it would seem that it is most closely associated with the phasing in of the new units and the transition from the older ones, as a result of the restructuring and reduction of offerings described in the first chapter. Before we can make this assessment, however, it may be opportune to look at this remarkable result in greater detail in order to see whether the cause of this increase may lie within the present range of predictors.

What can account for the disproportional increases in early withdrawal rates and lower pass rates among part-time enrolments in the years 2003-4?

One way of exploring this extraordinary “blip” in the early withdrawal rates for this period might be to consider what factors predict part-time status as an outcome in its own right, and perhaps then understand how it might be mediating the effects of other variables. We might also include year of enrolment as well, to take account of the possibility that the first year, 2003, would experience the greater impact of the restructuring. The results of this analysis are shown in Figure 4.3 which compares the odds ratios of predictors of part-time status

**Fig. 4.3 Comparison of Odds Ratios of Part-time Status
1999-2002 vs 2003-4**

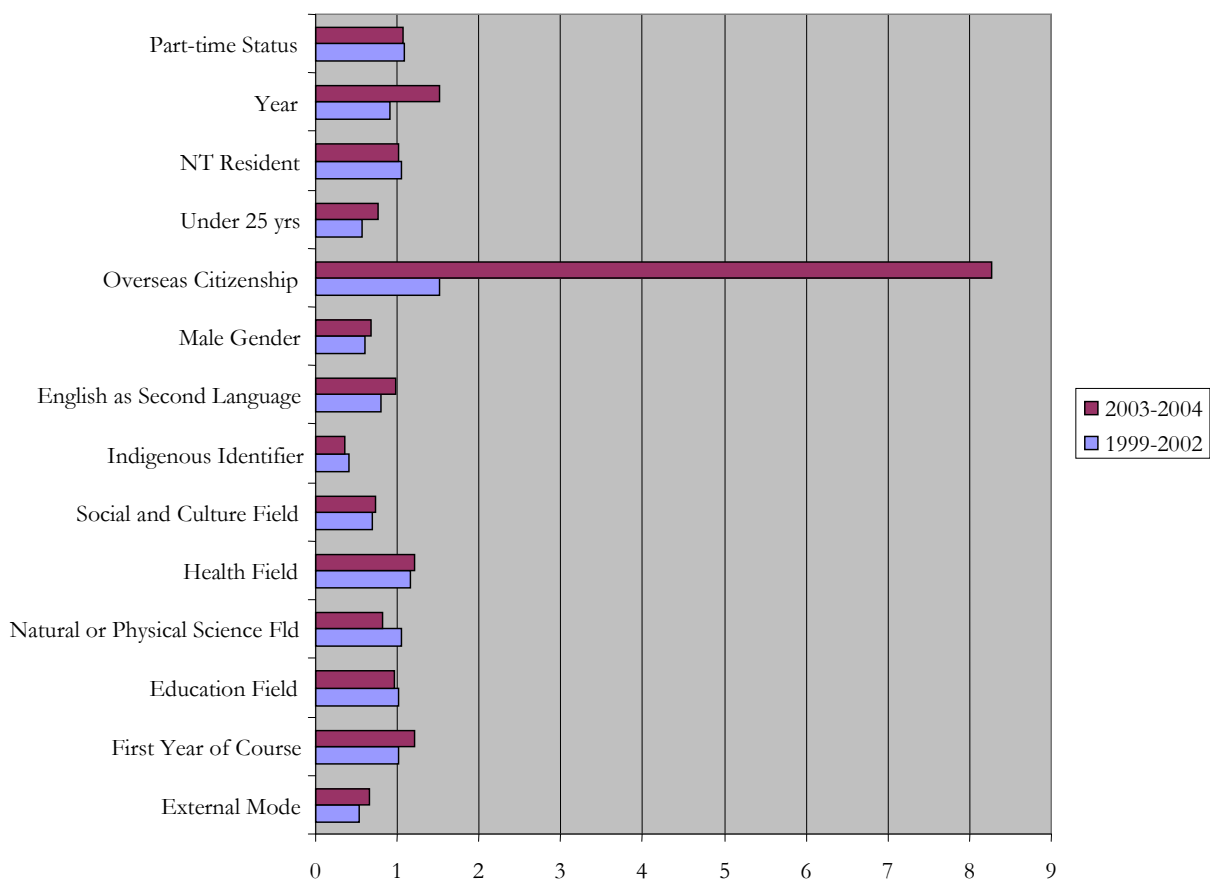


Almost counter-intuitively, the only obvious source of disruption among the predictor range (i.e. excluding the introduction of the new unit offerings) would seem to lie in the tendency of internal rather than external students to “go part-time” and be more prone as a result to making an early withdrawal. This trend is mirrored in almost all fields of study, except for that of health. The yearly effect, which might show up a relative importance of a teething problem in either sample, does not appear to make a great deal of difference across either period of observation when other factors have been controlled for. A separate comparison of the mean rates of early withdrawal between years 2003 and 2004 confirmed the null hypothesis ($t=-.266$, $p=.776$). While the increase in the preference for internal students for part-time study may explain part of the extraordinarily high early withdrawal rate in the second period, the statistical prediction itself does not explain why this should be so. It may be that internal students have a lower commitment to a particular course of studies, or perhaps that they share information more readily and are more susceptible to peer group pressures. Part-time students from the NT major urban regions may also have a greater tendency to over-estimate their time commitments and to prioritise core subjects over the Common Units in their first year. However, the bulk of the explanation must for the time being be put down to the disruptive effect of the restructuring, temporary though it may prove to be.

4.4 PREDICTING SUCCESS AND FAILURE IN THE COMMON UNITS

The patterns of predicting passing a unit could perhaps not be more different from those for prediction of early withdrawals (Fig. 4.4). Here we see that situational factors such as first year of study, part-time status and external mode are reversed or neutralized in their effects, while the most powerful predictor in the years 2003-4 is that of overseas citizenship. The effect of this citizenship variable has quadrupled its value over that for the previous period and needs further explanation. Other factors appear to have varied their effects on academic success. Indigenous status has proven to be more of a disadvantage, male gender has slightly improved its impact on success, while external mode of delivery has become less of a negative predictor and the younger (age under 25yrs) group has made significant gains. Most impressive has been the positive effect of the year of enrolment on improvement in the odds ratio of passing for the latter period. The addition of an extra year of “settling in” of the restructured program (i.e. from 2003 to 2004) has raised the odds ratio by over fifty percent when all other factors have been controlled for. This is a significant finding, and, together with the improvement in the prediction values for the younger group of passing, appears to vindicate the decision to introduce a skills-based unit for this transitional population. Among the parent course affiliations, the social and cultural and natural sciences areas continue to lag behind in performance, while the health and education fields perform have either held constant at about the average, or in the case of the former, significantly improved their chances.

Fig. 4.4 Comparison of Odds Ratios* of Passing Unit
1999-2002 vs 2003-4



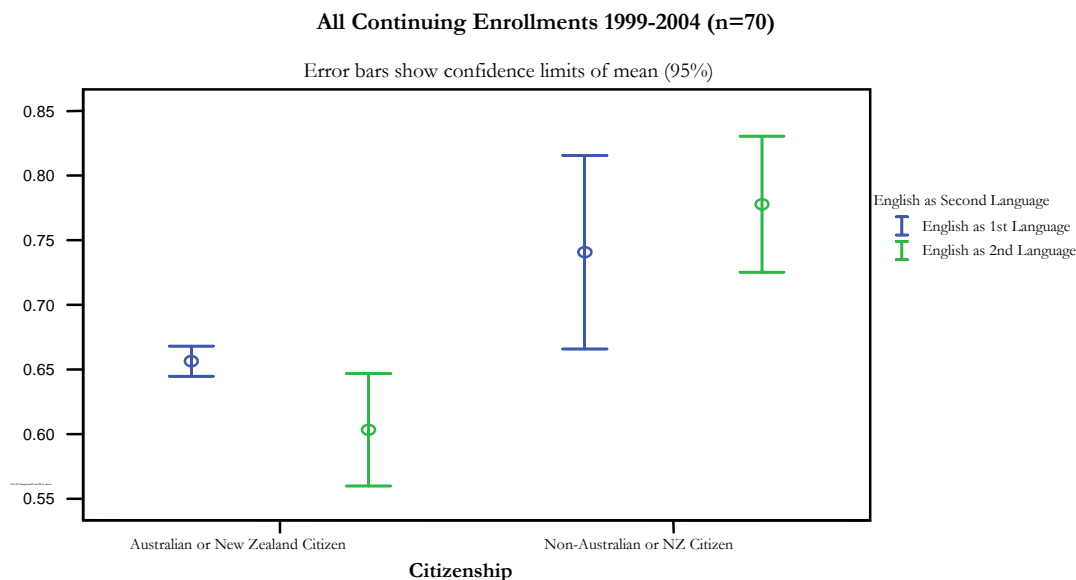
*Constant terms not shown – estimates of predictor effects are for comparative purposes only

4.5 WHY HAS OVERSEAS CITIZENSHIP BECOME SO IMPORTANT A PREDICTOR OF SUCCESS?

The remarkable improvement in the odd ratios of passing for overseas citizenship enrolments can perhaps be partly explained by the decline in representation (down to 2.8% from 6.8% in the previous period), combined with a much higher early withdrawal rate. This improvement cannot, however, be separated from the issues raised in the recent debate sparked off by a study by Birrell (2007) that purported to show that English proficiency among many overseas students was overlooked in assessment standards. This possibility may be explored in this instance by a comparison of the distribution of grades between domestic and overseas students who come from non-English speaking backgrounds.

Can the present data throw any light on the implication that overseas students with a non-English-speaking background are given some kind of favourable treatment? One way of exploring this issue might be to compare the overseas enrolments with an ESL background with their domestic counterparts. This might be done in two ways – by comparing the pass rates of enrolments across the two categories of citizenship and language background and, more specifically, to examine the grade distributions of overseas and domestic ESL enrolments. The former analysis might establish the statistical significance of differences in the two variables of citizenship and language background (i.e. how important is it in the Common Units?), while the latter might show up any greater tendency of the overseas ESL enrolment results to “bunch up” around a pass grade, rather than to be spread more normally throughout the range. The results of each of these analyses are displayed in Figs 4.5 and 4.6 respectively.

Fig. 4.5 Comparison of Error Bars of Pass Rates Citizenship and ESL Background

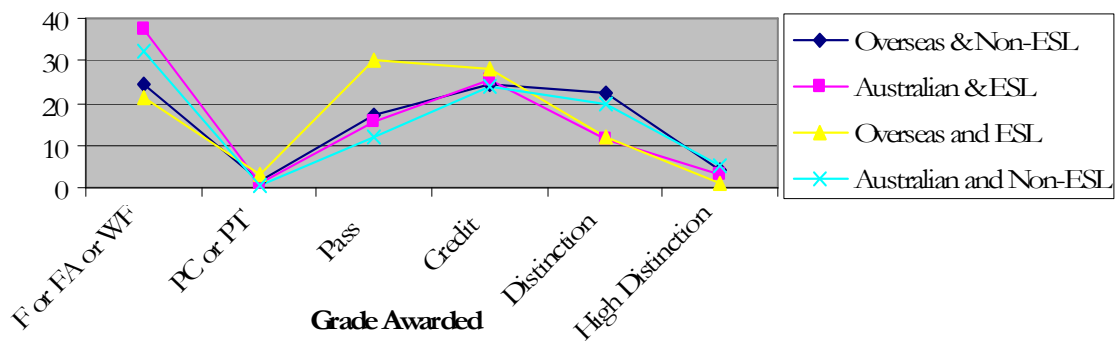


An inspection of the error bars reveals that there are substantial differences, not only between the means of the pass rates of overseas and domestic enrollments, but, within this division, between those of the enrollments with a non-English speaking or second-language English background. The latter difference is particularly striking, since it indicates as well that the domestic ESL enrollments fare worst of all, not only in that their pass rates are significantly lower than those of all overseas enrollments, but that they are probably also significantly lower than their English background

domestic students. What could account for these differences? In this case we might first compare the distribution of the full range of grades of the two ESL groups (Fig. 4.6) to test for the clustering effect on the pass result. The assumption here is that, if there is a “hump” of the overseas/ ESL grades around the pass level relative to the distributions of the other three possible combinations of citizenship and ESL status, there may be evidence of a tendency to “push” these students through more lenient marking.

Fig. 4.6 Comparison of Grade by Citizenship and ESL

All Completed Enrolments 1999-2004 (n=7267)



The comparison of the distribution of grade awarded (rather than pass/fail as in the previous analyses) across these four groups (Fig 4.6) does in fact reveal a deviant distribution of the suspect category; that of overseas citizenship combined with ESL background. This is quite marked around the Pass and Credit grade levels, indicating a pronounced positive skewness in this category relative to the more normal shape of the other three categories (i.e. when the fail grades are excluded). This observation is by no means conclusive evidence of the operation of the “Birrell hypothesis”. However, it does show up several dimensions of disadvantage: (1) the under-representation of domestic ESL enrolments relative to overseas enrolments in the passing grades; (2) the under-representation of both domestic and overseas ESL enrolments in the higher grade levels of distinction and high distinction; (3) the relative neglect of domestic ESL students as a particular problematic group in the Common Unit program, despite their generally above average performance in recent national research as reviewed in the first study and in Chapter 2. A further regression analysis of pass outcomes which added Indigeneity to an equation which included citizenship, ESL background (and an interaction term) did not reduce the power of overseas citizenship as a positive predictor of success. These findings all have implications for the delivery and assessment of the Common Units program.

4.6 EXPLORING COMBINATIONS OF PREDICTOR VALUES: A SEGMENTATION ANALYSIS

In this section we go across some of the predictor categories to identify the combinations which predict an attrition outcome more efficiently than the addition of individual values. This is a common method in market analysis and has been usually termed “data-mining”. One of the principal methods techniques is what is called “interaction analysis”, a multiplicative approach which exhaustively and systematically segments a sample into a limited number of groups based on unique combinations of values. While we may find, for example, that gender and age are powerful individual predictors, we may find that their added effect does not work the same for all combinations of age groups and gender groups – younger females, for example, may have a much

higher withdrawal rate than older ones, males may have uneven (and often contradictory) pass rates depending on their age band, with older males showing few signs of the disadvantage that may affect their gender average.

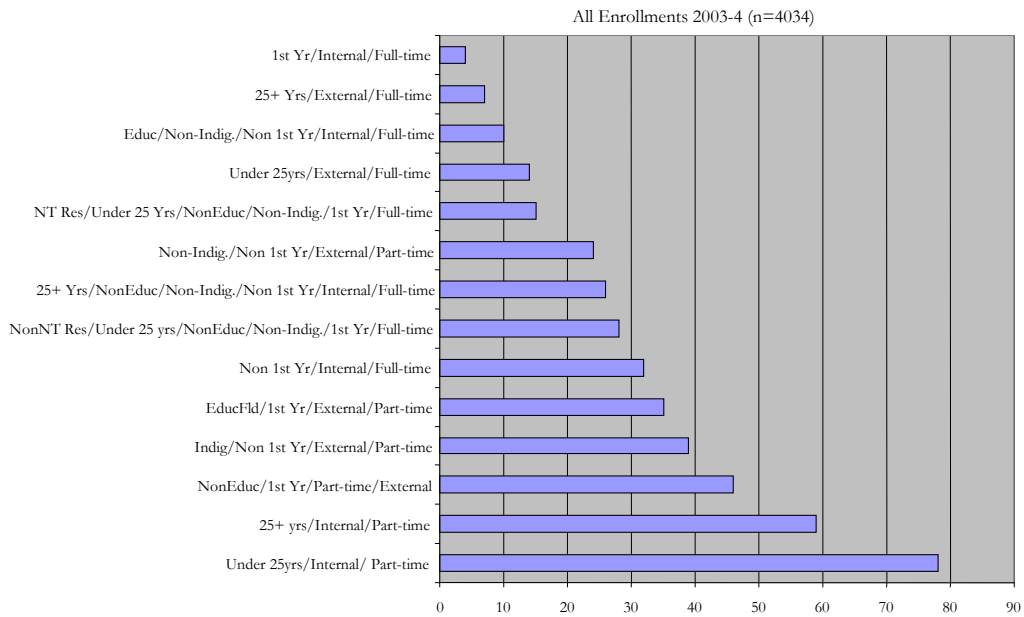
The method used here employs the program known as CHAID, available with the SPSS package, whose main features are described in the previous report (Tyler, 2003, p. 69). The following extract from the SPSS CHAID manual describes its operation in identifying the clusters or segments which it generates:

CHAID divides a population into two or more distinct groups based on categories of the “best” predictor of a dependent variable. It then splits each of the groups into smaller groups based on other predictor variables. This splitting process continues until no more statistically significant predictors can be found (or until some other stopping rule is met). CHAID displays the final subgroups (**segments**) on an easy-to-understand tree diagram.

The segments that CHAID derives are **mutually exclusive** and **exhaustive**. That is, segments do not overlap, and each population unit (case) is contained in exactly one segment. In addition, since segments are defined by combinations of predictor variables, you can easily classify each case into its appropriate segment simply by knowing the categories of the predictors (1993, p.3).

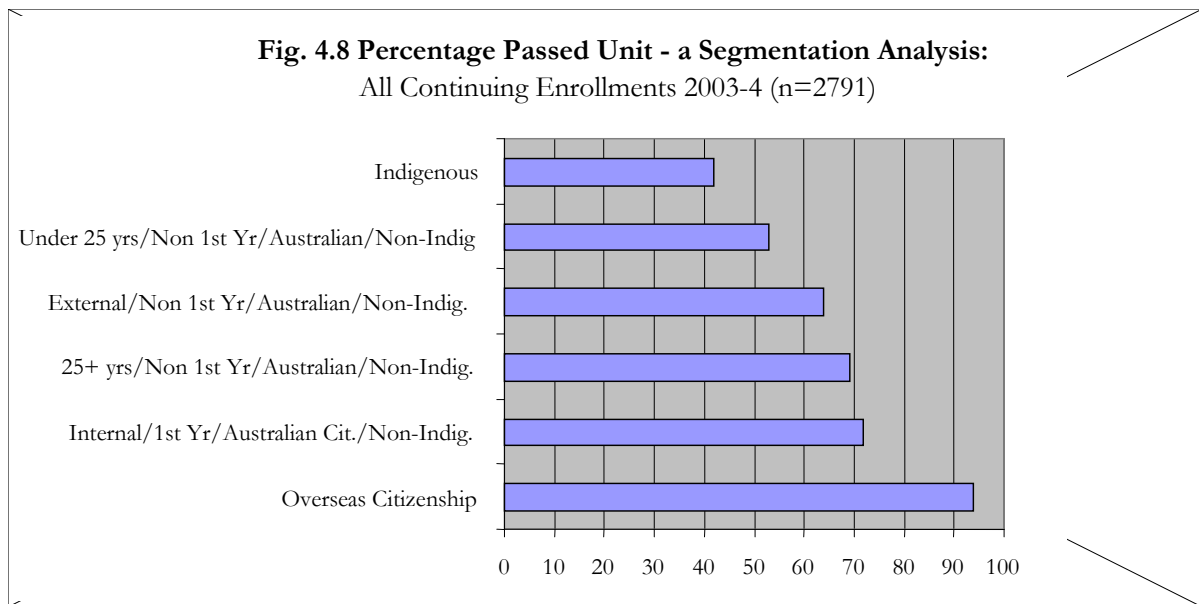
The segments so generated are then each ranked in the order of the extent to which they fulfil the criterion of the dependent variable (e.g. early withdrawal rates, pass rates). This procedure is carried out automatically and produces a hierarchy of segments which can be useful for targeting groups that are seen to be problematic. The “splits” that are not significant at the .05 level (using a logistic regression procedure) are dropped from the analysis, so that not every predictor will necessarily feature in the one or more of the final rankings of combined values. In this section we will look at both early withdrawals and pass rates across the range of predictors that have been included in the previous prediction equations. There was a very liberal limit selected for the depth of the “tree” or succession of splits (in both cases, to a maximum of 10 possible levels). The results of each segmentation analysis are displayed in Fig. 4. 7 (early withdrawals) and 4.8 (pass rates).

Fig.4.7 Percentage Early Withdrawals - A Segmentation Analysis



4.6.1 Early Withdrawals – Market Segments

The rank order of early withdrawals from the CHAID analysis indicates a more finely-attuned differentiation of the predictor effects than does either a bivariate or main effect regression analysis. While the latter showed that part-time status was a primary “risk factor” for early withdrawal, this analysis shows that its effects are concentrated in certain groups – particularly among internal enrolments of both age groups (though the under 25 yrs show an abnormally high rate of withdrawal). On the other hand, the low risk groups, though mainly full-time, seem to be scattered across a range of predictor values, - in education parent courses, in external as well as internal modes of study. Here, however, age does matter more than with the high risk predictors, with the older, non-first year students tending to cluster at the lower end of the rank order. In the middle ranks, the picture is more complicated and the segments more mixed in composition. It is interesting to note that the mix of predictor values appears to be more effective for targeting the groups as much as the broad-brush approach of a strategy based on main effects alone. This is perhaps why this kind of analysis may be particularly appropriate for designing a recruitment and retention strategy around enrolment time and leading into the first few weeks of term.



4.6.2 Pass Rates – Market Segments

Perhaps because of the criterion for the decision to “split” a branch was set at .05 level of probability, the much lower number of segments (six as against fourteen) for pass rates has been an artifact of the smaller sample size (a drop of over 30%) than for that for withdrawals. Nevertheless, this analysis does show up some interesting combinations that go beyond the extremes of the main effects (e.g. Overseas vs. Indigenous). In the middle of the rank order there would appear to be an important interaction between age, external mode of study and first year enrolment. While internal first year enrolments appear to predict above average pass rates, this appears to be complicated by an age factor, with the older groups tending to be more successful further down the rank order, particularly in later years of the course. This may reflect something of a bimodal distribution in the student body, between the internal first years and the older, external mode students enrolled in the second or later years of their course (especially in health science fields). The overseas citizenship has tended to dominate this analysis and has perhaps been responsible for the non-appearance of gender as a segmenting factor (compared with the results of segmentation for the previous study (see Tyler, 2003, Table 9.1)).

4.7 CONCLUSION: THE CHALLENGES OF DIVERSITY

The results of the analyses show up the challenges of designing units which can address the attritional effects that emerge from an interaction of diverse student backgrounds and a range of study situations and motivations. These challenges are compounded by the lack of similarity between the markers or risk factors for the two sources of attrition, namely early withdrawal and academic success. While there are outstanding predictors in each case (part-time status for the former, Overseas enrolments/ Indigenous for the latter), the segmentation analysis shows that most effects do not impact uniformly, nor in equal strength, across different subclasses of age, citizenship, ethnicity and modes of delivery. The results here may reveal grounds for intervention, as in the case of the interaction between citizenship and ESL status which suggests possible inequitable treatment of domestic as against overseas students with similar linguistic backgrounds. During these two years we have seen a further complicating factor in the restructuring of the unit offerings, associated in the first year with a decline in the pass rate to below 60%, and a greater tendency for part-time students, particularly in internal modes, to withdraw early in both years. Indigenous enrolments pose a particular problem for academic achievement, though not, it appear,

for early withdrawal. Indigenous pass rates have, if anything, declined during this period (from 48% to 42%), while their proportion has almost doubled (from 5.4% to 9.1%). Further analysis is clearly needed to identify the background to this disturbing rate of failure, particularly as it may be embedded in different mixes of age, gender and modes of study and educational fields.

5. WORKSHOP NOVEMBER 2005 AND FOLLOW-UP

5.1 INTRODUCTION

The presentation of the preliminary findings of this report to the Common Unit Management Group took place in November 2005. It was decided that a three hour workshop format for the presentation would be the most useful way for the group to consider the findings as well as consider ways the Common Units management might respond to the findings to help minimise attrition in Common Units. Prior to the meeting, the management group was sent a workshop outline and discussion paper summarising factors effecting student outcomes with hyper links to a summary of the relevant literature. The session began with an introduction to the project by Professor Charles Webb, a summary of findings by Assoc Prof Bill Tyler and a summary of literature by Nicola . The rest of the session involved small group discussion on allocated themes and feedback to establish an action plan. This format proved to be a successful way of not only actively engaging participants in the issues and outcomes but also for actively responding to research findings by devising strategies for improving students experience. Interestingly, in the process of considering how we might address the identified causes of attrition, the management group were reassured that, in Common Units at least, many of these issues (especially relating to teaching and learning in Common Units) were already being addressed.

5.2 WORKSHOP FORMAT

The workshop was augmented by a handout, received in advance by the management group. This outlined the workshop schedule and included hyperlinked references to literature relating to the five identified areas for consideration in considering university attrition: Student Backgrounds; Student Situation; Teaching and Learning situations; Outcomes; The Institutional Setting. (See Appendix A for a copy of the handout).

The workshop program included the following:

- Welcome and Introduction (Webb)
- Program Outcomes: the Evidence (Tyler)
- Student Response in Context of First Year (Prichard)
- Recommendations from attrition study: Topics for Action Plan
- Discussion Groups
- Feedback and General Discussion of Issues
- Regroup for Action Plan Discussion (form attached)
- Report by Group and Topic – Distribution of Action Plans
- Final Comments (Webb, Prichard)

Because of time limits final discussion and endorsement of the proposed actions from the workshop were scheduled for discussion at the management group meeting following the workshop in Feb 2006.

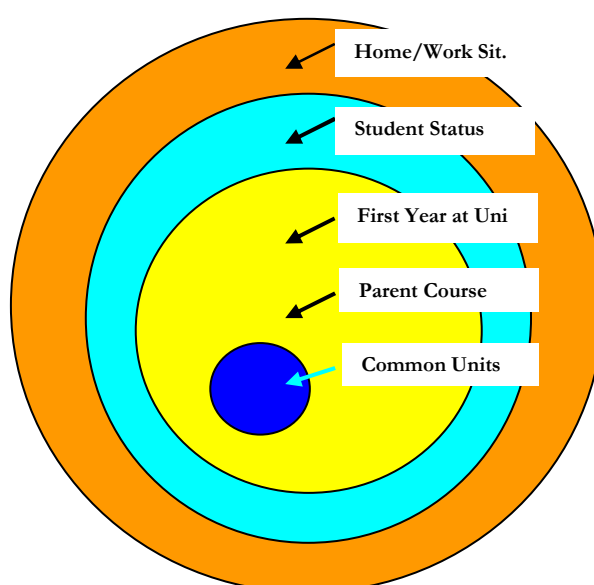
5.3 SUMMARY OF PRESENTATION AND DISCUSSION

5.3.1 The Student Perspective: Common Units in Context

As the diagram below illustrates, what students bring with them in terms of educational and cultural background, socio-economic status, and employment all have significant effects on rates of retention/attrition. Equally influential is their experience in their parent course and the institutional support they receive in their transition year.

Hence the workshop opened with the following question:

Can the following diagram help us to identify the factors affecting student outcomes in the Common Units?



5.3.2 Program Outcomes: The Evidence

A brief overview was provided of the trends and outcomes identified so far in this study. The *evidence* gathered so far correlating demographic and success rates data was summarised (see Chapter 4) as well as the *trends* in students' responses to satisfaction surveys for Common Units (see Chapter 3). The potential of effects of *equity issues* in relation to Gender, Age, NESB, Indigenous and Part-time status were highlighted as significant in considering strategies for reducing attrition (see Chapter 2 sections 2.3 & 2.4). The data also revealed *teaching and learning approaches* has having an effect of student success rates especially in relation to: the effects of modes of study – internal/external/online; art-time work, online delivery, teaching methodology and assessment (see Chapter 2 sections 2.4 & 2.5).

5.4 ISSUES FOR DISCUSSION

The workshop participants were divided into four working groups, each assigned one of the following factors for attrition identified from the cumulative findings of common unit trends and outcomes as reported earlier in the workshop and from recommendations of the AUQA Review 2005. The working groups were asked to consider how well Common Units is addressing the

factors for attrition that require attention (should further work be necessary) and how this might be achieved.

- ***Governance:***
 - a. Range and Variety of Choice – within units / between units
 - b. Coordination of Program- Committee, Consultant, Unit Committees
 - c. Teaching and Learning Liaison – staff development, workloads, class sizes
 - d. Resources – labs, room space, library and teaching materials
 - e. Lecturing and tutorial staff recruitment
 - f. Exemptions – Should more be granted than at present?
 - g. Marketing the Common Unit program – contact with similar programs?

- ***Trends and Patterns:***
 - h. Enrolments – what is the trend? Internal vs. external enrolments?
 - i. Early withdrawals – how can rate be reduced?
 - j. Academic Outcomes – why students fail esp. the FA grade? Unit variations?
 - k. Satisfaction – Evidence? How can student response be better monitored?
 - l. Are Common Units more vulnerable to attrition trends and pressures?

- ***Equity Groups and Student Outcomes:***
 - m. What are the main predictors of student success rates?
 - n. How can equity categories or groups be addressed at the level of instruction?
 - o. Are males students at some disadvantage in Common Units? If so how?
 - p. What can boost Indigenous retention and success rates?
 - q. Is NESB status a barrier? How do overseas students react to Common Units?
 - r. What equity groups may be missed by the official statistical data?

- ***Teaching and Learning Issues***
 - s. How can program design and delivery best address the pedagogic issues arising from the diversity of student background?
 - t. What are the main obstacles facing external students' completing a Common Unit?
 - u. What are main problems confronted in face-to-face delivery?
 - v. What are the main obstacles confronted by part-time students and how can they be overcome?
 - w. How effective are the support and remedial services for referred students?
 - x. What are some of the technical and pedagogic issues arising from online delivery?
 - y. What is the ideal balance between skills and general education content? How can this be better achieved?

5.5 DISCUSSION GROUP OUTCOMES

The outcomes of group discussions were formulated as an *action plan*. Outcomes of the discussion on the four factors for attrition (Governance; Trends and Patterns; Equity and Student Outcomes; and Teaching and Learning) were recorded under the headings:

- ***Areas of Concern***

Areas identified by AUQA 2004, through the report findings and issues that have arisen at management group meetings.

- ***Goals***

The achievement of these goals is seen as a way to address the areas for concern.

- ***Key Actions***

How these goals will be augmented.

- ***Who***

Who will be responsible for facilitating the process?

- ***When***

The timeline for realising goals.

5.5.1 Governance

- ***Goals***

The goals in relation to governance were:

- Recruitment of staff – the importance of recruiting staff from a range of discipline areas while at the same time ensuring staff recruited are committed to Common Units. Does one lead to the other?
- Professional Assessment/Credit Transfer for Common Units – given that a reasonable proportion of our students will possess academic literacy skills when they commence their degree through previous study or professional experience it is essential to provide clearly advertised and transparent recognition of prior learning processes. This will in turn promote goodwill towards Common Units.
- Student involvement – involving students in the management and evolution of the common unit program.
- Dissemination – ensuring information, feedback, evaluations about Common Units is readily available as part of important PR.
- Range and variety of interdisciplinary units – examining the possibilities for a greater variety and range of interdisciplinary Common Units.

- **Key Actions**

The key actions for addressing goals include:

- Integration of CU teaching with staff promotion etc. For example as a way of building staff teaching portfolios.
- Changing the psychology of the process of recruiting staff – more carrot less stick.
- Include challenge testing as an optional way of gaining exemption as well as clearly disseminating options for recognition of prior learning.
- Involving students through the INFORMAL STUDENT GROUP within TLDG.
- Using TLDG networks to promote CU's.
- Checking Carrick institute ideas for dissemination.
- Seek schools input on CU assessments regarding their relevance to: Professions Grad attributes/ GA Website/portal/resources.
- Develop charts mapping Common Units with graduate attributes.

- **Who**

The responsibility for facilitating the actions lies with the Academic Consultant Common Units (Nicola) in liaison with TLDG and Schools.

- **When/Where**

The timeline for the key actions is:

- The exemption process as advertised on the common unit webpage will be reviewed by July 2006.
- Graduate attribute charts should be developed for all three Common Units and put on the website by July 2006.
- Liaison with schools will be staggered throughout the year.

5.5.2 Trends and Patterns

- **Goals**

The ongoing goals for tracking trends and outcomes in Common Units include:

- Comparing CU outcomes with other first year core units.
- Exploring the origins of exemptions: course/units/demographics.
- Collecting qualitative data on why students withdraw.
- Monitoring the success of interventionist methods.
- Monitoring of success of students who have completed CUC100/CUC106 (the literacies units) vs. those who have not.

- **Key Actions**

The key actions are to expand the project and funding to:

- Develop focus groups of students and tutors.
- Allocate budget for interventionist measures.
- Experiment with segregated groups as listed in goals.
- Examine effect of different gender tutors on student experience.
- Include gender research on M/F response to teaching modes tablet PC vs. traditional tutorial.

- **Who**

Responsibility for actions lies with the Attrition Project team, Dr. Bill Tyler, Nicola and others involved in the ongoing project.

- **When/Where**

These actions should be completed for second stage of the attrition project 2005-2007.

5.5.3 Equity and Student Outcomes

- **Goals**

The following goals are devised in response to the findings of a high failure rate for Indigenous students and relatively high rate for students from other language backgrounds (particularly migrant students as opposed to International):

- Identify and provide advice and support to at-risk students.
- Ensure all students with low English literacy receive sufficient support.
- Ensure external students from these groups have access to support.
- Continue David Rose's Reading to Learn project training general and IATAS tutors.
- Increase liaison with student support areas to maximise support options.

- **Key Actions**

The key actions for addressing these goals include:

- Liaise with CUC tutors to ensure at-risk students are identified and referred to support tutorials early in the semester.
- Liaise with Indigenous support area, CAESL (LearnLink) and Access and Equity.
- Develop scaffolding in CUC materials for external at-risk students
- Look at options for providing an intensive program pre semester common unit program for at risk students.
- Look at a range of strategies for confidence building through improving accessibility of materials and other social support strategies.

- Identify initial withdrawals in Indigenous cohort and insure withdrawal paperwork is completed.
 - Insure IATAS, Common Unit, International and Study Skills tutors are given scaffolding literacy training.
- **Who**
Academic Consultant (Nicola) to liaise with Indigenous support area, CAESL and Access and Equity as well as common unit coordinators.
- **When**
The timeline for these is:
 - Liaison ongoing.
 - Withdrawal monitoring ongoing.
 - Scaffolding Workshops for tutors Semester 1, 2006.
 - Scaffolding Material Development Semester 1, 2007.
 - Pre semester intensive prepare for Jan 2008.

5.5.4 Teaching and Learning

- **Goals**
The following Teaching and Learning goals have been developed in response to the above problems experienced by equity groups as well as discussions regarding the challenges of external and online learning identifies by the literature.
 - Investigate different teaching styles – block/weekend teaching
 - Maximise tutor support for external students
 - Investigate the potential use of video for external students
 - Explore integration of Internal and External modes using tablet pc in face-face tutes
 - Utilise meta-cognition and meta-learning – as a way to ensure students value CU’s and their aims.
- **Key Actions**
The key actions for meeting these goals include:
 - Review the existing levels of flexible learning in CU’s and increase if required/appropriate
 - Ensure External tutors are providing adequate support by:
 - communicating regularly with students (personal emails/phone calls)
 - providing rapid and comprehensive feedback to assignments
 - Introduce Tablet PC for CUC107 internal students.
 - Explore options for video streaming.

- Ensure the relevance and context of Common Units in relation to students' general course and graduate attributes is imbedded as part of the learning in each unit.
- *Who*
Facilitation of key actions is the responsibility of the Academic Consultant (Nicola) in consultation with unit coordinators and the TLDG.

- *When*

The timeline for these is:

- Exploration of increased flexible learning technology ongoing for 2006/2007
- External Tutor support should be re-emphasised each semester
- Introduction of Tablet PC's trialled in CUC107 Semester 1, 2006 and introduced in full Semester.2 2006.
- Investigation and inclusion of meta-cognitive approach re Common Units to by Semester 1 2007.

5.6 IMPLEMENTATION OF KEY ACTIONS IN 2006

The implementation of key actions from the workshop has occurred according to the timeline in most areas. Areas where we have not met the timeline have been affected by extenuating circumstances, including staff changes and time constraints.

5.6.1 Actions Achieved

- *Governance*

The exemption process has been reviewed and clarified on the common unit's webpage with processes for professional assessment clearly outlined. The number of students who gained an exemption of some sort from CUCs in 2006 is under investigation.

Graduate attributes charts have been developed for all three Common Units and put on the website. Liaison with schools has to date been through email and phone and largely related to staffing, however, in 2007 the academic consultant will visit school meetings and provide an introduction to Common Units and discuss the advantages of teaching on Common Units and the links between common unit teaching and excellence. The common unit program will be entered into the Awards for Outstanding Contributions to Student Learning in 2007.

- *Trends and Patterns*

In 2007 the attrition project team plan to develop focus groups of students and tutors to gather qualitative information about student and staff experience of Common Units.

The research project being conducted by Greg Williams, Jodi Tutty and Barbara White into the efficacy of Tablet PC reveals incidentally some gender differences in response to this type of teaching. This issue of gender difference in response to Common Units, particularly to teaching modes with tablet PC vs. traditional tutorial will be explored further in 2007.

The issues of specific funding for interventionist measures needs exploring further and be linked with work being done in the new iteration of CAESL LearnLink..

- ***Equity and Student Outcomes***

The *monitoring of withdrawals* from at-risk students is ongoing. Some measures for dealing with at-risk students have been firmed up. These include the provision of a support tutorial for the three Common Units. Scaffolding Workshops for tutors Semester 1 2006 and the wide spread advertising of one-to-one tutor services for students.

The areas that require addressing are the provision of scaffolding workshops for tutors and closer liaison with the Indigenous support area. This will be a much easier task with the formation of LearnLink which unifies all the student literacy support functions from around the university.

- ***Teaching and Learning***

External student support is a strong focus with tutors being provided with written and verbal guidelines about what is expected.

The use of Tablet PC's has been trialled in CUC107 Semester 1, 2006 and introduced in full in Semester 2 2006. Greg Williams will report on the success of this at the first common unit meeting 2007, to be followed up by results from a formal research project into the efficacy of this technology in CUC107.

The inclusion of meta-cognitive approach in Common Units is an ongoing concern but measures implemented so far are:

- An emphasis in the initial lectures on the connection between Common Units and graduate attributes.
- Providing CUC106 students with samples of assignment tasks from their discipline areas to show the application CUC106 to their study.
- Including a learning contract in CUC100.

5.7 CONCLUSION

This workshop presentation of the preliminary findings of the 2003/2004 investigation into student outcomes in Common Units was a successful forum which allowed participants to digest the findings and discuss them extensively in a broader institutional context. In examining the factors for attrition it was reassuring to find that most of these factors are already addressed to a more or lesser extent within the common unit program. However, the forum gave the management group the opportunity to identify where further action and input is required. It was also an opportunity for people to share ideas and innovations to enhance the existing program. It appears the area needing the most attention is liaison with support areas within the university and schools and the extension of existing interventionist measures for at-risk students. The formalisation of the workshop actions by the management group is evidence of an ongoing commitment by Common Units to showcase best practise in teaching and learning. Because they include close liaison with the university's Teaching and Learning Development Group and Student Support Divisions the outcomes of this study and workshop will have positive effects at an institutional level.

6. THE DYNAMICS OF ATTRITION: 1999-2002 VS 2003-4

The two periods which have formed the focus of the attrition monitoring project, 1999-2002 and 2003-4 represent different phases of program development and therefore offer unique opportunities for comparative analysis. The first, 1999-2002, were the years when the Common Units were being established, often with some resistance from both students and staff who saw them as an unnecessary intrusion into the vocational and professional programs of first year study. In the second period, 2003-4, the legitimacy and usefulness of the Program had been established. Here, however, the Common Units underwent a major restructuring in its number of offerings and in the reorganisation of content to create two specialised units, one in generic and academic literacy skills and the other in interdisciplinary knowledge of, and approaches to, North Australia. In addition, in this second period there was a significant increase in the diversity of student intake; notably dramatic increases in the proportion of part-time and external modes of study. In this phase of the study therefore, the focus has been less on the full gamut of student responses to the Common Units (which was a concern of the first report) and more on the development of a secure and established program that had been subject to some internal upheaval in the structure of its unit offerings, coupled with increasing diversity in its intake.

6.1 EXPLORING TRENDS: A CROSS-PERIOD SYNTHESIS

While the detailed comparative analysis of the patterns and predictors has proven to be an important and valid exercise, there is another story to be told. Rather than considering each period as a discrete entity, it is possible to take a more synthetic approach, one in which the underlying drivers of change common to both periods may be identified and explored. While there have been moves in this direction in some of the trend graphs in Chapters 3 and 4 (esp. Fig. 3.8), these have so far been rather impressionistic and descriptive. A research design which provides a more firmly-based backdrop against which a more statistically rigorous estimation of the effects of diversity increase and program restructuring can be drawn could extend this work. This chapter will therefore attempt to develop such a synthetic approach to the drivers of change by exploring the dynamics of the relationship between diversity and attrition and then by seeking to estimate the impact of the restructuring exercise against this background.

1. Diversity, Equity and Attrition: Trends and Patterns 1999-2002 vs. 2003-4
 - a. What have been the trends in diversity, equity and attrition over the two periods?
 - b. What are the underlying patterns of changes or dynamics of attrition and how do they affect different groups of students?
2. Program Restructuring and Unit Re-Organisation: 2003-4: an Independent Effect?
 - a. Can the independent effects of program restructuring and increased diversity be estimated?
 - b. What is the interaction between program restructuring and increased diversity in predicting rates of student attrition in the Common Units?

6.2 DIVERSITY, EQUITY AND ATTRITION: TRENDS AND PATTERNS 1999-2002 VS 2003-4

Table 6.1 summarises the main findings of this report regarding the trends in diversity, equity and attrition over the two periods. This table sets out the evidence for changes in the composition of the student intake to the Common Units as well as any shifts in the patterns of early withdrawals and pass rates. Both of these are distributed across the various “equity groups”. The data for the earlier period is to be found in Table 8.1 of the previous report (Tyler, 2003) and the data for the present period is drawn largely from Table 4.1.

While the changes in student composition percentages are based on the total number of enrolments in each of the two periods, the outcome percentages are based solely on the *relevant* totals in each group category (e.g percentage of males passing a unit is based on the total number of all males who remain in the unit after the census date). While not as statistically rigorous as the more sophisticated multivariate analyses in Chapters 4 and 5, this table nevertheless presents a reasonably accurate synopsis of the major findings of this section of the report. Since the trend is towards increased diversity of intake and withdrawal patterns (especially in dramatic increases in proportions of part-time and external enrolments covered in Chapters 1 and 3), this summary will examine the impact of this increased diversity on changing patterns of student outcomes.

6.2.1 Diversity and Attrition

What have been the major shifts in attrition patterns observed over these two periods in the face of this increased student diversity? In order to simplify the rather complex task of interpreting trends in enrolments, withdrawal and pass rates across these thirteen equity or predictor groups of student background and situation, the data was collapsed into a scatter plot of percentage differences in the two attrition outcomes for each of these groups across the two observation periods (Fig. 6.1). This process resulted in a four-fold classification which positions each of the groups according to their trend coordinate values on each of the two measures of attrition now treated as axes. Groups were therefore positioned as having either *higher or lower withdrawal rates*, cross-referenced with having either *higher or lower pass rates* to create this two-dimensional display. This display retains the original values of the percentage differences, revealing the precise value of trends on one, other or both attrition outcomes.

Table 6.1 Summary Table of Equity Group Outcomes 1999-2002 vs. 2003-4						
<i>Enrolment Base</i>	<i>% of Total Enrolment</i>		<i>Percentages of Enrolments in Each Group % Early</i>			
	<i>1999-2002 (n=7535)</i>	<i>2003-4 (n=4034)</i>	<i>Withdrawals from Unit</i>		<i>% Continuing who Passed Unit</i>	
<i>Group Identifier</i>			<i>1999-2002</i>	<i>2003-4</i>	<i>1999-2002</i>	<i>2003-4</i>
External Mode	34.1	53.6	29.6	26.3	62.5	61.8
Part-time	25.0	50.4	23.6	45.6	67.0	63.4
First Year of Course	68.2	68.4	36.2	31.6	67.5	65.9
Health Field	11.4	18.5	27.3	26.7	71.0	68.9
Education Field	16.6	15.5	35.8	30.6	71.3	65.8
Social & Culture Fld	22.6	6.9	33.2	30.0	62.2	56.8
Natural & Phys Sci	8.1	4.5	34.8	36.5	69.1	57.4
Male	34.0	31.3	33.6	30.6	60.4	57.9
Under 25 yrs	57.0	51.4	32.8	30.9	63.0	62.5
Indigenous	5.4	8.7	34.4	31.4	48.4	42.5
O'seas Citizenship	6.8	2.8	33.7	38.7	73.1	93.5
ESL Background	10.7	9.1	36.2	28.5	64.7	69.0
NT Home Residence	85.6	77.5	30.1	31	66.8	63.2

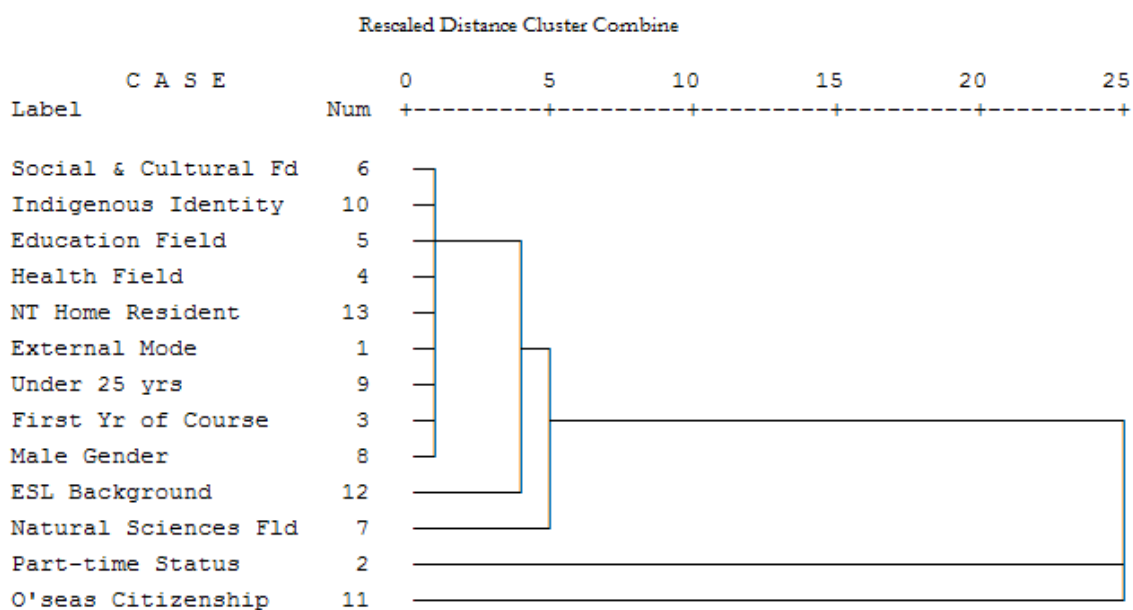
Fig. 6.1 Scatter plot of Equity Group Trends in Withdrawal and Pass Rates Common Unit Enrollments 1999-2002 to 2003-4



The trend comparison of equity group outcomes in Fig. 6.1 captures the dynamics of the movements in attrition that are not so easily seen in the Table 6.1. Here we can perceive not only the obvious cases of the outliers in the form of dramatic *increases* in *part-time withdrawal rates and overseas pass rates*, but also the clustering of a number of group trends in lower left-hand quadrant representing *lower rates of withdrawal combined with declining pass rates*. Of interest is the possible relation between the two rates in that the *higher proportions of students who might otherwise have withdrawn* in the first period are *now being retained in the units, only to fail*. This perception is reinforced by the relatively slight decrease in the pass rate of part-time students in the face of rocketing increases in their rate of early withdrawal. It is disappointing that only equity group of enrolments, those with English as a Second Language background, shows improvement in overall retention, though the change here is relatively small on both counts (-7.7 for withdrawal and 4.30 for passes). However, improvement in passes for ESL may prove to be driven to a large extent by its association with overseas enrolments (as seen in Chapter 4).

The tendency to clustering of equity group attrition trends in Fig 6.1 suggests that there may be a more meaningful system of identifying the underlying patterns that may overlay the initial positions in the quadrants. In order to explore these patterns in more depth, a cluster analysis of the trend values was carried out, yielding a dendrogram (Fig 6.2) based on the distances between the positions occupied by the equity groups in the previous figure. This figure provides a firmer statistical basis for identifying the clusters suggested by the figure, as well as generating the possibility for a more meaningful typology of the underlying dynamics of attrition.

Fig. 6.2 Dendrogram Showing using Average Linkage between Equity Group Trends in Attrition Outcomes 1999-2002 to 2003-4 (based on Fig. 6.1)



This figure indicates that the equity groups fall into four main clusters of attrition. First, there are those already identified at the far left of the figure (whose distances form a kind of rake prong pattern). These have fairly stable patterns characterized by falling withdrawal and declining pass rates. To the right we have the two “deviant” cases of ESL background and Natural Science Fields. The former represents the only instance of a “win-win” combination of falling withdrawals and rising pass levels, while the latter instances the reverse, a kind of “loose-loose” pattern of increasing withdrawals and a deeply declining pass rate. Finally we have the contrasting extremes of part-time enrolments which showed a dramatic increase in withdrawals combined with only a slight decline in pass rates, again contrasted with the mirror image of overseas enrolments with their very high improvements in passes and only slight increase in withdrawals. Overall, though, the dominant pattern in the figure is the cluster of the first level, a combination of declining rates of withdrawal and of passing a unit.

How can these patterns or clusters be identified more meaningfully for diagnostic and developmental purposes? In terms of Figures 6.1 and 6.2, these patterns would appear to be identifiable in four main categories or types:

- (a) stable decliners (e.g external mode, male gender, Indigenous etc)
- (b) stable improvers (ESL)
- (c) unstable decliners (part-time, natural sciences)
- (d) unstable improvers (overseas)

Let us look at these in more detail:

- (a) **Stable decliners:** As suggested earlier, this dominant and rather worrying pattern would appear to be generated by a tendency for students to continue and fail rather than to withdraw early. Of particular concern are those groups who have already higher rates of failure, particularly male and Indigenous (and no doubt combinations of both as found in the segmentation analysis of the 2003 report). The trends towards staying on without successful outcome is no doubt contributing to the decline in the pass rate in the 2003 pass rate. Even though this recovered in 2004 to some extent, the overall dominance of this category (nine out of the thirteen equity groups) is a cause of concern and of possible intervention.
- (b) **Stable improvers:** The ESL category shows an overall improvement in both measures of attrition. However, as discussed in earlier chapters, this improvement may disguise a division in the performance between overseas and domestic students in the ESL category (see Chapter Fig 4.5). The general improvement in ESL cannot be taken at face value or give any grounds for complacency as to the situation of all ESL students enrolling in the Common Units.
- (c) **Unstable improvers:** The most obvious example is that of the overseas enrolments, whose average annual pass rate dramatically increased by over 20% between these two periods. This matter has been dealt with previously in the literature review and in Chapter 4 and is closely related to that of ESL improvement in (b). The most salient aspect of this increase was noted in the rather eccentric distribution of grades in overseas ESL enrolments, clustering as they do around the minimal pass level, rather than being evenly spread out across the range as for domestic ESL enrolments (see Fig. 4.6). This may suggest either poorer overall performance of overseas ESL students or

perhaps a tendency for students in these categories to be awarded the minimal passing grade.

- (d) **Unstable decliners:** The rapid increase in the withdrawal rate for part-time enrolments over this period has not been balanced by an increase in academic success. Nor can this surge in withdrawals in this category be explained by any greater impact of external enrolments, whose predictive effect on part-time status actually decreased between the two observation periods (see Fig. 4.3). Clearly this is a loss to the Program that deserves attention at many levels. The case of decline in natural science enrolment pass rates presents a different order of problem, as it is characterised by a very sharp decline in the pass rate (12%) and only a slight increase in the withdrawal rate. Whether this reflects an increased difficulty with the new form of the units, or a decline in the quality and motivation of students from these course fields is an ongoing issue in program development and delivery.

6.3 PROGRAM RESTRUCTURING AND UNIT RE-ORGANISATION, EARLY WITHDRAWAL AND PASS RATES

How might the restructuring of unit offerings have affected attrition rates, over and above those effects which may be attributed an increased diversity of intake? This issue was examined in detail in Chapter 3 (see Fig. 3.8). It appeared from this analysis that: over the years 2002-4 there was a rapid increase in a crude measure of diversity (as measured by the mean proportion of equity groups in student intake), a simultaneous decline in the pass rate in 2003 (from 67.5% in 2002 to 58% in 2003) which was recovered and indeed slightly exceeded in 2004 (back to 68%). The effects of restructuring and diversity across the two periods may, however, be more rigorously explored in light of the predictive models of the following chapter where it became more obvious what the effects might be of particular predictors (such as the high rate of early withdrawals among part-time ennoblements) may be exerting in interacting with the new unit offering regime

Does the period of observation (and by implication, the introduction of the new unit regime) influence either early withdrawal or pass rates when the main equity group factors (“representing diversity”) and their interaction with period are controlled for? To test this hypothesis, two univariate analyses of variance were carried out using “period” (i.e. 1999-2002 vs. 2003-4) as a fixed effect or factor, together with its interaction with a range of situation factorial predictors (mode of study, part-time status) and selected covariates taken from student characteristics (overseas citizenship, Indigenous status, Under 25 yrs). Table 6.2 displays the results of these analyses in terms of the significance values of the F-ratios for the null hypothesis that each effect is equal to zero (significant effects are shown in bold type). While this analysis cannot hope to include all student background effects, nor rule out exogenous historical factors that may confound the inter-period comparison, this limited analysis can nevertheless provide some indication of the effect of the restructuring regime on each of two measures of attrition.

Table 6.2 Effect of Period of Observation (1999-02 vs. 2003-04) on Attrition Rates*

<i>Attrition Outcome Source of Variation</i>	<i>Early Withdrawal Sig.</i>	<i>Passed Unit Sig.</i>
Period (1999-2002 vs. 2003-04)	0.0000	0.5150
Indigenous Identifier	0.0340	0.0000
Overseas Citizenship	0.0010	0.0000
Under 25 yrs	0.3530	0.0000
External Mode of Study	0.0000	0.0000
Part-time Status	0.0000	0.7400
Period * External Mode	0.0000	0.6500
Period * Part-time Status	0.0000	0.3730
External Mode of Study * Part-time Status	0.0000	0.0910
Period * External Mode * Part-time Status	0.0270	0.1380
Corrected Total of enrolments (n=)	10269	7238

*Effects with significance $p < .05$ are shown in bold type

Table 6.2 compares the results of the model which explored this question on the two outcomes. The results reveal an interesting contrast between the two outcomes. For early withdrawals, it appears that there is indeed a strong independent effect of period of observation, indicating that the historical shifts in diversity which may be associated the introduction of the new unit regime could not account for the trend decline in rates of withdrawals from 36% to just over 30% (see Fig. 3.2). Indeed the highly significant values for the interaction terms including period indicate that the *change to new regime may have lowered the withdrawal rate*². This is an encouraging result, in that it would refute any claim that the new regime “turned students off” before they could properly engage with the content of the unit. By contrast, *the effect of the new regime on pass rate*, either as an independent or through interaction with the equity factors, *fails to reach statistical significance*. The same list of student characteristics and situations met in the literature and the earlier chapters apply for pass rates, as for the main predictors (esp. Chapter 4).

6.4 CONCLUSION

From these analyses, it appears that the new regime may have had a positive effect on retention rate in the Common Units (i.e. beyond the census date), but no direct effect on the pass rate of those students who continued. For the latter, the higher rate of failure in the year of introduction (2003) would appear to be attributable to the continuing or intensified effect of equity factors. This latter finding resonates with the clustering pattern of equity factors in the lower left hand cell of Fig. 6.1 which indicates an association between a lower withdrawal rate and a lower pass rate. This clustering effect suggests that a higher proportion of students, who might otherwise have withdrawn in the first period, continue their enrolments, only to fail. However, as the logistic regression of pass rates on year and equity factors within the latter period (Fig. 4.4) shows, the distribution of trends in equity effects is mixed, while the independent second year effect (i.e. the trend effect between 2003 and 2004) is quite positive.

² The sign of the effects of period and its interactions on withdrawal and pass rates was confirmed by a separated logistic ordinal regression to ensure consistency with the results of the previous analyses in Chapter 4.

However, the outcome of a decline in the rate of early withdrawals since 2000, despite being a positive outcome in itself, (Fig. 3.2) raises questions relating to the ability and motivation of the continuing students that are associated with some equity factors, either singly or in combination (such as overseas citizenship, ESL and external modes of study). While these students chose to continue instead of withdrawing early, their pass rates may have consequently declined.

Nevertheless, it may be concluded that the observed decline in the pass rate in 2003 cannot be directly attributed to the introduction of the new unit regime, either as a depressing effect in its own right, or in its interaction with any of the principal equity factors. Any *impact* that the *new unit regime* may have had on the 9% fall in the pass rate between 2002 and 2003 is more likely to have been *indirect, attributable to the decline in the voluntary elimination of students* at greater risk of failure through early withdrawal.

7. SUMMARY AND RECOMMENDATIONS

As set out in the Chapter 1, the aim of this stage of the Common Unit Monitoring Project was to update the analysis, findings and literature review of the first stage which investigated the initial years (i.e. 1999-2002) of the program (Tyler, 2003) by examining the trends and patterns in student attrition over the years 2003-4. At this stage, the focus was on evidence for the effects of increases in the diversity of student intake, together with an appraisal of the impact of the restructuring of the unit offerings in 2003 whereby a palette of five distinctive units was reduced effectively to two more specialised units, Academic Literacies (CUC100) and Northern Exposure (CUC106). In this phase, the focus turned to the investigation of the effects on attrition of growing diversity of intake in terms of student background, part-time status and external modes of study in conjunction with a radical restructuring and re-organisation of unit offerings.

The preliminary results of the analysis of the 2003-4 results therefore formed the basis of a set of findings to the November 2005 workshop hosted by the Common Unit Committee (now the Common Unit Management Group) where recommendations for the future development of the Common Units were put forward in the light of an extensive body of evidence on the first year university experience. The objective was at all times to see the Common Units in a broad developmental perspective over the full range of years observed since its inception in 1998 which has yielded a very rich file of empirical data (over 11,000 unit enrolments) and a comprehensive bibliographical resource in the common unit and first year research literature. The empirical prediction of the background to attrition rates in the compulsory and universal Common Units program has therefore opened the door to a wider investigation of patterns of first year survival. This chapter will attempt to summarise the main findings, examine the recommendations arising from this report for the development of the program and suggest the future directions of this monitoring project.

7.1 WHAT ARE THE MAIN FINDINGS ARISING FROM THIS REPORT?

7.1.1 Setting the Scene: Intake Diversity 1999-2004

Fig. 1.1 showed that over these six years, the student profile of the Common Units in socio-demographic terms has become older, more female, less foreign-born and ESL and only slightly more Indigenous. In terms of student situation the dramatic shift has been towards external mode of delivery, part-time status and interstate residence. Both of these categories approximately doubled in proportion from 1999-2004 (and over 50% when averaged over the two observation periods). In addition, over this period these rose from about a quarter to over a half of the total number of enrolments (i.e. including early withdrawals).

7.1.2 Researching Attrition: Literature Review

From the literature it appeared that first year attrition rates of 20% and above are commonplace in Western universities and that there are myriad predictors including the impact of levels of literacy, socio economic status, cultural background, Lote, location, student motivation, ability to integrate as well as outside influences, and teaching and learning factors such learning approach, assessment methods and online delivery. The research literature emphasised the need for an integrated approach to first year transition that recruits the combined energy and awareness of tutors, coordinators, discipline areas, student services and management. Programs such as the Common

Units attempt to provide students with support and assistance from their first point of contact as well as across all areas of their engagement with the university.

7.1.3 Attrition: Trends and Patterns in Common Units 1999-2004

7.1.3.1 General Trends: Withdrawals and Passes

The trend line for early withdrawals reveals a gradual decline from a high rate of almost 36 per cent of enrolments in 2000 to a low of just over 30 in 2003. On the other hand, the trend line for pass rates over these six years showed a much a gradual decline from over 70 per cent in 1999 to a low of about 62 per cent in 2001, followed by a “spike” to another high of 67.5 per cent in 2002. The following year, which coincided with the introduction of the new units, the rate plummeted again to a low of just below 58 per cent, which was recovered itself to about 68 per cent in the following year. This unevenness suggests a possible disruptive effect of the unit restructuring in 2003 (see Chapter 6). It could also reflect the resilience of the program in the face of a fairly radical reorganisation.

7.1.3.2 Equity Groups and Attrition Trends

Trends in the composition of early withdrawals indicated a general stability in rates of overseas citizenship and Indigeneity and declining rates of male gender, first year enrolments and recently, NT residence. The main source of instability in the trends would appear to be due to the dramatic increases in early withdrawals in the two recent years 2003-4 among part-time students, which showed an almost fourfold increase. This was accompanied in the year 2004 by a doubling of early withdrawals among the under 25 yr age group. The reason for the jump in early withdrawals in 2003-4 was explained by the rapid increase in recruitment of part time enrolments over these years. The changing composition of the pass grade or above enrolments revealed relative stability in the minority group (ESL, Indigenous) representation, though a relative decline in the percentage of overseas (non-Australian or New Zealand) citizenship, accompanied by a trebling of the percentage of external enrolments and a doubling of part-time enrolments. Male enrolments continued to decline as a proportion over the years, while the percentage of first-year enrolments fluctuated a good deal, between sixty and seventy percent of the total for the year. The percentage of younger enrolments declined between 1999 and 2000, though were recovering in 2003-4.

7.1.3.3 Stability, Equity and Over-representation: Early Withdrawals

The trends in early withdrawal rates were standardised against total enrolment proportions for each equity group. Comparisons across the two periods 1999-2002 vs. 2003-4 indicates a fairly stable pattern, with the outstanding exception of part-time enrolments in the final two years. First year enrolments were consistently over-represented in early withdrawals, as were internal enrolments (externals fall under the line of proportional or average representation). There was a marked increase in the representation of under-25 yr enrolments, from a beginning of almost minus 45% to a near average representation in 2004. The lower level of withdrawals was attributed to a possible tendency of younger or school leaver age groups to take advantage of the skill formation aspects of the Program, which was interpreted as a positive sign for a transitional program.

7.1.3.4 Stability, Equity and Over-representation in Passes

A comparison of the representation of equity groups passing a Common Unit based on the initial total enrolments, including early withdrawals, showed that two groups; NT residential and part-time enrolments appear to suffer wide fluctuations over the period. The relationship between withdrawal

rates and pass rates suggested a question that should be explored further – do groups that “stay on” tend to also higher pass rates, or does a higher rate of early withdrawal “screen out” the students most at risk of failure? (This question was explored in more detail in Chapter 6). For the other equity groups, there were not such wild fluctuations in rates of representation in passes among enrolments. Males, for example, were consistently under-represented in the pass categories while external enrolments showed only a slight reversal of performance in the latter years, perhaps as a result of the restructuring (see also Chapter 6 analysis). It was encouraging to see the first year enrolments trended back to above average in pass rate, after a dip towards an under-representation in years 2001 and 2002.

7.1.3.5 Diversity and Performance: Are they in Conflict?

An examination of the joint trends of pass rate and diversity of intake indicated that the reduction of choice (restructuring) of unit offerings described in Chapter 1, did not affect the performance of the bulk of students enrolling in the Common Unit program. Indeed, although accompanied by an increased diversity of intake of the years of the phasing in of the new units, the pass rate recovered by 2004 to just above its pre-restructuring average. This recovery was seen to speak well of the response of the design and delivery systems of the two new units which suggested that flexible adjustments in content, method and assessment were able to compensate for the loss of variety in unit choice.

7.1.3.6 Instability and Diversity: General Trend

From another perspective, we also examined the surface effects of instability in enrolment proportions across the equity groups on the average group representation in the passes across all the years observed (1999-2004). Here we were looking at the variation between or across the six years in terms of equity group representation in intake, rather than the variation within years. The appropriate statistic chosen here was the “coefficient of variation” of diversity of the mean or representation rate of each equity group across the six years. A plot of this measure against the level of over- or under-representation in the pass grade population for each year, showed a slight negative relationship. The groups that fitted this relationship best were interstate and overseas enrolment (in terms of a hypothetical association between low levels of instability and higher than average levels of representation in passes) on the one hand and the under 25 yrs and part-time status groups on the other (i.e. with high levels of instability combined with lower than average representation in passes on the other). Although this relationship is only indicative, since there are other factors besides enrolment instability that may contribute to pass levels other than the stability of equity group representation, the relationship was thought to merit further exploration in a multivariate context (see Chapter 6 which examines the dynamics of attrition in more detail).

7.1.4 Patterns of Prediction: Comparing the Risk Factors 1999-2002 vs. 2003-4

7.1.4.1 Comparing Predictors of Early Withdrawal

The comparison of odds ratios of early withdrawal between the two periods indicated a generally stable pattern. The outstanding exception here was the effect of the part-time status, which shows an odds ratio increase of over six times its earlier figure. This can be compared with the next increase, for enrolments from overseas citizens, which was approximately twice its earlier average rate. This can no doubt be partly explained by the introduction of a number of new externally-delivered courses in health sciences, education and law, though the part-time status effect persists when this effect is controlled for. Therefore, it would seem that it is most closely associated with the phasing in of the new units and the transition from the older ones as a result of the

restructuring and reduction of offerings described in the first chapter. This assessment suggested a separate regression analysis in order to see whether the cause of this increase may lie within its association with one or other of the present range of predictors, such as external modes of study.

7.1.4.2 Predicting Part-Time Status: A Comparison 1999-2002 vs. 2003-4

In order to find whether some other factor may have been driving up the rate of part-time withdrawals, a further regression was carried out with the other equity groups as predictors. This revealed a very stable profile among the predictors and, counter-intuitively, a lower value for the effect for external modes of study in the second period when part-time rates went up jointly with rates for this mode of delivery. Again, almost counter-intuitively, the only obvious source of disruption among the predictor range (i.e. excluding the introduction of the new unit offerings) would seem to lie in the tendency of internal rather than external students to “go part-time” and thus to be more prone to choosing an early withdrawal. This trend is evidenced in almost all fields of study, except health. Why this should be the case is difficult to explain, other than the fact that internal students have more flexibility in program choice and are more likely to prioritise the core units of their parent courses over the more freely available Common Units.

7.1.4.3 Predicting Pass Rates: A Comparison 1999-2002 vs. 2003-4

The patterns of predicting that an enrolment will proceed to a passing grade (PC or above) for a unit, forms an interesting contrast with the pattern for the prediction of early withdrawals. Here we see that situational factors such as first year of study, part-time status and external mode, which have been prominent in predicting withdrawals in both periods, become less important than student background characteristics. Of most interest is the emergence of overseas citizenship as the most powerful predictor in the years 2003-4, whose “odds ratio” value has apparently quadrupled over that for the previous (see following section for further analysis of this effect). Other factors appear to have varied their effects on academic success. Indigenous status has proven to be more of a disadvantage, male gender has slightly improved its impact on success, while external mode of delivery has become less of a negative predictor and the younger (age under 25yrs) group has made significant gains. Overall though, the patterns of prediction appear to be stable over the two periods, with the exception of the improvement in the pass rate for overseas enrolments (see Chapter 6).

Most encouraging from a developmental perspective has been the positive effect of the year of enrolment on improvement in the odds ratio of passing within the latter period. The addition of an extra year of “settling in” of the restructured program (i.e. from 2003 to 2004) has apparently raised the “odds ratio” of passing by over fifty percent, when all the other equity factors have been controlled for. This is a significant finding, and together with the improvement in the prediction values for the younger group of passing, appears to vindicate the decision to introduce a skills-based unit for this transitional population. Among the parent course affiliations, the social and cultural and natural sciences areas continue to lag further behind in performance, while success rates in the parent course fields of health and education have either held constant at about the average level in the case of education, or, in the case of health, significantly improved the chances of passing.

7.1.4.4 Overseas Citizenship: a “Special Case” of Predicting Success?

The remarkable improvement in the odd ratios of passing for overseas citizenship enrolments can perhaps be partly explained by the decline in representation (down to 2.8% from 6.8% in the previous period) combined with a much higher early withdrawal rate, both of which may have been associated a greater selectivity of intake and continuing enrolment. This improvement cannot,

however, be separated from the issues raised in the recent debate sparked off by a study by Birrell (2007) that purported to show that English proficiency among many overseas students has tended to be overlooked in assessment standards. This possibility was explored in this instance by a comparison of (a) the means and (b) the distributions of grades of domestic and overseas students who come from non-English speaking backgrounds.

An inspection of the error bars of the mean rates of passing revealed that there are substantial differences, not only between the means of the pass rates of overseas and domestic enrolments, but, within this category, between those of the enrolments with a non-English speaking or second-language English background. Domestic ESL enrolments fare worst of all, not only in that their pass rates are significantly lower than those of all overseas enrolments, but that they are probably also significantly lower than those of English background domestic students. The distribution analysis across all grade levels or these four groups (overseas/domestic citizenship by ESL/ non-ESL) provided some insight into this anomaly as well. While the grades of the overseas/ ESL grades appeared to cluster around the pass level, the distributions of all the other three possible combinations of citizenship and ESL status (note: including domestic ESL) were quite similar, if not identical in that they were fairly evenly spread out over the range of results ranging from Pass to High Distinction. While this appeared to provide some evidence of a tendency of tutors and other grading personnel to “push” overseas ESL students through to the lowest level of passing grade through more lenient marking, any conclusion should await further investigation and analysis of the special needs and assessment methods applied to overseas ESL students.

7.1.4.5 Students “at Risk” of Early Withdrawal or Unit Failure

A data-mining method (CHAID segmentation analysis) was carried out on the data set for 2003-4 in order to isolate the combination of values across the various situational and background predictors which could identify those enrolments most and least “at risk” either early withdrawal or failure. Here we are dealing not with the effects of unitary variables such as age or gender, but rather with unique combinations of values within factors (e.g. Indigenous part-time students aged over 15yrs in the first year of study) which might provide more useful insights into the segmentation of the “markets” in which the Common Units have been developed. This analysis produced the following results:

Let us look at these in more detail:

- (a) **Groupings at Risk of Early Withdrawal:** This analysis showed that the effects of the most prominent single predictor, part-time status, was confounded by its concentration within certain groups – particularly among internal enrolments of both age groups, with the under 25 yrs show an abnormally high rate of withdrawal. The groups with lower risk of withdrawal, though mainly full-time, were scattered across a range of predictor values, located in education parent courses and in external as well as internal modes of study. Here however, age does matter more than with the high risk predictors, with the older, non-first year students tending to cluster at the lower end of the rank order. It is recommended that the results of this kind of analysis may be particularly appropriate for designing a recruitment and retention strategies.
- (b) **Groupings at Risk of Failure:** This analysis showed up some interesting combinations that go beyond the extremes of the single main predictor effects such as overseas citizenship or Indigenous status. In the middle of the rank order of risk groups there appeared to be an important interaction between age, external mode of study and first year enrolment. While internal first year enrolments appear to predict above average

pass rates, this appears to be complicated by an age factor, with the older groups tending to be more successful further down the rank order, particularly in later years of the course. This may reflect something of a bimodal distribution in the student body, between the internal first years and the older, external mode students enrolled in the second or later years of their course (especially in health science fields). Overseas citizenship has tended to dominate this analysis, compared with the results of segmentation for the previous study of the 1999-2002 period (see Tyler, 2003, Table 9.1)

7.1.4.6 Conclusions: Equity, Attrition and Diversity

While there are outstanding predictors for each attrition measure (part-time status for early withdrawals, overseas enrolments/ Indigenous at opposite ends for passes), as for the 1999-2002 study, the segmentation analysis shows that most effects do not impact uniformly, nor in equal strength, across different subclasses of age, citizenship, ethnicity or mode of delivery. The results here may reveal grounds for intervention, as in the case of the interaction between citizenship and ESL status on the grounds of apparent inequitable treatment of domestic as against overseas students with similar linguistic backgrounds. During these two years there has been a further complicating factor in the restructuring of the unit offerings, associated in the first year with a decline in the pass rate from 67% in 2002 to below 58% in the year of changeover, 2003 – see following section). There was also found to be an increased tendency for part-time students, particularly in internal modes, to withdraw early in both years. Indigenous enrolments pose a particular problem for academic achievement in that Indigenous pass rates have, if anything, declined during this period (from 48% to 42%), while their proportion in the intake over the whole period (1999-2004) has almost doubled (from 5.4% to 9.1%). This clearly indicates a need to identify the background to this disturbing rate of failure, particularly as Indigenous outcomes appear to be implicated with other predictors such as age, gender and modes of study and fields of study.

7.1.5 The Dynamics of Attrition: Comparisons across Periods 1999-2002 vs. 2003-4

In this section the deeper patterns of change in patterns of attrition across the two observation periods covered in this and the previous report were explored through two strategies: (1) a comparative analysis of the relative rates of change in both withdrawal and pass rates across the various predictors based on student background and study situation; (2) a univariate analysis of variance of the impact of the restructuring of unit offering at the beginning of the second period on the two measure of attrition. This simultaneity of reform with the date of observation enabled the effect of restructuring to be “proxied” by the effect of “period” on rates of withdrawal and passes while controlling for the other main predictors, together with its interaction with each of these variables treated as factors. These strategies based on a more dynamic and synthetic design subsuming many of the effects noted so far produced the following results:

7.1.5.1 Diversity and Attrition: A Typology of Change Factors

Withdrawal and pass rates across these thirteen equity or predictor groups of student background and situation were collapsed into a scatter plot of percentage differences in the two attrition outcomes for each of these groups across the two observation periods. A cluster analysis of the results of this process suggested a four-fold classification which positions each of the groups according to their trend coordinate values on each of the two measures of attrition now treated as axes with each equity group positioned according to having either higher or lower pass rates to create this two-dimensional display. The four main types so generated by this method were:

- (a) **Stable decliners** - lower rates of both withdrawals and passes (external mode, male gender, Indigenous, health, social and cultural and education fields, under 25yrs and 1st yr)
- (b) **Stable improvers** - lower rates of withdrawals, higher rates of passes (ESL)
- (c) **Unstable decliners** – higher rates of withdrawals, lower rates of passes (part-time, natural sciences)
- (d) **Unstable improvers** – higher rates of withdrawal, higher rates of passes (overseas citizenship)

This underlying pattern of clustering based on the distances between equity groups in terms of their differences of the two measure of attrition over the two observation period quite clearly put the majority (nine out of thirteen) in the first category of “stable decliners”, suggesting a possible causal link between a lower rate of withdrawal and a declining rate of passing. While this has been met earlier and put down to the effects of a more diverse mix in the student body, the effects of restructuring in the year 2003 where the pass rate fell dramatically from 67% to 58% could not be ruled out.

7.1.5.2 The Effects of the Restructuring 2003-4

In order to untangle the possible changing effects of the equity group factors and unit restructuring in the second period of observation, two univariate analyses were carried out to explore the effect of period and its interaction with these factors. In other words, was the prediction of either the rate of withdrawals or of passes influenced by the period in which the observation was made, whether period was taken as a main effect or in combination with the equity group values? These analyses produced a contrasting pattern in which period of observation (i.e. 1999-2002 vs. 2003-4) exerted a significant depressing effect on the rate of withdrawals both as a main effect and in combination with several equity group predictors, while period had no significant effect on the pass rate on either of these counts. The conclusion was drawn therefore that the decline in the pass rate in 2003 could not be directly attributed to any increased “difficulty” in the new unit regime as experienced by equity group students, but rather to an increased rate of retention associated with lower rates of early withdrawal associated with the changeover. This rather complicated and paradoxical finding therefore indicates a positive effect on one of the attrition outcomes, while setting up a challenge for the other. Fortunately, the response of the Common Unit team was apparently adequate to the task, in that the pass rate recovered to its pre-restructured levels in the following year, as noted above. Further work needs to be done on the perversities of restructuring in future years, if its impact is to be anticipated and addressed without such a dramatic decline in the pass rate.

7.2. WHAT RECOMMENDATIONS HAVE EMERGED FROM THESE FINDINGS? HOW HAVE THEY INFORMED THE DEVELOPMENT OF THE COMMON UNITS?

The presentation of the preliminary findings of this report to the Common Unit Management Group took place in November 2005 as a workshop. This was a successful forum because it allowed participants to carefully examine the findings and discuss them extensively in the workshop. The fact that the management group has a cross faculty (and schools) membership and also includes members from TLDG and LILS meant that the report findings were examined from a broad institutional perspective.

In examining the factors for attrition it was reassuring to find that most of these factors are already addressed to a more or lesser extent within the common unit program. However, the forum gave

the management group the opportunity to identify where further action and input is required. It was also an opportunity for people to share ideas and innovations to enhance the existing program.

It appears the areas needing the most attention are:

- increased liaison with support areas within the university
- the extension of existing interventionist measures for at-risk students
- increased liaison with the schools to promote the further imbedding of academic literacy into general teaching practice and skills transfer

The workshop actions have been formalised by the management group and a review of the implementation of these is scheduled for the second common unit meeting in 2007.

7.3. WHAT DIRECTIONS SHOULD THE ATTRITION MONITORING PROJECT TAKE FOR THE YEARS 2005-6?

This study has opened up a number of possibilities for further action and investigation.

1. Extension and maintenance of the enrolment database over 8 yrs 1999-2006
2. Broaden scope to compare attrition in large core first yr units in Nursing, Education, Business and Law
3. Broaden scope to:
 - compare data for course success after Common Units against those who didn't complete them because of CT or PA for them and correlate this with basis of admission to course and TER;
 - correlate basis of admission and TER with success in Common Units.
4. Establishment of focus groups and development of measures of student satisfaction
5. Extension of Staff Workshops.
6. Regular reporting and of monitoring results to Common Unit Management Group
7. Monitoring background of early withdrawals, particularly among part-time students
8. Scrutiny of ESL overseas and domestic rates for equity purposes
9. Detailed research on Indigenous students in withdrawal and progress rates
10. Further monitoring effects of unit restructuring on attrition rates
11. Detailed study of media impact on rates of attrition (esp. online learning /“Tablet PC ”)
12. Comparative study of academic literacy improvement for those who do CUC100 and those who don't
13. Development of a monograph reviewing the Common Unit experience at CDU

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