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The value of the Matriculation and the Alternative Admissions tests scores in predicting success for the Bachelor of Business Science Extended Curriculum Programme students at the University of Cape Town

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COMPULSORY DECLARATION

This work has not been previously submitted in whole, or in part, for the award of any degree. It is my own work. Each significant contribution to, and quotation in, this dissertation from the work, or works, of other people has been attributed, and has been cited and referenced.

Signature: Signed by candidate Date: 23/11/2007

Signature removed

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Abstract

The value of the Matriculation and the Alternative Admissions tests scores in predicting success for the Bachelor of Business Science Extended Curriculum Programme students at the University of Cape Town

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The focus of this minor dissertation is on the relationship between the Matriculation examination results, the Alternative Admissions Research Project (AARP) test scores and the academic success of students in the Bachelor of Business Science (BBusSc) degree programme. This study is particularly focused on the BBusSc Extended Curriculum Programme (ECP) students, and reports on the 2001 to 2003 cohorts for the period 2001 to 2005 to ascertain what value the data available upon admission contribute in terms of predicting success for students from historically disadvantaged backgrounds within the diverse education landscape in South Africa.

This study examines and gives a descriptive analysis of the concurrent validity of AARP test scores and the Matriculation examination results and the predictive validity of each set of scores in relation to performance in each academic year of study, as well as the relationship of these scores with retention at university and graduation.

The predictive validity of the AARP test results and the Matriculation examination scores alone and in conjunction with other pre-admission data for the Extended Curriculum students are analysed and discussed and then compared to performance, retention and success of Mainstream BBusSc students. The assessment of this validity contrasts the ECP with the mainstream curriculum provisions to highlight the possible effects of the sustained interventions provided by the BBusSc ECP.

The conclusion presents trends and the actual value that these entrance data are able to provide for the selection of students and the significance of these for future student admission to the BBusSc ECP.

Key words

Academic preparedness, Matriculation scores, selection and admissions processes, alternative admissions tests, concurrent and predictive validity, business science students, extended curriculum, retention characteristics, academic success factors, impact of interventions

1. CHAPTER ONE — STATEMENT OF PURPOSE

1.1. Background to the study

In the past three decades the school education system in South Africa has undergone very dramatic changes for well-known political and established educational reasons. The changes have had substantial implications for the curriculum, its delivery, the actual quality of teaching and learning in the majority of schools in this country, and the value, use and interpretation of assessment methods and results. The policy and practices that have accompanied these changes have been multifaceted, and sometimes even confusing and complicating issues for the majority of stakeholders in the South African education landscape. Increased participation at secondary school level and the diversification of learners completing their schooling and proceeding to higher education have brought additional complexities in terms of assessing readiness for and ensuring access for students who have the potential to succeed in higher education.

Each year in South Africa, thousands of scholars write the Senior School Leaving Certificate (Matriculation) examinations. The Matriculation examination is a high stakes examination at the conclusion of their school career—a passage into the world of work or a possible gateway to any of the Higher Education Institutions (HEIs) in South Africa and worldwide. As argued by Haeck and Yeld, this examination has traditionally been used for a dual purpose, namely "*to certify a level of achievement on the course of study preceding the examination and to act as a gatekeeper for post-secondary educational opportunities*" (Haeck and Yeld, 1994, pg.2). However, this examination may serve even more purposes.

It may be:

- administrative (e.g. for purposes of the national and provincial education departments, an indicator of teacher delivery, school's success, i.e. quality assurance),
- political (affirming the success of the current massification of education, impact of changes and specific interventions and the transition from the previous education dispensation),
- statistical (for purposes of national and international comparisons),
- regulatory (dictating eligibility for specific further education and training), and for
- placement-related (a signal to the variety of tertiary options on current levels of achievement, skill, effort, attitude, and motivation of applicants).

All of these purposes have been "packed" into the interpretation of Matriculation results and yet they are all so distinct in their inherent assumptions. Since the school system is still so uneven in terms of

its quality and standards, the Matriculation results have become progressively diffuse in terms of their ability to provide a measure of "potential", or describe actual achievement or predict success for the variety of options offered by the HEIs in this country.

As summarised by Stiggins (1994, pg. 12–14) if assessments are to be truly meaningful they must (1) be based on quality assessment instruments, that is, instruments that are valid and reliable with appropriate and clear targets, (2) have a clear purpose, (3) with method(s) matched to target and purpose, (4) be an appropriate sample of the learning domain and (5) control for all sources of interference. If these five basic standards suggested by Stiggins are to be met for each examination taken by the matriculant in order for the Matriculation examination to be reliable and valid, it would seem reasonable to conclude that assessments in the years prior to these examinations could greatly affect performance in this high-stakes Matriculation examination. If prior assessments have not been valid and reliable, it follows from Stiggins' point that we are in danger of looking at Matriculation results that are not necessarily meaningful for higher education selection and admission purposes. Various studies internationally and also in South Africa have shown that preparation and subsequent success at tertiary level is tied directly to a firm foundation at secondary school level. It follows, therefore, that we need to have an understanding of the nature of this foundation if we are to responsibly admit students to tertiary education in South Africa.

Although the Matriculation results continue to serve as the primary measure for admitting students into tertiary education, there are other forms of information gathering that have been used by HEIs in South Africa. The Alternative Admissions Research Project (AARP) based at the University of Cape Town (UCT) has been operating since 1986 and has been offering an alternative admissions testing service since 1987 which is currently utilised by several HEIs in South Africa. The AARP tests were initially aimed at providing an alternative assessment of readiness for applicants to UCT who were from an educationally disadvantaged background, but their uses have evolved over the past decade or more into carefully designed and well researched instruments providing a set of results for the entire applicant pool that can be interpreted and used in a variety of ways. In particular they are used for the identification of talented applicants from an educationally disadvantaged background who are often, for reasons related to difficulties in interpreting Matriculation results, not adequately identified by means of the Matriculation examination results (Haeck et al, 1997, Chalton et al, 2001, Cliff et al, 2003).

The AARP tests assess acquired skills and levels of achievement in Mathematics, capacity for verbal and logical reasoning in the medium-of-instruction in higher education, and facility in higher-level Mathematics. In addition, they provide some critical measure of potential to succeed at university.

Numerous small specific and large-scale research studies conducted at UCT over the period 1989 to date have shown that the AARP tests provide a measure of the likelihood that students will be successful in their studies and that these tests have validity in terms of their predictive capabilities (Chalton et al, 2001; Cliff et al, 2003; 2005; 2006; Visser & Hanslo, 2006). The AARP tests, by their design, are relatively independent of the type and quality of schooling and home language of the writers and this independence is also ensured in the reporting and interpretation of the results providing a further element of fairness. The AARP tests have also remained fairly stable in terms of design and purpose during a time that the Matriculation examinations have undergone significant changes (AARP Statistical Reports, Cliff et al, 2003; 2005; 2006)

1.2. Rationale for the study

UCT use the two forms of assessment for admission purposes outlined above, namely the Matriculation Examination results and the Alternative Admissions tests scores. This study will examine closely what validity the Matriculation examination results and AARP tests scores bring to the measurement of preparedness, achievement and potential to succeed for the 2001 to 2003 cohorts of students who have been admitted to the BBusSc ECP by analysing their university performance over the period 2001 to 2005 in relation to pre-admission academic results and other available data, such as their type of schooling, race, gender and home language.

1.3. Purpose of the study

The purpose of the research is to clarify the validity of the Matriculation results and AARP tests scores in relation to student performance in the BBusSc degree programme and where appropriate highlight any causal relationships between the students' success and specific interventions provided by the ECP. This research also comprises a comparative study of what the Matriculation scores and the AARP test results contribute to an understanding of the academic readiness of the BBusSc ECP students in comparison with those students from similar educational backgrounds who met the conventional entrance requirements for the mainstream programme and consequently do not have the additional support available to ECP students throughout their degree programme.

For research purposes this study is unique in that it compares the concurrent and predictive validity of the AARP and the Matriculation scores of BBusSc mainstream students with those students on one of UCT's Academic Development Programmes, the BBusSc Extended Curriculum Programme.

From a practical perspective this research provides clarity on what the AARP and Matric scores actually predict about the ECP students, why these predictions vary from what is generally expected (as suggested by the limited preliminary study described later in this thesis), what the implications are for future student selection onto the programme and how we can improve selection processes for the ECP. The findings of this study also suggest that there are several other factors that influence academic performance on the ECP. The most responsible admissions process is crucial in that both the programme sponsors and the university need to be confident that funding and academic resources for the ECP are indeed utilised for the students who are most likely to succeed despite the fact that they did not achieve the minimum entrance requirements for the BBusSc degree programme. The outcomes of this research could enhance the identification of students with the potential to succeed so that these students are provided with access to tertiary education. Each year decisions have to be made about which students to admit and it is important to make selection decisions informed by research outcomes rather than on some random choice between two students with apparently similar eligibility.

1.4. Significance of the study

1.4.1. Research problem

Research question answered by this study

What do the Matriculation results and the Alternative Admissions Research Project (AARP) tests scores indicate in relation to the academic performance of mainstream and extended curriculum students in the BBusSc degree programme?

Specific questions to be explored in the study

- What predictive value do the AARP and Matriculation scores have?
- What is the concurrent value of the AARP and the Matriculation scores and what can we learn from these concurrences?
- What can we learn from the AARP and Matriculation scores in relation to the average achievement in each academic year of study at UCT?
- What is the predictive validity of these scores in terms of the success of the ECP students?
- Do the same trends exist for the BBusSc ECP and the mainstream BBusSc students?
- What is the value of the double-weighting of Matric English and Mathematics in relation to subsequent performance on the BBusSc degree programme?
- What characteristics upon admission actually predict success for the ECP students?

1.4.2. Specific focuses of this research

- Using Correlation Analysis techniques to investigate the extent to which the individual AARP test scores correlate with the Matriculation scores (concurrent validity) and the first year MAM102W performance (predictive validity) since a solid foundation in Mathematics is crucial for most of the senior courses
- Using Regression Analysis techniques to examine the influence of demographics (such as school background, gender, race), Matriculation and AARP Scores on performance, retention and graduation at university
- To establish the value of the AARP and the Matriculation scores in predicting eventual success of the BBusSc ECP students compared with the success of the mainstream BBusSc students; to look for patterns and draw conclusions from this comparison
- To interpret the findings of this study and to provide an overview of other factors impacting on the findings
- To consider the findings of similar previous studies and draw comparisons where possible
- To recommend ways in which the AARP scores could be more effectively used in the selection and admission of the BBusSc ECP, as continuous improvement in this process is regarded as essential.

1.5. Context for this study

> *Educational institutions also contribute to civil society by offering individuals a chance to better their lives. Educational qualifications are a form of social and cultural capital which can be converted into economic capital in the labour market. However such qualifications are a two edged sword. If unequally distributed, qualifications can increase the gap between those who already are advantaged and those citizens who are disadvantaged or marginalised. Education therefore can empower citizens but it can also become the mechanism for social exclusion. The distribution of education therefore has considerable significance for those groups in society, such as women, who still need to access what is their civic entitlement (Bourdieu 1997, pg. 46).*

The above quotation resonates in many respects with where South Africa finds itself in terms of education twelve years after democracy. Tertiary institutions in South Africa are still perceived by many to be the filter for including or excluding people from living the lives they aspire to. The Constitution of our country recognises the need to reconcile the divisions of the past and calls for redress of past inequities. Aligned with this the White Paper on Higher Education (1997), the

Higher Education Act (1997) and the National Plan on Higher Education (2001) require public HEIs to address past inequities as well as the country's high-level human resource needs. These strong external drivers have shaped and sharpened policies, processes and initiatives at UCT. The UCT Mission Statement (1996) indicates that it is our mission to be flexible on access, active in redress and rigorous on success. Furthermore, the university recognises its role in striving to end the racial fragmentation of the higher education system and to build a diverse student profile that substantially reflects the demographics of South African society, while also reflecting the university's international profile (UCT Admissions Policy 2006).

Flexibility of access to university calls for initiatives to identify potential applicants in alternative ways as the schooling legacy in this country gave rise to a set of complex challenges. The question still remains:

> How does one fairly provide access to applicants from the disadvantaged sectors in our community if they have been moulded and affected so profoundly by twelve years of schooling in a system so fraught with disadvantages?

In an attempt to alleviate the pressures exerted by the demands for transformation, both locally and globally, especially within the economic sector, the Commerce Faculty at UCT initiated the Sanlam Business Science Extended Curriculum Programme in 2001. The programme has been named after Sanlam in acknowledgement of their generous sponsorship of the infrastructure, staff and operational costs of the Sanlam BBusSc ECP. The ECP is aimed at widening access to and improving throughput for students from previously disadvantaged backgrounds (irrespective of the high school attended) in order to produce graduates reflecting the demographics of the country in alignment with the university's policy of promoting both excellence (identifying the "best" students from diverse backgrounds) and equity (ensuring that extended curriculum programme students graduate in similar numbers to mainstream students regardless of prior educational background). This programme is of paramount importance for the sustainable well-being of the economy of our country because of the need to produce quality Black[1] business graduates to play leading roles in this sector. Not only is access (input of quality students) imperative as we cannot morally set students up for failure or deny potential students access due to inappropriate admission criteria, but also throughput (output—quantity and quality) since government funding to all South African tertiary institutions is linked to output and all HEIs are being monitored in terms of quality delivery and their throughput rates.

[1] Here the term "Black" needs to be understood to incorporate the "Black", "Indian" and "Coloured" designated groups and really refers to all the traditionally educationally and economically disadvantaged groups in South Africa.

The BBusSc is a highly sought-after and selective degree that provides exceptional career opportunities for its graduates in key areas of the South African economy as part of the global economy. Since the BBusSc ECP is specifically aimed at students whose school background has not adequately prepared them for the rigours of tertiary study and who want to study in the field of management, several curriculum challenges have been addressed. The fundamental curriculum deviation from the mainstream curriculum lies in the fact that the mainstream programme has been restructured to spread the workload of the first two years over three years, enabling students to acquire essential foundation skills, develop effective study approaches and make the necessary adjustment from the school to the university environment. Students on the BBusSc ECP graduate in five years although the programme is flexible enough to allow students to graduate in four years through the two summer[2] term options. This provides UCT with an opportunity to effect inclusion of students who previously would have had no access to this field of study based on their Matriculation results thereby overturning Bourdieu's notion of unequally distributed qualifications and effecting subsequent social and economic empowerment of previously marginalised communities (Bourdieu, 1997).

The following section paints a picture of the additional value added by the BBusSc ECP interventions, which are not generally available to the mainstream BBusSc students.

1.6. Core principles of the SANLAM UCT BBusSc ECP

The core principles of the BBusSc ECP actually find grounding in Tinto's (1975) theory of college student integration or attrition. Tinto's 1975 formulations state that students enter college with characteristics that play a role in their drop-out, especially at first year level since these characteristics have a direct influence on the student's initial commitment to the institution and the goal of graduation. These in turn affect the student's degree of social and academic integration at the institution (Tinto, 1975).

Tinto indicates that mechanisms for social integration include peer group interaction, extra-curricular activities and interaction with academics and administrators (1975, p. 107). Tinto further states that the greater the level of academic integration, the greater the level of commitment to the institution and the goal of graduation. In addition, he indicates, the greater the level of social integration, the greater the level of commitment to the university which in turn increases the likelihood of the student's retention at university (Tinto, 1975, p110, Bray, 1999).

[2] A winter term has also been introduced in 2006.

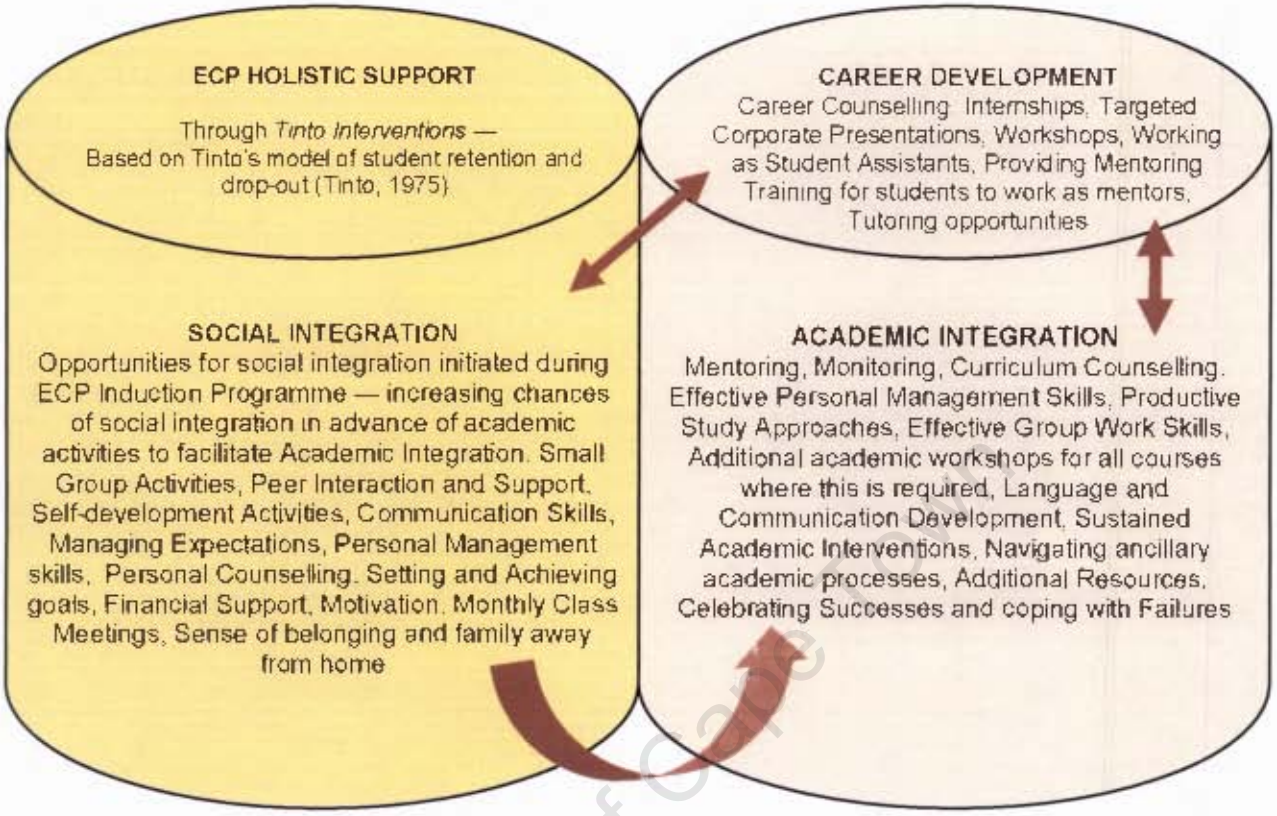
First year students arrive on the BBusSc ECP just as any other first year student anywhere else in the world, alive with possibility and filled with great expectations of a world which some of them have no real understanding of. Student personal circumstances, expectations and multiple emotional, psychological, academic and social factors play a role in whether ECP students will ultimately succeed or not. It is important that the context of the students and the programme is understood in order to fully appreciate the findings of this study.

It could be argued that some of the background characteristics displayed by ECP students such as family socio-economic background, parental education level, prior schooling experiences, and not meeting the entrance requirements could place these students at a bigger risk of not succeeding at university because of the variety and extent of these factors, and hence the ECP implemented a number of interventions to minimise these risk factors. Since many of the ECP students are often first generation university undergraduates in their families, their social and academic integration is even more important as they may experience additional stress factors which could counteract their motivation for learning. The specialised forms of interventions provided by the ECP are focussed on both academic and social integration as outlined below, in line with Tinto and others (Tinto, 1975; Bray, 1999).

- Over and above the Faculty Orientation Programme prior to the academic year, the ECP offers an induction programme which inducts students in a sustainable way into the university learning environment to facilitate the transition from secondary school to tertiary study as the behaviours are reinforced at strategic times throughout the academic year;
- Extending the first two years of the Business Science degree over three years allows students to develop effective personal management skills and productive study habits and adjust to the university learning environment;
- An environment in which skills development is encouraged by additional support activities such as collaborative learning workshops and extra tutorials;
- Foundational support in the first year Mathematics course is provided as this is an area where it is known that students enter university with less than the requisite background—doubling the contact time with the lecturer and tutors to accommodate appropriate interventions;
- Language and Communication Development opportunities within the Microeconomics course assist those students who are generally English Second Language speakers—the first semester course is stretched over the full year to accommodate various language and writing skills interventions;

- Students' academic progress is monitored and appropriate interventions required for both the foundation and senior years of study are provided;
- The programme curriculum outline is flexible enough to take students' individual needs into account ensuring that students progress at their own pace within the specified period, but also ensuring that good results are achieved;
- Student interaction is facilitated as part of their studies to develop and practice effective communication and group problem-solving strategies and skills;
- Career development is facilitated through participation in work placements, job shadowing opportunities and internships to gain practical experience in preparation for entering the market place.
- In addition to the two extended courses, first year BBusSc ECP students take mainstream courses to expose them to the pace and volume of work required and taking responsibility for their own learning. This facilitates development of the necessary skills towards the more independent learning required in the senior years of study. During the third and fourth academic years students follow their particular streams within the mainstream BBusSc programmes with support as required.
- A mentoring system is provided whereby senior students mentor first and second years throughout the academic year. These mentors assist with conceptual understanding of content of every course required by the BBusSc. In addition to this, mentees are also assisted with effective time management, productive study approaches, discipline, motivation, and numerous other challenges.
- Sustained appropriate support is provided throughout the degree programme, tapering off considerably by the third academic year of study. The ECP does not close the holistic support and interventions after the first year as it became clear over time that depending on the extent of their under-preparedness for tertiary study, some students required more time to develop effective independent study habits.

The following schematic outlines the key features of the holistic support provided by the BBusSc ECP. This support is underpinned by the elements facilitating social integration which in turn makes academic integration easier; as well as career development opportunities which facilitate integration into the workplace once students graduate.



1.7. Summary

As argued in section 1.1, the Matriculation results may be too complex in its purpose and therefore may not be communicating accurately the actual levels of students' achievement, skill, readiness and potential to succeed at university. Hence in addition to what we may be able to "read" from the Matriculation results, which may not be a relatively "pure" measure of these attributes, universities may have to look at alternative ways and means to establish the actual level of preparedness, achievement and the potential to learn and succeed at tertiary level.

Experience with the BBusSc ECP students over the past six years has shown that many factors affect success at tertiary level, such as desire to learn, good work ethic, effective time management skills, positive attitude, powerful motivation, strong effort, consistent participation, submitting work on time and other personal and social characteristics which contribute directly to academic achievement. These factors are extremely difficult to measure. For this reason, it is even more critical that we

assess the required attributes and potential to succeed at university as accurately as possible prior to admission.

Since the Matriculation results are problematic as described above, we have the additional information provided by the AARP results and this study considers what the Matriculation and AARP data provide collectively and separately. However, beyond this data, there may be other factors which impact on what we can read from this data in relation to subsequent academic performance. These factors may have wider implications for selection and for understanding academic readiness and the factors impacting on academic progression which is the broader purpose of this research.

2. CHAPTER TWO — LITERATURE REVIEW AND THEORETICAL FRAMEWORK

2.1. Introduction

The review includes relevant topics such as a variety of admissions models (Perfetto, 1999), considers the UCT admissions model and highlights relevant aspects of the UCT admissions process and sketch the admission guidelines with particular reference to the Commerce Faculty admissions criteria. The review also traces the origins of admissions tests and gives a perspective of the debates around admissions tests.

This literature review also provides a context for the AARP tests, an overview of the historical and present nature and purposes of the AARP tests, and indicates how the policies and processes shifted over time as the educational landscape changed in South Africa over the past three decades.

The most important aim of this study is to explore the predictive and concurrent value or validity of the AARP tests and Matriculation scores in terms of performance of the BBusSc students at UCT. Accordingly the literature review explores the relevant concepts of validity in its broadest sense, the changes over time in the conception of validity (Killen, 2003), the reasons why validity is important and valuable, and the four principles of validity suggested by Nitko (2001). The focus is not so much on instrument validity (Siegle, 2003) but rather on the useful interpretation of the results (Messick, 1989) of the AARP tests.

2.2. Admissions models described in the literature

In an attempt to more clearly understand and explain the variety of approaches to admissions that are practised throughout the United States, the College Board initiated the Admissions Models Project in 1998. One consistent theme that emerged from various conferences and other work on this project was that there is no single "best practice in admissions" that is applicable to all institutions and that admissions practice must be developed by each institution based on institutional mission, goals, objectives, and priorities.

Higher Education Institutions (HEIs) employ several different admissions approaches, either simultaneously or sequentially. However, there are certain commonalities that can be observed across a broad spectrum of public and private HEIs both in South Africa and internationally. These are described as the following nine philosophical perspectives encompassing both eligibility-based admissions models and selection models as defined by Perfetto (2003).

Eligibility-based models

- Entitlement — higher education is an inalienable right and should be made available to everyone.
- Open Access — higher education is a natural progression after high school and should be made available to everyone who is qualified.

Models based on a student's "capacity to perform"

- Meritocracy — higher education is a reward for those who have been most academically successful.
- Character — higher education is a reward for personal virtue, dedication, perseverance, community service, and hard work.

Models based on a student's "capacity to benefit"

- Enhancement — institutions should seek out and nurture talent.
- Mobilization — higher education is the "great equalizer" and must promote social and economic mobility.

Models based on a student's "potential to contribute"

- Investment — higher education should promote the greater good and further the development of society.
- Environmental/Institutional — the admissions selection process is designed to meet the enrolment goals and unique organizational needs of the admitting institution while promoting the overall quality of students' educational experience.
- Fiduciary — higher education is a business, and access must first preserve the institution's fiscal integrity.

In addition to the above aspects it is desirable to have more than one way of entering the university. Graunke & Woosley (2005) have shown that whilst many HEIs in the USA have procedures in place

to evaluate multiple characteristics of students, some also provide applicants with a variety of ways to gain admission. In recent years in the United States of America, several states have adopted "class rank plans", whereby all students who have met basic application requirements and who rank in the top 10% or 20% of their high school classes are automatically admitted (Graunke & Woosley, 2005).

2.3. A relevant historical perspective on selection and admissions to higher education

Most colleges and universities in the United States of America trace the heritage of admissions tests from two distinct lines: *"(1) written examinations required for entrance into private colleges; and (2) aptitude tests that grew out of changing social needs and notions of intelligence in the late 1800's and were designed to provide a means of sorting large numbers of people into appropriate occupational and intellectual categories in attempts to contribute to the efficient organisation of democratic society. "* (Perry et al, 2002, pg. 4). These examinations shifted from being oral tests administered by travelling examiners to written examinations administered on a regional basis and reached a much larger proportion of the target group. It was clearly an elite section of the nation that was targeted, as the Perry Discussion Paper states that *"throughout the first three decades of the twentieth century, the 'college boards' were week-long essay examinations of the curriculum provided in elite boarding schools"* (Perry, et al 2002, pg 4).

This model shifted in the 1930's because of the introduction of the SAT, generally known as the Scholastic Aptitude Test and later renamed as the Scholastic Assessment Test and currently known as the SAT I. The much researched and much written about SAT has its roots in intelligence tests developed in late 1800's and early 1900's initially administered on army recruits during World War I. In the early 1930's James Bryant Conant, who was the President of Harvard at the time, was searching for a tool to identify highly talented young men from obscure backgrounds who would nonetheless succeed at Harvard and initially used the SAT to this end. Conant believed that achievement tests would always favour those who had the financial resources and attended the best preparatory schools and he saw in the SAT the potential tool for *"restructuring society by counterbalancing the benefits of inherited privilege in favour of innate talent"* (Perry et al, 2002, pg 4). Harvard also used SAT to award scholarships, though traditional entrance examinations were still administered as admissions tests. During the same period The College Board developed a series of one-hour multiple choice questions, which has evolved into the SAT II used today. In 1959 Prof. Lindquist, a psychologist of note and an achievement test developer, formed the American College Testing company (ACT Inc.) as he wanted to increase the numbers of Americans attending college and developed the ACT as an achievement-type admissions test also designed to provide diagnostic

information to help colleges in placement as well as admissions. Today the ACT tests are used by public and private institutions as an alternative to SAT I (Perry et al, 2002).

The part of the history of the admissions tools being used by Conant to measure innate talent of students who would not ordinarily be admitted to university and the development of admissions tests for both placement and admission purposes, rings true of the underpinning philosophy and purposes of the AARP tests first developed at UCT in 1986 and first administered in 1987. At that point in time, student selection into South African Tertiary Institutions was fraught with controversy and the basis of much student upheaval as the cry for fair access and opportunities for success, which is still relevant and to some extent perceived to be unresolved to this day.

According to Perry et al "*one strength admissions tests are commonly presumed to have over high school grades—and that aptitude-type tests are commonly presumed to have over achievement-type tests—is an ability to identify students with high potential who have not yet demonstrated that potential*" (Perry et al 2002, pg. 10). In the South African context, one perspective of this theory relates to students with high ability attending under-resourced schools who score low on achievement tests (Matriculation Examinations) because they are held back by the poor education received at primary and high school and yet are identified by the AARP tests as students with potential.

Admissions tests measuring potential could, to some extent, minimise the impact that examinations may have on classroom teaching. This relates to the "*backwash effect*" that has been defined as the direct or indirect effect of examinations on teaching methods (Prodomou, 1995, pg. 13). One of the criticisms of some of the South African so-called "cram colleges" (offering Grade 11 and 12 in one year) is precisely that examinations affect classroom instruction, activities and assessment and this maybe positive, resulting in good results for students—albeit short term, or negative where surface learning is the predominant mode of interaction with learning materials and deep learning of topics are lacking with dire consequences for tertiary education which requires and assumes a thorough foundation for many courses. This may also be the case for students from well-resourced schools, who are determined to obtain high grades and focus on preparing towards the methods and answers that will allow them to pass examinations as opposed to fully understanding concepts by "training" to answer examination questions. This often results in a lack of insight into foundation concepts and lack of skills which are only shown up to be lacking when a level of proficiency is required as a basis for new learning, like in Mathematics at first year level. This may be one reason why students who make the faculty requirement for Matric Mathematics fail the first year Mathematics course.

The most serious criticism of standardised testing is its value for assessing individuals. In addition to this, Fitzgerald (1999) claims that with academic achievement tests, a single assessment is rarely enough to be dependable. It would be more useful to use academic achievement scores as additional sources of information rather than wholly rely on such scores. Some South African HEIs, including UCT, have shifted in some faculties towards using, for example, one of the AARP tests, the Mathematics Achievement (MACH) and Matric Mathematics results as concurrent measures of actual mathematics achievement prior to entering tertiary education. This is useful since performance assessment, which is seen as authentic testing where the student must perform the skill and show mastery, is most useful when you can make multiple opportunities for such performance assessments. It is not possible to get this from one set of school leaving results and an entrance exam which may or may not be authentic performance assessment. Hence it is prudent to gather as far as possible additional supporting evidence about the student's achievement prior to admission.

Several authors on the subject of university entrance examinations versus school examinations on their own, or any combination of these, have different conclusions on the matter. For example, Brown concluded his English Language Entrance Examination Progress Report (Brown, 1996) by stating that admission by entrance examination is far from being the only way to get into a Japanese University and that increasingly there are other possibilities available. He goes on to mention among other possibilities, entrance by recommendation and the use of multiple sources of information (e.g. academic, demographic, etc.) in admitting students into universities. Brown (1996) also states that the entrance examinations were originally designed to create "level playing fields" for all applicants to universities. However, schooling models, the validity of these very entrance tests and several other factors actually defeat the purpose of an entrance examination. Brown (1996) also shows that different admission models have been used in various countries with varying degrees of validity and success.

Most South African HEIs do not have standardised admissions tests and therefore rely fundamentally on the Matriculation results to admit students to the variety of programmes offered by each institution. In addition to the Matriculation results the University of Cape Town use the AARP tests as admissions tests and these tests play a role within the admissions approaches of the UCT Faculties that require applicants to write these tests.

2.4. UCT admissions approaches

The University of Cape Town is committed to being flexible on access, active in redress and rigorous on success (UCT Mission Statement, 1996). The UCT Admissions and Progressions Committee is charged with determining how school leaving examination results and any other available data, including the admissions tests results, are used in the eligibility and admissions criteria for all UCT faculties. All of the UCT faculties are represented on this committee and drafts of the individual faculty admissions criteria are submitted to this committee for approval. These admissions criteria are then scrutinised by members of senate and a final draft is submitted for approval to the university council. Although attempts have been made to ensure consistency with regard to admissions criteria for all faculties, the criteria and admissions process differ from faculty to faculty. UCT's admissions goals and objectives are partly based on equity of access and set aspirational overall enrolment and equity targets per programme. (UCT Undergraduate Admissions Policy, 2006; UCT Mission Statement, 1996)

The two overriding philosophical perspectives employed by UCT's selection model are based on a student's "capacity to perform" and on a student's "capacity to benefit" (Perfetto, 1999). This is evident in the admissions criteria, as students are rewarded for being most academically successful at high school level. However, in recent years, UCT is also using the model based on a student's "potential to contribute" to the Institution's enrolment goals. These selection models are linked to the actual characteristics, qualities and capacities that are valued as part of the transparent UCT admissions process.

Different admissions criteria are used in the various Faculties which may suggest a measure of inconsistency across faculties and certainly are making it difficult in terms of the mobility of students who change their mind about their programme of study during the admissions process. This becomes even more complex when combined with the practicalities of flexibility of access in order to provide access to students from previously disadvantaged sectors of the population and the inequities that still exist in South African schools to this day.

In addition to mainstream admissions, UCT also admits students in the category "potential to contribute". These students who do not meet the regular requirements for degree programmes are admitted into the Extended Curriculum Programmes (ECPs) or Foundational programmes offered by the majority of its six faculties in order to meet the institution's aspirational equity targets. Faculties who offer these programmes have an additional admissions procedure in place to select and admit

applicants in this category. The AARP tests now play a more significant role in the admissions and placement of these ECP students and this study considers one such group of students at UCT, namely the BBusSc ECP, an intervention programme provided by the Commerce Faculty for selected Matriculants who fail to meet the minimum Faculty Point requirements of the faculty but who meet the minimum Mathematics requirements.

The courses required by the various BBusSc degree specialisation programmes are both linguistically and quantitatively demanding and hence the double-weighting of the symbols for the Matric Mathematics and English subjects. Although no scientific evidence has been offered for the assumption about the validity of the double-weighting practice, the debates around this practice continue. It may be useful to consider the value of the double-weighting since it impacts a considerable number of students each year and considering the fact that the Commerce Faculty is the biggest Faculty at UCT and has the highest proportion of undergraduate students (UCT Annual Admissions Cycle report, 2001 to 2005).

The overall Matric performance is used as the only indicator of readiness to enter the Commerce Faculty. Currently admission into the Commerce Faculty does not require applicants to write the AARP tests, although applicants are encouraged to do so. However, even where the AARP tests are available for an applicant, the Matriculation/Faculty Point Score is still valued most by the Commerce Faculty as an indicator of achievement and potential.

At this point it is appropriate to clarify how the Matriculation results are used to render applicants eligible for admission to UCT and in particular to the Commerce Faculty. The following tables provide details of admission requirements to UCT and how the School leaving Examination Point System works for applicants to UCT.

TABLE 1 — THE UCT GUIDELINES FOR ADMISSION (2006)

Eligibility for admission	The legal minimum admission requirement for degree study is a Matriculation Endorsement and Exemption
Minimum language proficiency	All applicants must show evidence of proficiency in English and are required to submit evidence of this as part of their application to study at UCT
Minimum points score	The University of Cape Town uses an admissions rating or point system, which assigns points to each subject that you pass. The better your symbols, the greater the number of points you earn. You will earn more marks for subjects taken on higher grade.
Working out your points	The symbols you obtained for your six Senior Certificate subjects are worth a certain number of points (see table below). If you took more than six subjects, choose your best six, making sure that you include English and any subjects required for admission to the faculty and/or degree of your choice. Add these points together to obtain your total.

Additional requirements	In addition to Matriculation, each faculty has its own subject, symbol and grade requirements for admission to particular degrees or diplomas. Note: The BBusSc requires a minimum of D for Higher Grade (HG)[7] Mathematics and C for English.
Placement tests	The following tests are compulsory: **The Alternative Admissions Test** is compulsory for Humanities applicants. **The Health Sciences Placement Test** is compulsory for Health Sciences applicants. Note: For some faculties the AARP tests are compulsory for admission, such as Humanities and Health Sciences, but these are not compulsory in others like the Commerce Faculty.

(Available on UCT Website www.uct.ac.za)

The Matric Point (MatPt) is calculated using the applicant's six best subjects by utilizing the scoring system in the table below. The Commerce Faculty Point (FacPt) requires that the points for Mathematics and English be doubled in the calculation of the points.

TABLE 2 — CALCULATING THE MATRIC OR FACULTY POINT

Symbol	Higher Grade (HG)[3]	Standard Grade (SG)
A	8	6
B	7	5
C	6	4
D	5	3
E	4	2
F	3	1

It is relevant to note that the Commerce Faculty 2006 Admissions Policy incorporates the following:

- The academic achievement cut off points for offers are structured to achieve the desired demographic makeup of the student body. The ECP and Commerce Academic Development Programme (CADP) are structured to provide redress.
- All "Black", "Coloured" and "Indian" applicants who are South African residents or citizens and are not accepted for the Mainstream programmes are reviewed to determine whether or not they meet the extended programme admission requirements.
- The Faculty has agreed in principle to make AARP testing compulsory for all applicants but at present the University does not have sufficient resources to implement this decision for the Commerce Mainstream programmes. All applicants are encouraged to write AARP, especially applicants who may wish to apply (as their second choice) to the Humanities Faculty where it is compulsory to write the PTEEP portion. (Extracted from the Commerce Admissions Policy, 2006)

[3] The South African School Leaving Certificate allows students the choice to complete their subjects as a Standard Grade (SG) or a Higher Grade (HG) examination. Entrance into university requires Matriculation Endorsement which requires a pass in at least four specified Higher Grade subjects.

The following crude comparison of the BBusSc ECP and mainstream BBusSc admissions criteria for the period 2001 to 2003 will facilitate a better understanding of the admissions requirements for the BBusSc ECP in relation to the mainstream BBusSc.

TABLE 3 — BBUSSC ECP VS MAINSTREAM ADMISSIONS CRITERIA

CRITERION	EARLY/PROVISIONAL OFFER[4]	FINAL OFFER[5]
Mathematics	HG (C) ***(HG C required for mainstream)***	HG D or E when overall points were good ***(HG D required for mainstream)***
English	HG (C) 1st Language or 2nd Language ***(HG C 1st Language required for mainstream)***	HG (D) – 1st language HG (C)- 2nd language ***(HG D 1st Language required for mainstream)***
Faculty Points, (Mathematics and English double weighted)	45–49 ***(52 points required for Mainstream)***	42 – 49 ***(50 required for Mainstream)***
Other factors	Consistency of performance in Mock Matriculation Examinations, especially Mathematics AARP score, especially if in top three deciles	Number of subjects passed at Senior Certificate (SC) Inclusion of Physical Science as a SC subject COMB04 acceptances ("Black", "Coloured", "Indian") who obtained a HG (D) symbol in Mathematics would be invited to join the BBusSc ECP

Early Offers are made prior to the release of the final Matriculation results and this is based on the student's performance in the mock Matriculation examinations written in June and September of the Matriculation year. Currently prospective BBusSc students must obtain an overall Matric score of 60 (highest possible score is 64) for Actuarial Science and 58 for other specialisations or streams offered by the School of Management Studies.

Graunke & Woosley (2005) state that in one way or another, many HEIs set aside a small percentage of their entering cohort for students who may not meet traditional criteria but who have unique talents or personal situations. Graunke & Woosley (2005) also provide a list of background characteristics to qualify an applicant for special consideration to be admitted to a specific Faculty. In the case of UCT, this could be via decanal discretion, as each dean has a small number of students which can be admitted to the faculty under the dean's discretion. Depending on the admissions criteria and the attributes displayed by the applicant this could be for admission into the ECPs or into the mainstream programmes:

- First generation at university (especially within the context of South Africa's political and education history)
- Geographic location (such as semi-rural or rural areas)

- Socio-economic status and educational background (previously disadvantaged background)
- Extenuating circumstances
- Extra-curricular background and academic endeavours outside the classroom
- Personal attributes
- Language background
- Work experience (Through Recognition of Prior experiential Learning)

A combination of these may already be incorporated in the "personal report" score used in the admissions process for the UCT Faculty of Health Sciences and elsewhere.

2.5. Nature and purposes of the AARP tests

2.5.1. The role of the AARP tests

In an attempt to understand access and opportunity to tertiary education, Haeck & Yeld (1994) researched the use of Matric Examination results as the sole indicator of future academic success and the variety of Admissions tests used by various institutions across South Africa, as well as the use of achievement tests. They endorsed the advantages of such tests as discovered by James Bryant Conant in the 1930's (Perry, 2000), and the value of testing for potential within a particular paradigm, such as dynamic testing as utilised by two of the AARP tests. Haeck & Yeld (1994) concluded that careful selection and appropriate placement of Ex-DET[38] students were crucial in the success of these students both for reasons of equity and justice especially since the traditional methods of selection of the 80's were unable to provide tertiary institutions with sufficient candidates from previously disadvantaged backgrounds of the required "quality". Thus historically, the AARP Tests provided a mechanism for placement and selection of students from educationally disadvantaged backgrounds done on a theoretically sound basis.

The AARP tests comprise both achievement and proficiency tests and also give a measure of the potential for success at tertiary level. The development teams of the various AARP tests comprise both Educators and subject specialists from the Higher Education (university) and the Further

[3] Historically the Department of Education and Training schools (one of the 19 formal Education Departments which operated under the Apartheid Education System) were almost exclusively for Black Africans being taught by Black African teachers with its roots in the Bantu Education Act No 57 of 1953 based on ideological separation. The Department of Bantu Education changed its name to the Department of Education and Training in 1978. Teachers were underpaid, under-qualified and an unacceptable high percentage of the teachers were unqualified and taught with minimal resources in poor teaching and learning facilities in a system intimately bound and affected by the politics of the country (Murphy, 1987).

Education and Training (High school) sectors as well as statisticians who analyse results annually to ensure construct validity.

The main motivation for continuing this type of research is the fact that the Matriculation examination results on their own do not necessarily reflect the entry-level capacity or lack thereof of students for successful engagement in tertiary education (Cliff et al, 2003) within the South African Education context of extreme diversity in terms of quality and standard of schooling provision across the country.

Visser and Hanslo (2006), for example, concluded that performance on the Placement Test in English for Educational Purposes (PTEEP) is as good a predictor of dropout and retention as traditional the Matriculation Examination Points performance. For the ex-DET (disadvantaged) group in particular, the PTEEP appears to be a consistently stronger predictor of dropout and retention when compared to the traditional Matriculation Examination Points.

The problem of accuracy in terms of predicting success at tertiary level is further complicated by the type of and the impact of provision at tertiary level as well as a variety of other factors impacting on academic success once students enter the tertiary learning environment. This is true for students across the spectrum irrespective of entry-level performance. It is conceivable that the predictive value of AARP using correlation analyses can be counteracted by factors at tertiary level and this has been acknowledged in other AARP research work. For example, in an annual report it was concluded that Academic Development Programmes and other academic interventions which are prevalent in HEIs in South Africa may have impacted positively on the performance of weak incoming students and this serves to further depress the correlation coefficient when correlating AARP scores with subsequent course performance scores (Cliff et al, 2002).

Over the past six years students on the BBusSc ECP have been required to write the AARP tests if they did not write these tests prior to admission. Where these have been available prior to admission, the results have been used to provide additional information for the BBusSc ECP selection process, but we have found the AARP information to be most useful in diagnosing the level of under-preparedness of our students with regard to foundation skills and subsequent placement of students on specific intervention programmes.

2.5.2. The different AARP tests and their purposes

The literature shows that the AARP test scores can be used for selection, placement, diagnosis and prediction purposes (Cliff et al 2002; Chalton et al, 2001). Definitions of the Alternative Admissions Research Project (AARP) battery of tests have been provided in the literature (Cliff et al, 2002). The PTEEP, MACH, MCOM and the SRT tests developed by the AARP refer to the following.

- The Placement Test in English for Educational Purposes (PTEEP) **(2½ hours)**
- The Mathematics Achievement (MACH) **(1½ hours)**
- Mathematics Comprehension test (MCOM) **(1½ hours)**
- Scientific Reasoning Test (SRT) **(1 hour)**

(This study will make no reference to the SRT as it is used only for Health Science applicants)

The **Placement Test in English for Educational Purposes (PTEEP)** aims to assess students' abilities in terms of the following: to make meaning from texts that they are likely to encounter in their studies; to understand words and discourse signals in their contexts; to identify and track academic argument; understand and evaluate the evidential basis of argument; to extrapolate and draw inferences and conclusions from what is stated or given; to identify main from supporting ideas in the overall organisation of a text; to understand information presented visually (e.g. graphs, tables, flow-charts); and to understand basic numerical concepts and information used in text, including basic numerical manipulations.

Cliff, Yeld & Hanslo (2003) further qualifies the PTEEP with the purpose of assessing entry-level students' capacities to cope with the learning and thinking processes required of students at an English medium-of-instruction institution and as such it is a test of learning potential.

The objective of the **Maths Achievement (MACH)** test is to measure the extent of a candidate's backlog in basic mathematical knowledge and skills. The following are some of the content areas covered in the test: operations with fractions; spatial perception; functions represented by tables, graphs and symbols; operations with surds; circle geometry and basic trigonometry. Although these areas are covered in the Grade 11 Standard Grade mathematics syllabus (and the syllabi preceding it), the items in the test require somewhat more than what could be achieved through drill and practice. A great deal of attention is given to problem-solving within the above contexts – this is in line with current thinking in maths education and the objectives outlined for the Mathematics and Mathematical Literacy learning areas.

The **Maths Comprehension test (MCOM)** is designed to provide additional or alternative information about a candidate's mathematical potential to that provided by the Senior Certificate examinations. The following broad cognitive skills are assessed: the interpretation of information represented in various forms; the translation of information from one form to another; the extrapolation of information; the comprehension of concepts; the analysis of principles; the application of general principles to particular contexts; the generalisation of particular trends; and the synthesis of new principles from known concepts, and the relationships between the concepts.

The initial AARP aims were to identify students who attended the DET schools and whose school results would not qualify them for admission to UCT based on the admission requirements set at that time, but who via the AARP demonstrated the potential to succeed at University (Haeck & Yeld, 1994). The AARP tests were developed to be independent from the type and standard of schooling as they set out to *"minimise reliance on content-based secondary school experiences"* (Haeck & Yeld, 1994, pg 1) and be free of language and cultural bias so as to not further disadvantage English Second Language writers.

The purposes of the AARP tests have been clearly outlined in research papers and by the AARP Unit annual reports.

- ***Selection purposes***

The AARP results are used in addition to the Matric Point for selection and admission purposes by at least four faculties at UCT and at a few other HEIs in South Africa.

- ***Placement purposes***

For example in the Science Faculty the AARP results is used for placement in foundation course in Mathematics such as MAM1005H and MAM1006H which runs over two years but essentially make up a first year university Mathematics course. In Commerce and Humanities Faculties it is used for placement into a Microeconomics (ECO1010H) a semester course stretched over a year to incorporate language development and writing skills in the context of the subject matter.

- ***Diagnostic purposes***

Each year the AARP test results are analysed and a diagnostic breakdown of the performance of the cohort against core competencies is provided with the purpose of influencing the design of the learning, teaching and the curriculum to benefit the needs of the students. These diagnostic analyses are available to course convenors where they could use the information to the benefit of the student

or cohort of students by making curriculum adjustments. For example, BBusSc ECP and Commerce ADP students have been identified based on these analyses and have been allocated to additional support classes at first year level in both Mathematics and Language Development courses.

2.5.3. The nature of the AARP tests

As the target population for the writing of these tests evolved over time due to the changing educational landscape in our country, the design of the tests have changed considerably and the results of these tests can now be utilised for multiple purposes as stated above. Haeck et al (1997) describe the approach to the MCOM and PTEEP as a dynamic testing approach aimed at testing to what extent individuals can be taught to perform authentic academic tasks.

The dynamic testing approach with adequate scaffolding utilised for the MCOM and PTEEP closely models the approach used for the Learning Potential Assessment Device (LPAD) so eloquently described by Feuerstein and Krasilowsky (1972, pg. 574):

> *The method is based on a theoretical framework and a model substituting a DYNAMIC goal for the STATIC goal set forth by the conventional psychometric approach—that is, instead of measuring the existing inventory of capacities and using them as a basis for predicting further development of the individual, the LPAD has as its aim the measurement and evaluation of the capacity of the individual to use previous experience (in this particular case: newly acquired skills, functions, principles and motivations) for his adaptation to progressively new and more complex situations.*
>
> *This method involves a change in goals and measuring instruments. The latter are structured so as to follow a learning process to take place at the time of testing, followed by measurement of the capacity of the individual to apply his learning to tasks progressively more remote and complex. The test situation……..(is) a "teaching-learning" relationship between the examiner and the examinee. The main effect of this is the induction of change in both cognitive modalities as well as motivational patterns which make the deprived individual function at a level much closer to his hidden capacity than in any other instance.*

This description of the LPAD gives a reflection of the nature of the MCOM and PTEEP and its actual design. The design is appropriate in that it provides applicants from educationally deprived backgrounds another opportunity to demonstrate potential. If the AARP test scores are considered in conjunction with the Matriculation examination scores for admission purposes then the chances of identifying and admitting students with true potential maybe greatly improved. An added benefit is the fact that, the AARP tests can also be used as a basis for identification of further development requirements of both individual and cohorts of students, in other words for diagnostic and placement purposes. This is especially valuable in the case of ECP students who are admitted with less than

the requisite preparation and for the appropriate design and provision of support interventions to ensure their success. Thus the impact of the AARP goes beyond the admissions process to ensure optimum benefit to the student (Yeld, 2001).

There is no oral or aural component to any of the AARP tests. The Matric English examinations have an oral and aural component built in as part of its continuous assessment during the final school leaving year. For this reason, the PTEEP and Matric English will provide different information about a student's language proficiency. The PTEEP and Matric English both provide valuable information as it is commonly understood that good performance on a written language test does not guarantee good performance on an oral test and much has been written about the value of measuring a student's oral versus aural ability (listening comprehension ability) as paper and pencil tests can measure oral ability but not aural ability (Ito, 2003).

The thesis examines the validity of the AARP and the Matriculation results in relation to subsequent academic performance and it is important that we consider the broadest concept of validity in order to ensure that we know how to establish the validity we seek.

2.6. Definitions and concepts of validity used in context

The concept of validity in social science research has several components and although validity was traditionally subdivided into three categories, namely content, criterion-related and construct validity (Brown, 1996), some authors suggest that validity have as many as five components. Lewis (1999) suggests four ways to establish validity, namely:

a) Content validity
b) Construct Validity
c) Concurrent Validity and
d) Predictive validity

These four components are relevant to this research and they are defined within this context.

2.6.1. Validity

In general *validity* refers to the extent to which something does what it is intended to do. A measure intended to predict future success is said to have *predictive validity,* to the extent that it can predict that success (Siegle, 2003). This is emphasised by Brown where he suggests that the general

concept of validity has been defined as "*the degree to which a test measures what it claims, or purports, to be measuring*" (Brown, 1996, pg. 231). In Nitko's 2001 description of the general nature of validity he writes: "*Validity is the soundness of your interpretations and uses of students' assessment results. Validity emphasises the results you interpret, not the instrument or the procedures itself*" (Nitko, 2001, pg. 36).

Siegle (2003) contends that an instrument is valid only to the extent that its scores permit appropriate inferences to be made about a specific group of people for specific purposes.

2.6.2. Reliability

A test is reliable to the extent that whatever it measures, it measures it consistently. An instrument cannot be valid if it is not reliable. The reliability of a test refers to "*the degree with which repeated measurements, or measurements taken under identical circumstance, will yield the same results"* (Lewis 1999, pg 3). Reliability is the degree of consistency of the measure. Here one can ask the question: "Does the measure give you the same results every time it is used?" (Siegle, 2003).

Reliability or consistency also falls outside the ambit of this research as it is a vastly complex area as alluded to by the thirty-six threats to reliability as discussed by Brown in five different categories, namely, "*problems due to the environment of the test administration, administration procedures, examinees, scoring procedures, and test construction or quality of test items* (Brown, 1996, pp188–192). This study assumes that the AARP tests have demonstrated reliability over time since reliability is simply consistency. The AARP tests have been revised and fine-tuned annually and have shown stability over time after repeated annual administrations of the AARP tests and as such reliability of the AARP tests is assumed for the purposes of this study (AARP Statistical Reports, Cliff et al, 2003; 2005; 2006).

2.6.3. Content validity

This is a non-statistical type of validity that involves "*the systematic examination of the test content to determine whether it covers a representative sample of the domain to be measured*" (Anatasi & Urbina, 1997 p114). A test has content validity built into it by careful selection of which items to include (Anatasi & Urbina, 1997).

Content validity addresses the match between test questions and the content or subject area they are intended to assess, in other words it refers to the extent to which the content in the test is representative of the content domain which is being tested. The literature also refers to this concept of match as *alignment* while the content or subject area of the test may be referred to as a *performance domain* (College Board Validity Handbook, 2007). Content validity can be achieved by selecting test items so that they comply with the test specification which is drawn up through a thorough inspection of the content domain. The test must accurately reflect the content domain in all respects (PsychoLogi™ Software, 2003). Since this research is a quantitative analysis of aspects of validity the Matriculation Examinations or the AARP tests, the content validity of these assessments will not be discussed, but the definition is included for the sake of a comprehensive understanding of the various aspects of validity.

Face validity is very closely related to content validity and it should not be confused with it. Face validity refers to the issue of whether or not the items are measuring what they appear, on the face of it, to measure (PsychoLogi™ Software, 2003). The concept of face validity is relevant insofar as the face validity of the AARP is important as it would determine how seriously the results of the test are taken in a high stakes admissions process. The Matriculation examination is without a doubt enjoying face validity as the most sought after qualification by school leavers in this country and even more important to those who wish to enter higher education.

2.6.4. Construct validity

Construct validity refers to the degree to which a test or other measure assesses the underlying theoretical construct it is supposed to measure, in other words, the test is measuring what it is purported to measure (Brown, 1996). Construct validation requires the compilation of multiple sources of evidence. In order to demonstrate construct validity, evidence that the test measures what it purports to measure as well as evidence that the test does not measure irrelevant attributes are both required (College Board Validity Handbook, 2007).

This study does not report on construct validity of the AARP tests or the Matriculation examinations as construct validity lies outside the framework of this study.

2.6.5. How is validity established?

Siegle (2003) asserts that there is no definitive equation that can be easily applied to establish that one measure is valid and another is not. Instead, one can establish the degree of prediction—not "Is it valid?" but rather, "How valid is it?" (Siegle, 2003). This question can be answered by

determining the relationship between the measure used for prediction, for example, the Matric Mathematics symbol, and a measure of subsequent success, such as manifested in the MAM1002W result for first year BBusSc students.

2.6.6. Predictive validity

Validity in the context of this study has a two-fold meaning: concurrent and predictive and it has a quantitative meaning. Most definitions concur that if an instrument is purported to measure some future performance, it is referred to as predictive validity (Del Siegle, 2003). The PsychoLogi™ Glossary defines predictive validity as a "criterion-related validity". This refers to the use of test results to predict performance in another situation or criterion. When validity of the prediction of future performance on a criterion is of concern then we refer to it as predictive validity (PsychoLogi™ Software, 2003). The degree of correlation between the two tests is calculated to ascertain the extent of the predictive validity For example; it is claimed that the SAT used in the USA predicts performance in college.

In this study the concurrent validity is given by the MACH, MCOM and the Matric Mathematics results and the predictive validity obtained at a later stage, is given by, for example, the MAM102W results. In order to evaluate predictive validity, the second measure (MAM102W results) is compared with the individual MCOM and MACH scores as well as the combined AARP scores. This study also comments on the predictive validity by comparing the AARP and Matriculation scores with the average academic performance, the retention time and academic success of the students.

Some researchers have expressed the reservation that evidence of predictive validity in the tertiary environment is impossible to find as samples include only those who were actually admitted into the tertiary institution and not those who have already been excluded by virtue of not making it into the institution in the first place. In addition to this, several social and personal factors that have not been present in the pre-admission environment come into play in the tertiary environment and the impact of these factors on academic performance is hard to quantify. In order to focus this study it has been confined to a quantitative examination of the predictive validity between the AARP and the Matriculation examination results in relation to the performance of the BBusSc students who have been admitted to the ECP.

Cohen and Manion provides the following useful theory about predicting behaviour (1989, pg 158). "*Predicting behaviours and events likely to occur in the near future is easier and less hazardous than predicting behaviours likely to occur in the more distant future. The reason is that is that in short-*

term prediction, more of the factors leading to success in the predicted behaviour are likely to be present. In addition, short-term prediction allows less time for important predictor variables to change or for the individual to gain experience that would tend to change his likelihood of success in the predicted behaviour."

If we consider this theory then predicting academic achievement likely to occur in the near future is easier and less hazardous than predicting academic achievement success likely to occur in the more distant future. The reason is that on short term predictions, more of the factors leading to success in the predicted area are likely to be present. In addition to this short term prediction allows less time for the particular predictor variables to change or for the individual to gain experience that would tend to change the likelihood of academic success. Here one might consider predictive value of, for example, the Matric Mathematics in relation to the short term performance in MAM102W versus the longer term goals of retention and graduation.

An added challenge is the likelihood that good prediction will diminish due to time and the impact of other factors that were not present at the time of taking the first measure. It may be useful to conduct research on the factors that impact on university performance in conjunction to research on predictive validity as it would give meaning to why such validity exist or don't exist where we intuitively expect it to exist. An in-depth research into the impact of the academic and social environment, the interventions provided by the ECP and other aspects such as individual personality and disposition could also illuminate the findings of this research.

Thus one would expect that the Matric Mathematics and the overall Matric performance would not have such a great impact on the first year academic or MAM102W performance and hence would almost expect weak predictive correlations in this regard. Due to new factors prevalent in the tertiary environment that could influence student performance, one would also expect the likelihood of good prediction to diminish over time and hence cannot expect significant correlations between AARP and Matric performance and performance in the senior years of the undergraduate study. However, an inverse relationship could reasonably be expected for the ECP as the "power" of the predictor variable such as type of schooling will have diminished due to the interventions provided by the ECP support systems as these support systems were not in place when the first measure (Matriculation results) was taken. These are investigated and reported on in the findings of this study.

Cohen and Manion (1989) also remind their readers that correlation is a group concept; more a generalised measure that is useful in predicting group performance, but prediction cannot be done with certainty for any one individual and as such, for example, "*it can be predicted that gifted children*

as a group will succeed at school, it cannot be predicted with certainty that one particular gifted child will excel" (Cohen & Manion, 1989, pg 159).

This brings to mind the converse of this case. It may be conceivable that students from disadvantaged educational backgrounds will have difficulty coping in a tertiary environment, but it does not follow that all of them will fail and in fact it has been proven in the BBusSc ECP that several students who based on their Matriculation results would never have been admitted to the BBusSc degree, but nonetheless some of these ECP students managed to graduate in four years beyond all expectations.

2.6.7. Concurrent validity

Concurrent validity compares scores on an instrument with current performance on some other measure. Unlike predictive validity, where the second measure occurs later, concurrent validity requires a second measure which is administered at about the same time (Siegle, 2003). The PsychoLogi™ Glossary defines concurrent validity as a criterion-related validity. This means that we use test results to predict performance in another situation or criterion, which occurs more or less at the same time or, concurrently. When validity of the prediction of the concurrent performance on a criterion is of concern then we refer to it as concurrent validity (PsychoLogi™ Software, 2003). For concurrent validity to be established a second similar measure is required at about the same time and one would calculate the degree of correlation between the two tests. For example, the concurrent validity of the MACH scores with the Matric Mathematics performance as these two "instruments" both measure Mathematics achievement at a required level.

2.7. The nature and purposes of admissions tests

Messick's model of validity (1989) broadened the responsibilities of test developers and administrators by focussing attention on the *"evidential and consequential bases for the use and interpretation of test scores"* (Brown, 2000) and this is even more crucial in admissions testing as applicants literally have one chance of displaying the qualities that are required for admissions into HEIs. This consequential validity (McNamara, 2000) is particularly important as it is obvious that admissions tests have short and long-term consequences on the lives of individual applicants but also on the throughput rates of institutions and hence the added responsibility on these tests.

In trying to get more debate and investigation on the matter of entrance or admissions tests, Brown (2002, pg. 97–99) listed a range of questions about purposes, effects, roles, responsibilities and perspectives of entrance examinations. Some of the issues are relevant to admissions tests and guided by the headings suggested by Brown, I have adapted some of his assessment issues for consideration in using admissions tests in the South African context.

- ***Purposes of admissions tests***

The purposes of and the type of tests (whether norm-referenced or criterion-referenced) are questioned in the literature. The argument is that the purpose of the entrance examinations needs to be resolved as a test cannot be declared valid if the purpose is unclear. This argument holds for any admissions test. The literature on AARP shows that the purposes of the AARP tests are clear to all stakeholders as discussed in section 2.5. It has also been argued that the design and content impact significantly on the possible purposes of admissions tests. One of the logistical strategies suggested by Brown is to ensure that test writers, teachers and administrators, who will ultimately make important decisions based on the admissions test scores, understand the purposes of the admissions tests.

- ***Effects of admissions tests***

Since the status of the admissions tests has shifted from being a complementary measure to being a more high-stakes test, AARP may have to begin to question what the negative backwash effects of these tests could be on teaching, course content, course characteristics at high school level. Since the AARP tests are independent of language and not based on the content of high school curriculum, except for the MACH, which is an achievement test, there should be no negative backwash effect. However, the same cannot be said for the Matriculation examinations as mentioned in section 2.3. Other effects that could be considered are what test content, what test design issues and test interpretation factors could be changed to create more positive backwash effects from these admissions tests.

- ***Roles of admissions tests***

Here one could question how sound the admissions tests are in terms of reliability and validity? Predictive validity studies would assist in determining reliability and validity. The detailed scoring and reporting provided could be put to better use in analysing students' needs during the first year at university and for the provision of specific interventions for specific cohorts. In addition to this we need to firm up on how these admissions tests are actually used for diagnostic and placement

purposes. A broad question to consider could be how the admissions tests are meeting tertiary administrators' needs and national needs.

- ***Responsibilities of admissions tests***

As suggested by Messick's validity model we could ask what evidential and consequential bases in terms of admissions test interpretations and uses should we be considering in assessing the validity of the admissions tests. We need to determine what the value implications and the social consequences are for the Alternative Admissions tests and how we deal with these in the South African context.

- ***Perspectives on admissions tests***

Considerations with regard to admissions tests from a functional perspective, (the content and value concerns) and from a political perspective (local and general political concerns) must be given attention. The perspectives of all stakeholders must be given due consideration to ensure synergy. We also need to find a better way of explaining the meaning of the results of admission tests as well as the consequences involved in decision-making so that the administrators who ultimately use the admissions tests results will make better informed decisions.

The most important message that comes through via the literature is that in order for any admissions test to be meaningful, validity of such a test must go beyond the construct of the test and focus serious attention on the interpretation and the use of the test scores (Messick, 1989; Brown, 1999). The social and personal consequences of admissions tests for an applicant to any HEI are extremely powerful and hence it is of great importance to place more emphasis on validity research and its implications to the educational environment as a whole and at all levels (McNamara, 2001). In this country we need to examine whether the Matriculation Examinations and AARP tests serve the needs of those who ultimately interpret and use the results to make decisions around admissions. We have to re-evaluate our assumptions on the usefulness of these scores, how we value, interpret and how these scores are actually used by the people who make the final admissions decisions.

2.7.1. Validating the admissions process

A sound admissions process needs to be validated periodically as the admissions criteria and processes utilised by a HEI to select students from among the pool of applicants are ultimately valid only if they produce the desired results. The traditional way of evaluating the admissions processes and decisions is through validity studies that examine how well students actually perform academically. These studies could incorporate all factors considered in the admissions process, not

just the Matriculation examination results, but also demographic factors and scores achieved on the admissions tests, where these are used for admissions purposes. In cases where additional criteria are used, for example, the UCT Faculty of Health Sciences places more emphasis on the overall student profile, including desired personal qualities, these factors can be rated and included in validity studies. As shown by the various research projects cited in this study, UCT has taken the validity of its AARP tests seriously and has reported the findings in a number of published research articles.

For the years relevant to this study, the writing of the AARP tests has not been compulsory for a Commerce applicant, and a small number of BBusSc students actually wrote the tests voluntarily for research purposes. Consequently the results of the AARP tests have not been used to any significant extent by the Commerce Faculty in the admissions process as they were not available for the majority of applicants in the first place. Where available and appropriate the results of the AARP tests have been used by the BBusSc ECP to advantage a student who did well on the AARP tests and did not make the Commerce Faculty minimum requirements for admission. On the other hand, where the results were available and were poor, these were not used to disadvantage any direct or referred BBusSc ECP applicant in this study.

2.8. AARP and the changing conceptions of validity

Killen (2003) quoted Messick when he indicated that validity has changed from the idea that a test is valid "for anything with which it correlates" to the idea that there are a "*finite number of types of validity*" to the idea that "*validity is a unitary concept*" (Messick, 1989, pg. 18). He further indicated that as the concept of validity changed and developed over time, there has been a parallel shift in the underlying importance of validity from "prediction to explanation" (Killen, 2003, pg. 3). Thus Correlations between test scores and some established criterion became less important than how the test results could be "*interpreted to provide some information about some underlying construct*" (Killen, 2003, pg. 3). Although the emphasis of validity changed, the conception of validity as multidimensional (content validity, predictive and concurrent criterion validity, construct validity and consequential validity) has persisted in the literature for educators as it seems to be easier to measure and apply to assessments. In practice, teachers find it easier to focus on the actual questions they set in a test than the inferences they have drawn from those questions.

Killen proposed that we should think of validity in terms of the definition provide by the American Educational Research Association, American Psychological Association and the National Council on Measurement in Education, namely that validity is a unitary concept that refers to the "*degree to which a certain inference from a test is appropriate and meaningful*" (Killen, 2003, pg. 5). This is taken a step further when the idea of seeking evidence of validity is considered to ensure that assessment-based inferences and decisions are valid.

Nitko's four principles for validation include *appropriate interpretations* (meanings) given to assessment results, *appropriate uses* (selection, placement, diagnosis and monitoring of students), *appropriate values* given to and the uses of assessment results arising from implicit social and educational values, and *appropriate consequences*, considering intentional and unintentional consequences when judging whether you are using assessment results validly (Nitko, 2001).

Nitko's validity descriptors (Nitko, 2001) provide a sound basis for "testing" the validity of the AARP tests. The AARP focuses on both the validity of the actual instruments and the manner in which the results obtained are reported and interpreted. Most of these aspects of validity of the AARP tests have been given attention in the literature (Yeld & Visser, 2000, Visser & Hanslo, 2006, Cliff et al, 2003).

Furthermore the AARP tests are reliable measurements as the tests have produced consistent results over time (AARP Statistical Reports, Cliff et al, 2003; 2005; 2006), and the design is relatively independent of the type of school preparation and language bias. In addition to this the ranking of students within their specific type of schooling provides a mechanism for fair interpretation and use of the results for purposes of admission and selection and hence it can be assumed to be fair across all demographic groups. The diagnostic facility of the AARP tests enables administrators and educators to utilise the identified academic strengths and weaknesses to place students in the best learning environment and to provide the appropriate interventions required for academic success of the student.

The AARP research teams (Haeck & Yeld, 1987, Cliff, et al, 2003) have reported on the relevance and importance of construct validity in overall validity of any form of testing. In order to reveal potential of the students to learn, both the PTEEP and MCOM tests utilise the dynamic testing approach derived from the insights of constructivists theories of learning the test provides multiple opportunities for action (mental and physical) on the part of the writer as he or she progresses through the test. In addition to this, scaffolding, where tasks (opportunities for action) are provided

which allows the writer to manipulate texts on which the final writing tasks are based. This scaffolding enables writers to engage with the tasks at a deeper level than they would had the scaffolding not been given (Haeck & Yeld, 1987). Hence these tests have been constructed in a very particular way but for the purposes of this study the notion of construct validity falls outside the ambit of this particular research and as such is taken for granted for the AARP tests.

Messick's expanded theory of validity (Messick, 1989; McNamara, 2001; Brown, 2000) is very helpful in understanding the broader implications of the concept of validity.

TABLE 4 — FACETS OF VALIDITY: MESSICK, 1989, PG 20

	TEST INTERPRETATION	TEST USE
EVIDENTIAL BASIS	Construct Validity	Construct Validity + Relevance/Utility
CONSEQUENTIAL BASIS	Value implications	Social consequences

This expanded version of validity includes the evidential and consequential bases of test interpretation and use (Brown, 2000). This consequential validity relates to the manner in which the implementation of a test affects the interpretability of test scores, in other words the practical consequences of the introduction of a test (McNamara, 2000). According to McNamara (2001) this matrix emphasises the need to gather evidence in support of the various interpretations we make of admissions test scores. It stresses the need for test constructs to be relevant as validity encompasses both relevance and usefulness in the testing context.

The bottom row of the matrix presents relatively unfamiliar sets of considerations for testers (McNamara, 2001) as Messick's theory insists that all interpretations of test scores involve questions of value which have social implications. This is also true for the battery of AARP tests in the current climate of the changing school leaving examination in South Africa. The theory also stresses the need to investigate or to be cognisant of the impact of a test in terms of its social consequences as admissions tests impact on individuals and the institutions. This is particularly relevant with the AARP tests becoming more of a high-stakes testing as it is utilised by more faculties for direct admissions purposes.

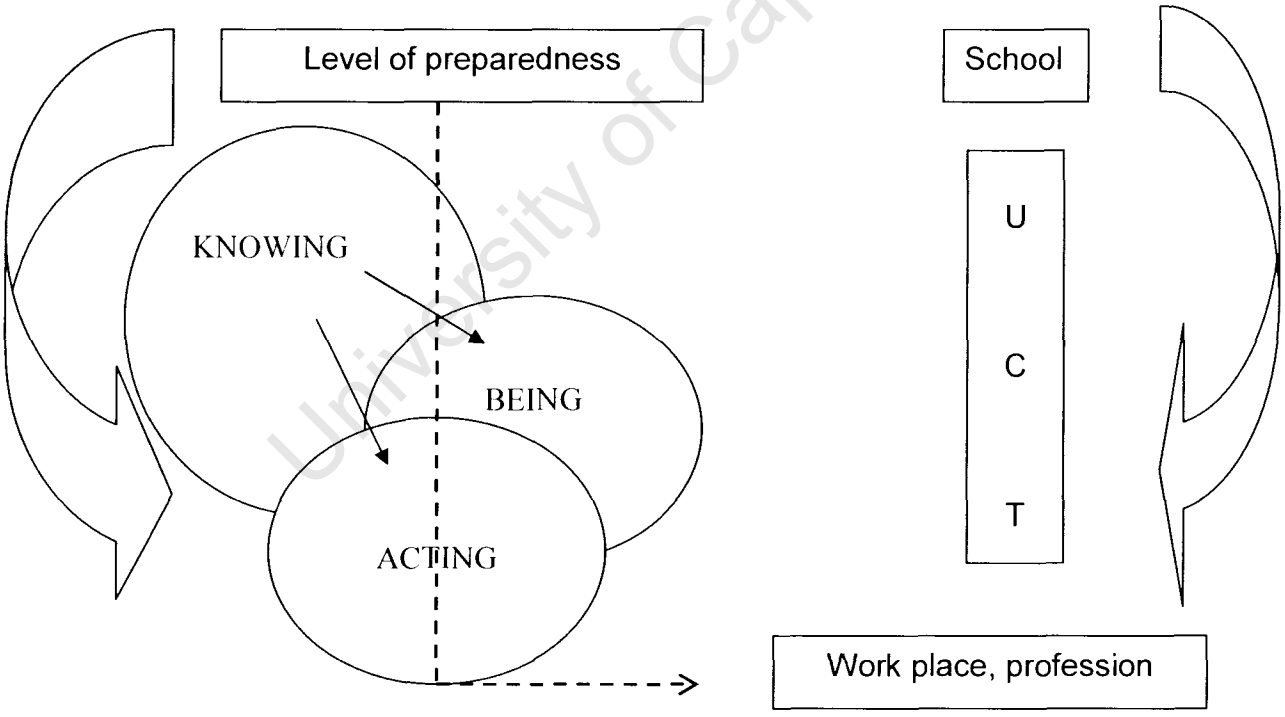
Although the AARP tests have been assessed on an on-going basis to respond to questions on validity they must continue to *maintain relevance and utility* (McNamara, 2001) in the face of the changing admissions testing landscape in South Africa.

2.9. Schematic overview of this research study

This study focuses on the concurrent validity of the Matriculation and AARP scores and their predictive validity in terms of performance in undergraduate years of study as highlighted by the centre of Figure 2 below. There are factors prior to university study that impact on university preparedness and there are several factors at university affecting retention, throughput and life beyond university as depicted in Figure 1 and contextualised below.

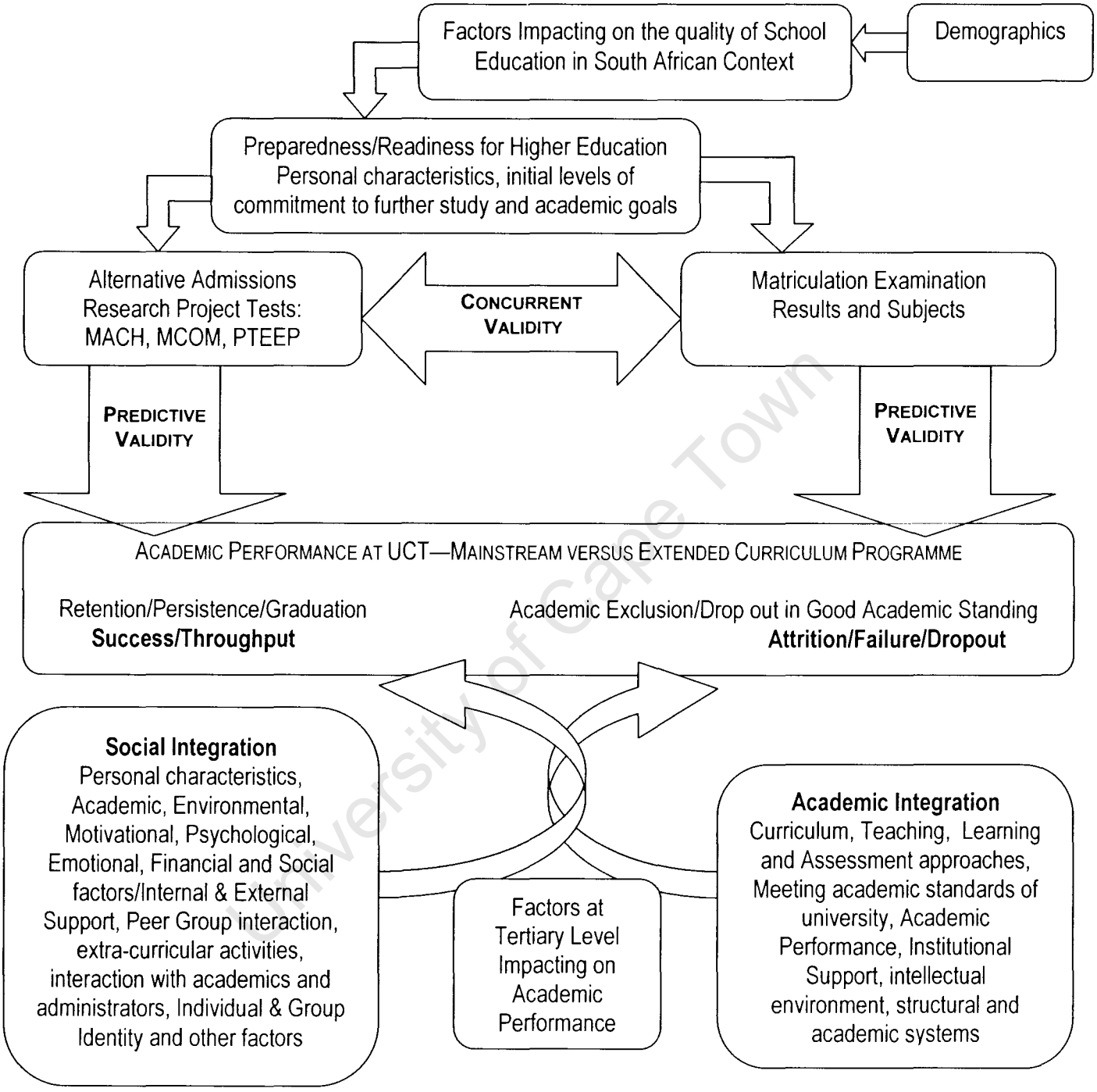
According to Bernstein (1978) the curriculum is socially constructed, tells us what is prioritised in society, shapes consciousness and identities of students. This can be seen in the BBusSc programmes as the thinking, acting and being of students are changed by the knowledge component as each area of specialisation is grounded in relevant current business fields and prepares students for what is expected or prioritised by the specialists in that field. The following schematic based on the model provided by Barnett, Ronald, Coates, and Kelly (2005), summarises the "interaction" between the dimensions of Knowing, Being and Acting as contextualised for the BBusSc ECP students.

FIGURE 1 — KNOWING, BEING AND ACTING



In the light of the above, the strategy to modify the entrance requirements for the BBusSc ECP is indeed a major reform effort with even greater consequences for all aspects of the student's experience at UCT and hence it is imperative that we ensure that we admit students responsibly and that such students are provided with appropriate interventions and adequate development opportunities to succeed.

FIGURE 2 — SCHEMATIC OVERVIEW OF THIS RESEARCH



2.10. Summary

As illustrated in this review, the literature identifies a number of problems regarding admissions and selection models and many questions are raised about the actual purposes and value of admissions tests and university entrance examinations. Many criticisms are levelled at these tools for measuring potential and achievement prior to getting into tertiary education and not many solutions are being offered.

In our context, it would seem that we first need to define clearly what the purposes of the Matriculation Examinations are. Unless the purpose is clear, the validity can always be questioned. The purposes of the AARP tests are stated very clearly and one can test the various aspects of validity of these admissions tests and this has been done by several researchers. The AARP tests are also relatively free of any backwash effects on school teaching and learning, whilst the Matriculation Examinations have some negative backwash effects.

Messick's (1989) validity ideas in terms of test interpretation and test uses expanded the concept of validity. In the South African context this raised questions around what the value implications and the social consequences are that are important for the Matriculation examinations and the AARP tests. With regard to this, we need to find ways to better explain the quality and distinct purposes of the Matriculation examinations and the meaning of their results, as well as the values and consequences involved in decision-making so that administrators who use these results for admissions purposes could make better informed decisions.

The real challenge that this study is aimed at, is in how we use the AARP and Matriculation Examination results responsibly in admitting students to a demanding degree programme such as the BBusSc when they have not met the minimum requirements set by the faculty to be admitted to the mainstream programme. The understanding gathered from the concepts of validity and how we measure such validity could prove to be very useful in getting to closer to this aim.

As Ramsden (2003, pg 223) concludes, quoting Bruner (1966, pg 165): *"Evaluation is often viewed as a test of effectiveness – of materials, teaching methods, or whatnot – but this is the least important aspect of it. The most important is to provide intelligence to improve these things".*

3. CHAPTER THREE — METHODOLOGY

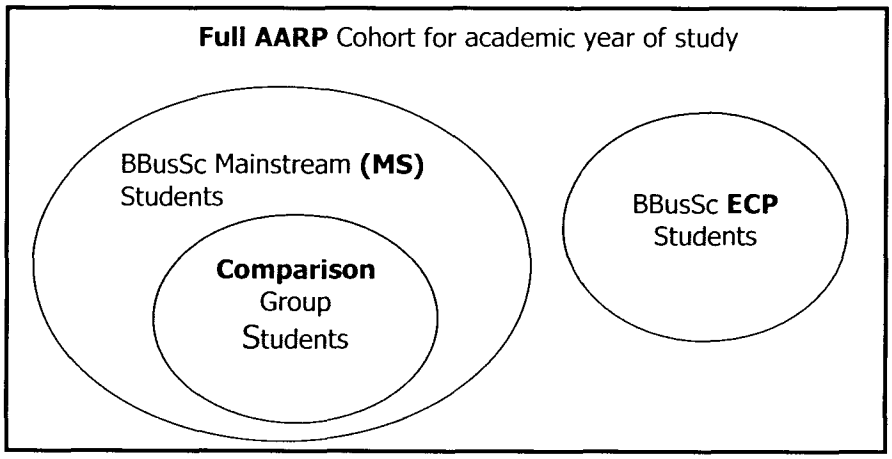
3.1. Sample selection and scope of this research

I decided to confine the study to three cohorts (2001 to 2003) of ECP students as they would have been in a position to graduate by 2005 or at the end of 2006. Since consistency is a necessary condition for reliability, working with the data for three cohorts enabled the study to comment on consistency as well. Data was collected for all Commerce students who wrote the AARP tests as applicants in the years 2001 to 2003. This made a comparative study between the ECP and any subset of mainstream students possible. The equivalent subset of interest comprised specifically those students who came from the same educational and economic background as the ECP students, but who met the mainstream entry requirements and therefore did not participate in the ECP interventions. This research acknowledges the fact 'Black' (including "Black", "Indian" and "Coloured") students may have been at a private or model C school for only a few years and still incorporate such students in the historically disadvantaged category.

The overall sample was further limited to the BBusSc (COMBO4, COMB10 and COMB15) students and excludes those who are on the Actuarial Science programme (COMB03) as this area of specialisation is not available to the ECP students.

The entire population of this study comprised a total of ***168*** students who had written the AARP tests as part of their application process to UCT and these have been extracted from a total of ***1460*** students who registered for the BBusSc degree from February 2001 to 2003 in the School of Management Studies. The sample population of students have been disaggregated into four categories for the purposes of the data analysis.

FIGURE 3 — RELATIONSHIPS BETWEEN THE CATEGORIES OF STUDENT GROUPS IN STUDY



The validity investigations focus on the ECP and Comparison Groups as the students in these groups are from similar backgrounds, as described below.

In addition to the disaggregated subgroups for the individual cohorts, 2001, 2002 and 2003, data was also aggregated, merging the 2001 to 2003 subgroups in each of the categories creating a bigger sample for each of the relevant analyses.

Description of each subset/category of students studied

- **Full AARP** — All BBusSc students who wrote the AARP tests as part of their application process to be admitted to UCT, irrespective of race, gender or background (Excluding Actuarial Science students, COMB03). All students included in this study belong to the full cohort for each year. ***(n = 168)***
- **MS** (Mainstream) — Students who wrote the AARP tests as part of their application process to be admitted to UCT, irrespective of race, gender or background and who have been registered as mainstream students—COMB04. These students are all non-ECP students. ***(n = 111)***
- **ECP**— Students who wrote the AARP tests as part of their application process to be admitted to UCT who are from previously disadvantaged backgrounds, including racial ethnic groups designated as "Black", "Coloured" and "Indian" students and who are registered as BBusSc Extended Curriculum Programme students—COMB10/COMB15. ***(n = 57)***
- **Comparison** — Students who wrote the AARP tests as part of their application process to be admitted to UCT who are from previously disadvantaged backgrounds, including racial ethnic groups designated as "Black", "Coloured" and "Indian" students and who met the minimum mainstream entrance requirements and were registered as such —COMB04. These students form a subset of the Mainstream students who in turn is a subset of the Full cohort for each year. ***(n = 55)***

For ease of reference the Sanlam BBusSc Extended Curriculum Programme students are referred to as the ECP students.

3.2. Research design and methodology

The research design incorporated a descriptive analysis of the demographic data available upon entry and a quantitative analysis of the School Leaving Examination results and the AARP scores, and the extent to which these predict the success of the Sanlam BBusSc ECP students within the

Faculty of Commerce within UCT over the past five years. This was compared with the analysis of the subset of mainstream students (the Comparison group) mirroring the demographic and entrance profile of the ECP students. The results will be discussed in the light of the fact that the ECP cohorts participated in sustained additional academic interventions throughout their degree programme, whereas the Comparison group only had access to the mainstream curriculum provision.
This research explores the concurrent validity of the AARP test scores and the Matriculation examination results and the predictive validity of these scores in relation to subsequent performance in each academic year of study, as well as the relationship of these scores and other data available upon admission with retention at university and graduation.

The research question was addressed by considering the evidence of potential presented by the applicant upon admission to the University of Cape Town and analysing to what extent these measures of achievement and potential are valid by comparing them with student performance at UCT. This would provide a measure of the validity of the Matriculation and AARP scores in relation to subsequent performance. These measures included a number of variables including race, gender, home language, and type of schooling, school leaving examination results, the Matric English and Mathematics results, as well as the AARP results.

The quantitative ***research approach*** included

- reviewing relevant literature, (sections 3.4 and 3.5)
- obtaining copies of all appropriate sets of data,
- compiling the data into an appropriate form for the statistical analysis,
- performing statistical techniques on the available data,
- exploring further and providing explanations for anomalies that presented themselves,
- performing and analysing a retention study,
- doing the comparative analysis,
- discussing and writing up the results of the study,
- making recommendations for further research

This research included:

a) A longitudinal comparative study of the first three cohorts of the BBusSc ECP (2001–2003 cohorts), to examine consistency of findings over time
b) A similar analysis of the subset of the 2001–2003 mainstream BBusSc students who had written the AARP tests
c) A comparative study of an equivalent subset of the mainstream students from similar backgrounds as the BBusSc ECP students but who were accepted into the mainstream

d) The use of statistical techniques such as correlation and regression analysis and other appropriate techniques

e) A descriptive and an inferential analysis of the results obtained from the statistical analysis

3.3. Data collection technique

(a) The following data has been compiled by for the 2001 to 2003 BBusSc ECP cohorts.

- Demographic data (other indicators)
- Matric subjects and results (indicators of prior academic achievement)
- AARP scores and rankings (alternative/additional indicators of achievement and potential)
- UCT results for duration of the degree, up to end 2005 (indicator of subsequent achievement in each academic year of study)
- Number of students registered upon admission to UCT for each cohort
- Number of students who transferred later into ECP from other faculties and other Commerce streams
- Academic Exclusion rates: Number of Academic Exclusions and reasons why
- Number of students who left in good academic standing (GAS), with supporting reasons
- Number of students who moved to another UCT Faculty; change in degree and why
- Retention rates for each cohort, from inception to date and per annum
- Graduation rates, specifying list of graduates, disaggregated into gender and race

(b) The following full sets of data were obtained from various departments for the 2001 to 2003 Commerce BBusSc cohorts and the data of those students who have written the AARP tests have been extracted.

- AARP Percentage Scores and Decile rankings (With acknowledgement to Alvin Visser, AARP Unit, UCT)
- Demographic data (school, gender, population), Matric subjects and results, Faculty and Matric score,
- UCT results for each cohort 2001 to 2005 (With acknowledgement to Jane Hendry and Fiona Gibbons, the UCT Institutional Planning Office)

(c) Variables considered in the study

AARP test scores

The AARP results were recorded both as a raw percentage obtained for the actual tests and students were ranked into deciles according to their performance relative to the overall group of AARP writers (Overall Decile) and relative to their performance in relation to writers from the same school background (Ex-Ed Decile). The school background is based on the historical classification of the schools when 19 Education Departments co-existed in this country.

- Overall PTEEP Percent
- Overall PTEEP Decile
- Ex-Ed PTEEP Decile
- Overall MACH Percent
- Overall MACH Decile
- Ex-Ed MACH Decile
- Overall MCOM Percent
- Overall MCOM Decile
- Ex-Ed MCOM Decile

Students are ranked into 10 decile groups, where decile 1 represents the top 10% of the full sample and decile 10 represents the bottom 10% of the full sample.

Demographic variables

The ECP students are all from traditionally disadvantaged backgrounds and include students from the "Black", "Indian" and "Coloured" designated groups. The variables were set up relative to the "White" (W) designated group where W was used as a dummy variable.

- Gender, Male (1) or Female (2) — dichotomous variable
- RB —"Black"
- RI —"Indian"
- RC — "Coloured"
- Home Lang — Home Language as declared by the student, all other languages were grouped as Other relative to English as the latter is used as the medium of instruction at UCT
- EdCodeOld — Code assigned to "Old Education Department"
- ECP/Non-ECP — Whether the student is an ECP student or not

Matriculation scores/results

The UCT admissions process includes the calculation of the Matriculation Point (MatPt) as described in the Literature Review and the relevant faculty calculates the Faculty Point (FacPt) based on the double weighting of subjects they value most in terms of preparation for study in the particular faculty.

Some faculties double the points for one or two school subject(s) that are valued in terms of preparation for the particular field of study, for example English is double-weighted by Faculty of Humanities whereas both English and Mathematics are doubled in the Faculty of Commerce. This study investigates to some extent the value of this double-weighting policy in Commerce.

- FacPt — Faculty Point calculated by incorporating double weighting for Matric Mathematics and English
- MatPt — Unweighted Matriculation Score
- Matric English %
- Matric Mathematics %

University performance

The first year Mathematics course (MAM102W) is particular significant as a BBusSc student must pass this foundation course. Performance in this course is crucial as it is the only whole year course done by all BBusSc students during the first year and could ultimately mean the difference between graduating with a BBusSc or a Bachelor of Commerce (BCom) degree as the course is not required by the all BCom streams.

- MAM102W % — Mathematics 102 Percentage
- AYOS Average % — Unweighted Average Performance for each academic year of study (AYOS 1 to 5)
- Retention — Number of years the student remained at university
- Years to graduation — Number of years taken to graduate

3.4. Data analysis

The writing of the AARP tests was not compulsory for Commerce applicants in the years relevant to this study. The information in Table 5 has been included to indicate the total number of

[12] The Matric English and Mathematics percentiles have been calculated from the symbols (C=65%, B = 75% and A = 85%) and used in the correlations.

students who registered for the BBusSc degree in relation to those who wrote the AARP tests as applicants to UCT.

TABLE 5 — STATISTICS FOR FULL BBUSSC AND ECP COHORTS: 2001 – 2003

Cohort	2001	2002	2003	TOTAL
Full BBusSc Cohort (COMB04) for the academic year Including BBusSc ECP (COMB10 and COMB15) Excluding Actuarial Science students (COMB03)	468	471	521	1460
Full BBusSc ECP cohort for the year (COMB10 and COMB15), including those who did not write AARP	46	54	66	166

For the purposes of this study, the students who wrote the AARP as part of their application process to UCT were extracted and numbers involved in each of the disaggregated groups are summarised in Table 6 below.

TABLE 6 — POPULATION STATISTICS FOR THIS STUDY

Cohort	2001	2002	2003	TOTAL
FULL AARP Full cohort of BBusSc students who had written the AARP tests	**45**	**64**	**59**	**168**
MS BBusSc Mainstream students who had written the AARP tests (Subset of Full Cohort of BBusSc students for the year)	**30**	**45**	**36**	**111**
ECP BBusSc ECP students who had written the AARP tests (Subset of Full AARP Cohort)	**15**	**19**	**23**	**57**
COMPARISON BBusSc mainstream students who had written the AARP tests, coming from similar backgrounds as the ECP students This group is a subset of the Mainstream (MS) group	**15**	**22**	**18**	**55**

Summary of data analysis techniques

- The relevant data of the students who had written the AARP tests have been extracted from the full cohorts for each year and compiled into an Excel Spreadsheet
- In preparation of the statistical analysis, the average performance of the two semesters was calculated for each academic year for each of the students in each cohort for a five-year period to give a "year average"
- A correlation and regression analysis were performed on relevant sets of data using the Pearson product-moment correlation coefficient as well as linear and multiple regression techniques

- A retention analysis was done on the relevant sets of data for comparative purposes
- Consultations with the AARP statistician on the most suitable statistical package to utilise (With acknowledgement to Kutlwano Ramaboa, UCT AARP Statistician)
- Microsoft Excel was used for certain techniques which were then repeated with the further statistical analysis that were performed using STATISTICA
- Concurrent and Predictive Correlations and Regressions were performed for each of the Full AARP cohorts, then for the disaggregated subsets: the ECP, MS and the Comparison groups as defined above as well as for the aggregated groups, 2001 to 2003 combined under each category: Full AARP Cohort (168), MS (111), ECP (57) and Comparison (55)
- Tables have been generated to highlight significant findings

3.5. The choice of analysis

The factors impacting on an individual's academic success are complex and varied, and even more so the factors impacting on a cohort's success. Correlation research is one way to begin teasing out simple relationships between factors that have some bearing on academic success. This quantitative analysis uses correlation and regression techniques to highlight the relationships between pre-admission data and subsequent academic success, retention, attrition with a view to isolate possible factors which are strongly correlated and may predict success for the BBusSc students.

Interrelationships between the variables have been considered to see if any measure of association exists and multicollinearity has been ruled out. According to Cohen and Manion (1989), techniques of correlation research are particularly appropriate and useful in social and educational investigations where the objective is to achieve some degree of prediction. They further assert that prediction studies are suitable where group performance as opposed to individual performance is the focus since only a high correlation can be regarded as valid for individual prediction. This study acknowledges that a number of factors contribute to or predict academic success and hence correlation and regression research is particularly advantageous because it allows for measurement of a number of variables and their relationships simultaneously and also yields information concerning the extent of the relationships between the variables studied. This study does not give any information about cause and effect relationships as correlation research does not necessarily imply causal relationships except to offer some possible explanation of patterns or lack thereof (Cohen & Manion, 1989).

In my opinion, the various views provided in the literature on validity almost contradict itself by desperately trying to prove concurrent and/or predictive validity and at the same time stating how

difficult it is to prove such validity and providing reasons why such validity just cannot be found. Assessment of predictive and concurrent validity is generally expressed as correlation coefficients and in some instances state an absolute minimum of 0.71 to establish such validity (Fitzgerald, 1999). This level of correlation did not emerge for many of the variables considered in this study.

3.6. Summary

The Matriculation results and UCT results were obtained for the 2001 to 2003 BBusSc cohorts and the calculation of the overall average performance for each academic year was done for the 2001 to 2005 period. The 2001 to 2003 students who had written the AARP tests as applicants to UCT were ranked by the AARP Unit (according to their percentage scores into deciles, based on their schooling and as an overall cohort of writers for the admissions cycle) into deciles (1 to 10). I calculated the Overall Average AARP performance as the average of the PTEEP, MACH and MCOM percentage scores. All these results were used in the analyses done in this study.

The division of the three cohorts (2001—2003) into the various subsets as described resulted in twelve subgroups for which descriptive statistics were compiled, concurrent and predictive correlation matrices prepared using the *STATISTICA* electronic statistical package as well as manual techniques in Excel. *STATISTICA* was also used to perform the regressions studies although some of these turned out to be devoid of meaning as the sample sizes were too small and had to be disregarded. The survival analyses were conducted using sorting and counting techniques in EXCEL. The twelve subgroups were analysed using five different approaches.

(a) Survival (Retention) and Graduation Analysis
(b) Concurrent Validity Correlation Analysis
(c) Predictive Validity Correlation Analysis
(d) Predictive Validity Regression Analysis
(e) Composite Studies

The application of the above techniques on the twelve subgroups resulted in an enormous amount of data and made the analysis and interpretation of the findings rather complex and the identification of emerging patterns challenging. Due to this challenge it was decided to also aggregate the data of the 2001 to 2003 cohorts and to analyse these groups in the same manner. This was helpful as it either provided confirmation of results or illuminated some of the findings. However, this meant that there were now sixteen different sets of data analysed in at least four different ways. In order to make sense of the findings and to provide discussion culminating in reasonable conclusions, the

decision was made to focus predominantly on the ECP and the Comparison Groups and what we can learn from this comparative study.

This research focussed on finding the strength of relationships between pre-admission variables and subsequent academic performance at university. This research does not attempt to find or give meaning to causal relationships, except to provide possible explanations for the presence or absence of relationships.

4. CHAPTER FOUR — RESULTS AND DISCUSSION

The first part of this Chapter provides a synopsis of the preliminary studies, which leads into the main focus of this dissertation. The five investigations done as part of this study include a Survival and Graduation Analysis, a Concurrent Validity Correlation Analysis, a Predictive Validity Correlation and Regression Analysis, and the results are discussed and key findings highlighted.

4.1. Previous studies of the predictive value of AARP and socio-economic factors impacting on academic success

A limited preliminary study (Francis, 2005) began to gather evidence of the predictive validity of the AARP tests, and their concurrent validity with Matric Mathematics Higher Grade within the BBusSc ECP context and outlined some of the factors impacting on this predictive validity. The issues raised in the study proved important to the enhancement of selection procedures for the Bachelor of Business Science Extended Curriculum Programme (BBusSc ECP) and for the devising of a selection and admission process which widens opportunities for those students able to benefit from tertiary studies.

A number of reports specifically aimed for the ECP were prepared by the AARP Unit since the inception of the ECP in 2001. The report done by Fish (2001) on the correlations between the Matric Mathematics, the MACH and the MCOM tests and the June results in the courses taken by the ECP candidates suggested that the results provided evidence that, despite the fact that Mathematics Higher Grade (HG) is one of the main criteria by which students are admitted to the BBusSc programme, the Mathematics HG was a weak predictor of success in all the first-year courses in the programme. It was shown that the MCOM test was the best predictor of the three tests considered in the analysis, and it was recommended that serious consideration be given to including it as one of the criteria by which selections are made to the programme (Fish, 2001). A more comprehensive study was done in 2002 for students on the BBusSc ECP and the BCom Academic Development Programme comparing performance of these students in first year courses with the AARP data (Cliff et al, 2002). These studies did not provide a comparison with mainstream data.

A large-scale predictive validity study done by means of a survival analysis approach, (Visser & Hanslo, 2006) where the data set consisted of 22 347 undergraduate degree students from all faculties who attended UCT during the eight years 1995 to 2002 provided valuable insight into the attrition and throughput patterns of students. The most important finding of the analysis was that performance in the bottom three deciles on the Placement Test in English for Educational Purposes

(PTEEP) is as good a predictor of risk of dropout as poor Matriculation score performance. For students from an educationally disadvantaged schooling background, in particular, the PTEEP appeared to be a consistently stronger predictor of risk of dropout or good academic performance than Matric.

The present study is different in that it contrasts directly students coming from similar educational and socio-economic backgrounds, but who experienced either the mainstream BBusSc curriculum provision or the additional interventions offered by the Sanlam BBusSc ECP. Also, although the AARP tests were not compulsory for the Commerce Faculty applicants for the years of this study, 168 of the ECP students and mainstream applicants wrote the AARP tests as applicants to UCT.

In order to make both justifiable and useful inferences based on the validity evidence gathered in this research, the concurrent and predictive validity within the context described was examined in a variety of ways. This study incorporated multiple techniques to provide a complete analysis of the data to overcome shortcomings of individual methods and together with the comparative study yielded results, which could potentially impact on future selection procedures in the Commerce Faculty at the University of Cape Town.

4.1.1. BBusSc ECP Preliminary Studies

4.1.1.1. Preliminary study 1 — Qualitative study of factors impacting on academic success

A comprehensive evaluation questionnaire was prepared by the BBusSc ECP Coordinator and administered in September to October 2005 (Francis, 2005). 55 Students from the 2001 to 2005 cohorts, ranging from first to final academic year of study, completed the questionnaire. The aim was to begin to identify some of the major factors impacting on success of the Sanlam BBusSc ECP students and the programme. Broad areas covered by the questionnaire included:

- Making the choice to study at UCT
- The gap between school and first year at UCT
- Area of specialisation and duration of your degree
- Language challenges
- Diversity challenges
- The actual ECP support system

- Assessment challenges
- Sanlam BBusSc ECP induction programme
- Sanlam ECP mentoring system
- Sanlam ECP programme evaluation
- UCT support systems
- Student involvement on campus
- Managing your career as a student

A number of factors affecting throughput were identified from the respondents to the questionnaire and these are described below. It is important to read the responses within the following context.

Many more students are meeting the admissions requirements for university degrees and the Matric results of incoming students are telling us that we have better 'quality' students and yet the first year results, retention rates and graduation rates are not reflecting this at all. Despite dedicated efforts of lecturers, the overall drop out rate across the faculties at UCT is of the order of 30%, and it would be most useful to know what actually happens once students arrive at UCT.

The underlying principle of the BBusSc ECP is that the known disadvantages emanating from poor school background impact not only on the first year of undergraduate study but that these students remain affected for most of the years spent at university. The under-preparedness impacts on how students acquire new concepts, which in turn acts on their identity within their field and how they will apply themselves in their respective area of specialisation, both at university and ultimately in their place of work. This resonates with the theory of Knowing, Being and Acting (Barnett et al, 2005) as reflected on in the literature review in section 2.9.

It is also known that first year university students generally find the transition from school to university environment challenging. For the students admitted in 2001 to 2003, it may be that the gap between school and university was exacerbated by the notion of "grade creep". If one considers the adjustments done to the Matriculation results across the years of this study it seems reasonable to conclude that it had some effect on the performance at first year level and beyond. This grade creep is reflected in the increase in the number of high Matric symbols of students admitted to UCT. From the 2005 UCT Admissions Report it is evident that over the years relevant to this study and the preliminary studies, the number of students admitted with A and B aggregates have gradually increased and it is difficult to reflect the true diversity in the "academic preparedness" of the new student intake. Included in the analysis of the 2005 UCT Admission Cycle Report were some striking statistics about the "academic quality" of the students based on the Matriculation results.

- *The notional A and B aggregate applicants made up 64% of the 2005 admissions, 59% in 2004, 52% in 2003, 46% in 2002, and 41% in 2001.*
- *The proportion of A-aggregate Matriculants amongst the 2005 new undergraduate enrolments (33%) was 15% higher than in 2001.*
- *Comparisons of the notional D and E aggregates showed only 3% of the 2005 Matriculants in that category compared with the 14% in 2001, whilst the proportion of notional C aggregate admissions dropped from 26% in 2001 to 16% in 2005.* (2005 UCT Admissions Cycle Report, pg. 4)

From these statistics it can be seen that grade inflation during the period of this study was highly probable. The impact of the "inflation" of Matric symbols still echoes in the performance of the first year ECP students as they struggle to cope with the demands of subjects such as Mathematics and Economics. For example, in 2005 over 40% of the first year BBusSc ECP students had to decant into an intervention programme for Mathematics after the first semester as they were at risk of not passing the year long course. This proportion is very high in relation to those who had to use this intervention in previous years. This disturbing pattern has continued into 2006 when the pass rate for the first year Mathematics course was 34% for the ECP students. This happened despite the fact that ECP students met the mainstream requirements for Mathematics.

The questionnaire respondents acknowledged their challenges with regard to making the academic and social transition from school to university. Evidence from the BBusSc ECP student portfolios corroborate the evidence from respondents and indicate that emotional and personal factors associated with living away from home have a very high impact on the ability of students to focus and perform academically.

Family crises back home, including illness, divorce, death of siblings or parents and the subsequent change in financial status due to income loss, or subsequent bouts of depression or clinical depression, often result in students having to apply for a short or extended leave of absence, or students having to apply for deferred examinations which more often than not, impact on their academic promotion status. This in turn brings stresses related to the readmissions appeals process, extending the time taken to complete the degree, financial implications thereof and the list is endless. These issues are non-academic in nature, but only through analysing personal circumstances can deeper reasons be found for students who are not performing or dropping out in good academic standing. Students have listed the above as some of the reasons for not coping at various stages in their undergraduate degree programme compounded by the fact that there is a

severe lack of understanding from important family members at home of what it really means to be a university student.

The UCT admissions statistics reflect that the SA African new undergraduate applicants to UCT remain overwhelmingly non-Capetonian. Over the 2001 to 2005 admissions cycles, between 84% and 86% of all SA African new undergraduate applicants to UCT were not resident in the greater Cape Town Area (2005 UCT Admissions Cycle Report). This statistic was also reflected in the ECP cohorts and large numbers of students are affected by the factors outlined above.

The articulation gap between school and university dictates where problems are located as it means different things for different students due to the diverse schooling system inherited from the apartheid years.

1) Discipline, general motivation and encouragement
2) Coping with pace and meeting deadlines, coping with increasing workload over time
3) Getting to grips with volume of content of the various courses
4) Adjusting to the variety of assessment methods employed by different courses
5) Strategies for coping with the pressure and demands of large quantities of work
6) Lacking time management techniques, task management, prioritisation
7) Lacking independent study techniques/effective study approaches
8) Coping with examination anxieties, coping with failure
9) Advice on a variety of issues students are struggling with —academic and emotional
10) Curriculum advice as required in terms of changes in direction of study, area of specialisation, due to lack of career guidance at school or role models in communities
11) Reading skills, essay writing skills, referencing techniques
12) The hidden or implicit curriculum requirements

From the respondents to ECP evaluation questionnaires it is clear that aspects such as a lack of career guidance at school level, a lack of role models in the communities where students live, and a lack of understanding of the expectations of a university student have a serious impact on curriculum choices and academic performance. This is evident in the fact that on average 80% of the BBusSc ECP students (2001, 2002 cohorts) changed their area of specialisation and then continued to be successful.

These factors may be present in some measure for most first year students, but the ECP students are unique in that these factors are exacerbated by the sheer variety and the extent of gaps as they enter UCT at a distinct disadvantage in terms of foundation skills for the demanding BBusSc degree due to their low Matriculation points. However, when these factors are adequately dealt with and the impact minimised by means of appropriate interventions, students remain focused on their ultimate goal of successful completion of their degree. Hence the entry-level performance and the ultimate performance can differ considerably depending on how the impact of a variety of factors is managed.

4.1.1.2. Preliminary study 2 — Predictive validity of the AARP tests for BBusSc ECP students

The preliminary study done on the predictive validity of the AARP tests for the 70 students in the 2001 and 2002 cohorts of BBusSc ECP suggested that the AARP and the Matric scores are in themselves not the best predictors of success for the ECP students (Francis, 2005).

Is it possible that the ECP by its very nature is expected to "overturn" correlation predictions of the AARP and Matric scores as adequate support is in place to ensure that ECP students complete their degree successfully despite their entrance profile? It could be that the study interventions provided by the ECP may have impacted positively on the performance of those who performed poorly upon admission thus weakening the correlation coefficient when correlating AARP and Matric scores with subsequent university performance (Cliff et al, 2002).

To illustrate this, the concurrent and predictive correlation study in the preliminary research was accompanied by a matrix categorising students in terms of their overall average AARP performance and their overall UCT performance. The matrix classified students into four categories in terms of whether they featured in the top or bottom 50% of the cohort in terms of their overall average AARP and UCT performance.

TABLE 7 —PRELIMINARY STUDY DATA (n = 70)

	Quadrant II		Quadrant I		
	TOP 50% AARP		**BOTTOM 50% AARP**		
TOP 50% ECP in terms of performance at UCT	2001 2002 **Total**	13 11 **24**	2001 2002 **Total**	11 9 **20**	Outcomes in **quadrant I and III** generally unexpected/unpredicted
BOTTOM 50% ECP in terms of performance at UCT	2001 2002 **Total**	7 5 **12**	2001 2002 **Total**	8 6 **14**	Outcomes in **quadrant II and IV** generally expected/predicted
	Quadrant III		**Quadrant IV**		

The analysis of the ECP AARP percentage scores and UCT results for the 2001 and 2002 sample *(n = 70)* showed that there were almost as many ECP students in category I as in II and similarly for category III and IV although this was not generally an expected outcome, but could be expected in the absence of any serious intervention. However, since the BBusSc students were not accepted on the basis of AARP, but on their Matriculation points, it would be of interest to consider the performance of all BBusSc students in relation to what AARP would have recommended to determine how best to utilise the AARP data in future. The present study focused on the upper 30% and lower 30% in each category and expanded the research sample as described in Chapter three. This type of comparison has been expanded to include the top and bottom 30% in terms of the Faculty Point as well.

It has to be noted that AARP recommendations for admission purposes are done on the basis of ranking, not raw scores. The full cohort of AARP writers are ranked in terms of performance with writers from similar school backgrounds and also as a full cohort without differentiating applicants in terms of schooling. Thus students from historically educationally disadvantaged backgrounds can be compared with other students from similar backgrounds, which is more equitable in the South African education context.

The AARP also makes no claim or prediction that high AARP test performance is related to subsequent high academic performance. Rather, AARP predicts that high ranking is related to reduced likelihood of subsequent academic failure and low ranking is related to increased likelihood of subsequent academic failure. Based on this, some students included in the bottom 50% of AARP scores (Category I and IV, including those in deciles 9 and 10) would not have been recommended by AARP for admission purposes and students included in the top 50% of AARP scores (Category II

and III, including those in deciles 1 and 2) would have been highly recommended for admission purposes.

The preliminary study highlighted four different categories in terms of pre-admission and university academic achievement. Some students present high scores at the point of entry to university and succeed, but equally so, others fail despite the reasonably high performance on the AARP tests. Then there are a number of cases where the students fall in the bottom 50% in terms of AARP scores which may be suggest that they are at risk of failure, but the predictions are "overturned." This confirms the complex nature of the elements that predict success and that AARP does not consistently predict the subsequent performance of some of the BBusSc ECP students. This phenomenon, however, is to be expected if the interventions provided by the ECP are as successful as we hope them to be. The specific preliminary studies, as well as the study of factors impacting upon academic life, motivated a closer look at the overall cohort survival statistics (retention and success) in comparison with the AARP raw score averages across the battery of tests.

The correlations, retention analysis and anomalies need to be further unpacked by considering the BBusSc ECP cohorts 2001–2003, utilising appropriate statistical methods to do the comparisons with the equivalent subset of mainstream students from similar backgrounds, taking into account the BBusSc ECP selection criteria and analysing more carefully the impact of each of the ECP processes and interventions on the success of the students. This research will establish trends over a period of time by comparing the BBusSc ECP statistics with equivalent mainstream statistics.

Although no real generalisation could be achieved based on this preliminary study, it provided the impetus for a more longitudinal study. The recommendations emanating from the preliminary study were that the analyses done could be further illuminated by a more longitudinal study and a comparison with the following.

(a) The first cycle of five years of the BBusSc ECP 2001 – 2005, longitudinal study to confirm consistency or otherwise
(b) The full cohort of mainstream BBusSc students who wrote AARP in the same round for the five year cycle
(c) The subset of students who are from similar backgrounds as the BBusSc ECP students who were accepted into the mainstream for the first five year cycle

These preliminary studies provided a solid foundation for the research done in the present study for which the findings are recorded and discussed in the remainder of this chapter.

4.2. The present study — Discussion of results

Different types of investigations have been done as part of this study to cross-check the validity of the findings. The results of these investigations are discussed under the following headings.

1) Survival and Graduation Analysis
2) Concurrent Validity Correlation Analysis
3) Predictive Validity Correlation Analysis
4) Predictive Validity Regression Analysis
5) Composite Study of the AARP, Matric and UCT Performance

4.2.1. Investigation 1 — Survival and graduation analysis

Tables 8 to 10 show a summary of the graduation and survival statistics for the ECP and Comparison subgroups of each cohort which provides a comparative understanding of the progression and success of each cohort. The detailed tables have been included in the appendix to avoid cluttering of information at this point.

4.2.1.1. Graduation and retention of 2001 cohorts

TABLE 8 — 2001 COHORT GRADUATION AND RETENTION STATISTICS

2001 Cohort	ECP (15)	Comparison (15)
Graduated in 4 Years	**3** (20%)	**9** (60%)
Graduated in 5 Years	**6** (40%)	**1** (7%)
Other, Excluded, cancelled, left	**6** (40%)	**5** (33%)

Table 8 shows that, for this cohort, admitting students from a traditionally disadvantaged background with less than the requisite entry requirements, is no more risky than admitting students who have met the minimum entry requirements, provided that the disadvantaged students have the appropriate interventions. This is evident from the fact that almost the same number of ECP students graduated by the fifth year as those in the Comparison Group (ECP— **9**, 60% and Comparison— **10**, 67%) and the exclusion rates for the two groups are also similar (ECP— **6**, 40% and Comparison— **5**, 33%).

It must, however, be borne in mind that the full ECP class of 2001 consisted of 46 students and this study reports only on the subset of 15 who wrote the AARP tests as applicants to UCT. Moreover, some of the students in the Other category, include those who took six or seven years but have

graduated eventually, but not in the five-year period considered by this study. The same is true for the Comparison Group. As such, no generalisation beyond the two focus groups is possible, although the pattern is similar for the 2002 and 2003 cohorts as indicated below.

4.2.1.2. Graduation and retention of 2002 cohorts

TABLE 9 — 2002 COHORT GRADUATION AND RETENTION STATISTICS

2002 Cohort	ECP (19)	Comparison (22)
Graduated in 4 Years	**6** (32%)	**9** (41%)
Retention 5 years	**12** (63%)	**12** (55%)
Other, Excluded, cancelled, left	**1** (5%)	**1** (4%)

Table 9 indicates that 32% of BBusSc ECP students who were admitted with fewer than the requisite Matric points graduated in four years while the students from similar backgrounds (Comparison group) who went into the mainstream programme graduated at a rate of 41%. It could be conceded that the intense interventions the ECP students received must have had an impact on the graduation rate as they did well despite the fact that most of them did not make the minimum entrance requirements for the BBusSc. It is also important to note that only two out of a total of nine students who stayed on beyond five years or who were excluded, or cancelled their registration or left the university in good academic standing, were from the ECP and Comparison groups. This is a very encouraging statistic as the ECP students were at a higher risk of being in this category if one considers only their Matriculation performance.

4.2.1.3. Graduation and retention of 2003 cohorts

TABLE 10 — 2003 COHORT GRADUATION AND RETENTION STATISTICS

2003 Cohort	ECP (23)	Comparison (18)
Retention 3 years	**21** (91%)	**16** (89%)
Other, Excluded, cancelled, left	**2** (9%)	**2** (11%)

Graduation with a BBusSc was not possible for the 2003 cohort due to the three year limitation imposed on this cohort since this study considered the years 2001 to 2005. Graduation for the 2003 cohort was possible at the end of 2006.

Table 10 shows that after three years, the ECP retention rate was almost the same as that of the Comparison group. This is quite significant since theoretically most of these students would not have been accepted into the BBusSc degree programme if the ECP did not exist. This success may be attributed to the improvements in the ECP intervention programme after the first two-year experience and the fact that students were supported throughout their degree programme.

4.2.1.4. Key findings

The key findings of Investigation 1 are that although the ECP students did not meet the Matriculation entrance requirements as specified for the BBusSc degree programme, they still managed to graduate or survive at a similar rate as the Comparison group students and the exclusion rates were also small, but similar for the two groups. This is suggesting that the ECP interventions had a positive effect on the academic performance of the ECP students and that their chances of graduation are as high as those of equivalent students in mainstream.

From this it can be concluded that differential Matric performance does not necessarily impact on throughput, in the presence of explicit intervention.

4.2.2. Investigation 2 — Concurrent validity correlation analysis

Manion & Cohen refers to correlations as measures of association and offers a crude analysis of what the actual correlation means for a sample size of more than 100. This research interprets correlations as follows described by Manion & Cohen. Correlations ranging from 0.20–0.35 indicate very slight (weak) relationships between the two variables and have no value in individual or group studies. Correlations of 0.35–0.65 indicate moderate relationships and are of little use for individual predictions, but combined with multiple regressions are useful for group prediction. Correlations of 0.65–0.85 are significant correlations and make group prediction possible and are accurate enough for most purposes (Manion & Cohen, 1989, pp. 149 – 165).

The tables compiled for Investigation 2 provide the concurrent validity data and have been extracted from the concurrent validity correlation matrices included in the appendix labelled as Tables 36 to 43 (pp. 118 – 120).

4.2.2.1. *Concurrent validity of Matric English with the AARP tests*

TABLE 11 — CONCURRENT CORRELATIONS ECP AND COMPARISON COHORTS

Cohort	2001 ECP				2001 Comparison			
Variables	**PTEEP**	**MACH**	**MCOM**	**AARP**	**PTEEP**	**MACH**	**MCOM**	**AARP**
Matric English %[12]	**0.70**	-0.23	0.48	0.41	0.40	-0.12	0.03	0.08
Cohort	**2002 ECP**				**2002 Comparison**			
Matric English %	0.42	**0.64**	**0.54**	**0.63**	**0.72**	0.14	**0.56**	**0.62**
Cohort	**2003 ECP**				**2003 Comparison**			
Matric English %	-0.08	-0.10	-0.20	-0.17	**0.54**	0.23	0.20	0.37
Cohort	**ECP Aggregated**				**Comparison Aggregated**			
Matric English %	0.24	0.11	0.21	0.22	**0.56**	0.05	0.32	0.36

AARP will be used as an easy reference for the Overall AARP Average. The Matric English and Mathematics percentiles have been calculated from the symbols (C=65%, B = 75% and A = 85%) and the percentiles have been used in the correlations.

The Matric English and the PTEEP produced significant correlations for the ECP 2001 (0.70) and the 2002 Comparison Group (0.72) while the 2003 Comparison (0.54) and the Aggregated Comparison (0.56) groups show moderate correlations between these two variables. The ECP Aggregated group reflect a weak correlation between the PTEEP and Matric English. This may suggest that the PTEEP (academic literacy) and the Matric English (language/literature) give us different data about students from educationally disadvantaged backgrounds.

The Matric English shows weak to moderate correlations with the MACH and MCOM for all the groups in Table 11, except for the 2002 groups studied. The AARP performance and the Matric English show very weak to moderate correlations which confirm that the AARP and Matric English pre-admission data provide complementary information as they are measuring different constructs.

4.2.2.2. *Concurrent validity of Matric Mathematics with the AARP tests*

TABLE 12 — CONCURRENT CORRELATIONS ECP AND COMPARISON COHORTS

Cohort	2001 ECP				2001 Comparison			
Variables	**PTEEP**	**MACH**	**MCOM**	**AARP**	**PTEEP**	**MACH**	**MCOM**	**AARP**
Matric Maths %	-0.21	0.13	-0.13	-0.08	-0.41	**0.79**	0.26	0.47
Cohort	**2002 ECP**				**2002 Comparison**			
Matric Maths %	0.15	0.49	0.19	0.32	-0.06	0.43	0.18	0.28
Cohort	**2003 ECP**				**2003 Comparison**			
Matric Maths %	-0.24	**0.60**	0.21	0.26	0.38	**0.76**	0.42	**0.70**
Cohort	**ECP Aggregated**				**Comparison Aggregated**			
Matric Maths %	-0.04	0.42	0.16	0.24	-0.01	**0.61**	0.28	0.46

The MACH and the Matric Mathematics produced moderate to significant correlations (ranging from 0.43 to 0.79) for the individual Comparison Groups as well as for the Aggregated 2001–2003 Comparison Group. However, for the ECP Groups, the MACH and the Matric Mathematics yielded weak to moderate concurrent correlations. Generally, for the groups studied, the MACH shows consistently positive moderate correlation with the Matric Mathematics performance, which confirms the concurrent validity of the MACH and the Matric Mathematics since they are both measures of Mathematics achievement.

The Matric Mathematics and the PTEEP and MCOM show weak correlations for most of the groups in Table 12, which is confirmed by the weak correlations between the AARP and the Matric Mathematics performance. It is only the 2003 Comparison Group that produced a markedly different and significant correlation of 0.70 between the AARP and the Matric Mathematics. This suggests that the PTEEP and MCOM (both involve reduced curriculum alignment and measures of potential) give us different data about applicants' academic ability than we obtain from the Matric Mathematics results.

4.2.2.3. *Concurrent validity of Matric and Faculty points with the AARP tests*

TABLE 13 — CONCURRENT CORRELATIONS FOR THE ECP AND COMPARISON GROUPS

Cohort	2001 ECP		2001 Comparison		2002 ECP		2002 Comparison		2003 ECP		2003 Comparison	
Variables	**FacPt**	**MatPt**	**FacPt**	**MatPt**	**FacPt**	**MatPt**	**FacPt**	**MatPt**	**FacPt**	**MatPt**	**FacPt**	**MatPt**
PTEEP	0.39	0.32	-0.29	-0.25	**0.57**	**0.58**	0.49	0.42	0.03	0.13	0.34	0.33
MACH	-0.20	-0.21	0.26	0.22	**0.63**	**0.50**	0.27	0.16	0.17	0.08	**0.61**	0.48
MCOM	0.34	0.31	-0.28	-0.30	**0.54**	**0.51**	**0.52**	0.43	-0.09	-0.11	**0.58**	0.45
AARP	0.22	0.17	-0.10	-0.11	**0.67**	**0.60**	**0.58**	0.46	0.05	0.03	**0.67**	**0.54**

The 2001 and 2003 ECP Groups as well as the 2001 Comparison Group confirm the weak correlation between the Matric and AARP performance. However, the 2002 ECP and the 2002 and 2003 Comparison Groups show a moderate correlation between the AARP and Matric performance. The MCOM and MACH correlate well with the Faculty Point and Matric Point for the 2003 Comparison Group, but not so for the 2003 ECP Group.

The AARP Average correlates well with the Faculty Point for the 2002 (0.58) and 2003 (0.67) Comparison Groups, but there is an inverse correlation between these two variables for the 2001 Comparison Group (-0.10). There is also no consistent pattern in terms of the ECP correlations for the Matric and AARP performance.

TABLE 14 — CONCURRENT CORRELATIONS 2001—2003 ECP AND COMPARISON AGGREGATED

Cohort	2001 – 2003 ECP Aggregated		2001 – 2003 Comparison Aggregated	
Variables	**FacPt**	**MatPt**	**FacPt**	**MatPt**
PTEEP	0.31	0.33	0.04	0.03
MACH	0.26	0.18	0.22	0.16
MCOM	0.28	0.26	0.08	0.03
AARP Ave	0.34	0.30	0.17	0.11

The AARP correlates very weakly with the Faculty Point for the aggregated 2001–2003 Comparison Group. The AARP Average also does not correlate well with the Matric and Faculty Points for the

aggregated 2001–2003 ECP Group. These findings suggest strongly that the AARP and Matric are measuring somewhat different constructs and as such provide us with complementary data.

The above findings show inconsistency in the correlations from 2001 to 2003 between the individual AARP tests and overall AARP performance with the Matric performance evidencing very little concurrent validity between the AARP and Matric data which confirms their complementarity in terms of the impact they have on academic performance.

4.2.2.4. Concurrent validity of the weighted and unweighted Matric Point

The Faculty Point (FacPt) is obtained by double-weighting the Matric Mathematics and English symbols in the calculation of the points. The Matric Point (MatPt) does not double-weight any of the Matric symbols. Tables 13 and 14 above show that when one compares the correlations between the AARP variables and the FacPt and the AARP variables and the MatPt, then there is very little difference between the pairs of values obtained for the FacPt and the MatPt. The double-weighting policy is also revealed as problematic in a number of ways as borne out by the data below.

TABLE 15 — CORRELATIONS IMPACTING ON DOUBLE-WEIGHTING OF MATRIC ENGLISH AND MATHEMATICS

Cohort	2001 ECP		2001 Comparison		2002 ECP		2002 Comparison		2003 ECP		2003 Comparison	
	FacPt	MatPt	FacPt	MatPt	FacPt	MatPt	FacPt	MatPt	FacPt	MatPt	FacPt	MatPt
FacPt	**1.00**	**0.98**	**1.00**	**1.00**	**1.00**	**0.97**	**1.00**	**0.97**	**1.00**	**0.97**	**1.00**	**0.94**
MatPt	**0.98**	**1.00**	**1.00**	**1.00**	**0.97**	**1.00**	**0.97**	**1.00**	**0.97**	**1.00**	**0.94**	**1.00**
Matric English %	**0.63**	**0.54**	-0.28	-0.29	0.42	0.31	**0.55**	0.43	**0.58**	0.49	**0.62**	**0.61**
Matric Maths %	0.22	0.13	0.03	-0.01	**0.63**	0.46	**0.60**	**0.52**	0.42	0.30	**0.60**	**0.57**

When considering the relevant pairs of correlation coefficients for the disaggregated ECP and Comparison subgroups in Table 15 the pattern is similar with only the 2002 ECP cohort showing a slightly different pattern. In most cases the FacPt and MatPt correlates similarly with other variables.

TABLE 16 — AGGREGATED GROUPS: DOUBLE-WEIGHTING OF MATRIC ENGLISH AND MATHEMATICS

Cohort	ECP Aggregated		Comparison Aggregated	
Variables	**FacPt**	**MatPt**	**FacPt**	**MatPt**
FacPt	**1.00**	**0.97**	**1.00**	**0.99**
MatPt	**0.97**	**1.00**	**0.99**	**1.00**
Matric English %	**0.58**	0.47	0.10	0.06
Matric Maths %	0.47	0.34	0.23	0.18

From Table 16, it is clear that the MatPt and the FacPt show multicollinearity as they correlate very strongly with each other: 0.97, 0.99 and 1.00 for the aggregated ECP and Comparison groups. Similar correlation values are obtained in Table 15 above for the individual ECP and Comparison groups. This means that the double-weighting of Matric English and Mathematics, thereby producing the FacPt, actually makes no difference at all. In fact when comparing the correlation between MatPt or FacPt and the other variables, it is evident that there is mostly a minor difference in how the FacPt and MatPt correlate with these variables.

4.2.2.5. Key findings

The general pattern emerging from this study with regard to the concurrent validity of the AARP and Matriculation scores is that these two sets of data correlate weakly to moderately, suggesting that the Matriculation examinations and the AARP tests are measuring somewhat discrete constructs and thereby providing us with complementary sets of pre-admission data. There is repeated evidence indicating the relative absence of effect of the double-weighting practice. This investigation found no evidence to suggest that the double-weighting of Matric Mathematics and English makes any difference as the FacPt and MatPt show multicollinearity as they correlate almost perfectly with each other.

4.2.3. Investigation 3 — Predictive validity correlation analysis

This study compares the data available upon entry to the university with the actual university performance. It also gives insight into the predictive value of Matric Mathematics in relation to the first year university Mathematics (MAM102W) performance. Performance in this first year Mathematics course is crucial and would often dictate whether a student will continue with the BBusSc or opt for the BCom degree programme which does not require MAM102W.

The tables compiled for investigation 3 provide the predictive validity data and have been extracted from the predictive validity correlation matrices included in the appendix labelled as Tables 44 to 51 (pp. 121 – 123).

4.2.3.1. Predictive validity of the Matric Mathematics performance

TABLE 17 — PREDICTIVE VALIDITY OF THE MATRIC MATHEMATICS PERFORMANCE

Case wise deletion of missing data	Predictive validity of Matric Mathematics		
Cohorts	**Maths 1**	**AYOS 1**	**AYOS 2**
2001 ECP Cohort (N=14)	0.42	0.21	0.14
2002 ECP Cohort (N=18)	0.34	0.34	-0.03
2003 ECP Cohort (N=22)	**0.56**	0.18	-0.14
2001 Comparison Cohort (N=14)	0.49	**0.52**	**0.38**
2002 Comparison Cohort (N= 20)	0.10	0.29	0.26
2003 Comparison Cohort (N=16)	**0.76**	**0.79**	**0.50**
2001 - 2003 ECP Aggregated (N = 54)	0.40	0.24	-0.04
2001 - 2003 Comparison Aggregated (N=50)	0.43	**0.54**	0.38

(Maths 1 is used for easy reference, referring to the first year Mathematics course with the code MAM102W.)

The correlation coefficients between the Matric Mathematics and the MAM102W for the 2001-2003 ECP subgroups are weak to moderate. The 2002 cohorts have very weak correlations for the two subgroups: Comparison—0.10; and ECP—0.34. However, the 2003 ECP cohort has moderate correlation of 0.56 between the Matric Mathematics and the MAM102W, and there is a significant correlation for the 2003 Comparison Group, 0.76, between these two variables.

When the subgroups were aggregated for the three cohorts, the correlation coefficients were only 0.40 and 0.43 which means that the Matric Mathematics did not predict well in terms of the MAM102W performance for the aggregated cohorts. This may have implications in terms of the assumptions made by the first year Mathematics course and the double-weighting practice for the Matric Mathematics.

The Matric Mathematics showed the only significant and also the highest correlation in terms of first year university performance of the Comparison groups (0.52 and 0.79). However, this correlation is very different for the ECP (0.21 and 0.18). This may suggest that the first year ECP interventions

available to these cohorts made a significant impact irrespective of their entry level Mathematics performance.

The weak predictive validity of the Matric Mathematics in terms of first year Mathematics and academic performance in AYOS 1 and AYOS 2 is even more significant if we consider the fact seven of the ECP students did not meet the minimum Mathematics requirement of a D HG as stipulated by the Commerce Faculty entry requirements. However, whatever these seven students were lacking in terms of foundation Mathematics skills would have been provided for by the specialised ECP Mathematics provision.

Compared to Matric English below, the Matric Mathematics showed a much stronger predictive validity with first year academic performance.

4.2.3.2. Predictive validity of the Matric English performance

TABLE 18 — PREDICTIVE VALIDITY OF THE MATRIC ENGLISH PERFORMANCE

Case wise deletion of missing data	**Matric English**		
Cohorts	**Maths 1**	**AYOS 1**	**AYOS 2**
2001 ECP Cohort (N=14)	-0.21	-0.10	0.29
2002 ECP Cohort (N=18)	0.06	0.28	0.00
2003 ECP Cohort (N=22)	0.17	0.10	0.01
2001 Comparison Cohort (N=14)	-0.39	-0.21	-0.21
2002 Comparison Cohort (N= 20)	-0.03	0.17	0.08
2003 Comparison Cohort (N=16)	0.21	0.39	**0.64**
2001 - 2003 ECP Aggregated (N = 54)	-0.06	0.08	0.06
2001 - 2003 Comparison Aggregated (N=50)	-0.12	0.12	0.09

There is a consistently very weak or inverse correlation between Matric English and MAM102W performance for all groups longitudinally. This is contrary to the general idea that the MAM102W requires language skills due to the applied nature of the content. It may very well be that the Matric English assesses language and literature and writing skills which may not be as crucial for Mathematics Learning.

Both the PTEEP and Matric English correlated very weakly and sometimes negatively with performance in the first year Mathematics course and overall performance in AYOS 1 and 2. So

there is a moderate concurrent value of PTEEP and Matric English (as illustrated in Investigation 2 earlier), but the predictive value is almost non-existent as the correlations are mostly small and predictions cannot be justified.

Table 18 shows that the Matric English has very weak predictive validity in terms of subsequent academic performance for the ECP and Comparison Groups studied, suggesting that the double-weighting of the Matric English cannot be justified as the double-weighting places a higher value on Matric English.

4.2.3.3. Predictive validity of the Matric and Faculty Point performance

TABLE 19 — PREDICTIVE VALIDITY OF THE MATRIC AND FACULTY POINT PERFORMANCE

Case wise deletion of missing data	Faculty Point			Matric Point		
Cohorts	**Maths 1**	**AYOS 1**	**AYOS 2**	**Maths 1**	**AYOS 1**	**AYOS 2**
2001 ECP Cohort (N=14)	0.29	0.44	**0.71**	0.31	**0.50**	**0.73**
2002 ECP Cohort (N=18)	0.38	**0.56**	0.28	0.36	**0.54**	0.37
2003 ECP Cohort (N=22)	0.42	0.44	0.25	0.32	0.48	0.35
2001 Comparison Cohort (N=14)	-0.09	-0.20	-0.13	-0.11	-0.22	-0.14
2002 Comparison Cohort (N= 20)	0.34	0.42	0.41	0.43	0.39	0.42
2003 Comparison Cohort (N=16)	**0.60**	**0.68**	**0.70**	**0.60**	**0.72**	**0.78**
2001 – 2003 ECP Aggregated (N = 54)	0.26	0.45	0.35	0.24	0.47	0.44
2001 - 2003 Comparison Aggregated (N=50)	0.07	0.11	0.10	0.07	0.09	0.08

The Faculty Point and Matric Point are good predictors for most of the subgroups in terms of the MAM102W performance, although not statistically significant for any group. However, when the groups were aggregated for the 2001 to 2003 cohorts the Faculty Point and Matric Point displayed insignificant correlations with the MAM102W performance for all aggregated subgroups. When one considers the equally insignificant correlations that both the Matric Point and Faculty Point have with subsequent academic performance for the Aggregated ECP and Comparison groups, one can conclude that there is very little evidence that the double-weighting of the Matric Mathematics and English has effect for this three-year sample.

The Matric Point for the 2001 ECP Cohort correlates well (0.73) with the performance in AYOS 2, but weakly with the performance in MAM102W (0.31) and moderately with the performance in AYOS 1

(0.50). This may be as a direct result of the fact that the majority of the ECP students did not meet the FacPt requirements and that the interventions provided impacted positively on their university performance.

4.2.3.4. Predictive validity of the overall AARP average performance

TABLE 20 — PREDICTIVE VALIDITY OF THE OVERALL AARP AVERAGE PERFORMANCE

Case wise deletion of missing data	Overall AARP Average		
Cohorts	**Maths 1**	**AYOS 1**	**AYOS 2**
2001 ECP Cohort (N=14)	-0.38	**-0.50**	-0.27
2002 ECP Cohort (N=18)	-0.02	0.18	0.14
2003 ECP Cohort (N=22)	0.12	0.16	-0.15
2001 Comparison Cohort (N=14)	0.04	0.00	-0.08
2002 Comparison Cohort (N= 20)	-0.05	0.33	0.13
2003 Comparison Cohort (N=16)	**0.51**	**0.55**	0.42
2001 - 2003 ECP Aggregated (N = 54)	-0.01	0.10	-0.09
2001 - 2003 Comparison Aggregated (N=50)	0.16	0.29	0.15

The AARP generally shows very weak correlations with the MAM102W performance for the ECP and Comparison Groups. The evidence shows that the AARP performance is negatively correlated to the MAM102W for the ECP groups. This may be as a result of the first year Mathematics intervention programme provided for the ECP students. The AARP performance shows moderate predictive validity for only the 2003 Comparison Group. It can be concluded that the AARP Performance does not have predictive validity with regards to first year Mathematics performance for the cohorts investigated.

It may be worthwhile reminding the reader that both the ECP and Comparison Group students are from traditionally disadvantaged backgrounds and that the AARP tests could assist with the selection of students in this category. However, the same evidence could not be found in the 2002 cohort or for any other subgroup and hence no general conclusions can be made from the existing data.

The negative correlations obtained for the ECP is of particular interest as this could be attributed to the high level of intervention in the first and second year of the ECP. The ECP and Comparison subgroups, when aggregated, produced negative or very insignificant correlations between the AARP

performance and the first year Mathematics performance as well as for the overall first and second year academic performance.

A possible reason why the Comparison group also produced insignificant correlations or negative correlations between AARP and subsequent performance may be that they performed well on the Matriculation examinations due to the backwash effect and were admitted because of their acceptable FacPt, but that this performance was not matched by their AARP tests or their university performance.

The AARP performance for the 2001 ECP Cohort was strongly inversely correlated to the average performance in AYOS 1. This significant finding suggests that strong factors were impacting on the ECP performance in the first academic year of study.

Compared to the findings for the 2001 ECP cohort, the opposite phenomenon is true for the 2001 Comparison Group. The performance of the 2001 Comparison Group in MAM102W and AYOS 1 to AYOS 4 is negatively correlated or bears no relationship to the AARP scores as well as to the Faculty Point. This means that both AARP and Matric scores have no predictive validity with regard to subsequent performance for the 2001 Comparison cohort.

The overall conclusion is that the AARP performance shows no predictive validity for the groups studied.

4.2.3.5. Key findings

As indicated in Investigation 3 there is no statistically significant correlation between the pre-admission variables studied and subsequent academic performance. The fact that the Matric Mathematics is the best predictor, but not significantly so for all the groups studied, and that the English has little or no value in predicting future academic success for these students, are real concerns as these subjects are double-weighted in the admissions process.

The AARP, the Matric and Faculty Points and the Matric Mathematics predicted well for subsequent academic performance for the 2003 Comparison Groups, but not for any of the other years indicate longitudinal inconsistency and this suggest that different factors affected the performance of the different cohorts studied.

While the findings do not offer conclusive generalisable evidence about the validity and actual value of the Matric and AARP results as a prediction of academic success in the BBusSc degree programme, the Matric Mathematics shows the strongest correlation with subsequent performance for the majority of the subgroups studied.

The Matric Point and Faculty Point show equally insignificant and similar correlations with subsequent academic performance for the ECP and Comparison aggregated groups. This suggests strongly that the double-weighting of the Matric Mathematics and English has no justification for this three-year sample.

The Matric Mathematics is the best overall predictor (correlations are consistently positive, but not always significant) in terms of performance in MAM102W as well as for performance across all four academic years of study. It is clear that the Matric English, the AARP performance as well as the Faculty Point have very little predictive validity with regard to performance in MAM102W and overall academic performance in the undergraduate years. The AARP performance has generally no predictive validity for the ECP and Comparison groups studied. The Faculty Point, the basis upon which all these students were admitted to the BBusSc degree, is also not a good predictor. This suggests that there were other factors that impacted on pre-admission performance as well as on the academic performance at university for the 2001 to 2003 cohorts.

In correlation terms, this investigation found very few predictive relationships, signaling minimal evidence of direct relationships between performance in Matric, AARP and subsequent academic performance.

4.2.4. Investigation 4 — Predictive validity regression analysis

Multiple variable regressions were performed on the twelve subgroups as described in Chapter 3. All variables considered by this study have been taken into the multiple regression model to establish which of these factors account for variation, and to what extent they influence academic performance in the first year Mathematics course (MAM102W) or in any of the four academic years of study.

As shown in Investigation 2, the concurrent correlation matrices for the continuous variables show that most of the variables studied, correlate weakly to moderately with one another, and none of the distinct variables are very highly correlated. The case of the FacPt and the MatPt has been discussed in Section 4.2.2.4. This excludes the possibility of multicollinearity between some of the variables which refers to a situation where the explanatory variables are highly correlated with one

another. As a result there is no real danger that some of the variables might prove to be not significant when others have already been taken into consideration by the regression. In fact it is true that many of the continuous variables used are in fact negatively correlated with one another.

The tables containing the regression studies are included in the appendix and cross-referencing has been provided for the data extracted in the regression summaries below. The summaries of the regression analyses given below reflect the variation in performance for the independent variables, MAM102W, performance in AYOS 1 and AYOS 2 as well as for the retention and graduation of the ECP and Comparison Groups.

4.2.4.1. Regression summary of variables predicting MAM102W performance

TABLE 21 — REGRESSION RESULTS FOR MAM102W PERFORMANCE

Cohort	Number of variables in regression model	Significant predictor variables	Variables accounted for % of the variance
2001 ECP (n = 14) Table 118, page 141	7	1 MatPt	77%
2002 ECP (n = 19) Table 134, page 146	10	7 EdCodeOld, PTEEP (2), MACH (2), MatPt, FacPt	91.3%
2003 ECP (n = 14) Table 147, page 150	5	2 RI, Matric Maths	73.45%
2001 Comparison (n=14) Table 126, page 143	12	12 Gender, PTEEP (3), MACH (3), MCOM (3), FacPt, Matric Maths	99.99%
2002 Comparison (n=21) Table 141, page 148	7	6 PTEEP (3), MCOM (2), RI	72.24%
2003 Comparison (n=17) Table 152, page 151	13	9 RB, Matric Maths, MACH (3), MCOM, PTEEP (3)	99.52%

(PTEEP (3) means that all three PTEEP Variables, namely the Overall PTEEP percent, the Overall PTEEP Decile and the Ex-Ed PTEEP Decile appeared as significant. The same applies to the MACH and MCOM variables.)

The results in Table 21 indicate that the variables studied provide a significant explanation for the variation in results as the factors studied account for 72 to 99.99% of the variance in performance. It is evident that there were other factors impacting on performance for the 2001 and 2003 ECP groups as well as for the 2002 Comparison Group.

The PTEEP, Matric Mathematics and the Matric point show up as significant predictors of success in the MAM102W performance for the ECP and Comparison Groups and many of the other groups studied. The Schooling, Gender and Race appeared as significant predictors for three different subgroups and hence did not impact widely and no conclusions can be made about these variables in terms of performance in MAM102W. A combination of Matric, AARP and demographic variables influenced the variation in first year Mathematics performance, but there also appear to be other factors, beyond those investigated, that impacted on the MAM102W performance.

4.2.4.2. Regression summary of variables predicting performance in AYOS 1

TABLE 22 — REGRESSION RESULTS FOR PERFORMANCE IN AYOS 1

Cohort	Number of variables in regression model	Significant predictor variables	Variables accounted for % of the variance
2001 ECP (n = 15) Table 119, page 141	5	2 MatPt, RI	75%
2002 ECP (n = 19) Table 135, page 146	4	2 EdCodeOld, FacPt	65%
2003 ECP (n = 23) Table 148, page 150	6	4 EdCodeOld, Matric Maths, HL	58.68%
2001 Comparison (n=15) Table 127, page 144	13	11 PTEEP (3), MACH (3), MCOM(2), RC, RI, Gender	99.99%
2002 Comparison (n=21) Table 142, page 148	3	2 MACH (2)	45.47%
2003 Comparison (n=17) Table 153, page 152	11	10 MACH (3), MCOM (2), PTEEP, RC, Matric Maths, Matric English	99.75%

The data shows that Matric, schooling, Home Language and to some extent Race accounted for the variance in the first year performance of the ECP groups. However, it did not explain all of the variance, which point to other factors that have not been studied. These could include the interventions and other socio-economic factors as highlighted by the preliminary studies on other factors affecting performance for the ECP students. It is quite significant that the AARP did not contribute in explaining the variance for the ECP groups.

In contrast to this, the AARP explained to a large extent variation in first year performance for the Comparison Groups, although the Matric and race variables were also significant in this regard for the 2003 Comparison Group.

4.2.4.3. Regression summary of variables predicting performance in AYOS 2

TABLE 23 — REGRESSION RESULTS FOR PERFORMANCE IN AYOS 2

Cohort	Number of variables in regression model	Significant predictor variables	Variables accounted for % of the variance
2001 ECP (n = 15) Table 120, page 141	6	3 MatPt, Matric Maths, RI	90%
2002 ECP (n = 18) Table 136, page 146	7	4 PTEEP, Gender, MatPt, RC	81.93%
2003 ECP (n = 23) Table 149, page 150	2	1 EdCodeOld	38.87%
2001 Comparison (n=15) Table 128, page 144	8	5 PTEEP (3), MCOM, Matric Maths	98%
2002 Comparison (n=20) Table 143, page 149	3	1 MatPt	23.25%
2003 Comparison (n=16) Table 154, page 152	11	6 MACH, PTEEP (3), Matric Maths, Gender	99.68%

The data shows that Matric, schooling and race accounted for some of the variance in the second year performance of the ECP groups. The PTEEP explains some of the variation of the second year

performance for the 2002 ECP group. Once again, the AARP data is more significant in terms of explaining the variation in performance in the second year for the Comparison groups.

4.2.4.4. Regression summary of variables predicting retention

TABLE 24 — REGRESSION RESULTS FOR VARIABLES PREDICTING RETENTION

Cohort	Number of variables in Regression model	Significant predictor variables	Variables accounted for % of the variance
2001 ECP (n = 15) Table 124, page 143	3	1 FacPt	67%
2002 ECP (n = 19) Table 139, page 147	6	3 MACH (2), MCOM	85.29%
2003 ECP (n = 23) Table 151, page 151	6	3 MatPt, RB, HL	64.79%
2001 Comparison (n = 15) Table 131, page 145	12	8 PTEEP (2), MACH (3), RC, FacPt, Matric Maths	99.59%
2002 Comparison (n = 19) Table 146, page 149	11	9 PTEEP (3), MACH (3), MCOM (2), Matric Maths	93.50%
2003 Comparison (n = 17) Table 156, page 153	3	0 No significant variables	37.06%

With regard to retention, a combination of Matric and AARP, but different factors emerged as significant predictors each year for both the ECP and Comparison Cohorts. There is no real pattern evident with regard to significant predictors, however, being "Black" (RB), and Home Language (HL) emerged as significant predictors for the 2003 ECP, and being "Coloured" (RC) emerged twice as a significant predictor for the Comparison Group. This does mean, however, that race did not have much impact on performance for the ECP and Comparison groups.

4.2.4.5. Regression summary of variables predicting graduation

TABLE 25 — REGRESSION RESULTS FOR VARIABLES PREDICTING GRADUATION

Cohort	Number of variables in Regression model	Significant predictor variables for Graduation	Variables accounted for % of the variance
2001 ECP (n = 9) Table 125, page 143	3	1 FacPt	74%
2002 ECP (n = 15) Table 140, page 148	3	2 RC, PTEEP	44.44%
2003 ECP			
2001 Comparison (n = 10) Table132, page 145	9	0 No significant variables	100%
2002 Comparison			
2003 Comparison			

In terms of graduation success, the Faculty Point, PTEEP and being "Coloured" (RC) were significant predictors and explained some of the variance in performance, but there were other factors that impacted largely on graduation success of the ECP students. This may be attributed to the ECP specialised interventions throughout the degree programme as outlined in the literature review.

The following variables accounted for 100% of the variation in graduation for the 2001 Comparison Group: RC, Ex-Ed PTEEP Decile, Ex-Ed MACH Decile, Home Lang, Overall PTEEP Percent, Overall MACH Percent, Matric Mathematics %, Matric English % and RI, but none of these were significant predictors. This suggests that most of the factors explaining variance in performance have been taken into the regressions model.

In the regression studies for the ECP and Comparison groups, the PTEEP appeared as the most significant predictor of subsequent academic performance. The MatPt or FacPt followed as the next predominant influence. This is followed by the Matric Maths and the MACH, appearing at the same frequency as significant predictor, which is congruent with the fact that they both measure Mathematics achievement. The regression studies for all the groups yielded the PTEEP, Matric, and Matric Maths/MACH (in that order) as the most influential factors in terms of future academic performance for the ECP and Comparison Cohorts.

There are cases where the significant variables did not account for much of the variation in performance and this signals once again that other factors, including the socio-economics factors

identified in the preliminary study in section 4.2.1.1 impacted largely on performance for the ECP and Comparison Groups. Other factors affecting throughput are investigated below.

4.2.4.6. Other factors affecting throughput

TABLE 26 —SCHOOLING STATISTICS FOR ECP AND COMPARISON GROUPS

	2001 Cohort		2002 Cohort		2003 Cohort	
	ECP (15)	**Comparison (15)**	**ECP (19)**	**Comparison (22)**	**ECP (23)**	**Comparison (18)**
Ex-DET School	**0**	**0**	**4** (21%)	**0**	**1** (4%)	**2** (11%)
Other School	**15** (100%)	**15** (100%)	**15** (79%)	**22** (100%)	**22** (96%)	**16** (89%)

The regression analyses show that schooling very rarely featured as a statistically significant variable as there were so few students from Ex-DET schools in the sample. Schooling featured as a significant predictor in the 2003 Comparison cohort (AYOS3) and in the 2003 ECP cohort where EdCodeOld and MatPt accounted for only 38% of the variation in AYOS2 performance of the 23 ECP students. In the 2002 ECP cohort, schooling was a statistically significant variable which together with FacPt, RI and Ex-Ed PTEEP accounted for 91% of the variation in performance of the 19 students in first year Mathematics which also resulted in schooling being a significant predictor of success for the 2002 cohort.

From the Table 26 it is clear that the majority of the students came from relatively better resourced high schools as only four (2002) and three (2003) students were from Ex-DET schools. None of the 2001 students came from EX-DET schools, which perhaps means that the type of schooling these students received provided a better level of preparedness for tertiary education.

This would have minimised the effects schooling on success and as a result schooling did not feature as a significant contributor predicting success for the sample population as a whole. This is borne out by the regression studies where the Old Education Department was isolated as a significant predictive variable for success in AYOS 1 only for the 2002 ECP cohort and for the success in the MAM102W for the ECP 2002 Cohort. The Ex-Education Department variable also showed up as a significant predictor variable for the 2003 ECP in terms of their AYOS 1 and 2 performances and for the Comparison Group in terms of the AYOS 3 performance. This variable was insignificant in terms of predictive value for all the other groups and hence does not tell us much about future academic performance.

TABLE 27 —HOME LANGUAGE STATISTICS FOR ECP AND COMPARISON GROUPS

	2001 Cohort		2002 Cohort		2003 Cohort	
Cohort Variable	ECP (15)	Comparison (15)	ECP (19)	Comparison (22)	ECP (23)	Comparison (18)
English Home Language	8 (53%)	11 (73%)	11 (58%)	17 (77%)	13 (57%)	14 (78%)
Other Home Language	7 (47%)	4 (27%)	8 (42%)	5 (23%)	10 (43%)	4 (22%)

Less than a third of the Full AARP 2001 cohort had a home language other than English whilst about 50% of the ECP students were English Second Language (ESL) speakers. The impact of this may to some extent have been counteracted by the Language and Communication Development interventions offered to ECP students for the first six months of their first academic year of study.

Approximately 25% of the Full AARP cohorts were ESL speakers and the majority of the ESL students were in the ECP. It was noted that more than a third of each ECP cohort (2001 ECP, 47%; 2002 ECP, 42%; 43%, 2003) declared that English was not their first language.

In the relevant regression studies, Home Language featured as a statistically significant variable in predicting success in AYOS 3 and 4 for the 2001 ECP cohort; and predicting success in AYOS 1 for the 2003 ECP cohort; and in predicting retention for the 2003 ECP subgroup. However, although Home Language appears as a significant variable for the ECP group, it explains only some of the variation in performance or retention ECP cohort. Home Language did not emerge as a significant variable with regard to MAM102W performance.

These findings suggest that the first year ECP Language and Communication Development interventions would have reduced the negative impact of language on the academic performance of the ECP students, which reflects in their retention and ultimate graduation success.

4.2.4.7. Key findings

The regression studies provide evidence to suggest that PTEEP contributes most often to variation in terms of performance in MAM102W of the ECP and Comparison Groups, but that there are factors other than those studied that impacted on the MAM102W performance. More of the variation in performance in MAM102W (up to 99.99% in some investigations) is explained by the variables taken

into the regression model for the Comparison group than for the ECP groups. This suggests that other factors impacted on the ECP MAM102W.

The regression studies for all the groups yielded the PTEEP, Matric, and Matric Maths/MACH (in that order) as the most frequently occurring factors in terms of explaining variance in academic performance for the ECP and Comparison Cohorts. The AARP data is more significant in terms of explaining the variation in Mathematics and subsequence academic performance for the Comparison groups.

There are cases where the significant variables did not account for much of the variation in performance and this signals that other factors, including the socio-economics factors identified in the preliminary study may have impacted largely on performance for the ECP and Comparison Groups.

The variables studied also explained the variation in retention graduation performance for the Comparison Groups better than for the ECP Groups. This again suggests that there are other qualitative factors that impacted on the ECP performance and that these factors may be embedded in the ECP social and academic integration interventions.

According to the Schooling background data collected and flowing from the regression studies it is evident that Schooling did not influence subsequent academic performance as only 21% of the 2002 ECP and 4% of the 2003 ECP and 11% of the 2003 Comparison groups attended EX-DET schools .

Over 40% of each ECP groups had a Home Language other than English, and this factor emerged a significant variable in the regression studies for overall academic performance but not with regard to MAM102W performance. However, as pointed out before, the first year Language and Communication Development interventions minimised the negative impact of language on the academic performance of the ECP students, which reflects in their retention and ultimate graduation success.

From all of the above it can be concluded that over and above the variables studied in the predictive validity and regression investigations, other socio-economic factors may have influenced the academic performance of the ECP students. Some of these other factors have been alluded to in the literature review, and have also been highlighted by the preliminary qualitative study of factors impacting on success of the ECP students.

4.2.5. *Investigation 5 — A composite study of AARP, Matric and UCT performance*

This investigation ranked students using their Overall AARP Average percentage scores across the PTEEP, MACH and MCOM tests, referred to as their AARP performance. These students were categorised into three groups, namely performers in the top, middle and bottom 30%. The same analysis was done with the Faculty Point as defined before and for the average academic performance at UCT. The following comparisons were obtained for the Full AARP cohort and the ECP subset for which the indicators are included in brackets. The discussion follows under each heading and makes reference to relevant correlation coefficients obtained in the earlier studies.

4.2.5.1. *Investigation 5A — A composite study of AARP and UCT performance*

Table 28 explains the content of Matrix A contrasting the Overall AARP Average performance with the average academic performance at university. This comparison provides some categorical measure of the predictive validity of the AARP tests in terms of subsequent performance at university.

TABLE 28 — PREDICTIVE VALIDITY: AARP VS UCT PERFORMANCE

		A	B
	Matrix	Top 30% AARP	Bottom 30% AARP
1	Top 30% UCT	Cell A1 — Students who scored in the top 30% of those who wrote the AARP Tests and who subsequently scored in the top 30% in terms of their overall average UCT performance *"Generally Expected/Predicted"* **High Predictive value of AARP and UCT Performance**	Cell B1 — Students who scored in the bottom 30% of those who wrote the AARP Tests and who subsequently scored in the top 30% in terms of their overall average UCT performance *"Generally Unexpected/Unpredicted"*
2	Bottom 30% UCT	Cell A2 — Students who scored in the top 30% of those who wrote the AARP Tests and who subsequently scored in the bottom 30% in terms of their overall average UCT performance *"Generally Unexpected/Unpredicted"*	Cell B2 — Students who scored in the bottom 30% of those who wrote the AARP Tests and who subsequently scored in the bottom 30% in terms of their overall average UCT performance *"Generally Expected/Predicted"* **High Predictive value of AARP and UCT Performance**

It is highly probable that students from previously disadvantaged backgrounds and poorly-resourced schools could end up in Cell A2 if no appropriate interventions are provided. It is also possible that students from well-resourced schools could end up in Cell A2.

	Matrix A	A	B
	Cohorts Aggregated	Top 30% AARP	Bottom 30% AARP
1	Top 30% UCT	26 **(ECP 3)**	13 **(ECP 6)**
2	Bottom 30% UCT	10 **(ECP 3)**	24 **(ECP 21)**

Cells A1 and B2 (generally expected/predicted) for each cohort as well as cell A2 and B1 (generally unexpected/unpredicted) have similar numbers of students in each category. This shows the incidence of students in the Top 30% AARP subsequently performing in the Top 30% UCT (A1) is as frequent as the incidence of students in the Bottom 30% AARP subsequently performing in the Bottom 30% UCT (B2).

The reverse of this phenomenon is also prevalent, i.e. students in the Top 30% AARP subsequently performing in the Bottom 30% UCT (A2) and students in the Bottom 30% AARP subsequently performing in the Top 30% UCT (B1) thus showing incidence of the predicted/expected as well as the unpredicted/unexpected. The results indicate that AARP has some predictive value in terms of subsequent performance for the students in the top 30% of the AARP performers as almost twice as many students appear in the predicted/expected categories (A1 & B2, totalling 50 of the 73 students) than in the unexpected/unpredicted categories (B1 & A2, totalling 23 of the 73 students).

As outlined in the literature review, some talented students regardless of schooling type and resources at high school do not necessarily perform as they may not have been sufficiently challenged or engaged in high school, consequently producing poor Matriculation results. However, these students score well on tests measuring potential, thus producing good AARP scores, and subsequently blossom in a rich and challenging environment such as the School of Management Studies at UCT. This has been the case for the three ECP students in cell A1 where they scored in the top 30% in terms of AARP Scores (although their matriculation scores did not meet the minimum entrance requirements) and subsequently remained in the top 30% in terms of undergraduate performance.

24 Of the 33 ECP students are in the predicted categories and 9 are in the unexpected categories. The fact that 6 out 33 ECP students are in B1 suggests the positive effect of the ECP interventions on their performance and that these ECP students did not just pass with mediocre results, but got their degree with a high achievement. The fact that only 3 of the 10 students in category A2 are ECP students, despite their low Matric point base, means that more of the equivalent mainstream students performed poorly at UCT although they had a higher Matric point base.

4.2.5.2. Investigation 5B — A composite study of Matric and UCT performance

Table 29 explains the content of Matrix B comparing the Commerce Faculty Point with the average UCT performance over the four or five years at university and provide some indication of the predictive validity of the Faculty Point in terms of subsequent performance.

TABLE 29 — PREDICTIVE VALIDITY: FACULTY POINT VERSUS UCT PERFORMANCE

		A	B
	Matrix	Top 30% FacPt	Bottom 30% FacPt
1	Top 30% UCT	Cell A1 — Students who scored in the top 30% In terms of the Faculty Point (FacPt) and who subsequently scored in the top 30% in terms of their overall average UCT performance *"Generally Expected/Predicted"* **High Predictive value of FacPt and UCT Performance**	Cell B1 — Students who scored in the bottom 30% In terms of the Faculty Point (FacPt) and who subsequently scored in the top 30% in terms of their overall average UCT performance *"Generally Unexpected/Unpredicted"*
2	Bottom 30% UCT	Cell A2 — Students who scored in the top 30% In terms of the Faculty Point (FacPt) and who subsequently scored in the bottom 30% in terms of their overall average UCT performance *"Generally Unexpected/Unpredicted"*	Cell B2 — Students who scored in the bottom 30% In terms of the Faculty Point (FacPt) and who subsequently scored in the bottom 30% in terms of their overall average UCT performance *"Generally Expected/Predicted"* **High Predictive value of FacPt and UCT Performance**

	Matrix B	A	B
	Cohorts Combined	Top 30% FacPt	Bottom 30% FacPt
1	Top 30% UCT	30 **(ECP 1)**	6 **(ECP 3)**
2	Bottom 30% UCT	9 **(ECP 0)**	31 **(ECP 25)**

Matrix B confirms the fact that the ECP students were admitted with low Matric base points as 28 out of 29 were in the bottom 30% of Faculty Point performers.

The three ECP students in cell B1 are examples of such students who scored poorly on Matric (bottom 30% FacPt), but scored in top 30% in terms of their UCT performance. This is an illustration of those students discussed in the literature review, who come from poorly-resourced schools and who have not as yet demonstrated their potential (low Matriculation Point), but when placed in a highly-resourced academic environment such as the ECP at UCT, blossom academically (in top 30% in terms of performance at UCT). This also suggests the positive impact of the ECP interventions.

Matrix B also shows that the Faculty Point proves to be a stronger predictor than the AARP scores (reflected in Matrix A) in terms of subsequent success at university since 61 of the 76 students are in the predictive categories, including 26 out of the 29 ECP students. This confirms the earlier suggestion that the AARP and Matric are measuring somewhat different constructs. It may also point to the fact that the content assessed in the matriculation examinations may be closer in to the content assessed in university examinations and that the AARP provides complementary data.

4.2.5.3. Investigation 5C — A composite study of Matric and AARP performance

Table 30 explains the content of the matrix contrasting the Commerce Faculty Point with the AARP performance and provide some information of their concurrent validity.

Table 30 — CONCURRENT VALIDITY: FACULTY POINT VERSUS AARP PERFORMANCE

		A	B
	Matrix	Top 30% FacPt	Bottom 30% FacPt
1	Top 30% AARP	Cell A1 — Students who scored in the top 30% In terms of the Faculty Point (FacPt) and who also scored in the top 30% in terms of their overall average AARP performance *"Generally Expected/Predicted"* **High Concurrent Value of AARP and FacPt**	Cell B1 — Students who scored in the bottom 30% In terms of the Faculty Point (FacPt) and who scored in the top 30% in terms of their overall average AARP performance *"Generally Unexpected/Unpredicted"*
2	Bottom 30% AARP	Cell A2 — Students who scored in the top 30% In terms of the Faculty Point (FacPt) and who scored in the bottom 30% in terms of their overall average AARP performance *"Generally Unexpected/Unpredicted"*	Cell B2 — Students who scored in the bottom 30% In terms of the Faculty Point (FacPt) and who also scored in the bottom 30% in terms of their overall average AARP performance *"Generally Expected/Predicted"* **High Concurrent Value of AARP and FacPt**

	Matrix C	A	B
	Cohorts combined	Top 30% FacPt	Bottom 30% FacPt
1	Top 30% AARP	30 (ECP 1)	6 **(ECP 4)**
2	Bottom 30% AARP	3 **(ECP 0)**	30 **(ECP 28)**

Most students in the Bottom 30% AARP and who also performed in the Bottom 30% Faculty Point (B2) are ECP students as highlighted by matrix C. This is expected as the majority of the ECP students are admitted to the ECP by virtue of not having satisfied the minimum Faculty Point requirement and the AARP scores have not been used against an applicant in the admissions process.

It is important to note the high concurrent value of the AARP and FacPt suggested by the above matrix as the majority of students in these performance categories lies in cell A1 and B2 indicating high concurrent validity of the AARP and FacPt for those students in the top and bottom 30% of the cohorts. Although it was concluded earlier in section 4.3.2 as part of Investigation 2 that the AARP and Faculty Point do not generally have a high concurrent value for all the students analysed in this sample, investigation 5C shows that the AARP tests actually associates well for the top and bottom 30% Matric performers.

The fact that there are six students in cell B1 having performed poorly on the Matriculation examinations (mostly ECP students), and being identified by the AARP as students with potential, highlights the strength of the AARP tests to identify students with potential who have not yet demonstrated that potential, as the AARP tests were designed to do. This strongly suggests that AARP provides data complementary to the Matric data and if used in conjunction with the Matric points could more accurately identify students with the potential to succeed at university. Thus, the AARP data could assist in more accurately identifying students with potential from the category of low Matric points who could be placed in an ECP environment where the appropriate interventions will minimise the risk of attrition.

4.2.5.4. Investigation 5D — Retention and graduation in relation to AARP, Faculty Point and UCT undergraduate performance

TABLE 31 — 2001 COHORT RETENTION AND PROMOTION STATISTICS (END 2005)

2001 Full AARP Cohort	**ECP**	Graduated in 4 Yrs Full **(ECP)**	Graduated in 5 Yrs Full **(ECP)**	CON Full	REN Full	REN Comparison	**REN ECP**	GAS Full
Top 30% AARP (15)	**1**	7 **(0)**	5 **(1)**	0	2	0	**0**	1
Top 30% UCT Ave (15)	**4**	11 **(0)**	4 **(4)**	0	0	0	**0**	0
Top 30% FacPt (15)	**0**	9 **(0)**	3 **(0)**	1	2	2	**0**	0
Bottom 30% AARP (15)	**10**	7 **(3)**	5 **(5)**	1	2	0	**2**	1
Bottom 30% UCT Ave (15)	**6**	2 **(0)**	4 **(1)**	4	5	2	**3**	0
Bottom 30% FacPt (15)	**11**	5 **(4)**	5 **(5)**	3	2	0	**2**	0

The ECP students are highlighted in each category

CON means that the student is academically eligible to continue
REN means that the student is academically ineligible to continue
GAS means the student left in good academic standing

Although the majority of the ECP students featured in the bottom 30% of the AARP performers, a total of eight of these ECP students graduated. Three ECP students graduated in four years and five ECP students graduated in five years as indicated in Table 31.

The three ECP students, who scored in the bottom 30% of AARP, were a subset of the four ECP students who scored in the bottom 30% in terms of Faculty point and yet they graduated in four years. Nine out of the 10 students who scored in the Bottom 30% AARP graduated in four or five years. Thus 90% of the 2001 ECP students, who based on their Matric and AARP pre-admission data were predicted to most likely not succeed, "overturned" the prediction for success. It can be concluded that this is a direct consequence of the ECP social and academic integration interventions described in this study.

The two Comparison students who were academically excluded were both in the Top 30% in terms of Faculty performance. Further investigation into these case studies may provide some explanation for the failures.

TABLE 32 — 2002 COHORT RETENTION AND PROMOTION STATISTICS (END 2005)

2002 Full Cohort	**ECP**	Graduated in 4 Yrs Full	**Graduated in 4 Yrs ECP**	CON Full	REN ALL	REN Comparison	**REN ECP**	GAS Full
Top 30% AARP (21)	**1**	13	**1**	4	3	2	**0**	1
Top 30% UCT Ave (21)	**2**	17	**1**	4	0	0	**0**	0
Top 30% FacPt (21)	**1**	14	**1**	4	2	2	**0**	1
Bottom 30% AARP (21)	**14**	7	**4**	12	1	1	**0**	1
Bottom 30% UCT Ave (21)	**10**	2	**2**	11	5	5	**0**	3
Bottom 30% FacPt (21)	**16**	6	**3**	13	0	0	**0**	1

The ECP students are highlighted in each category

Although three ECP students scored in the bottom 30% with regard to Faculty Point, none of them was excluded academically, in fact these three students graduated in four years. This may be because these students blossomed in the rich and challenging academic environment and/or thrived in the academically supportive impact of the ECP environment. Equally astounding is the fact that four of the students who were in the bottom 30% in terms of their AARP performance, graduated in four years.

The five mainstream students who were academically excluded were from the Comparison group and hence from previously disadvantaged backgrounds. Two of these excluded Comparison group students scored in the top 30% AARP and two scored in the top 30% FacPt and only 1 scored in the

bottom 30% AARP. Again this may point favourably to the support that the ECP provides to the students who come in with fewer than the requisite points.

TABLE 33 — 2003 COHORT RETENTION AND PROMOTION STATISTICS (END 2005)

2003 Full AARP Cohort	ECP	Retention 3 Yrs Full	Retention 3 Yrs ECP	CON Full	REN Full	REN Comparison	REN ECP	GAS Full
Top 30% AARP (20)	**4**	20	**4**	20	0	0	**0**	0
Top 30% UCT Ave (20)	**4**	20	**4**	20	0	0	**0**	0
Top 30% FacPt (20)		20		19	1	0		0
Bottom 30% AARP (20)	**13**	19	**12**	13	6	0	**4**	1
Bottom 30% UCT Ave (20)	**17**	16	**15**	9	9	0	**7**	2
Bottom 30% FacPt (20)	**17**	18	**15**	12	8	0	**6**	0

The ECP students are highlighted in each category

Table 33 shows that despite the fact that the majority of ECP students ranked in the bottom 30% in terms of their Faculty Point and AARP scores, most students reached the end of third year. The two Comparison students (out of a total of 18) who were academically excluded did not appear in any of the categories listed in the table above. This means that the two students who were excluded over and above the seven ECP students were not from previously disadvantaged backgrounds.

Of the 13 ECP students who were in the bottom 30% AARP, only four were excluded, but six out of the 17 ECP students who were in the bottom 30% FacPt were excluded. Exclusions in both these categories were almost "expected" based on the predictive value of AARP and Matric but it does not make the AARP more or less effective than the Matric at predicting success or failure. This is confirmed by the fact that almost the same number of students were retained for more than three years despite being in the bottom 30% AARP (13) and the bottom 30% FacPt (12).

TABLE 34 — GRADUATION STATISTICS FOR FULL ECP 2001 TO 2004 COHORT

Cohort	Year of graduation	BBusSc	BCom	Total	No of Graduates	Total Registered	% Graduation Rate
2001	2004	4	2	**6**			
	2005	17	3	**20**			
	2006	3	2	**5**	**31**	**46**	**67.39**
2002	2005	14	4	**18**			
	2006	7	6	**13**	**31**	**54**	**57.41**
2003	2006	9	10	**19**	**20**	**66**	**30.30**
2004	2006	0	1	**1**	**1**		
	Total	**54** (66%)	**28** (34%)	**82**		**166**	**49.40**

Although this study covers the period from 2001 to 2005, the 2006 statistics have been included for the sake of completion. The graduation statistics indicate that the ECP interventions are making a difference since the majority of the "at risk" students, based purely on Matriculation examination results, eventually passed their first year of study and 66% of the ECP graduates obtained a BBusSc (54) and 34% of the ECP graduates obtained a BCom degree (27) as reported in Table 39.

4.2.5.5. Key findings

The fact that there are students who performed poorly on the Matriculation examinations (bottom 30%) who performed in the top 30% in AARP and as such were identified as students with potential, highlights the strength of the AARP tests to identify students with high potential who have not yet demonstrated that potential, as these admissions tests were designed to do.

Although it was concluded in correlation terms that the AARP and Faculty Point do not generally have a high concurrent value for all the students analysed in this sample, this categorical investigation shows that the AARP actually predicts very well for the high Matric as well as for the poor Matric achievers.

The graduation and retention studies concluded that although most of the ECP students scored in the bottom 30% with regard to Faculty Point, some of them graduated in four years. Similarly some students were in the bottom 30% in terms of their AARP performance and yet graduated in four years. These remarkable achievements suggest that the ECP interventions had a positive impact on their academic performance.

The composite investigations strongly suggest that AARP provides data complementary to the Matric data. In particular, the AARP data could assist in more accurately identifying students with potential from the category of low Matric points who could be placed in an ECP environment where the appropriate interventions will minimise the risk of attrition.

4.3. Summary

The key findings summarised at the end of each investigation have been consolidated into the significant findings in the concluding chapter. These findings form the basis of the educational implications and the recommendations for future research in this area, which are contained in the concluding chapter.

5. CHAPTER FIVE — SUMMARY AND CONCLUSIONS

5.1 Introduction

This chapter provides a summary of the significant findings and highlights some educational implications of these findings. This is followed by a discussion of the remaining issues and the limitations of strictly applying quantitative measures for making decisions regarding preparedness for university study. Suggestions are made for further research to corroborate the findings of this study and for practical applications.

5.2 Summary of significant findings

The BBusSc ECP students did not meet the minimum Matriculation entrance requirements as specified for the BBusSc degree programme and therefore were at high risk of failure, but they still managed to graduate or survive at a similar rate as the Comparison group students who met the entrance requirements. The exclusion rates for both the Comparison and ECP groups studied were small, but similar. This is suggesting that the ECP interventions had a positive effect on the overall academic performance of the ECP students and meant their chances of graduation from a lower Matric Point base were similar to equivalent mainstream students with higher Matric Point base.

The general pattern emerging from the investigation with regard to the concurrent validity of the AARP and Matriculation scores, is that these two sets of data correlate weakly to moderately, suggesting that the Matriculation examinations and the AARP tests are measuring somewhat discrete constructs and thereby providing us with complementary sets of pre-admission data.

This investigation also provided repeated evidence indicating the relative absence of effect of the double-weighting practice as the investigation yielded no correlation evidence to suggest that the double-weighting of Matric Mathematics and Matric English makes any difference to the value of school data for predicting subsequent performance.

The predictive validity investigation found no statistically significant correlation between the pre-admission variables studied and subsequent academic performance, except in the few cases where the Matric Mathematics was significant. The fact that the Matric Mathematics emerged as the best predictor, but not significantly so for all the groups studied, together with the fact that the Matric English has little or no value in predicting future academic success for these students, presents a real

dilemma as these subjects are double-weighted in the admissions process for the Commerce applicants.

The Faculty Point is derived from the Matric Point by means of double-weighting the Matric English and Mathematics symbols. However, both of these show equally insignificant correlations with subsequent academic performance for the ECP and Comparison aggregated groups. This also suggests that the double-weighting of the Matric Mathematics and English has no justification in predictive terms for the three-year sample studied.

The linear correlation investigations revealed the Matric Mathematics as the best overall predictor in terms of performance in MAM102W as well as for performance across the first two academic years of study. The findings indicate that generally both the AARP scores and the Faculty Point are not strong predictors of subsequent academic success or that curriculum "overturns" direct (correlational) relationships. This suggests that there were other factors that impacted on pre-admission performance as well as on the academic performance of the 2001 to 2003 cohorts of students while they were at university. The Matric Mathematics performance is the strongest predictor of success but has less influence at the higher levels of the BBusSc degree programme.

In correlation terms, the Matric Mathematics produced the most consistently positive and highest correlations for students from all backgrounds and the Matric Point emerged as the second best predictor of future academic success.

The regression studies provide evidence to suggest that PTEEP contributes most often to variation in terms of performance in MAM102W of the ECP and Comparison Groups, but that there are factors other than those studied that impacted on the MAM102W performance.

The regression studies for all the groups yielded the PTEEP, Matric, and Matric Maths/MACH (in that order) as the most influential factors in terms of future academic performance for the ECP and Comparison Cohorts. The AARP data is more significant in terms of explaining the variation in Mathematics and subsequence academic performance for the Comparison groups.

There are cases where the significant variables did not account for much of the variation in performance and this signals once again that other factors, including the socio-economics factors identified in the preliminary study impacted largely on performance for the ECP and Comparison Groups.

According to the Schooling data collected and flowing from the regression studies it is evident that Schooling did not influence subsequent academic performance which makes sense since a very small percentage of the students studied were from Ex-DET schools.

More than 40% the ECP students studied had a Home Language other than English, and this factor emerged as a significant variable in the regression studies for overall academic performance but not with regard to MAM102W performance. The retention and ultimate graduation success suggest that the first year Language and Communication Development interventions minimised the negative impact of language on the academic performance of the ECP students.

The overall conclusion of the predictive validity and regression investigations was that in addition to the variables studied, other socio-economic factors influenced the academic performance of the ECP students. Some of these other factors have been alluded to in the literature review, and have also been highlighted by the preliminary qualitative study of factors impacting on success of the ECP students.

The fact that there are students who performed poorly on the Matriculation examinations (bottom 30%) and performed in the top 30% in AARP and as such were identified as students with potential, highlights the strength of the AARP tests to identify students with high potential who have not yet demonstrated that potential, as the AARP tests were designed to do.

Although the overall AARP Average and Faculty Point do not generally have a high concurrent value for the students analysed in this sample, further investigations showed that the AARP tests actually predict very well for the top and bottom 30% Matric performers. This means that AARP predicts well for the high Matriculation achievers as well as for the poor Matriculation achievers. This result is very encouraging since the AARP tests have been designed to spread out the high end and bottom end achievers.

The graduation and retention studies concluded that although 28 out of 29 of the ECP students scored in the bottom 30% with regard to Faculty Point, some of them graduated in four years. Similarly some students were in the bottom 30% in terms of their AARP performance and yet graduated in four years. These remarkable achievements suggest that the interventions strongly enhance the chances for the ultimate success of these students. It can be concluded that it is this very provision that is responsible for "overturning" the predictions that could be made by the AARP and Matriculation Scores for the ECP students. The dilemma lies in the fact that we wish to show that

- Placement—Supporting the process of placement of students into relevant academic development programmes, including Extended Curriculum Programmes;
- Diagnostic—Diagnosing specific areas of development that are assessed and facilitate early intervention for "at-risk" students

As discussed in the literature review under the nature of the AARP tests, the fact that there is no oral or aural component to any of the AARP tests may provide a measure of understanding and meaning to the lack of concurrent correlation between Matric English and PTEEP as they focus on different aspects of language proficiency and suggest that they measure different constructs. The BBusSc degree demands a high level of language proficiency both orally, aurally and written. This could provide more incentive for the Commerce faculty to value both the PTEEP score and the Matric English symbol in future admissions.

Another educational implication emanating from this research is the fact that not all variable factors impacting on performance prior to admission and once at university have been incorporated in this study as indicated by the fact that in most regressions only up to 75% of the variance has been explained by the variables studied.

This means that other non-academic factors are affecting academic performance. These psycho-social factors may impose unnecessary stress and result in non-attendance of lectures and tutorials and sometimes disengagement of a serious degree. Mainstream academics cannot always make up or compensate for a lack of foundation skills, but academics also have a role to play in student stress management and should be aware when students are stressed by course material and should provide academic interventions as and when required. This can be reasonably concluded from the evidence that the ECP academic interventions, incorporating different ways of addressing content, impacted hugely on academic performance of the ECP students, despite their apparent low Matric performance. The retention and graduation statistics for the ECP, in comparison with their equivalent group within the mainstream (Comparison group) indicate that the different treatment of the subject matter within the specialised interventions disrupt the expected pattern retention and graduation of the ECP students. Since the Comparison and ECP groups performed similarly in terms of survival and attrition, it can be concluded that the social and academic integration interventions amplifies the difference between pre-admission data and subsequent university performance of the ECP students.

This study suggests that factors, other than those examined by this quantitative study, impact on academic performance. The preliminary ECP study has shown that stress factors impacting on students while at university differ substantially from those that they have experienced before, and stress management workshops could be on the use of positive coping strategies and on avoidance of

strategies such as denial and behavioural disengagement. In terms of effective social integration of students from disadvantaged backgrounds, the Commerce Faculty could consider incorporating stress management training in the induction or orientation programmes which can be followed up by periodic refresher workshops during the academic year.

5.4 Limitations and remaining issues

A few characteristics of this study limit the generalisability of the results. The sample numbers are relatively small in each of the subsets as this study reports only on the entrance and subsequent UCT performance of students who have written the AARP tests as part of their application process to UCT. These students are not compared with those students who have been admitted in the years 2001 to 2003 solely on the basis of their Matriculation results and who have not written the AARP tests. This decision was taken to confine the scope of the study.

This means that general conclusions could not be made about all BBusSc students based on trends seen for the 2001 to 2003 cohorts tracked over a five-year period. In addition to this, not all students in these cohorts would have been able to graduate in the period 2001 to 2005 as the BBusSc usually takes four years to complete whilst the ECP students have five years to complete the degree. However, the third cohort still provides valuable information about academic progression.

The context and approach to the Matriculation Examinations have also changed during the period of this study which may introduce new factors impacting on pre-admission performance and performance at the undergraduate level. Since validity requires both reliability and consistency to be satisfied, this is difficult to achieve while the South African Senior Schools have changed so dramatically in terms of teaching, learning and assessment methods and outcomes and in the preparation for the Matriculation examinations. In addition to this, due to the upsurge in the demand for the BBusSc degree and the actual number of places available, Commerce Faculty increased its minimum requirements for admission which made entry into the faculty even more competitive. Over the period 2001 to 2003 the entrance requirements increased from 50 to 54 points for the BBusSc degree. This was done in response to the perceived grade creep as the Matriculation results were adjusted differently over the three-year period.

This study did not delve into the impact of the above but will acknowledge that the full picture will not be revealed by the findings of this study although the AARP tests and the results have been stable in the changing education environment.

Although a series of regression analyses have been performed on all the variables considered for the total population included in the study as well as for the disaggregated subgroups of the study, the number of viable cases included in some regressions on the subgroups was too small and rendered the results ineffective. These have been excluded where justified.

This study has a major focus on quantitative analysis. There is acknowledgment that there are other equally important factors impacting on success that can only be determined qualitatively and those factors have not been considered by this study. The above-mentioned limitations have been imposed by the timing and the period (2001 to 2005) of this research study as well as the scope of this minor dissertation.

A number of challenges remain for the AARP tests and are summarised below.

TABLE 35 — ONGOING CHALLENGES FOR AARP

Ongoing Validity Challenges	AARP Unit Challenges	Applicant Challenges	Admissions Challenges
Defensibility of the **Construct Validity** as well as **Content Validity** of the AARP Tests when testing across the spectrum of applicants in the South African context	Ensuring that the **purposes** of the AARP tests are clear. The perception of the actual significance and utilisation of the AARP scores. The changing admissions testing landscape in South Africa and the new national testing initiatives	**Consequential Validity:** The effects of the AARP tests on all stakeholders, especially personal consequences for the test writers. The relative value of the AARP test scores and Matriculation Results, their importance in application to study at a specific HEI	**Consequential Validity:** Appropriate **interpretation** and **utilisation** of the AARP Tests scores and Matriculation results
Providing scientific/empirical evidence of reliability and **predictive validity**	The actual value in predicting academic success at tertiary level; and the **concurrent** use of AARP scores and Matriculation results	How do prospective applicants prepare for these tests?	**Face validity:** Social consequences and the perception of power and control that is still prevalent in our society

(Adapted from an analysis done By Tim McNamara (2001) on the competing demands of classroom-based assessment)

With regard to the Matriculation Examination results, it is imperative that we ensure that the scores are believable, credible and fair to both those who write the examinations and to those who will interpret and use the results for admission purposes.

5.5 *Recommendations for future research*

This research found no justification or merit in the double-weighting of the Matric Mathematics and English. Future research could verify that these two proficiency areas are indeed appropriately valued in the admissions process for Commerce students. It would be useful to expand this study to all Commerce students in the 2001 to 2003 cohorts, including those who did not write the AARP tests as applicants, to confirm whether the double-weighting of these two Matric subjects were actually justified in the admissions process.

The AARP tests are still not compulsory for Commerce applicants to UCT. The findings on the complementarity of the AARP and Matric data, suggest that the MACH and PTEEP could offer another measure of quantitative and language comprehension proficiency which might provide a better measure of future academic success for commerce students if considered in conjunction with the Matric Mathematics and English results. In order to further examine the relative value of the AARP and the Matric, it is recommended that all Commerce students who wrote the AARP tests for the period 2004 to 2006 be analysed in a similar manner to look for any trends that may exist.

Qualitative research methods may be the best way to gain a deeper understanding of the factors impacting on success. An examination of these factors could give more insight into the aspects of support provided by the ECP that may be beneficial to all Commerce students irrespective of their entrance data.

This study considered measurable data available upon admission and during undergraduate performance at university. It was concluded that other factors contribute to retention, departure or success at university and that the role played by these emotional, psychological, social and academic factors is complex. This quantitative study could be further illuminated if accompanied by qualitative research to establish the factors that impacted positively on the academic success the BBusSc ECP students who did not meet the faculty minimum requirements for admission, but nonetheless succeeded academically. The factors that impacted negatively or positively on the academic performance of all subgroups of students (ECP, Mainstream, Comparison groups) could be qualitatively determined. The outcomes of this study could be of benefit to academic staff as well as future students in the Commerce Faculty. This could incorporate the factors impacting strongly on a student's decision to leave the university in good academic standing so that the effects of these variables can be minimised in future.

With regards to the validity of the Matric, it would be prudent to conduct predictive validity studies of the Matriculation examinations as they are at present and in view of the changes in matriculation examination approaches, reporting and interpretation of results that will be implemented in 2008.

In my understanding of the bigger picture, the role of the AARP has shifted from being an additional tool to aid admissions to being an integral part of admissions and as such Admissions Tests have become significantly more important. The future role of the AARP tests needs to be carefully evaluated especially in view of major changes made at secondary school level. The context has changed dramatically as the South African school leaving examination system has undergone dramatic change in terms of the overall curriculum, its content, the forms of formative and summative assessment, the reporting of results and the interpretation thereof by tertiary institutions. We will also have to establish the role of the AARP tests in relation to the National Benchmarking Tests which will soon be introduced into the South African school leaving system. Future research must include the impact university performance of all the changes implemented to the Matriculation Curriculum and assessment and how this impact on the role that AARP plays within this new landscape.

5.6 Conclusion

This study has been designed to explore the value of the AARP and Matric results in predicting success in the BBusSc degree at UCT. The conclusions presented here were predominantly gleaned from a small-scale quantitative analysis (correlation, regression and survival analyses for the period 2001 to 2005) of the students in the 2001 to 2003 cohorts who were admitted to the BBusSc degree who had written the AARP tests as applicants to UCT.

The Matric Mathematics and English subjects, the overall Matric results (calculated as weighted average to give a Faculty entrance score) were compared in several ways with the AARP scores to give a sense of the concurrent validity and then the Matric and AARP results were compared with the first year Mathematics and the performance for each academic year of study to provide a sense of the predictive validity of the Matriculation and AARP scores in predicting undergraduate performance generally as well as in first year university Mathematics course. In addition to this, the correlation between the various test scores and rankings, and relevant demographics were examined in relation to the undergraduate performance of the three cohorts studied.

While the findings of this study offer conclusive evidence about the lack of validity of the AARP Performance as a predictor of academic success in the BBusSc Extended Curriculum Programme, it is clear that of the three tests, the PTEEP shows the strongest correlation. While the English

language is one of the important factors contributing to academic success, performance in Matric Mathematics appears to be the most important factor contributing to academic success in the undergraduate BBusSc performance.

This work contributed to the understanding of the complex nature of factors impacting on academic success by analysing the value of all data available upon admission and confirming the fact that additional factors other than academic factors may impact on academic success or failure or drop-out.

It may be the case that the Matric Point is a good predictor of academic success but the addition of the AARP scores could yield a significant improvement in the predictive validity of all data available upon admission. In addition to this the use of the AARP tests, which are relatively independent of language bias, could reduce the inequities resulting from the varying standards of school preparation especially in the SA context and could certainly benefit both the applicant and the institution enrolling the applicant. As such the AARP tests constitute a valid measuring instrument of student preparation and potential to succeed beyond the information provided by the senior school leaving examinations.

The AARP diagnostic data could facilitate early intervention for students identified as lacking in certain core Mathematics and English language skills. The AARP diagnostic analysis could also be more effectively utilised for the placement of students who based on their AARP results do not have the requisite quantitative and English Language proficiency to proceed with their undergraduate study without appropriate intervention.

There are a number of issues impacting on the actual value of the Matric and AARP data. For example, the diverse schooling backgrounds that are still prevalent in South Africa, how we define disadvantage at this stage in our history if we are trying to address the inequities of the past in the education arena, the fact that many students from previously disadvantaged backgrounds are now in well resourced schools, placement of students for specific extended curriculum programmes or programmes that are in high demand, the perceptions of the tests among applicants, the AARP tests and Matric examinations in relation to other national testing initiatives, the education process for the end-users of the AARP results in the various faculties, the questions around the standard of the Matric Examinations, as well as the actual level of preparedness of matriculants for undergraduate study.

Over the past five years it has been observed that the Matriculation scores often do not distribute students at the top end adequately as it has become more common for students to achieve at least

six distinctions. The AARP tests have provided a better ranking of applicants in this category. The role of the AARP tests have also shifted from being used as an additional instrument, generally used for placement purposes (how student would cope in a mediated environment) and diagnostic purposes (assessment of thinking and other cognitive skills, linguistic skills, etc.) to one which is strongly used for selection purposes within UCT (Humanities and Health Science faculties) and other universities (for example, University of Pretoria). As such the perceived value has strengthened as the demand for entry into university from previously disadvantaged communities has increased considerable over the past decade and HEIs have an even stronger obligation to admit applicants responsibly to undergraduate degree programmes.

The issue of whether a high level of Mathematics and English proficiency can indeed give any indication of future academic success in the case of BBusSc students at UCT is a complex one and has been questioned by this study in several different ways. The study found repeated evidence to suggest that the double-weighting has little effect on predicting future academic performance.

The findings of the retention and comparative study of AARP and UCT performance, specifically on the ECP students who did not necessarily meet the Faculty entrance requirements, suggest in no uncertain terms that these students have the potential to succeed academically provided that the appropriate interventions are in place.

The overall conclusion is that the AARP tests have value in predicting success of the BBusSc students at undergraduate level and add complementary data to that provided by the Matriculation results. This study shows that the interventions provided by the ECP support systems tend to "overturn" the predictive value that could be provided by the AARP tests and the Matriculation Examination results and the most effective way to utilise the AARP information for the ECP purposes is to utilise the scores and diagnostic analyses for placement and the provision of appropriate interventions. This study found no evidence to suggest that the AARP tests perform significantly better or worse than the Matriculation indicators in predicting university performance for students from socio-economically deprived backgrounds, but rather that there is complementary value in considering both sets of data which are valuable for multiple purposes, including, selection, diagnostic and placement purposes.

We must continue to gather intelligence on this in order to improve the effectiveness of the selection processes employed in getting the right students into the right programme to guarantee the mutual success of the student, the programme and the institution.

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the AARP has predictive value and simultaneously to use this finding to ensure that ECP students succeed in spite of their educational background and performance.

5.3 Educational implications of significant findings

This study found no evidence to suggest that those students who did not meet the Commerce faculty entrance criteria but were nonetheless admitted to the BBusSc degree programme via the ECP were destined to fail. In fact, the findings suggest that given the appropriate intervention, students succeed despite their low Matric base point.

The Commerce Faculty administration still has the power to determine the relative value of the AARP in relation to the Matriculation score as the Matric score is still deemed most acceptable in terms of admissions. In terms of doubling the Matric Mathematics and English score, this study found no justification for the double-weighting of Mathematics and English. In fact, the complementarity of the AARP and Matric surfaced frequently in a variety of ways and could be valuable in terms of future selection and admissions into both the ECPs and mainstream programmes.

The implication of the composite studies for selection purposes is that the AARP is valuable in identifying talented students from previously disadvantaged backgrounds, with low Matric points for the Extended Curriculum Programmes where the social and academic interventions will minimise the risk of attrition. In addition to this, the AARP and Matric **together** enhance the chances of selecting students who are likely to be successful.

From the findings it is clear that the AARP is providing a different measure from the Matriculation results. This is evident in the fact that a number of ECP students who scored poorly both on the Faculty and the AARP scores have succeeded.

In view of the findings of this study admissions tests offer important benefits to any tertiary institution by providing additional information about an applicant's ability and potential to succeed. The UCT Alternative Admissions Project tests are valuable in the following ways:

- Measuring Preparation and Achievement—Assessment of academic preparation and achievement upon entry to university;
- Measuring Potential—Predicting success at university beyond that predicted by the Matriculation examinations;

APPENDIX

Concurrent correlation studies: 2001 to 2003 disaggregated groups

Table 36 — Concurrent Correlation 2001 ECP

Marked Correlation are significant at p < .05000

N=15 (Casewise deletion of missing data)

Variables	1	2	3	4	5	6	7	8
1. FacPt	1.00	0.98	0.39	-0.20	0.34	0.22	0.63	0.22
2. MatPt	0.98	1.00	0.32	-0.21	0.31	0.17	0.54	0.13
3. Overall PTEEP Percent	0.39	0.32	1.00	-0.11	0.64	0.69	0.70	-0.21
4. Overall MACH Percent	-0.20	-0.21	-0.11	1.00	-0.03	0.53	-0.23	0.13
5. Overall MCOM Percent	0.34	0.31	0.64	-0.03	1.00	0.77	0.48	-0.13
6. Overall AARP Average	0.22	0.17	0.69	0.53	0.77	1.00	0.41	-0.08
7. Matric English %	0.63	0.54	0.70	-0.23	0.48	0.41	1.00	-0.23
8. Matric Mathematics %	0.22	0.13	-0.21	0.13	-0.13	-0.08	-0.23	1.00

Table 37 — Concurrent Correlation 2001 Comparison

Marked Correlation are significant at p < .05000: N=15 (Casewise deletion of missing data)

Variables	1	2	3	4	5	6	7	8
1. FacPt	1.00	1.00	-0.29	0.26	-0.28	-0.10	-0.28	0.03
2. MatPt	1.00	1.00	-0.25	0.22	-0.30	-0.11	-0.29	-0.01
3. Overall PTEEP Percent	-0.29	-0.25	1.00	-0.25	0.01	0.19	0.40	-0.41
4. Overall MACH Percent	0.26	0.22	-0.25	1.00	0.52	0.79	-0.12	0.79
5. Overall MCOM Percent	-0.28	-0.30	0.01	0.52	1.00	0.86	0.03	0.26
6. Overall AARP Average	-0.10	-0.11	0.19	0.79	0.86	1.00	0.08	0.47
7. Matric English %	-0.28	-0.29	0.40	-0.12	0.03	0.08	1.00	-0.25
8. Matric Mathematics %	0.03	-0.01	-0.41	0.79	0.26	0.47	-0.25	1.00

Table 38 — Concurrent Correlation 2002 ECP

Marked Correlation are significant at p < .05000: N=19 (Casewise deletion of missing data)

Variables	1	2	3	4	5	6	7	8
1. FacPt	1.00	0.97	0.57	0.63	0.54	0.67	0.42	0.63
2. MatPt	0.97	1.00	0.58	0.50	0.51	0.60	0.31	0.46
3. Overall PTEEP Percent	0.57	0.58	1.00	0.63	0.61	0.82	0.42	0.15
4. Overall MACH Percent	0.63	0.50	0.63	1.00	0.61	0.86	0.64	0.49
5. Overall MCOM Percent	0.54	0.51	0.61	0.61	1.00	0.90	0.54	0.19
6. Overall AARP Average	0.67	0.60	0.82	0.86	0.90	1.00	0.63	0.32
7. Matric English %	0.42	0.31	0.42	0.64	0.54	0.63	1.00	0.04
8. Matric Mathematics %	0.63	0.46	0.15	0.49	0.19	0.32	0.04	1.00

Table 39 — Concurrent Correlation 2002 Comparison

Marked Correlation are significant at p < .05000

N=21 (Casewise deletion of missing data)

Variables	1	2	3	4	5	6	7	8
1. FacPt	1.00	0.97	0.49	0.27	0.52	0.58	0.55	0.60
2. MatPt	0.97	1.00	0.42	0.16	0.43	0.46	0.43	0.52
3. Overall PTEEP Percent	0.49	0.42	1.00	0.05	0.66	0.73	0.72	-0.06
4. Overall MACH Percent	0.27	0.16	0.05	1.00	0.21	0.58	0.14	0.43
5. Overall MCOM Percent	0.52	0.43	0.66	0.21	1.00	0.87	0.56	0.18
6. Overall AARP Average	0.58	0.46	0.73	0.58	0.87	1.00	0.62	0.28
7. Matric English %	0.55	0.43	0.72	0.14	0.56	0.62	1.00	-0.11
8. Matric Mathematics %	0.60	0.52	-0.06	0.43	0.18	0.28	-0.11	1.00

Table 40 — Concurrent Correlation (2003 ECP)

Marked Correlation are significant at p < .05000

N=23 (Casewise deletion of missing data)

Variables	1	2	3	4	5	6	7	8
1. FacPt	1.00	0.97	0.03	0.17	-0.09	0.05	0.58	0.42
2. MatPt	0.97	1.00	0.13	0.08	-0.11	0.03	0.49	0.30
3. Overall PTEEP Percent	0.03	0.13	1.00	0.10	0.54	0.68	-0.08	-0.24
4. Overall MACH Percent	0.17	0.08	0.10	1.00	0.55	0.73	-0.10	0.60
5. Overall MCOM Percent	-0.09	-0.11	0.54	0.55	1.00	0.91	-0.20	0.21
6. Overall AARP Average	0.05	0.03	0.68	0.73	0.91	1.00	-0.17	0.26
7. Matric English %	0.58	0.49	-0.08	-0.10	-0.20	-0.17	1.00	-0.16
8. Matric Mathematics %	0.42	0.30	-0.24	0.60	0.21	0.26	-0.16	1.00

Table 41 — Concurrent Correlation (2003 Comparison)

Marked Correlation are significant at p < .05000

N=17 (Casewise deletion of missing data)

Variables	1	2	3	4	5	6	7	8
1. FacPt	1.00	0.94	0.34	0.61	0.58	0.67	0.62	0.60
2. MatPt	0.94	1.00	0.33	0.48	0.45	0.54	0.61	0.57
3. Overall PTEEP Percent	0.34	0.33	1.00	0.32	0.10	0.51	0.54	0.38
4. Overall MACH Percent	0.61	0.48	0.32	1.00	0.70	0.93	0.23	0.76
5. Overall MCOM Percent	0.58	0.45	0.10	0.70	1.00	0.83	0.20	0.42
6. Overall AARP Average	0.67	0.54	0.51	0.93	0.83	1.00	0.37	0.70
7. Matric English %	0.62	0.61	0.54	0.23	0.20	0.37	1.00	0.36
8. Matric Mathematics %	0.60	0.57	0.38	0.76	0.42	0.70	0.36	1.00

Concurrent correlation studies: 2001 – 2003 aggregated cohorts

Table 42 — Concurrent Correlation 2001 - 2003 ECP

Marked Correlation are significant at p < .05000

N=57 (Casewise deletion of missing data)

Variables	1	2	3	4	5	6	7	8
1. FacPt	1.00	0.97	0.31	0.26	0.28	0.34	0.58	0.47
2. MatPt	0.97	1.00	0.33	0.18	0.26	0.30	0.47	0.34
3. Overall PTEEP Percent	0.31	0.33	1.00	0.41	0.62	0.79	0.24	-0.04
4. Overall MACH Percent	0.26	0.18	0.41	1.00	0.54	0.81	0.11	0.42
5. Overall MCOM Percent	0.28	0.26	0.62	0.54	1.00	0.88	0.21	0.16
6. Overall AARP Average	0.34	0.30	0.79	0.81	0.88	1.00	0.22	0.24
7. Matric English %	0.58	0.47	0.24	0.11	0.21	0.22	1.00	-0.06
8. Matric Mathematics %	0.47	0.34	-0.04	0.42	0.16	0.24	-0.06	1.00

Table 43 — Concurrent Correlation 2001 - 2003 Comparison

Marked Correlation are significant at p < .05000

N=53 (Casewise deletion of missing data)

Variables	1	2	3	4	5	6	7	8
1. FacPt	1.00	0.99	0.04	0.22	0.08	0.17	0.10	0.23
2. MatPt	0.99	1.00	0.03	0.16	0.03	0.11	0.06	0.18
3. Overall PTEEP Percent	0.04	0.03	1.00	0.11	0.34	0.54	0.56	-0.01
4. Overall MACH Percent	0.22	0.16	0.11	1.00	0.47	0.79	0.05	0.61
5. Overall MCOM Percent	0.08	0.03	0.34	0.47	1.00	0.84	0.32	0.28
6. Overall AARP Average	0.17	0.11	0.54	0.79	0.84	1.00	0.36	0.46
7. Matric English %	0.10	0.06	0.56	0.05	0.32	0.36	1.00	-0.02
8. Matric Mathematics %	0.23	0.18	-0.01	0.61	0.28	0.46	-0.02	1.00

Predictive correlation studies: Aggregated cohorts

Table 44 — Predictive Correlation 2001 - 2003 ECP Aggregated

Marked Correlation are significant at p < .05000

N=54 (Casewise deletion of missing data)

Variables	Maths 1	AYOS 1	AYOS2
1. FacPt	0.26	0.45	0.35
2. MatPt	0.24	0.47	0.44
3. Overall PTEEP Percent	-0.20	0.11	0.06
4. Overall MACH Percent	0.16	0.12	-0.20
5. Overall MCOM Percent	-0.02	0.03	-0.06
6. Overall AARP Average	-0.01	0.10	-0.09
7. Matric English %	-0.06	0.08	0.06
8. Matric Mathematics %	0.40	0.24	-0.04

Table 45 — Predictive Correlation 2001 - 2003 Comparison Aggregated

Marked Correlation are significant at p < .05000

N=50 (Casewise deletion of missing data)

Variables	Maths 1	AYOS1	AYOS2
1. FacPt	0.07	0.11	0.10
2. MatPt	0.07	0.09	0.08
3. Overall PTEEP Percent	-0.10	0.12	0.05
4. Overall MACH Percent	0.27	0.25	0.14
5. Overall MCOM Percent	0.10	0.25	0.12
6. Overall AARP Average	0.16	0.29	0.15
7. Matric English %	-0.12	0.12	0.09
8. Matric Mathematics %	0.43	0.54	0.38

Predictive correlation studies: 2001 to 2003 Disaggregated groups

Table 46 — Predictive Correlation 2001 ECP Marked Correlation are significant at p < .05000 N=14 (Casewise deletion of missing data)			
Variables	Maths 1	AYOS 1	AYOS 2
1. FacPt	0.29	0.44	**0.71**
2. MatPt	0.31	**0.50**	**0.73**
3. Overall PTEEP Percent	-0.22	-0.20	0.15
4. Overall MACH Percent	-0.36	-0.42	**-0.66**
5. Overall MCOM Percent	-0.16	-0.36	0.08
6. Overall AARP Average	-0.38	**-0.50**	-0.27
7. Matric English %	-0.21	-0.10	0.29
8. Matric Mathematics %	0.42	0.21	0.14

Table 47 — Predictive Correlation 2001 Comparison Marked Correlation are significant at p < .05000 N=14 (Casewise deletion of missing data)			
Variables	Maths 1	AYOS 1	AYOS 2
1. FacPt	-0.09	-0.20	-0.13
2. MatPt	-0.11	-0.22	-0.14
3. Overall PTEEP Percent	-0.45	-0.46	-0.47
4. Overall MACH Percent	0.30	0.19	0.10
5. Overall MCOM Percent	0.03	0.07	0.03
6. Overall AARP Average	0.04	0.00	-0.08
7. Matric English %	-0.39	-0.21	-0.21
8. Matric Mathematics %	0.49	**0.52**	0.38

Table 48 — Predictive Correlation 2002 ECP Marked Correlation are significant at p < .05000 N=18 (Casewise deletion of missing data)			
Variables	Maths 1	AYOS 1	AYOS 2
1. FacPt	0.38	**0.56**	0.28
2. MatPt	0.36	**0.54**	0.37
3. Overall PTEEP Percent	-0.28	-0.02	-0.05
4. Overall MACH Percent	0.16	0.23	0.07
5. Overall MCOM Percent	0.00	0.19	0.25
6. Overall AARP Average	-0.02	0.18	0.14
7. Matric English %	0.06	0.28	0.00
8. Matric Mathematics %	0.34	0.34	-0.03

Table 49 — Predictive Correlation 2002 Comparison			
Marked Correlation are significant at p < .05000			
N=20 (Casewise deletion of missing data)			
Variables	Maths 1	AYOS 1	AYOS 2
1. FacPt	0.34	0.42	0.41
2. MatPt	0.43	0.39	0.42
3. Overall PTEEP Percent	-0.15	0.30	0.09
4. Overall MACH Percent	0.05	0.17	0.00
5. Overall MCOM Percent	-0.01	0.24	0.15
6. Overall AARP Average	-0.05	0.33	0.13
7. Matric English %	-0.03	0.17	0.08
8. Matric Mathematics %	0.10	0.29	0.26

Table 50 — Predictive Correlation (2003 ECP)			
Marked Correlation are significant at p < .05000			
N=22 (Casewise deletion of missing data)			
Variables	Maths 1	AYOS1	AYOS2
1. FacPt	0.42	0.44	0.25
2. MatPt	0.32	0.48	0.35
3. Overall PTEEP Percent	-0.20	0.25	0.14
4. Overall MACH Percent	0.41	0.19	-0.14
5. Overall MCOM Percent	0.03	-0.04	-0.34
6. Overall AARP Average	0.12	0.16	-0.15
7. Matric English %	0.17	0.10	0.01
8. Matric Mathematics %	0.56	0.18	-0.14

Table 51 — Predictive Correlation (2003 Comparison)			
Marked Correlation are significant at p < .05000			
N=16 (Casewise deletion of missing data)			
Variables	Maths 1	AYOS 1	AYOS 2
1. FacPt	0.60	0.68	0.70
2. MatPt	0.60	0.72	0.78
3. Overall PTEEP Percent	0.40	0.48	0.63
4. Overall MACH Percent	0.47	0.44	0.30
5. Overall MCOM Percent	0.35	0.41	0.18
6. Overall AARP Average	0.51	0.55	0.42
7. Matric English %	0.21	0.39	0.64
8. Matric Mathematics %	0.76	0.79	0.50

Graduation statistics for full ECP cohort

Table 52 — Graduation Statistics for ECP students

Cohort	Year of graduation	BBusSc	BCOM	Total	No of Graduates	Total Registered	% Graduation Rate
2001	2004	4	2	6			
	2005	17	3	20			
	2006	3	2	5	31	46	67.39
2002	2005	14	4	18			
	2006	7	6	13	31	54	57.41
2003	2006	9	10	19	20	66	30.30
2004	2006	0	1	1	1		
	Total	54	28	82		166	49.40
	% BBusSc or BCom	66%	34%				

2001 ECP cohort descriptive statistics

Table 53 — 2001 ECP Cohort Gender Distribution		
	Count	Percent
Female	5	33.33
Male	10	66.67
Total	15	100

Table 54 —Race Gender Breakdown for 2001 Full ECP Cohort

2001 Race Gender Breakdown	Female	Male	Totals	%Race
Black Female	10			
Black Male		16		
Total Black			26	56.52
Coloured Female	8			
Coloured Male		7		
Total Coloured			15	32.61
Indian Female	2			
Indian Male		3		
Total Indian			5	10.87
TOTALS	20	26	46	
% Gender	43.48	56.52		

Table 56 — Race Gender Breakdown for 2001 to 2003 Full ECP Cohort

Race Gender Breakdown	2001	2002	2003	Totals	% of total
Black Female	10	19	21	50	30.12
Black Male	16	11	20	47	28.31
Coloured Female	8	5	2	15	9.04
Coloured Male	7	13	8	28	16.87
Indian Female	2	2	4	8	4.82
Indian Male	3	4	11	18	10.84
TOTALS	46	54	66	166	100.00

Table 57 — 2001 ECP Cohort Racial Distribution

Race Breakdown	Count	Percent
Coloured (C)	6	40.00
Black (B)	6	40.00
Indian (I)	3	20.00
Total	15	100

Table 58 — 2001 ECP Cohort Home Language Distribution

Home Language	Count	Percent
EN	8	53.33
XH	4	26.67
EA	1	6.67
VE	1	6.67
SS	1	6.67
Total	15	100

Table 59 — 2001 ECP Cohort Home Language Distribution

Home Language English and Other	Count	Percent
Other	7	46.67
English	8	53.33
Total	15	100.00

Table 60 — 2001 ECP Cohort Schooling Data

Ex-Dept of Education	Count	Percent
IN	2	13.33
IE	3	20.00
CO	3	20.00
CA	7	46.67
Total	15	100

Table 61 — 2001 ECP Cohort Matric English Results		
Matric English	Count	Percent
E	2	13.33
D	4	26.67
C	8	53.33
B	1	6.67
Total	15	100.00

Table 62 — 2001 ECP Cohort Retention Statistics		
Retention	Count	Percent
2	1	6.67
4	3	20.00
5	11	73.33
Total	15	100.00

Table 63 — 2001 ECP Cohort Time to Graduation		
Time to Graduation	Count	Percent
4	3	20.00
5	6	40.00
Missing	6	40.00
Total	15	100.00

Table 64 — Descriptive Statistics 2001 ECP Cohort						
Variable	**Mean**	**Std.Dev**	**Minimum**	**Maximum**	**N**	**No.cases Missing**
FacPt	46.27	4.08	36	52	15	0
MatPt	35.27	3.47	27	40	15	0
Overall PTEEP Percent	61.47	7.92	45.73	71.36	15	0
Overall PTEEP Decile	4.20	1.57	2	7	15	0
Ex-Ed PTEEP Decile	6.27	1.83	4	10	15	0
Overall MACH Percent	61.33	11.23	44.00	82.50	15	0
Overall MACH Decile	2.67	1.23	1	5	15	0
Ex-Ed MACH Decile	3.47	2.00	1	7	15	0
Overall MCOM Percent	54.99	9.98	32.11	70.60	15	0
Overall MCOM Decile	3.07	1.98	1	8	15	0
Ex-Ed MCOM Decile	4.60	2.26	1	9	15	0
Matric English %	60.33	8.34	45.00	75.00	15	0
Matric Mathematics %	59.67	6.40	55.00	75.00	15	0
MAM102W %	60.36	13.07	35.00	79.00	14	1
2001 Ave % AYOS1	55.63	6.70	46.75	67.50	15	0
2002 Ave % AYOS2	53.23	11.70	26.22	68.88	15	0
2003 Ave % AYOS3	52.48	9.14	35.57	70.00	14	1
2004 Ave % AYOS4	55.06	10.66	36.38	71.00	14	1
2005 Ave % AYOS5	58.97	7.14	47.20	69.75	11	4
Retention	4.60	0.83	2	5	15	0
Time to Graduation	4.67	0.50	4	5	9	6

2001 Comparison cohort descriptive statistics

Table 65 — 2001 Comparison Cohort Time to Graduation

Time to graduation	Count	Percent
4	9	60.00
5	1	6.67
Missing	5	33.33
Total	15	100.00

Table 66 — 2001 Comparison Cohort Retention Statistics

Retention	Count	Percent
1	1	6.67
2	2	13.33
3	1	6.67
4	9	60.00
5	2	13.33
Total	15	100.00

Table 67 — 2001 Comparison Cohort Schooling Data

Ex-Dept of Education	Count	Percent
NA	2	13.33
CO	3	20.00
CA	5	33.33
TR	2	13.33
CL	1	6.67
IN	2	13.33
Total	15	100.00

Table 68 — 2001 Comparison Cohort Home Language Distribution

Home Language	Count	Percent
Other	4	26.67
English	11	73.33
Total	15	100

Table 69 — 2001 Comparison Cohort Racial Distribution

Race	Count	Percent
Indian (I)	5	33.33
Coloured (C)	6	40.00
Black (B)	4	26.67
Total	15	100

Table 70 — 2001 Comparison Cohort Gender Distribution		
Gender	Count	Percent
Female	7	46.67
Male	8	53.33
Total	15	100

Table 71 — 2001 Comparison Cohort Home Language Distribution		
Home Language	**Count**	**Percent**
EN	11	73.33
CH	1	6.67
SS	1	6.67
XH	1	6.67
VE	1	6.67
Total	15	100.00

Table 72 — Descriptive Statistics 2001 Comparison Cohort					
Variable	**Valid N**	**Mean**	**Minimum**	**Maximum**	**Std.Dev.**
FacPt	15	50.27	0	61	14.40
MatPt	15	38.13	0	46	10.91
Overall PTEEP Percent	15	67.94	55.78	77.89	7.26
Overall PTEEP Decile	15	2.87	1	5	1.36
Ex-Ed PTEEP Decile	15	4.53	1	8	2.26
Overall MACH Percent	15	69.37	48.00	90.00	13.02
Overall MACH Decile	15	2.00	1	4	1.00
Ex-Ed MACH Decile	15	3.00	1	7	1.93
Overall MCOM Percent	15	61.72	38.53	92.70	12.01
Overall MCOM Decile	15	2.47	1	6	1.36
Ex-Ed MCOM Decile	15	3.40	1	8	2.06
Matric English %	15	71.67	55.00	85.00	9.00
Matric Mathematics %	15	69.67	55.00	85.00	11.87
MAM102W %	14	50.64	0.00	86.00	26.58
2001 Ave % AYOS1	15	54.48	28.22	68.63	11.24
2002 Ave % AYOS2	14	54.34	7.17	71.67	17.71
2003 Ave % AYOS3	12	58.36	44.57	73.00	8.45
2004 Ave % AYOS4	11	61.38	54.67	71.33	4.92
2005 Ave % AYOS5	2	54.60	54.00	55.20	0.85
Retention	15	3.60	1	5	1.12
Time to Graduation	10	4.10	4	5	0.32

2002 ECP cohort descriptive statistics

Table 73 — Race Gender Breakdown for 2002 Full ECP Cohort

2002 Race Gender Breakdown	Female	Male	Totals	%Race
Black Female	19			
Black Male		11		
Total Black			30	55.56
Coloured Female	5			
Coloured Male		13		
Total Coloured			18	33.33
Indian Female	2			
Indian Male		4		
Total Indian			6	11.11
TOTALS	26	28	54	
% Gender	48.15	51.85		

Table 74 — 2002 ECP Cohort Gender Distribution

Gender	Count	Percent
Female	8	42.11
Male	11	57.89
Total	19	100.00

Table 75 — 2002 ECP Cohort Racial Distribution

Race	Count	Percent
Coloured (C)	7	36.84
Indian (I)	4	21.05
Black (B)	8	42.11
Total	19	100.00

Table 76 —2002 ECP Cohort Home Language Distribution

Home Language	Count	Percent
EN	11	57.89
XH	5	26.32
ZU	2	10.53
TW	1	5.26
Total	19	100.00

Table 77 — 2002 ECP Cohort Home Language Distribution		
Home Language	Count	Percent
Other	8	42.10526
English	11	57.89474

Table 78 — 2002 ECP Cohort Schooling Data		
Old Education Department	Count	Percent
CA	10	52.63
CO	2	10.53
ET	3	15.79
TK	1	5.26
NE	1	5.26
IE	2	10.53
Total	19	100.00

Table 79 — 2002 ECP Cohort Schooling Data		
	Count	Percent
Other	15	78.94737
Ex-DET	4	21.05263

Table 80 — 2002 ECP Cohort First Registration		
Degree Registered for	Count	Percent
COMB10	14	73.68
COMB04	3	15.79
COMB11	2	10.53

Table 81 — 2002 ECP Cohort Matric English Results		
Matric English	Count	Percent
C	13	68.42
B	2	10.53
D	3	15.79
A	1	5.26
Total	19	100.00

Table 82 — 2002 ECP Cohort Promotion Statistics		
Promotion Status	Count	Percent
CON	9	47.37
QUA	6	31.58
GAS	1	5.26
COI	2	10.53
REP	1	5.26
Total	19	100.00

Table 83 — 2002 ECP Cohort Retention Statistics		
Retention	Count	Percent
2	1	5.26
4	6	31.58
5	12	63.16

Table 84 — 2002 ECP Cohort Time to Graduation		
Time to Graduation	Count	Percent
4	6	31.58
5	7	36.84
6	1	5.26
7	1	5.26
Missing	4	21.05
Total	19	100.00

Table 85 —2002 ECP Cohort Degree Distribution		
Promotion Status	Count	Percent
CON	12	63.16
Bcom	2	10.53
BBusSc	4	21.05
NONE	1	5.26
Total	19	100.00

Table 86 — Descriptive Statistics 2002 ECP Cohort					
Variable	Valid N	Mean	Minimum	Maximum	Std.Dev.
FacPt	19	47.47	41	61	4.19
MatPt	19	35.95	30	46	3.34
Overall PTEEP Percent	19	54.55	37.84	72.97	9.87
Overall PTEEP Decile	19	4.32	1	8	2.16
Ex-Ed PTEEP Decile	19	4.79	1	9	2.12
Overall MACH Percent	19	48.47	22.00	80.50	12.96
Overall MACH Decile	19	3.37	1	9	1.89
Ex-Ed MACH Decile	19	4.37	1	8	2.06
Overall MCOM Percent	19	48.31	21.05	86.32	17.07
Overall MCOM Decile	19	3.42	1	8	2.14
Ex-Ed MCOM Decile	19	4.47	1	9	2.63
Matric English %	19	65.53	55.00	85.00	7.05
Matric Mathematics %	19	59.74	45.00	85.00	10.73
MAM102W %	19	49.68	25.50	72.00	13.04
2002 Ave % AYOS1	19	52.63	41.71	75.10	8.47
2003 Ave % AYOS2	18	51.24	31.00	61.00	7.22
2004 Ave % AYOS3	18	53.82	37.63	67.25	8.77
2005 Ave % AYOS4	18	55.43	36.71	66.50	8.35
Retention	19	4.53	2	5	0.77
Time to Graduation	15	4.80	4	7	0.86

2002 Comparison cohort descriptive statistics

Table 87 — 2002 Comparison Cohort Gender Distribution

Gender	Count	Percent
M	13	59.09
F	9	40.91
Total	22	100.00

Table 88 — 2002 Comparison Cohort Racial Distribution

Race	Count	Percent
Indian (I)	10	45.45
Black (B)	5	22.73
Coloured (C)	7	31.82
Total	22	100.00

Table 89 — 2002 Comparison Cohort Home Language Distribution

Home Language	Count	Percent
EN	17	77.27
XH	2	9.09
TG	1	4.55
TW	2	9.09
Total	22	100.00

Table 90 — 2002 Comparison Cohort Home Language Distribution

Home Language	Count	Percent
Other	5	22.73
English	17	77.27
Total	22	100.00

Table 91 — 2002 Comparison Cohort Schooling Data

Old Education Department	Count	Percent
CO	6	27.27
CA	10	45.45
TR	2	9.09
IN	2	9.09
NE	1	4.55
CL	1	4.55
Total	22	100.00

Table 92 — 2002 Comparison Cohort Matric English Results		
Matric English	Count	Percent
A	8	36.36
B	8	36.36
C	5	22.73
D	1	4.55
Total	22	100.00

Table 93 — 2002 Comparison Cohort Matric Mathematics Results		
Matric Mathematics	Count	Percent
A	6	27.27
C	9	40.91
B	5	22.73
D	2	9.09
Total	22	100.00

Table 94 — 2002 Comparison Cohort Promotion Statistics		
	Count	Percent
QUA	9	40.91
GAS	1	4.55
REN	5	22.73
CON	6	27.27
REF	1	4.55
Total	22	100.00

Table 95 — 2002 Comparison Cohort Retention Statistics		
	Count	Percent
2	1	4.55
4	12	54.55
5	7	31.82
Missing	2	9.09
Total	22	100.00

Table 96 — 2002 Comparison Cohort Time to Graduation		
	Count	Percent
4	9	40.91
Missing	13	59.09
Total	22	100.00

Table 97 — 2002 Comparison Cohort Degree Distribution		
	Count	Percent
BBusSc	9	40.91
NONE	6	27.27
CON	7	31.82

Table 98 — Descriptive Statistics 2002 Comparison Cohort					
Variable	Valid N	Mean	Minimum	Maximum	Std.Dev.
FacPt	21	55.38	51	64	3.76
MatPt	21	41.81	38	48	2.73
Overall PTEEP Percent	22	66.95	45.95	77.03	8.42
Overall PTEEP Decile	22	2.00	1	6	1.54
Ex-Ed PTEEP Decile	22	2.55	1	8	2.36
Overall MACH Percent	22	59.20	44.00	90.00	11.07
Overall MACH Decile	22	1.82	1	4	0.85
Ex-Ed MACH Decile	22	2.77	1	6	1.60
Overall MCOM Percent	22	61.10	32.63	80.00	13.49
Overall MCOM Decile	22	1.95	1	5	1.09
Ex-Ed MCOM Decile	22	3.00	1	8	1.90
Matric English %	22	75.45	55.00	85.00	8.99
Matric Mathematics %	22	71.82	55.00	85.00	9.95
MAM102W %	22	48.18	0.00	84.00	19.71
2002 Ave % AYOS1	22	56.00	13.57	69.63	11.56
2003 Ave % AYOS2	21	56.27	35.00	74.00	9.60
2004 Ave % AYOS3	20	51.42	6.00	77.00	16.50
2005 Ave % AYOS4	19	55.64	0.78	76.00	21.16
Retention	20	4.25	2	5	0.72
Time to Graduation	9	4.00	4	4	0.00

2003 ECP cohort descriptive statistics

Table 99 — Race Gender Breakdown for 2003 Full ECP Cohort

Race Gender Breakdown	Female	Male	Totals	%Race
Black Female	**21**			
Black Male		**20**		
Total Black			**41**	**62.12**
Coloured Female	**2**			
Coloured Male		**8**		
Total Coloured			**10**	**15.15**
Indian Female	**4**			
Indian Male		**11**		
Total Indian			**15**	**22.73**
TOTALS	**27**	**39**	**66**	
% Gender	**40.91**	**59.09**		

Table 100 — 2003 ECP Cohort Gender Distribution		
Gender	Count	Percent
Male	14	60.87
Female	9	39.13
Total	23	100.00

Table 101 — 2003 ECP Cohort Racial Distribution		
Race	Count	Percent
Indian (I)	8	34.78
Black (B)	12	52.17
Coloured (C)	3	13.04
Total	23	100.00

Table 102 — 2003 ECP Cohort Home Language Distribution		
Home Language	Count	Percent
EN	13	56.52
XH	5	21.74
NS	1	4.35
ZU	1	4.35
SS	2	8.70
TW	1	4.35
Total	23	100.00

Table 103 — 2003 ECP Cohort Home Language Distribution		
	Count	Percent
Other	10	43.48
English	13	56.52
Total	23	100.00

Table 104 — 2003 ECP Cohort Schooling Data		
Old Department of Education	Count	Percent
CA	13	56.52
TR	2	8.70
IN	1	4.35
ET	1	4.35
IE	2	8.70
WC	1	4.35
NE	1	4.35
OF	1	4.35
CO	1	4.35
Total	23	100.00

Table 105 — 2003 ECP Cohort Schooling Data		
	Count	Percent
Other	22	95.65
Ex-DET	1	4.35
Total	23	100.00

Table 106 — 2003 ECP Cohort Matric English Results		
Matric English	Count	Percent
D	3	13.04
B	6	26.09
C	12	52.17
A	2	8.70
Total	23	100.00

Table 107 — 2003 ECP Cohort Matric Mathematics Results		
Matric Mathematics	Count	Percent
D	9	39.13
C	10	43.48
A	3	13.04
E	1	4.35
Total	23	100.00

Table 108 — 2003 ECP Cohort Promotion Statistics		
Promotion Code	Count	Percent
COI	2	8.70
REF	1	4.35
CON	12	52.17
REP	1	4.35
REN	6	26.09
CAN	1	4.35
Total	23	100.00

Table 109 — 2003 ECP Cohort Retention Statistics		
Retention	Count	Percent
2	2	8.70
3	21	91.30
Total	23	100.00

Table 110 — Descriptive Statistics 2003 ECP Cohort					
Variable	Valid N	Mean	Minimum	Maximum	Std.Dev.
FacPt	23	48.78	43	55	3.57
MatPt	23	36.87	32	42	2.83
Overall PTEEP Percent	23	65.51	35.89	80.86	11.22
Overall PTEEP Decile	23	3.35	1	8	1.97
Ex-Ed PTEEP Decile	23	4.91	1	10	2.45
Overall MACH Percent	23	65.76	45.10	91.40	12.42
Overall MACH Decile	23	2.43	1	5	1.34
Ex-Ed MACH Decile	23	4.17	1	8	2.12
Overall MCOM Percent	23	57.81	32.98	80.90	13.06
Overall MCOM Decile	23	3.35	1	7	1.90
Ex-Ed MCOM Decile	23	5.13	1	10	2.62
Matric English %	23	68.04	55.00	85.00	8.22
Matric Mathematics %	23	61.09	45.00	85.00	7.83
MAM102W %	22	48.02	0.00	79.00	17.95
2003 Ave % AYOS1	23	54.25	34.00	73.50	9.57
2004 Ave % AYOS2	23	48.62	15.70	66.00	12.89
2005 Ave % AYOS3	21	49.58	29.67	79.00	12.04
Retention	23	2.91	2	3	0.29

2003 Comparison cohort descriptive statistics

Table 111 — 2003 Comparison Cohort Gender Distribution		
Gender	Count	Percent
Female	13	72.22
Male	5	27.78
Total	18	100.00

Table 112 — 2003 Comparison Cohort Racial Distribution		
Race	Count	Percent
Coloured (C)	8	44.44
Black (B)	4	22.22
Indian (I)	6	33.33

Table 113 — 2003 Comparison Cohort Home Language Distribution		
Home Language	Count	Percent
EN	14	77.78
XH	2	11.11
CH	1	5.56
TG	1	5.56
Total	18	100.00

Table 114 — 2003 Comparison Cohort Home Language Distribution		
Home Language	Count	Percent
Other	4	22.22
English	14	77.78
Total	18	100.00

Table 115 — 2003 Comparison Cohort Schooling Data		
Old Education Department	Count	Percent
CA	3	16.67
ET	2	11.11
CO	5	27.78
IN	5	27.78
NA	1	5.56
TR	2	11.11
Total	18	100.00

Table 116 — 2003 Comparison Cohort Schooling Data		
Old Education Department	Count	Percent
Other	16	88.89
EX-DET	2	11.11
Total	18	100.00

Table 117 — Descriptive Statistics 2003 Comparison Cohort					
Variable	Valid N	Mean	Minimum	Maximum	Std.Dev.
FacPt	18	56.06	47	64	4.56
MatPt	18	42.72	39	48	2.95
Overall PTEEP Percent	18	69.46	51.20	78.47	8.69
Overall PTEEP Decile	18	2.56	1	6	1.62
Ex-Ed PTEEP Decile	18	3.28	1	9	2.19
Overall MACH Percent	17	68.59	36.60	90.30	15.82
Overall MACH Decile	17	2.29	1	7	1.83
Ex-Ed MACH Decile	17	3.29	1	9	2.34
Overall MCOM Percent	17	65.08	41.49	88.30	12.55
Overall MCOM Decile	17	2.41	1	6	1.54
Ex-Ed MCOM Decile	17	3.47	1	8	2.48
Matric English %	18	73.89	55.00	85.00	8.32
Matric Mathematics %	18	73.33	55.00	85.00	9.85
MAM102W %	18	54.69	31.00	82.00	15.28
2003 Ave % AYOS1	18	60.56	45.00	77.00	9.74
2004 Ave % AYOS2	17	58.68	37.09	73.44	9.68
2005 Ave % AYOS3	16	57.18	31.86	73.50	11.30
Retention	18	2.83	1	3	0.51

2001 ECP cohort: Regression studies

Table 118 — Regression Summary for Dependent Variable: MAM102W %

(2001 ECP Cohort)

R= .87927813 R^2= .77313004 Adjusted R^2= .50844841

F(7,6)=2.9210 p<.10632 Std.Error of estimate: 9.1604

N = 14	Beta	Std.Err. of Beta	B	Std.Err. of B	t(6)	p-level
Intercept			-374.942	150.2496	-2.5	0.046815
RI[13]	0.05514	0.338718	1.984	12.187	0.16	0.876029
MatPt	1.32471	0.345391	4.826	1.2583	3.84	0.008605
Ex-Ed MCOM Decile	0.93374	0.94416	5.79	5.8547	0.99	0.360871
Gender[14]	1.11585	0.45643	31.098	12.7206	2.44	0.050148
Overall MCOM Decile	2.03586	0.895257	13.086	5.7544	2.27	0.063314
Overall MCOM Percent	2.32307	1.127638	3.011	1.4614	2.06	0.085042
Home Lang	0.72611	0.554753	18.284	13.969	1.31	0.238463

Table 119 — Regression Summary for Dependent Variable: 2001 Ave % AYOS1

(2001 ECP Cohort)

R= .86605987 R^2= .75005969 Adjusted R^2= .61120397

F(5,9)=5.4017 p<.01434 Std.Error of estimate: 4.1775

N = 15	Beta	Std.Err. of Beta	B	Std.Err. of B	t(9)	p-level
Intercept			-7.22261	15.77147	-0.46	0.657841
MatPt	1.00905	0.21145	1.94612	0.40782	4.77	0.001012
Overall MCOM Decile	0.078	0.379209	0.2638	1.28255	0.21	0.841614
RI	0.69624	0.257944	11.26598	4.17382	2.7	0.024426
Ex-Ed MCOM Decile	0.70729	0.415532	2.09533	1.23101	1.7	0.12294
Matric Mathematics %	-0.29594	0.21511	-0.30982	0.2252	-1.38	0.202167

Table 120 — Regression Summary for Dependent Variable: 2002 Ave % AYOS2

(2001 ECP Cohort)

R= .94703530 R^2= .89687586 Adjusted R^2= .81953275

F(6,8)=11.596 p<.00143 Std.Error of estimate: 4.9691

N = 15	Beta	Std.Err. of Beta	B	Std.Err. of B	t(8)	p-level
Intercept			-54.1445	24.29331	-2.23	0.056404
Overall MACH Decile	-0.16075	0.276556	-1.5232	2.62057	-0.58	0.577074
MatPt	1.06046	0.214663	3.5709	0.72284	4.94	0.001135
RI	1.21914	0.409609	34.4422	11.57194	2.98	0.017699
Matric Mathematics %	-0.58553	0.240438	-1.0703	0.43948	-2.44	0.040866
Ex-Ed MCOM Decile	0.49319	0.228864	2.5509	1.18376	2.15	0.063285
Matric English %	0.36318	0.24797	0.5095	0.34787	1.46	0.18119

Table 121 — Regression Summary for Dependent Variable: 2003 Ave % AYOS3

(2001 ECP Cohort)

R= .97757374 R^2= .95565042 Adjusted R^2= .85586386

F(9,4)=9.5769 p<.02192 Std.Error of estimate: 3.4718

N = 14	Beta	Std.Err. of Beta	B	Std.Err. of B	t(4)	p-level
Intercept			105.127	46.23563	2.27	0.085376
Home Lang	1.42685	0.279141	25.4076	4.97058	5.11	0.006927
FacPt	1.2738	0.207549	3.834	0.6247	6.14	0.003573
Overall MACH Percent	-3.51417	0.658816	-2.9894	0.56043	-5.33	0.005949
RB	1.54779	0.355486	28.4648	6.53764	4.35	0.012119
Overall MACH Decile	-3.33979	0.67037	-25.7014	5.15885	-4.98	0.007587
Ex-Ed MCOM Decile	-0.64468	0.216361	-2.9807	1.00033	-2.98	0.040752
Overall PTEEP Decile	1.17013	0.419617	7.5664	2.71336	2.79	0.049385
Ex-Ed PTEEP Decile	-0.7032	0.377474	-4.0987	2.20015	-1.86	0.135941
RI	0.25397	0.222965	5.4543	4.78832	1.14	0.318257

Table 122 — Regression Summary for Dependent Variable: 2004 Ave % AYOS4

(2001 ECP Cohort)

R= .86795919 R^2= .75335315 Adjusted R^2= .67935909

F(3,10)=10.181 p<.00220 Std.Error of estimate: 6.0350

N = 14	Beta	Std.Err. of Beta	B	Std.Err. of B	t(10)	p-level
Intercept			**97.47949**	**17.184**	**5.67**	**0.000206**
Home Lang	**0.49189**	**0.209704**	**10.20822**	**4.35201**	**2.35**	**0.040944**
Overall PTEEP Percent	**-0.45952**	**0.160164**	**-0.71352**	**0.24869**	**-2.87**	**0.016695**
Gender	-0.26056	0.207368	-5.58468	4.44469	-1.26	0.237499

Table 123 — Regression Summary for Dependent Variable: 2005 Ave % AYOS5

(2001 ECP Cohort)

R= .98602992 R^2= .97225501 Adjusted R^2= .90751670

F(7,3)=15.018 p<.02408 Std.Error of estimate: 2.1712

N = 11	Beta	Std.Err. of Beta	B	Std.Err. of B	t(3)	p-level
Intercept			103.4046	95.42335	1.08	0.357842
RB	-0.11305	0.43728	-1.5998	6.18801	-0.26	0.812717
Overall PTEEP Decile	-0.22004	1.242683	-0.9954	5.62154	-0.18	0.870733
Matric English %	**0.69709**	**0.161904**	**0.633**	**0.14702**	**4.31**	**0.023061**
Matric Mathematics %	**0.47385**	**0.135068**	**0.4921**	**0.14026**	**3.51**	**0.039247**
Home Lang	0.55081	0.242984	7.5303	3.32191	2.27	0.10824
Ex-Ed PTEEP Decile	-0.96014	0.47863	-3.9819	1.985	-2.01	0.138518
Overall PTEEP Percent	-1.53577	1.368307	-1.4159	1.26155	-1.12	0.343423

Table 124 — Regression Summary for Dependent Variable: Retention

(2001 ECP Cohort)

R= .81768964 R^2= .66861635 Adjusted R^2= .57823899

F(3,11)=7.3981 p<.00550 Std.Error of estimate: .53778

N = 15	Beta	Std.Err. of Beta	B	Std.Err. of B	t(11)	p-level
Intercept			-4.30566	1.994197	-2.16	0.053789
FacPt	0.79262	0.210865	0.16091	0.042808	3.76	0.003161
Gender	0.20368	0.195583	0.34566	0.331916	1.04	0.320035
Overall PTEEP Percent	0.19142	0.188869	0.02001	0.019748	1.01	0.332593

Table 125 — Regression Summary for Dependent Variable: Time to Graduation

(2001 ECP Cohort)

R= .86096384 R^2= .74125874 Adjusted R^2= .58601399

F(3,5)=4.7748 p<.06260 Std.Error of estimate: .32171

N = 9	Beta	Std.Err. of Beta	B	Std.Err. of B	t(5)	p-level
Intercept			-3.73077	2.31214	-1.61	0.167543
FacPt	1.13647	0.309088	0.17133	0.046597	3.68	0.014341
Gender	0.78504	0.35134	0.74476	0.333311	2.23	0.075744
RB	-0.49955	0.27618	-0.56643	0.313159	-1.81	0.130278

2001 Comparison cohort: Regression studies

Table 126 — Regression Summary for Dependent Variable: MAM102W %

(2001 Comparison Cohort)

R= .99999240 R^2= .99998480 Adjusted R^2= .99980242 F(12,1)=5483.1 p<.01055 Std.Error of estimate: .37367

N = 14	Beta	Std.Err. of Beta	B	Std.Err. of B	t(1)	p-level
Intercept			-848.924	17.41471	-48.7475	0.013058
Ex-Ed PTEEP Decile	3.71591	0.10915	42.811	1.25753	34.044	0.018695
Overall PTEEP Percent	3.57049	0.082086	12.715	0.29232	43.4971	0.014633
Overall MACH Percent	0.69411	0.066704	1.403	0.13486	10.4059	0.060991
Matric Mathematics %	-1.15008	0.033115	-2.641	0.07603	-34.7295	0.018326
FacPt	-0.40048	0.024717	-0.713	0.04402	-16.2028	0.039241
Overall MCOM Percent	-0.69216	0.018208	-1.478	0.03888	-38.0145	0.016743
Overall MACH Decile	1.58902	0.033028	42.359	0.88043	48.1118	0.01323
Overall PTEEP Decile	0.71395	0.077157	13.706	1.48121	9.2532	0.068534
Ex-Ed MACH Decile	-2.06628	0.096414	-28.672	1.33785	-21.4313	0.029684
Gender	0.8969	0.055808	46.428	2.88889	16.0712	0.039562
Ex-Ed MCOM Decile	-0.19305	0.024843	-2.4	0.30888	-7.7711	0.081474
Overall MCOM Decile	-0.05701	0.015051	-1.082	0.28568	-3.788	0.164314

Table 127 — Regression Summary for Dependent Variable: 2001 Ave % AYOS1

(2001 Comparison Cohort)

R= .99998894 R^2= .99997787 Adjusted R^2= .99969024 F(13,1)=3476.6 p<.01327 Std.Error of estimate: .19776

N = 15	Beta	Std.Err. of Beta	B	Std.Err. of B	t(1)	p-level
Intercept			148.239	14.19485	10.4432	0.060775
Ex-Ed PTEEP Decile	2.06813	0.031201	10.2663	0.15488	66.2851	0.009604
Overall PTEEP Decile	-2.83296	0.117235	-23.4794	0.97163	-24.1649	0.02633
Overall MCOM Decile	-0.52264	0.013091	-4.3316	0.10849	-39.9245	0.015942
RC	-1.49057	0.021269	-33.0291	0.47129	-70.083	0.009083
Overall MACH Decile	3.34875	0.040954	37.6283	0.46017	81.7695	0.007785
Ex-Ed MACH Decile	-2.96228	0.053903	-17.2711	0.31427	-54.9555	0.011583
Gender	1.33501	0.033294	29.0491	0.72446	40.0978	0.015873
RI	-0.73759	0.016422	-16.9851	0.37817	-44.914	0.014172
FacPt	0.08396	0.308454	0.0655	0.24061	0.2722	0.830815
Overall MACH Percent	-0.57702	0.042466	-0.4979	0.03664	-13.588	0.046767
Overall PTEEP Percent	-0.76062	0.099528	-1.178	0.15414	-7.6423	0.082832
Ex-Ed MCOM Decile	-0.11099	0.023607	-0.6045	0.12856	-4.7017	0.133413
MatPt	0.78808	0.308953	0.8118	0.31826	2.5508	0.237854

Table 128 — Regression Summary for Dependent Variable: 2002 Ave % AYOS2

(2001 Comparison Cohort)

R= .98801543 R^2= .97617448 Adjusted R^2= .93805366

F(8,5)=25.607 p<.00120 Std.Error of estimate: 4.4070

N = 14	Beta	Std.Err. of Beta	B	Std.Err. of B	t(5)	p-level
Intercept			-1217.98	374.3173	-3.25386	0.022599
Ex-Ed PTEEP Decile	3.2139	0.460084	24.66	3.5306	6.98546	0.000926
Overall PTEEP Decile	3.93121	1.526681	50.27	19.5211	2.575	0.049732
Matric English %	0.80125	0.194391	1.53	0.3706	4.12183	0.009158
Overall MCOM Decile	-0.32802	0.100852	-4.15	1.275	-3.25247	0.022634
Overall PTEEP Percent	5.9037	1.817195	14	4.3103	3.2488	0.022726
Matric Mathematics %	-0.39665	0.208197	-0.61	0.3184	-1.90515	0.1151
Gender	0.20505	0.159347	7.07	5.494	1.28678	0.254523
RC	0.18679	0.145246	6.44	5.0079	1.28601	0.25477

Table 129 — Regression Summary for Dependent Variable: 2003 Ave % AYOS3

(2001 Comparison Cohort)

R= .89984161 R^2= .80971493 Adjusted R^2= .73835802

F(3,8)=11.347 p<.00297 Std.Error of estimate: 4.3233

N = 12	Beta	Std.Err. of Beta	B	Std.Err. of B	t(8)	p-level
Intercept			-31.9138	19.26488	-1.65658	0.136196
Ex-Ed MACH Decile	1.37218	0.238137	6.1075	1.05993	5.76214	0.000423
Matric Mathematics %	1.08346	0.238533	0.7931	0.1746	4.54218	0.001894
Matric English %	0.21196	0.15501	0.199	0.14552	1.36739	0.208684

Table 130 — Regression Summary for Dependent Variable: 2004 Ave % AYOS4

(2001 Comparison Cohort)

R= .83226824 R^2= .69267043 Adjusted R^2= .38534085 F(5,5)=2.2538 p<.19665 Std.Error of estimate: 3.8535

N = 11	Beta	Std.Err. of Beta	B	Std.Err. of B	t(5)	p-level
Intercept			70.0122	12.32821	5.67902	0.002358
Gender	0.20879	0.336845	1.9651	3.17035	0.61984	0.562517
Overall MCOM Decile	1.70634	0.652667	5.98516	2.2893	2.61441	0.047417
Ex-Ed MCOM Decile	-1.56518	0.689397	-4.00441	1.76378	-2.27036	0.072406
RB	0.32443	0.297133	3.16065	2.89474	1.09186	0.324691
Matric English %	-0.30584	0.296729	-0.16091	0.15612	-1.0307	0.349933

Table 131 — Regression Summary for Dependent Variable: Retention

(2001 Comparison Cohort)

R= .99796705 R^2= .99593823 Adjusted R^2= .97156764 F(12,2)=40.866 p<.02412 Std.Error of estimate: .18906

N = 15	Beta	Std.Err. of Beta	B	Std.Err. of B	t(2)	p-level
Intercept			-21.1458	2.504126	-8.44438	0.013735
Ex-Ed MCOM Decile	0.24502	0.230933	0.1331	0.125493	1.061	0.399877
Ex-Ed PTEEP Decile	4.14635	0.311752	2.0538	0.154421	13.3001	0.005606
Overall PTEEP Percent	2.88146	0.271709	0.4453	0.04199	10.6049	0.008775
RC	0.93258	0.081824	2.062	0.18092	11.3974	0.00761
Home Lang	0.78891	0.214474	1.9324	0.525353	3.67832	0.06661
Ex-Ed MACH Decile	-0.93909	0.206441	-0.5463	0.120102	-4.54894	0.045083
FacPt	-0.80392	0.153794	-0.0626	0.011971	-5.22727	0.034704
Matric Mathematics %	-1.19106	0.144582	-0.1125	0.013654	-8.238	0.014417
Overall MACH Decile	-0.90521	0.328889	-1.0149	0.368758	-2.75233	0.110546
Overall MCOM Percent	-0.81969	0.256887	-0.0765	0.023976	-3.19086	0.085769
Overall MACH Percent	0.33802	0.231229	0.0291	0.019908	1.46186	0.281278
RB	-0.24361	0.22524	-0.5967	0.551722	-1.08156	0.392514

Table 132 — Regression Summary for Dependent Variable: Time to Graduation

(2001 Comparison Cohort)

R=1.00000000 R^2=1.00000000 Adjusted R^2=1.00000000 F(9,0)= – p< – Std.Error of estimate: ---

N = 10	Beta	Std.Err. of Beta	B	Std.Err. of B	t(0)	p-level
Intercept			10.5205			
RC	0.95623		0.71717			
Ex-Ed PTEEP Decile	-2.00455		-0.28636			
Ex-Ed MACH Decile	-1.07137		-0.18081			
Home Lang	-0.32171		-0.21061			
Overall PTEEP Percent	-1.18971		-0.04422			
Overall MACH Percent	-0.57884		-0.01414			
Matric Mathematics %	0.07071		0.00197			
Matric English %	-0.21293		-0.00697			
RI	-0.14928		-0.09141			

2002 ECP cohort: Regression Studies

Table 134 — Regression Summary for Dependent Variable: MAM102W %

(2002 ECP Cohort)

R= .95551392 R^2= .91300686 Adjusted R^2= .80426544 F(10,8)=8.3961 p<.00301 Std.Error of estimate: 5.7671

N = 19	Beta	Std.Err. of Beta	B	Std.Err. of B	t(8)	p-level
Intercept			**-83.2920**	**33.87293**	**-2.45895**	**0.039383**
EdCodeOld	**2.35075**	**0.491906**	**73.1593**	**15.30894**	**4.77886**	**0.001393**
MatPt	**2.69572**	**0.838879**	**10.5171**	**3.27280**	**3.21348**	**0.012359**
Ex-Ed PTEEP Decile	**1.25005**	**0.374041**	**7.6740**	**2.29623**	**3.34202**	**0.010201**
Overall MACH Percent	**2.24575**	**0.620146**	**2.2592**	**0.62387**	**3.62133**	**0.006769**
FacPt	**-2.77345**	**0.950575**	**-8.6185**	**2.95392**	**-2.91765**	**0.019361**
RC	-0.18258	0.126500	-4.8023	3.32728	-1.44332	0.186920
Ex-Ed MCOM Decile	0.16431	0.150725	0.8136	0.74636	1.09015	0.307393
Overall PTEEP Decile	-0.93383	0.438751	-5.6314	2.64587	-2.12839	0.065958
Ex-Ed MACH Decile	0.77298	0.415811	4.8901	2.63058	1.85896	0.100090
Gender	0.23312	0.141110	5.9907	3.62623	1.65206	0.137126

Table 135 — Regression Summary for Dependent Variable: 2002 AVE % AYOS1

(2002 ECP cohort)

R= .80675703 R^2= .65085690 Adjusted R^2= .55110173 F(4,14)=6.5245 p<.00351 Std.Error of estimate: 5.6775

N = 19	Beta	Std.Err. of Beta	B	Std.Err. of B	t(14)	p-level
Intercept			-18.9482	21.00373	-0.902134	0.382244
FacPt	**0.653038**	**0.197248**	**1.3192**	**0.39846**	**3.310750**	**0.005151**
EdCodeOld	**0.646252**	**0.171144**	**13.0744**	**3.46243**	**3.776062**	**0.002045**
RI	0.303334	0.175491	6.1368	3.55036	1.728487	0.105881
Ex-Ed PTEEP Decile	0.256841	0.188794	1.0250	0.75343	1.360429	0.195197

Table 136 — Regression Summary for Dependent Variable: 2003 Ave % AYOS2

(2002 ECP Cohort)

R= .90515820 R^2= .81931136 Adjusted R^2= .69282931 F(7,10)=6.4777 p<.00451 Std.Error of estimate: 4.0019

N = 18	Beta	Std.Err. of Beta	B	Std.Err. of B	t(10)	p-level
Intercept			-25.8527	15.36429	-1.68265	0.123354
MatPt	**1.076889**	**0.209713**	**2.2617**	**0.44045**	**5.13507**	**0.000441**
Gender	**-0.500647**	**0.156326**	**-7.0702**	**2.20764**	**-3.20259**	**0.009450**
Overall PTEEP Decile	**0.682754**	**0.190728**	**2.2950**	**0.64112**	**3.57973**	**0.005014**
RC	**0.581497**	**0.199061**	**8.6561**	**2.96321**	**2.92120**	**0.015269**
Matric Mathematics %	-0.327584	0.188630	-0.2154	0.12403	-1.73665	0.113095
Overall MCOM Decile	-0.222119	0.159009	-0.7563	0.54145	-1.39689	0.192671
RB	0.358548	0.264456	5.0634	3.73466	1.35579	0.204990

Table 137 — Regression Summary for Dependent Variable: 2004 AVE % AYOS3

(2002 ECP Cohort)

R= .88127888 R^2= .77665247 Adjusted R^2= .65482654

F(6,11)=6.3751 p<.00422 Std.Error of estimate: 5.1535

N = 18	Beta	Std.Err. of Beta	B	Std.Err. of B	t(11)	p-level
Intercept			0.8412	18.48733	0.04550	0.964524
Overall MCOM Decile	-0.562404	0.187507	-2.2424	0.74763	-2.99937	0.012093
RI	-0.674229	0.173916	-13.8248	3.56607	-3.87675	0.002578
MatPt	0.778671	0.217667	1.9867	0.55535	3.57734	0.004339
Matric Mathematics %	-0.474476	0.215977	-0.3795	0.17275	-2.19688	0.050360
Overall PTEEP Decile	0.292834	0.191206	1.2109	0.79064	1.53151	0.153883
Overall MACH Percent	0.257972	0.247355	0.1953	0.18725	1.04292	0.319364

Table 138 — Regression Summary for Dependent Variable: 2005 Ave % AYOS4

(2002 ECP Cohort)

R= .83841833 R^2= .70294529 Adjusted R^2= .54091546

F(6,11)=4.3384 p<.01727 Std.Error of estimate: 5.6566

N = 18	Beta	Std.Err. of Beta	B	Std.Err. of B	t(11)	p-level
Intercept			37.60618	17.71811	2.12247	0.057324
Overall MCOM Decile	-0.707795	0.330431	-2.68595	1.25393	-2.14203	0.055409
Ex-Ed MCOM Decile	0.307599	0.305812	0.97357	0.96791	1.00584	0.336105
RI	-0.506636	0.197102	-9.88713	3.84650	-2.57042	0.026031
MatPt	0.328239	0.201106	0.79705	0.48834	1.63217	0.130914
Gender	-0.292327	0.191083	-4.77301	3.11993	-1.52985	0.154290
RB	-0.210093	0.202682	-3.49651	3.37318	-1.03656	0.322190

Table 139 Regression Summary for Dependent Variable: Retention

(2002 ECP Cohort)

R= .92354065 R^2= .85292734 Adjusted R^2= .77939101

F(6,12)=11.599 p<.00022 Std.Error of estimate: .36276

N = 19	Beta	Std.Err. of Beta	B	Std.Err. of B	t(12)	p-level
Intercept			10.46975	1.498300	6.98775	0.000015
Overall MACH Decile	-1.64981	0.339881	-0.67353	0.138756	-4.85409	0.000395
Overall MACH Percent	-1.05288	0.430277	-0.06276	0.025646	-2.44699	0.030762
Overall MCOM Decile	0.35564	0.129134	0.12820	0.046549	2.75402	0.017472
Matric English %	0.28826	0.155222	0.03158	0.017004	1.85710	0.088001
FacPt	-0.36932	0.182963	-0.06800	0.033686	-2.01854	0.066456
RI	0.22580	0.127221	0.41636	0.234585	1.77490	0.101262

Table 140 — Regression Summary for Dependent Variable: Time to Graduation

(2002 ECP Cohort)

R= .66666667 R^2= .44444444 Adjusted R^2= .29292929

F(3,11)=2.9333 p<.08085 Std.Error of estimate: .72474

N = 15	Beta	Std.Err. of Beta	B	Std.Err. of B	t(11)	p-level
Intercept			2.555556	0.838963	3.046089	0.011125
RC	0.849837	0.307799	1.444444	0.523158	2.761007	0.018522
Overall PTEEP Decile	0.845636	0.341421	0.333333	0.134581	2.476816	0.030747
RI	0.747265	0.364926	1.555556	0.759653	2.047717	0.065232

2002 Comparison cohort: Regression studies

Table 141 — Regression Summary for Dependent Variable: MAM102W %

(2002 Comparison Cohort)

R= .84993776 R^2= .72239419 Adjusted R^2= .57291414

F(7,13)=4.8327 p<.00710 Std.Error of estimate: 12.896

N = 21	Beta	Std.Err. of Beta	B	Std.Err. of B	t(13)	p-level
Intercept			383.3491	95.01946	4.03443	0.001417
RI	0.38682	0.167170	14.9158	6.44603	2.31395	0.037670
Overall PTEEP Percent	-3.07722	0.630714	-7.0445	1.44385	-4.87894	0.000301
Overall PTEEP Decile	-1.24600	0.674508	-15.5509	8.41828	-1.84727	0.087586
Overall MCOM Percent	1.59676	0.471489	2.2849	0.67469	3.38664	0.004866
Ex-Ed MCOM Decile	1.33878	0.449124	13.6470	4.57820	2.98088	0.010622
Ex-Ed PTEEP Decile	-1.48755	0.669612	-12.2443	5.51169	-2.22151	0.044694
Home Lang	0.28666	0.174575	14.0585	8.56165	1.64204	0.124539

Table 142 — Regression Summary for Dependent Variable: 2002 AVE % AYOS1

(2002 Comparison Cohort)

R= .67431585 R^2= .45470186 Adjusted R^2= .35847278

F(3,17)=4.7252 p<.01416 Std.Error of estimate: 9.2164

N = 21	Beta	Std.Err. of Beta	B	Std.Err. of B	t(17)	p-level
Intercept			144.0303	24.74127	5.82146	0.000020
Overall MACH Percent	-1.13805	0.305171	-1.1636	0.31203	-3.72920	0.001669
Overall MACH Decile	-0.49066	0.418778	-6.4683	5.52062	-1.17166	0.257495
Ex-Ed MACH Decile	-0.39760	0.385013	-2.8296	2.74002	-1.03270	0.316214

Table 143 — Regression Summary for Dependent Variable: 2003 Ave % AYOS2

(2002 Comparison Cohort)

R= .48224605 R^2= .23256125 Adjusted R^2= .14227434 F(2,17)=2.5758 p<.10541 Std.Error of estimate: 8.7620

N = 20	Beta	Std.Err. of Beta	B	Std.Err. of B	t(17)	p-level
Intercept			-19.7071	34.33022	-0.574045	0.573455
MatPt	**0.466506**	**0.216451**	**1.7493**	**0.81164**	**2.155249**	**0.045769**
Gender	0.240275	0.216451	4.5226	4.07421	1.110065	0.282427

Table 144 — Regression Summary for Dependent Variable: 2004 AVE % AYOS3

(2002 Comparison Cohort)

R= .77278283 R^2= .59719330 Adjusted R^2= .39578994 F(6,12)=2.9652 p<.05157 Std.Error of estimate: 13.108

N = 19	Beta	Std.Err. of Beta	B	Std.Err. of B	t(12)	p-level
Intercept			33.9718	102.1391	0.33260	0.745172
Gender	-0.37206	0.285228	-12.6601	9.7055	-1.30442	0.216555
MatPt	0.15586	0.408864	1.0153	2.6634	0.38120	0.709719
Matric Mathematics %	-0.04458	0.300032	-0.0782	0.5264	-0.14857	0.884361
Ex-Ed MCOM Decile	**1.90836**	**0.683361**	**16.6871**	**5.9755**	**2.79261**	**0.016266**
Overall MCOM Decile	**-1.94429**	**0.875113**	**-29.6578**	**13.3488**	**-2.22176**	**0.046292**
RB	-0.38267	0.352687	-15.4068	14.1997	-1.08501	0.299236

Table 145 — Regression Summary for Dependent Variable: 2005 Ave % AYOS4

(2002 Comparison Cohort)

R= .51867797 R^2= .26902683 Adjusted R^2= .17156375 F(2,15)=2.7603 p<.09534 Std.Error of estimate: 19.677

N = 18	Beta	Std.Err. of Beta	B	Std.Err. of B	t(15)	p-level
Intercept			**58.8599**	**8.445312**	**6.96954**	**0.000005**
Gender	-0.393027	0.220824	-16.9382	9.516789	-1.77982	0.095368
RI	0.348625	0.220824	14.7402	9.336644	1.57875	0.135246

Table 146 — Regression Summary for Dependent Variable: Retention

(2002 Comparison Cohort)

R= .96693059 R^2= .93495477 Adjusted R^2= .83274083 F(11,7)=9.1470 p<.00368 Std.Error of estimate: .29998

N = 19	Beta	Std.Err. of Beta	B	Std.Err. of B	t(7)	p-level
Intercept			8.71688	4.133693	2.10874	0.072924
Ex-Ed PTEEP Decile	**7.45883**	**1.271125**	**2.24781**	**0.383069**	**5.86790**	**0.000619**
Overall MACH Decile	0.93384	0.498040	0.76248	0.406648	1.87504	0.102914
Ex-Ed MCOM Decile	**-3.94744**	**0.555289**	**-1.47716**	**0.207793**	**-7.10881**	**0.000192**
Overall PTEEP Decile	**-3.18113**	**0.707679**	**-1.42887**	**0.317869**	**-4.49516**	**0.002815**
Overall MCOM Percent	**-2.43590**	**0.429579**	**-0.12651**	**0.022310**	**-5.67044**	**0.000758**
Overall MACH Percent	**-0.88688**	**0.265519**	**-0.07044**	**0.021089**	**-3.34019**	**0.012416**
Overall PTEEP Percent	**2.36002**	**0.623268**	**0.20050**	**0.052951**	**3.78652**	**0.006834**
FacPt	0.02553	0.197913	0.00545	0.042247	0.12902	0.900971

Ex-Ed MACH Decile	**-1.89235**	**0.565139**	**-0.84537**	**0.252464**	**-3.34848**	**0.012276**
Matric Mathematics %	**-0.69251**	**0.250017**	**-0.05284**	**0.019078**	**-2.76984**	**0.027700**
RB	0.29457	0.134594	0.51584	0.235699	2.18856	0.064817

2003 ECP cohort: Regression studies

Table 147 — Regression Summary for Dependent Variable: MAM102W %

(2003 ECP Cohort)

R= .85704879 R^2= .73453263 Adjusted R^2= .65157408

F(5,16)=8.8542 p<.00035 Std.Error of estimate: 10.595

N = 22	Beta	Std.Err. of Beta	B	Std.Err. of B	t(16)	p-level
Intercept			-14.6918	24.13596	-0.60871	0.551263
RI	**-0.511930**	**0.186027**	**-18.6632**	**6.78190**	**-2.75191**	**0.014178**
Matric Mathematics %	**0.602274**	**0.175139**	**1.3575**	**0.39476**	**3.43883**	**0.003372**
Home Lang	-0.268970	0.181189	-9.4732	6.38157	-1.48447	0.157118
Overall MCOM Decile	-0.227718	0.147930	-2.2096	1.43541	-1.53937	0.143257
EdCode Old	-0.231464	0.187585	-19.4876	15.79335	-1.23391	0.235054

Table 148 — Regression Summary for Dependent Variable: 2003 AVE % AYOS1

(2003 ECP Cohort)

R= .76600090 R^2= .58675737 Adjusted R^2= .43179139

F(6,16)=3.7864 p<.01538 Std.Error of estimate: 7.2158

N = 23	Beta	Std.Err. of Beta	B	Std.Err. of B	t(16)	p-level
Intercept			-28.0346	23.32019	-1.20216	0.246792
MatPt	0.073559	0.203753	0.2485	0.68840	0.36102	0.722807
EdCode Old	**-0.830631**	**0.261165**	**-38.1333**	**11.98980**	**-3.18048**	**0.005811**
Matric Mathematics %	**0.779071**	**0.274126**	**0.9528**	**0.33526**	**2.84202**	**0.011774**
Home Lang	**-0.417609**	**0.186755**	**-7.8869**	**3.52702**	**-2.23614**	**0.039939**
Overall PTEEP Percent	0.363247	0.177618	0.3099	0.15153	2.04510	0.057655
RC	0.200902	0.175486	5.5849	4.87836	1.14483	0.269116

Table 149 — Regression Summary for Dependent Variable: 2004 AVE % AYOS2

(2003 ECP Cohort)

R= .62349610 R^2= .38874739 Adjusted R^2= .32762213

F(2,20)=6.3598 p<.00728 Std.Error of estimate: 10.568

N = 23	Beta	Std.Err. of Beta	B	Std.Err. of B	t(20)	p-level
Intercept			-6.7069	29.78047	-0.22521	0.824100
EdCode Old	**-0.477886**	**0.176659**	**-29.5369**	**10.91882**	**-2.70514**	**0.013624**
MatPt	0.337581	0.176659	1.5355	0.80356	1.91092	0.070455

Table 150 — Regression Summary for Dependent Variable: 2005 Ave % AYOS3

(2003 ECP Cohort)

R= .50572148 R^2= .25575421 Adjusted R^2= .21658338

F(1,19)=6.5292 p<.01934 Std.Error of estimate: 10.655

N = 21	Beta	Std.Err. of Beta	B	Std.Err. of B	t(19)	p-level
Intercept			0.701417	19.27000	0.036399	0.971344
Matric English %	**0.505721**	**0.197916**	**0.720330**	**0.28190**	**2.555230**	**0.019343**

Table 151 — Regression Summary for Dependent Variable: Retention

(2003 ECP Cohort)

R= .80495924 R^2= .64795938 Adjusted R^2= .51594415

F(6,16)=4.9082 p<.00502 Std.Error of estimate: .20045

N = 23	Beta	Std.Err. of Beta	B	Std.Err. of B	t(16)	p-level
Intercept			**1.879775**	**0.675625**	**2.78227**	**0.013319**
MatPt	**0.47386**	**0.206817**	**0.048184**	**0.021030**	**2.29119**	**0.035861**
RB	**-1.09037**	**0.293830**	**-0.615049**	**0.165742**	**-3.71087**	**0.001898**
Home Lang	**-0.85606**	**0.276845**	**-0.486581**	**0.157358**	**-3.09219**	**0.006993**
Matric English %	-0.23984	0.223488	-0.008405	0.007832	-1.07317	0.299116
Gender	-0.32189	0.167984	-0.185845	0.096986	-1.91621	0.073380
Matric Mathematics %	0.23913	0.190159	0.008802	0.006999	1.25753	0.226607

2003 Comparison cohort: Regression studies

Table 152 — Regression Summary for Dependent Variable: MAM102W %

(2003 Comparison Cohort)

R= .99759977 R^2= .99520531 Adjusted R^2= .97442832

F(13,3)=47.899 p<.00430 Std.Error of estimate: 2.2541

N = 17	Beta	Std.Err. of Beta	B	Std.Err. of B	t(3)	p-level
Intercept			152.2681	107.3588	1.41831	0.251134
Matric Mathematics %	**1.58038**	**0.116435**	**2.2962**	**0.1692**	**13.57297**	**0.000865**
Overall MACH Decile	**1.67798**	**0.191845**	**12.9313**	**1.4785**	**8.74652**	**0.003147**
Ex-Ed MACH Decile	**-3.16121**	**0.577351**	**-19.0515**	**3.4795**	**-5.47537**	**0.011978**
Overall PTEEP Decile	-1.66053	0.524968	-14.0960	4.4564	-3.16311	0.050749
Ex-Ed PTEEP Decile	0.41877	0.187522	2.6418	1.1830	2.23320	0.111664
Overall MACH Percent	**-1.30363**	**0.374428**	**-1.1615**	**0.3336**	**-3.48166**	**0.040007**
Ex-Ed MCOM Decile	**0.91581**	**0.217808**	**5.2099**	**1.2391**	**4.20467**	**0.024560**
RB	**-0.45437**	**0.107772**	**-14.6481**	**3.4744**	**-4.21601**	**0.024385**
Matric English %	0.28289	0.263380	0.5639	0.5250	1.07408	0.361489
Gender	0.22386	0.090251	7.2171	2.9096	2.48045	0.089234
MatPt	-0.44717	0.225154	-2.0875	1.0511	-1.98606	0.141223
Overall PTEEP Percent	-0.83631	0.685833	-1.3255	1.0870	-1.21941	0.309816
Home Lang	-0.11756	0.104678	-4.2172	3.7550	-1.12310	0.343164

Table 153 — Regression Summary for Dependent Variable: 2003 AVE % AYOS1

(2003 Comparison Cohort)

R= .99874644 R^2= .99749445 Adjusted R^2= .99198225

F(11,5)=180.96 p<.00001 Std.Error of estimate: .87509

N = 17	Beta	Std.Err. of Beta	B	Std.Err. of B	t(5)	p-level
Intercept			**-36.2575**	**8.437529**	**-4.29717**	**0.007736**
Matric Mathematics %	**1.60832**	**0.066891**	**1.6202**	**0.067385**	**24.04382**	**0.000002**
Overall MACH Decile	**1.64963**	**0.102050**	**8.8141**	**0.545258**	**16.16496**	**0.000017**
Ex-Ed MACH Decile	**-1.45987**	**0.180175**	**-6.0999**	**0.752843**	**-8.10251**	**0.000464**
Ex-Ed PTEEP Decile	**-0.31960**	**0.036751**	**-1.3979**	**0.160744**	**-8.69630**	**0.000333**
EdCode Old	-0.06092	0.044742	-1.7927	1.316631	-1.36159	0.231470
Ex-Ed MCOM Decile	**1.57437**	**0.146935**	**6.2095**	**0.579532**	**10.71477**	**0.000123**
RC	**0.20227**	**0.042445**	**3.8966**	**0.817693**	**4.76541**	**0.005035**
Overall MCOM Decile	**-1.09900**	**0.144756**	**-6.9586**	**0.916557**	**-7.59212**	**0.000629**
Overall MACH Percent	-0.29506	0.148275	-0.1823	0.091598	-1.98996	0.103256
Matric English %	**-0.22088**	**0.083894**	**-0.3053**	**0.115950**	**-2.63281**	**0.046376**
MatPt	0.08973	0.057536	0.2904	0.186218	1.55950	0.179622

Table 154 — Regression Summary for Dependent Variable: 2004 AVE % AYOS2

(2003 Comparison Cohort)

R= .99841694 R^2= .99683639 Adjusted R^2= .98813645

F(11,4)=114.58 p<.00018 Std.Error of estimate: 1.0862

N = 16	Beta	Std.Err. of Beta	B	Std.Err. of B	t(4)	p-level
Intercept			-7.4611	54.39886	-0.13716	0.897534
MatPt	**0.77963**	**0.085468**	**2.4970**	**0.27374**	**9.12188**	**0.000801**
Overall PTEEP Decile	**-1.71786**	**0.399927**	**-10.3076**	**2.39966**	**-4.29544**	**0.012691**
Overall PTEEP Percent	-0.72347	0.549521	-0.8015	0.60882	-1.31655	0.258357
Matric English %	-0.15429	0.113315	-0.2107	0.15474	-1.36161	0.244968
Overall MACH Decile	**0.61296**	**0.133457**	**3.2387**	**0.70515**	**4.59296**	**0.010084**
Matric Mathematics %	**0.46077**	**0.059306**	**0.4684**	**0.06029**	**7.76924**	**0.001480**
RB	-0.03205	0.045192	-0.7148	1.00779	-0.70928	0.517307
Ex-Ed PTEEP Decile	**0.63325**	**0.157194**	**2.7705**	**0.68775**	**4.02844**	**0.015754**
Gender	**-0.16217**	**0.049589**	**-4.0121**	**1.22681**	**-3.27033**	**0.030780**
RC	0.10641	0.046553	2.1224	0.92852	2.28576	0.084249
Overall MACH Percent	0.17142	0.126842	0.1049	0.07764	1.35145	0.247927

Table 155 — Regression Summary for Dependent Variable: 2005 Ave % AYOS3

(2003 Comparison Cohort)

R= .86035671 R^2= .74021368 Adjusted R^2= .63629915

F(4,10)=7.1233 p<.00556 Std.Error of estimate: 7.0260

N = 15	Beta	Std.Err. of Beta	B	Std.Err. of B	t(10)	p-level
Intercept			201.6462	116.4168	1.73211	0.113927
Overall PTEEP Decile	-2.33195	1.113415	-16.1537	7.7128	-2.09441	0.062663
EdCode Old	**-0.47789**	**0.175629**	**-15.8229**	**5.8151**	**-2.72101**	**0.021523**
FacPt	**0.51220**	**0.176042**	**1.2412**	**0.4266**	**2.90954**	**0.015577**
Overall PTEEP Percent	-1.93408	1.134515	-2.4588	1.4423	-1.70476	0.119055

Table 156 — Regression Summary for Dependent Variable: Retention

(2003 Comparison Cohort)

R= .60878463 R^2= .37061873 Adjusted R^2= .22537690

F(3,13)=2.5517 p<.10073 Std.Error of estimate: .46523

N = 17	Beta	Std.Err. of Beta	B	Std.Err. of B	t(13)	p-level
Intercept			1.706638	0.942666	1.81044	0.093392
RC	-0.310315	0.226173	-0.323340	0.235667	-1.37203	0.193268
Gender	-0.418013	0.232523	-0.505353	0.281107	-1.79773	0.095474
Matric Mathematics %	0.345843	0.234863	0.018844	0.012797	1.47253	0.164672

AARP vs. UCT Performance Matrices

PREDICTIVE VALIDITY: AARP vs. UCT Performance

	Matrix I	A	B
	2001 Full Cohort	Top 30% AARP	Bottom 30% AARP
1	Top 30% UCT	6 (ECP 1)	6 (ECP 3)
2	Bottom 30% UCT	3 (ECP 0)	4 (ECP 3)

	Matrix II	A	B
	2002 Full Cohort	Top 30% AARP	Bottom 30% AARP
1	Top 30% UCT	11 (ECP 1)	3 (ECP 1)
2	Bottom 30% UCT	4 (ECP 0)	11 (ECP 9)

	Matrix III	A	B
	2003 Full Cohort	Top 30% AARP	Bottom 30% AARP
1	Top 30% UCT	9 (ECP 1)	4 (ECP 2)
2	Bottom 30% UCT	3 (ECP 3)	9 (ECP 9)

	Matrix IV	A	B
	Cohorts Aggregated	Top 30% AARP	Bottom 30% AARP
1	Top 30% UCT	26 (ECP 3)	13 (ECP 6)
2	Bottom 30% UCT	10 (ECP 3)	24 (ECP 21)

Faculty Point vs. UCT Performance Matrices

PREDICTIVE VALIDITY: Faculty Point vs. UCT Performance

	Matrix V	A	B
	2001 Full Cohort	Top 30% FacPt	Bottom 30% FacPt
1	Top 30% UCT	6 (ECP 0)	3 (ECP 1)
2	Bottom 30% UCT	3 (ECP 0)	7 (ECP 3)

	Matrix VI	A	B
	2002 Full Cohort	Top 30% FacPt	Bottom 30% FacPt
1	Top 30% UCT	13 (ECP 1)	2 (ECP 1)
2	Bottom 30% UCT	5 (ECP 0)	10 (ECP 9)

	Matrix VII	A	B
	2003 Full Cohort	Top 30% FacPt	Bottom 30% FacPt
1	Top 30% UCT	11 (ECP 0)	1 (ECP 1)
2	Bottom 30% UCT	1 (ECP 0)	14 (ECP 13)

	Matrix VIII	A	B
	Cohorts Combined	Top 30% FacPt	Bottom 30% FacPt
1	Top 30% UCT	30 (ECP 1)	6 (ECP 3)
2	Bottom 30% UCT	9 (ECP 0)	31 (ECP 25)

Faculty Point vs. AARP Performance Matrices

CONCURRENT VALIDITY: Faculty Point vs. AARP Performance

	Matrix X	A	B
	2001 Full Cohort	Top 30% FacPt	Bottom 30% FacPt
1	Top 30% AARP	8 (ECP 0)	2 (ECP 0)
2	Bottom 30% AARP	3 (ECP 0)	8 (ECP 8)

	Matrix X	A	B
	2002 Full Cohort	Top 30% FacPt	Bottom 30% FacPt
1	Top 30% AARP	10 (ECP 1)	0 (ECP 0)
2	Bottom 30% AARP	0 (ECP 0)	12 (ECP 12)

	Matrix XI	A	B
	2003 Full Cohort	Top 30% FacPt	Bottom 30% FacPt
1	Top 30% AARP	12 (ECP 0)	4 (ECP 4)
2	Bottom 30% AARP	0 (ECP 0)	10 (ECP 8)

	Matrix XII	A	B
	Cohorts combined	Top 30% FacPt	Bottom 30% FacPt
1	Top 30% AARP	30 (ECP 1)	6 (ECP 4)
2	Bottom 30% AARP	3 (ECP 0)	30 (ECP 28)

The End