A Study Investigating the Role of Psychosocial Factors in the Progression of Learners in an Applied Health Sciences Master's Programme- a Higher Education Perspective.

By

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Mini dissertation submitted in partial compliance with the requirements of the Master's Degree in Technology: Chiropractic, in the Faculty of Health Sciences at the Durban Institute of Technology.

I, Bruce Grant, do declare that this mini dissertation is representative of my own work, both in conception and execution.

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Dedication

I would like to dedicate this research to my wonderful and beautiful fiancée Stacey and to my fantastic family.

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Abstract

Learner progression is a key marker in charting the success of learners within an educational institution. This marker is however limited in that it is not able to identify the factors related to the learner, which are categorised into issues of identity, economics, politics and educational paradigms within which the learner develops and the learners supporting psychosocial paradigm is moulded.

Thus for the purposes of this research the focus was on the psychosocial paradigm, as the associated factors are informally structured and therefore presented the most variance in their influence on the learner in their progression through higher education. In addition the psychosocial paradigm is discussed as being intrinsically or extrinsically related to the individual learner. Furthermore within the context of the psychosocial paradigm there are factors relating to identity (encompassing both academic and social literacy) which were discussed.

Thus the aim of this research was to investigate the impact or role of psychosocial factors in the academic progression of M.Tech chiropractic learner's at DUT. In order to achieve this, a questionnaire was developed by means of a focus group and refined through a pilot study, which was then dispatched to the pre-identified sample. The returned questionnaire data were then analysed using SPSS version 11.5 (SPSS Inc, Chicago, Ill, USA). Descriptive analysis was used for categorical variables, and summary statistics for quantitative variables. Inferential statistics compared any self reported subject failure and any objective subject failure, with Chi square tests having been done to assess associations between the outcomes and categorical factors, while independent two sample t-tests or Mann Whitney tests were used for quantitative and Likert scale variables. A p value of <0.05 was considered as statistically significant.

Abstract

The results indicated that the self-reported failure rate in the sample was 34.4% and the objective failure rate was 44.8%. Thus the respondents tended to under-report subject failure. In addition the limitations in reporting by the HEMIS database limited the accuracy of the comparison. The strength of the discrepancy between objective analysis and self-reported data was however negated in part by the similar trends seen between the subjects failed per year. With respect to more specific results, qualified chiropractors seemed to experience significantly less failure than those still studying in both the self-reported and objective analysis. In addition to the above no specific demographic factors was associated with failure with the exception of the learners' previous qualifications (object and self-reported) that was protective of failure. In terms of the previous academic record, the grade obtained for physical science in grade 12 and overall grade 12 aggregate were significant predictors of failure (both self reported and objective). In terms of the extrinsic factors, family structure and living environment did not affect self-reported or objective failure even though it was noted that death in the family affected self-reported failure but not objective failure.

Academic factors that were identified to be associated with failure indicated that the most significant factor was 'heavy workload'. In addition time spent studying was an important factor both in objective and self-reported failure, whereas lecture attendance (self-reported) indicated non-significantly associated with self-reported failure, whereas the objective data showed the opposite. This indicated that the educational paradigms as well as the intrinsic psychosocial factors seem to have played the greatest part in the learner progression.

Thus definite trends were established between the self-reported and objective reporting, it is nevertheless recognised that the research had limitations in that it did not investigate learners who repeatedly failed subjects and past learners who did not complete the course. Nevertheless, this preliminary study has resulted providing clear indications of where further in-depth qualitative studies could progress.

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Definition of terms

Academic Literacy

In terms of this research, academic literacy is defined as the ability of the learner to successfully understand and interpret the academic context of the respective subject and take on the practices required for success.

Active Learners

Active learners process actively, they think out aloud, they jump in prematurely and work well in groups (Felder, 1993).

Allied Health Professions Council Of South Africa (AHPCSA)

Allied Health Professions Council of South Africa is the statutory body which provides control of the practice of allied health professions, and provides for matters connected herewith (South Africa 2001: Gazette no.22052).

Attrition

In terms of this research, attrition is defined as the number of learners who exit the chiropractic programme without completing a qualification.

Definition of terms

Content Validity

An instrument has content validity when the content of the questionnaire is considered effective, and well rounded enough to be able to assess a particular concept. This was achieved by having the individuals in the focus group representative of the specific areas of expertise related to the research to be conducted as well as respondent representation (Mouton, 1996).

Criterion Validity

Criterion validity is measured when a particular tool produces similar results when compared with another tool already known to be trustworthy. This is also called *concurrent* validity by Mouton (1996).

Deduction

Deduction starts with principles and conclusions are then derived and deduced (Felder, 1993).

DIT

DIT refers to the Durban Institute of Technology.

DUT

DUT refers to the Durban University of Technology.

Definition of terms

Extrinsic Factors

For the purposes of this research extrinsic factor are defined as those factors originating from a context external to the individual learner and comprise various social experiences or circumstances which an individual learner may have encountered.

Extrinsic Motivation

Extrinsic motivation exists when students are motivated by an outcome that is external and unrelated to the learning activity (Pretorius and Lemmer, 1998).

Face Validity

Face validity is the simplest type of validity, which is determined by agreement between researchers and those with a vested interest in the questionnaire (i.e. interpreted in this study as those participants of the focus group), that 'on the face of it' the tool seems valid, unambiguous and easily interpreted by a lay person (Mouton, 1996).

Global Learner

Global learners need the big picture in order to function properly. They are initially slow to grasp a concept but then progress in major leaps (Felder, 1993).

Identity

For the purpose of this research, identity is defined as the ways in which an individual behaves and understands themselves in relation to other individuals and groups. Identities are seen to be contextual, multiple and fluid.

Definition of terms

Induction

Induction starts with observations and conclusions are inferred and explained (Felder, 1993).

Intrinsic Factors

For the purposes of this research intrinsic factors are defined as those factors, which are inherently part of an individual learner's psychological and physical profile.

Intrinsic Motivation

For the purposes of this research intrinsic motivation exists when someone works because of an inner desire to accomplish a task successfully whether it has some external value or not.

Intuitive Learner

An intuitive learner focuses on subconscious information, is more imaginative, looks for meanings, desires variety and enjoys abstract theories and models (Felder, 1993).

Learners

For the purpose of this study, learners are defined as all DUT 1st year chiropractic students as well as all other students in the chiropractic programme, until they receive their practice number from the Allied Health Professions Council of South Africa.

Definition of terms

Outcomes

Outcomes mean the contextually demonstrated end products of the learning process (SAQA, 1998).

Outcome Based Education (OBE)

Kudlas (1994:32) as cited in Mokhaba 2005 defines outcome based education as a process that focuses on what is to be learned (knowledge, skills and / or values), that is, the outcome. He describes an outcome, as a demonstration of learning that, is, what the learner is to know or do.

Qualified Chiropractors

Are defined as individuals who qualified from the DUT/DIT/Technikon Natal Chiropractic programme from 1989 to 2006.

Qualification

Qualification means any degree, diploma or certificate awarded after examination of a person's proficiency in a particular subject (South Africa 2001: Gazette no.22052).

National Qualifications Framework (NQF)

The National Qualifications Framework is the set of principles and guidelines by which records of learner achievement are registered to enable national recognition of acquired skills and knowledge, thereby ensuring an integrated system that encourages life- long learning (SAQA, 1998).

Definition of terms

Pass Rate

Pass Rate is the number of students who have passed as a percentage of the number of students enrolled for a subject (Kisten, 2006).

Physical science

Physical science is a subject that involves the science of matter and energy and their interactions (e.g. concepts of vectors and scalars, abstract thought principles, three- dimensional visualization of forces) in addition to incorporating a large number of mathematical principles connecting the matter and energy interactions (http://www.thefreedictionary.com/physical%20science, 2006 and http://en.wikipedia.org/wiki/Physical_science, 2006).

Progression

For purposes of this research progression refers to the lack of failure.

Psychosocial

For the purposes of this research, the term psychosocial includes the learners' psychological, emotional, social, health and academic circumstances which pertain to the individual.

Rape

Forced sexual intercourse including both psychological coercion as well as physical force. Forced sexual intercourse means vaginal, anal, or oral penetration by the offender(s). This category also includes incidents where the penetration is from a foreign object such as a bottle. Includes attempted rapes, male as well as female victims, and both heterosexual and homosexual rape. Attempted rape includes verbal threats of rape (Fisher, Cullen and Turner, 2000).

Reflective Learners

Reflective learners process introspectively, they work quietly, delay starting and work well alone or in pairs (Felder, 1993).

Sensing Learner

A sensing learner focuses on sensory input, is practical and observant, requires repetition, and works best with concrete facts and data (Felder, 1993).

Sequential Learner

The sequential learner progresses steadily by functioning on partial understanding (Felder, 1993).

Social Literacy

For the purposes of this research, social literacy is the ability of a learner to mould and adapt their behaviour around the roles and practices of a social group to which the individual claims membership.

Definition of terms

South African Qualifications Authority (SAQA)

The South African Qualifications Authority is a body of 29 members appointed by the Ministers of Education and Labour. The members are nominated by identified national stakeholders in Education and Training (SAQA, 1998).

Throughput

Throughput is the tracking of a cohort of students registering for the first time and completing the programme within the minimum formal time (Kisten, 2006).

Verbal Learner

The verbal learner needs explanation in spoken words or in written text (Felder, 1993).

Visual Learner

The visual learner needs pictures, diagrams, sketches, flow charts, etc to learn (Felder, 1993).

Zone of Proximal Development

Zone of proximal development is when a learner is working within an environment which he/she is academically extended slightly beyond where that individual feels academically both capable and competent (Vygotsky, 2006).

Chapter One

1.1 Introduction

Learner progression is a key marker in charting the success of learners within an educational institution. However this marker is not able to identify the factors related to the learner that are responsible for the lack of progression, thus studies have identified global categories of factors that are implicated in the lack of progression. These categories are related to issues of identity, economic and political, educational paradigms within which the learner develops and the learners supporting psychosocial paradigm is moulded around the above mentioned factors.

For most individuals going to higher education is a very challenging and intimidating time in one's life. There is a shift from the controlled environment of school and family to an environment where the individual has to accept personal responsibility for their personal, social and academic aspects of their lives. This undoubtedly will create some stress and anxiety in their lives (Conway, 2004). All the abovementioned aspects or factors necessitate the creation of coping mechanisms within the individual, to which they either adapt or they will fail to progress academically, socially etc.

As mentioned above, there are numerous aspects in an individual's life that can have bearing on the academic life of an individual; factors mentioned above include personal, social and academic ability. There are many more factors that play a role in the academic life of an individual at a higher education facility. For the purposes of this research the focus was predominantly on the psychosocial aspects which affect learners. I will however, highlight other factors which could play a role and have a substantial impact on a learner's academic progression.

Therefore, due to one or all of these factors, a percentage of students may / do take longer than anticipated to complete the programme. Therefore, this research aims to investigate psychosocial factors within the context of the M.Tech Chiropractic programme, in an effort to appreciate issues which affect throughput.

Thus the results of this survey had the potential to be used in several important ways, for example

- Knowledge of the perceptions of students could help academics to enhance the influence of factors that are seen as positive for student success and minimise the factors that are seen as causing student failure (Ditcher and Tetley, 1999)
- Allow for the identification of the student related factors in order for these to be addressed by the student.

Thus, this research attempted to determine the effect that previously identified psychosocial factors has on the academic progression of chiropractic students at DUT.

1.2. Aim/Purpose Of Study

This study investigated the role of psychosocial factors in the progression of learners in an applied health sciences master's programme - a higher education perspective.

Therefore the purpose of this study is threefold:

1.2.1 To investigate the extent to which the identified psychosocial factors affect pass rates.

Null Hypothesis One

The identified psychosocial factors do not affect pass rates.

1.2.2 To investigate the extent to which the identified psychosocial factors affect throughput rates.

Null Hypothesis Two

The identified psychosocial factors do not affect throughput rates.

1.2.3 To assess correlations between objectives 1 and 2 noted above in order to determine the impact of identified psychosocial factors on the learners within the M.Tech Chiropractic programme.

Null Hypothesis Three

There are no noted correlations between objective one and objective two.

1.3 Rationale For The Study And Research Questions

1.3.1 To provide a basis for subsequent research to improve throughput of Chiropractic learners.

1.3.2 To facilitate the improvement of Chiropractic education, and subsequent growth of the profession as a whole.

1.3.3 To provide a basis for subsequent research in other areas, this may facilitate effective throughput channels and decrease delay channels during qualification.

1.3.4 Perceptions of learners who experience subject failure are valuable in determining factors which influence subject failure.

McKenna, 2006 states that any delay in obtaining a qualification has negative financial implications for both the learners involved as well as for the institution. This has a ripple effect which has a negative affect on the South African economy, as the government subsidises tertiary education. The South African economy also desperately requires skilled graduates (McKenna, 2006). Therefore this research aims to initiate enquiry into this field, by investigating the possible factors resulting in minimum time completion or delayed qualification in M.Tech: Chiropractic at Durban Institute of Technology.

1.4 Limitations:

The research recognizes, but did not investigate learners that repeatedly failed subjects and who did not complete the course as a result thereof.

The following groups of people were omitted from the study due to absence of current contact details:

- Past learners that did not complete the course, but wanted to come back at a later stage, were not included in this study.
- Learners that started chiropractic at DUT and transferred to Witswatersrand Technikon (and vice versa) at some stage of their degree, were excluded. These graduates were difficult to contact, therefore they were counted as a non-response and seen as not being statistically viable.
- Lastly, the researcher omitted learners who obtained their B-tech, but withdrew at M-tech level. These graduates were difficult to contact, therefore they were counted as a no response and not statistically viable.

1.5. Outline of Chapters

Chapter two consists of a brief review of literature, followed by the research methodology and materials used (chapter three), and lastly the results and interpretation thereof in chapters four and five, respectively.

1.6. Conclusion

The aim of this research, therefore, was to investigate the impact or role of psychosocial factors in the academic progression of M.Tech chiropractic learner's at DUT.

Chapter 2- Literature Review

2.1. Introduction

Technikon Natal introduced the first formal South African Chiropractic education programme in 1989. Since its addition to the higher education degree choices offered by Technikon Natal, the course has produced some 10 year's worth of Chiropractic graduates. On average, between 15 and 30 learners graduate from it annually. In April 2002, Technikon Natal merged with ML Sultan to become the Durban Institute of Technology, (South Africa, 2002: Gazette number 23065) "A University of Technology" (2003) and in 2006 it became Durban University of Technology (*DIT Gains University Status as DUT*, 2006). The Chiropractic qualification has also evolved from a Master's Diploma in Chiropractic to a Master's Degree in Technology of Chiropractic with much emphasis being placed on not only the academic aspect of education but also Master's level research, and the course itself has been revised and re- curriculated numerous times (SAQA, 1998).

In 1994 the Technikon of Witwatersrand (now The University of Johannesburg, 2005), became the second tertiary institution in South Africa to offer Chiropractic as a higher education course. Together, these two institutions account for the all of South African Chiropractors who have already achieved a Master's Degree in Technology: Chiropractic and numerous learners who are currently attempting to do so (Courage, 2006).

Due to the increased pressure on institutions to be accountable and financially efficient, the need to quantify, understand and minimize the phenomenon of attrition becomes more urgent every day (Till, 2000). According to theories of attrition, the characteristics that a learner brings to the tertiary institution will interact with institutional characteristics and together they determine a learner's academic integration and commitment to graduate (Till, 2000).

The complexity of factors contributing to learner success should not be underestimated and is beyond the scope of this study. This literature review attempts to highlight just some of the factors, in particular the psychosocial factors considered in this study.

2.2. Progression In Education

According to Ditcher and Tetley (1999), academic success at university is usually described in terms of grades or degree completion. The converse can be assumed to be true regarding academic failure. Throughput rates and pass rates are fundamental markers in charting the success of learners within an educational institution as these are accurate quantitative markers of progression. Statistics from The Department Of Education Report of 2004 South African, indicated that the national benchmark for graduation rate is 25%, however the graduation rate at DIT is 17% (South Africa Department Of Education, 2005).

For the purposes of this research, throughput is defined as: “The tracking of a cohort of learners registering for the first time and completing the programme within the minimum formal time” (Kisten, 2006). Similarly a pass rate is the number of learners who have passed as a percentage of the number of learners enrolled for a subject (Kisten, 2006). Research conducted by The Department Of Education South Africa (2005), indicated that the undergraduate pass rate at DIT was 73%, however this includes learners who repeat subjects.

However, these markers are merely a mathematical reflection of progression. De Beer (2005) suggests that academic pass rates, achievement and lifelong learning are rather more apt to investigate because these are the means to establishing the real causes for failure and the factors that affect learner successes. In other terms, it could also provide a means to enhance learner successes by redesigning institutional management support structures according to the results. Most importantly, de Beer (2005) points out that the

learners should not be regarded as products but as human beings. In this regard it is of paramount importance to investigate how learners cope with the higher educational experience taking into consideration all possible factors.

This study does not neglect the qualitative realities of throughput and pass rates, which are discussed in the next section, but its focus is on the individual and social factors quantitatively contributing to these statistics.

2.3. Demographics

This study is not an analysis along demographic lines and so such issues are not discussed in detail. But the impact of such issues of race and gender should not be disregarded given the deeply divided nature of South African society. Demographic information such as age, gender, ethnic group or race is considered core demographic data in this study.

Age in years or maturity can play a major role in the academic progression of a learner. Approximately twenty-five percent of the university population are mature learners (Ditcher and Tetley, 1999). The mature learner adapts more rapidly to the study environment as well as the pressures of a heavy or challenging academic workload (Ditcher and Tetley, 1999). Lack of maturity may also play a role in academic failure according to Ditcher and Tetley (1999). According to a UK study cited in Roberts, Watkin, Oakey and Fox, (2003) the converse is true, mature learners according to their study showed that mature (older) learners are more vulnerable to withdrawing from the selected course of study. This is further supported by Fleming and Mckee (2005), who stated that mature learners, despite their motivation, were disadvantaged by the fact that many of these learners had not being involved in education for a number of years. It is evident from the conflicting literature that the exact influence of age is under review.

Another demographic factor that needs discussion is that of gender, with a South African analysis showing that of first-year intake by gender indicated a

higher percentage of female learners than male learners enrolled in higher education institutions, despite the fact that male learners performed better than their female counterparts in Grade 12 (64% of males passed in 2001, versus 60% of females) (Cosser, 2004). South African statistics from The Department Of Education Report of 2004 indicated that senior certificate examination showed that 53% of matriculants were female and in the same year 53% of higher education learners were female. Figures are not available as to the graduation rates by gender, but according to Johnes, 1990 (cited in Roberts et al, 2003), male learners are more at risk of academic failure than are female learners.

In relation to their representation in the general population, black African and coloured learners were under-represented in the first-year intake (53% versus 79% for black Africans, 8% versus 9% for coloureds), while Indian/ Asian and white learners were over-represented (9% versus 2% for Indians / Asians, 30% versus 10% for whites) (Cosser, 2004). However at DIT in 2004, 70% of learners were African (South African Department Of Education, 2005), but this level of racial representation is not echoed in the chiropractic department, which is similar to the study by Cosser (2004).

Pretorius and Le Roux (1998) state that several factors are pertinent to the South African context, low economic and social status to name a few, which prohibits grade 12 learners from entering the first year of higher education. In South Africa ethnic grouping still largely parallels socio-economic status, and therefore black African learners still do not enter certain higher education programmes. It has been suggested that this may be due to lack of financial resources or lack of exposure to certain professions. Based on anecdotal evidence, Chiropractors service largely white and Indian communities and are under represented in a more rural context.

2.4. Progression Factors

For the purposes of this discussion, the factors which are considered to be related to progression in higher education have been classified into two broad categories. These categories are similar to those found in Courage's (2006) research on Subject Failure in a Master's Degree Programme. The categories are: firstly, psychosocial factors relating to a learner; and secondly, educational or institutional factors which influence the progression of the learner.

2.4.1. Psychosocial Factors Relating To A Learner

A psychosocial paradigm includes factors that are informally structured and therefore present the most variance in their influence on the learner (Myburgh, 2005). This category was of particular relevance to this study and is thoroughly discussed under two broad headings, namely those psychosocial factors which are intrinsically related to the individual learner with regards to "psyche" and those factors which are considered extrinsically related to the learner with regard to a more "social" context. The division between intrinsic and extrinsic factors is fairly contentious as it has been criticised for being a somewhat artificial division, as in reality it is far more complex and integrated. However, for the sake of maintaining simplicity this framework is reasonable to use in the context of this study.

2.4.1.1. Intrinsic Psychosocial Factors

For the purposes of this research intrinsic factors are defined as those factors which are inherently part of an individual learner's psychological and physical profile. Killen (1994) (as cited in Morgan, 2001) noted that lecturers were more inclined than learners to attribute learner success at university to factors within the control of learners. Contrary to this, learners were more likely than lecturers to attribute success at university to factors that could be conceived to be beyond their control. Roberts et al (2003) support the notion that

intrinsic psychosocial factors are important factors affecting the academic progression of a learner.

2.4.1.1.1. Intra- Personal Models

2.4.1.1.1.1. Lejeune Three Dimensional Model

LeJeune (2000) describes a three dimensional model of factors in learner attrition. Ultimately the three factors involved are: motivation, academic preparation, and working within the zone of proximal development. According to Wikipedia (2006) Vygotsky considered the zone of proximal development to be when a learner is working within an environment which he/she is academically extended slightly beyond where that individual feels academically both capable and competent. He describes the ideal formula for failure as a low motivated learner, with low academic preparation, and having to work some distance outside the zone of proximal development. But the very nature of this formula is even more intricate as high motivation and low academic preparation may too lead to failure, as will a learner with high motivation who becomes bored because he is working below his/her zone of proximal development. LeJeune (2000) goes on to say that the model does not incorporate one element that either influences the three factors or may totally supersede all of them. According to him traumatic life events may result in failure regardless of the other factors, which are discussed later in this chapter.

2.4.1.1.1.2. Ditcher And Tetley Research

In a mail based questionnaire, Ditcher and Tetley (1999) revealed that learners (full time undergraduate) and academics (lecturing staff) at the University of Canterbury rated the following factors in order of importance as reasons contributing to lack of progression: lack of self motivation; insufficient effort; poor time management/ organisational skills; inappropriate assessment procedures; inability to manage stress; poorly structured presentations by

lecturers; poor literacy skills; lecturers who are out of touch with learners' needs; heavy course workload; misunderstanding course requirements; personal or family difficulties; inability to balance study and social commitments; irregular and insufficient feedback; irregular attendance at lectures; inadequate resources; financial problems; lack of academic ability; lack of maturity and insufficient learning support programmes

Similarly, at the South African Association for Research and Development in Higher Education (SAARDHE) conference at the University of KwaZulu-Natal in 2005, de Beer (2005) reported that the following causes of failure in higher education, where noted in a study at the University of Alabama (2004): lack of ability and poor school preparation; failure to assume responsibility; interference from psychological problems; lack of personal standards of quality; poor language skills; in appropriate choice of a major; vagueness about long- range goals; misunderstanding the amount of work required; other social activities and poor distance education delivery. De Beer (2005) goes on to mention that these factors may differ from institution to institution but are to a great extent more or less universal problems.

These factors have been identified within South Africa, but are unsure whether these are appropriate or apply to the chiropractic learners within the South African context

Rendón, Jalomo, and Nora (1999) concluded that the following factors hindered a learner's academic progression:

- Married students with family obligations
- Single parents
- Students who have been out of school for some time
- Students who are the first in their family to attend college
- Students who never liked high school or who were rebellious in high school

- Students who have had negative experiences with former teachers or administrative staff in elementary and secondary schools
- Students who were not involved in academic activities or student groups during high school
- Students who did not participate in school-based social activities or student programs during high school
- Students who are afraid or feel out of place in the mainstream college culture
- Students who have had negative interactions with college faculty or administrative staff
- Students who have a hard time adjusting to the fast pace of college
- Students who take evening courses when little or no services are available

Students who lack the financial resources to take additional courses or participate in campus-based academic and social activities in college

This is reinforced by a study conducted by Roberts et al (2003), where the following factors or reasons were provided by the learners in their study as to why they continued their course of study: determination to get a good career (self-motivated); not the sort of person to give up easily (self-motivated); learnt to cope better; support from family/ friends at home; support from friends at university; personal problems resolved; parental/family disapproval; losing face; support from other sources within the university and support from tutors.

The factors mentioned by De Beer (2005), Roberts et al (2003) and Rendon et al (1999) are not dissimilar to those discussed by Ditcher and Tetley (1999), and some of these factors can be attributed directly to the learner. These lists have been included here both to show the degree of overlap between studies and to indicate the genesis of the questionnaire developed for this study.

2.4.1.1.2. Intra- Personal Factors

2.4.1.1.2.1. Low Motivation

Both LeJeune (2000) and Ditcher and Tetley (1999) identify low motivation as a factor which may contribute to poor academic progression. Pretorius and Lemmer (1998) state that, learners differ both with respect to their skills and capabilities to carry out tasks and in their will to do them; in other words, it is due to the intensity and quality of their motivation. While intelligence may be a desirable quality among learners, motivation is even more so. Learners, who are motivated, learn according to their academic abilities. Moreover, motivated learners also make the lecturer's job easier; as they tend not to disrupt the instructional environment; they listen, discuss and debate topics when appropriate. When learners are motivated, lecturers also report having a sense of greater job satisfaction, thus motivation strengthens the entire education enterprise, this ultimately establishes a healthy culture and environment for teaching and learning (Pretorius and Lemmer, 1998). Ericsson (1996) and (2002) (cited in Plant et al, 2004) both describe learners who study habitually as being motivated and driven to succeed.

Theorists indicate two types of motivation: extrinsic or intrinsic (Deci and Ryan, 1985). Extrinsic motivation exists when a learner(s) are motivated by an outcome that is external to as well as unrelated to the learning activity. In contrast to extrinsic motivation, intrinsic motivation exists when someone works because they have an inner desire to accomplish a task successfully whether it has some external value or not. While both extrinsic and intrinsic motivations operate in most lecture halls, our systems tend to be designed primarily to promote extrinsic motivation (Pretorius and Lemmer, 1998, p.44).

There are four dimensions of a learner's motivation which can help lecturers to design strategies to motivate learners to learn eagerly:

- Interest: the extent to which the learner's curiosity is aroused by the lecture and sustained over time.

- Relevance: the extent to which the instruction is related to personal needs and goals which are perceived as meaningful.
- Expectancy: the learners perceived likelihood in learning.
- Satisfaction: the learner's intrinsic and extrinsic motivation (Pretorius and Lemmer, 1998, p.44).

Conversely, McKenna (2004) states in her research that definitions of motivation in the literature failed to go far enough in accounting for why some learners met lecturers' expectations and others did not. The definitions do not capture the role played by identity and power. While the learners in her study were motivated to succeed, she argues that some where not invested in the identities associated with being academically literate.

De Beer (2005) discusses the concept of "Failure Syndrome Learners." Which are described as those learners who are commonly recognised as persons with a low self-concept, or defeated or frustrated attitudes. In this study, this realm is considered one aspect of the intrinsic psychosocial factors progression.

2.4.1.1.2.2. Insufficient Effort

Low motivation as discussed previously may be linked to insufficient effort in a cause and effect relationship. Entwistle (1992) discusses the merits of responsible learners. Invariably, such learners follow through on a given task, complete it to the best of their ability, and often do so without direct or frequent supervision. It is questionable as to exactly how many learners are really responsible though, according to Entwistle (1992). When a task becomes too difficult for them, rather than seek help, they permit their attention to be diverted. When learners cannot learn easily, they are likely to become discouraged or irritated (Entwistle, 1992). Norton Peirce (1995) refutes the idea that low motivation is a fixed attribute that manifests as insufficient effort. She uses the term 'investment' to explain how learners may show insufficient effort because they are insufficiently invested in the target

identities. In the case of this study the target identities are ‘successful learner’ or ‘chiropractic graduate’.

2.4.1.1.2.3. Attendance at Lectures

Attendance at lectures may in itself have a multitude of variables which determine the extent a learner will or will not attend lectures. For example, transport problems to and from campus may prevent regular attendance. However, truancy is an issue which has been recognised as problematic across the board for many years. Plant, Ericsson, Hilland and Asberg (2004) as well as Enwistle (1992) discusses the value of lectures in terms of motivating learners and transmitting information, as well as the social function of sharing ideas, leading to co-operative learning. One may assume that poor attendance may lead to the development of a significant gap in the process of learning. The reasons why a learner do not attend lectures may vary from one individual to the next but Ditcher and Tetley (1999) claim that irregular attendance at lectures is a factor relating to the learner which contributes to poor academic progression. This opinion is shared by Plant et al (2004), who state that a learners who attend the majority of their lectures are more likely to progress than learners who have a low lecture attendance. In contrast to Plant et al (2004) and Ditcher and Tetley (1999), Beer and Beer (1992) concluded from their study that as the number of class hours increased, grades decreased. This issue becomes nuanced in interesting ways in this study when the discrepancy between objective results and the self-reported results are considered. The extent to which the learners are honest with themselves about practices such as attending lectures comes under question.

2.4.1.1.2.4. Time Management Skills

Time management can be described as the organising of activities to fit into the available time (Pretorius and Lemmer, 1998). Ditcher and Tetley (1999) cite poor time management skills as a factor which was rated third highest by both learners and academics as a factor which contributes to academic

failure. The inability to balance study and social commitments as suggested by Ditcher and Tetley (1999) may also be as a result of poor time management skills, in particular, learners entering higher education find it difficult to handle the amount of freedom they are given in higher education (Entwistle, 1992). Thus from the literature it would seem that learners who possess poor time management skills often spend less time studying and as a consequence reflect decreased academic progress.

This concurs with the inverse, where learners with good time management skills are more goals oriented and have a focussed approach to studying (Britton and Tesser as cited in Plant et al, 2004). The shift from the controlled environment of school and family to an environment in which learners are expected to accept personal responsibility for both academic and social aspects of their lives will create anxiety and distress (Conway, 2004). It has therefore been suggested that the Inability to Manage Stress may also be related to poor time management skills (Entwistle, 1992), but may also exist on its own.

2.4.1.1.3. Identity

Social identity theories are defined by a set of interrelated social and psychological theories concerned with when and why individuals identify with, and behave as part of social groups, adopting the shared attitudes of outsiders (Tajfel, 2006). All people therefore have various interrelated identities because people belong to various groups (McKenna, 2004). McKenna (2004) describes identity in relation to what she calls academic literacy. When a learner takes on a specific social literacy, such as that of a chiropractic learner, they are investing in the identity constructed by that literacy. Therefore academic literacy comprises the norms and values of higher education as constructed in discipline- specific practices.

> *"Learners are expected to take on these practices and the underlying epistemologies, without an overt instruction in or critique of these ways of being."* (*McKenna, 2004, pp. 269)*

Longden (2002) (cited in Roberts et al, 2003) as well as Plant et al (2004) stated that academic literacy plays an integral part of a learner's ability to cope with the demands of the academic workload of higher education.

Identity is considered to be linked with factors which are directly or indirectly based on issues related to self image and self competence (Roberts et al, 2003) and the capacity of these factors to influence the ability of the learner to interface with the educational setting and benefit either positively or negatively from it (Ditcher and Tetley, 1999).

In a study by Roberts et al. (2003) the reasons for staying within a programme were dominated by factors intrinsic to the individual. Factors which were positively related to progression were self-esteem, motivation and commitment. The notion of commitment can be extrapolated as goal orientation and self efficacy (Maslow, 1954). Self efficacy is an aspect of the self concept (Rogers, 1956) which refers to the belief in one's own power to act effectively, and is often considered to be an enduring characteristic formed by early positive regard and is enhanced by positive feedback from others.

Individuals with high self-efficacy beliefs are known to make more effort, do not 'give up easily' and tend to be more goal orientated (Bandura, 2006). Those with high self-efficacy will take on increasingly difficult tasks in order to achieve their goal. There is a clear link between these concepts and the ways in which motivation theorists describe levels of effort and investment (see section, 2.4.1.1.2.2.). These concepts are also supported by literature which suggests that a strong determination to succeed and a strong sense of self-identity were key factors in facilitating persistence amongst learners. This is further supported by the fact that strong personal commitment to the chosen programme was an essential pre-requisite for progression (McKenna, 2004, Maslow, 1954).

2.4.1.1.4. Health

As an extension of the concept of psychosocial factors which are intrinsic to an individual learner, physical well-being could be considered of great significance. The lack of well-being can manifest itself in terms of a mental (bulimia, anorexia nervosa), emotional (manic – depressive) and / or physical (dietary (malnutrition), communicable diseases) disease (WHO, 2006). Thus any disease stemming from these causes can lead to a deterioration in health and thus have an affect on the mental capacity regardless of factor or health condition concerned. This would imply a negative academic impact on the learner.

Within the context of the South African learner, health issues relating to the HIV-AIDS phenomenon are the most pertinent (Gouws and van der Merwe, 2004; Dorrington, Bradshaw and Budlender, 2002).

According to Gouws and Van Der Merwe (2004) the prevalence rate of HIV positive learners by 2005 can be calculated to be between 21- 36 per cent. A significant increase is projected regarding the percentage of learners that will be living with Aids. Gouws and van der Merwe (2004) argue that if learners become infected it might happen in the few years before the start of their studies, but most probably only during their studies, specifically at residential institutions where the biggest cohort of learners are in the range of 18-25. Depending on the economic situation of the learner as well as the care available to the learner, the onslaught of full blown Aids and even death can occur 5-10 years after becoming infected (Dorrington, Bradshaw and Budlender, 2002). This means that Aids- infected learners can die between the ages of 21-30 years. Institutions of higher education have to take this into consideration when developing a response to the onslaught of the pandemic (Gouws and van der Merwe, 2004).

Nzimande (2000) discusses the various reactions which a learner may experience whilst coming to terms with the diagnosis of HIV/AIDS. Nzimande (2000) states that no matter how well prepared some one is for a HIV test, it may still come as a shock to learn that one is HIV positive, the person may feel very confused and might not know what to do. Some of these individuals will go into denial and be convinced that the results are incorrect; others may experience anger, either blaming themselves or the person they believe infected them.

Most significantly for this study, many of them experience depression, they may feel that life has lost its meaning and that they have purpose to live. Suicide a very real threat in such cases (Nzimande, 2000). Mafuya (2005) discusses the management strategies of HIV/AIDS in higher education institutions in South Africa, and points out the lack of information and silence at institutional and individual levels, as well as stigma and discrimination which profoundly affects HIV positive learners. Together all these emotional issues may negatively impact upon a learner's academic experience.

Furthermore, in the immune compromised state, these learners are particularly susceptible physically to a number of debilitating opportunistic infections. In the South African context, two of the most prevalent AIDS related diseases include *tuberculosis (TB)* and *pneumocystis carinii pneumonia (PCP)* (Noble, 2005). As a result these incredibly life threatening diseases, the learner may experience flu like symptoms namely fatigue, fever, loss of concentration and weight loss. As the infection worsens the individual may become incapacitated and unable to perform normal daily functions and as result their academic status may be greatly affected (Avert, 2005). Thus, there seem to be a myriad of emotional and physical intrinsic psychosocial factors that impact on the South African HIV positive learner.

2.4.1.2. Extrinsic Psychosocial Factors

For the purposes of this research, extrinsic factors are defined as those factors originating from a context external to the individual learner and comprising of various social experiences or circumstances which an individual learner may have encountered.

2.4.1.2.1. Socio-Economic Background

In addition to the intrinsic psychosocial factors are a group of factors, which for the purposes of this research, are considered to be extrinsic to the individual learner. Within this group of extrinsic factors, the researcher takes into consideration various issues pertaining to an individual learner's social background and familial structure. Personal or family difficulties or traumatic life events, as pointed out by LeJeune (2000), may result in failure regardless of the other factors.

2.4.1.2.1.1. Social History

Social scientists have been concerned with the effect of social origins on educational progression since the early days of the discipline. One important aspect of social origins that continues to occupy the interest of researchers and the public is the family (Carter, 1999, Roberts et al, 2003).

According to Carter (1999), recent demographic changes in mortality and marriage behavior have had a profound impact on the increasing proportion of children who will reach age eighteen without both biological parents. Carter (1999) reported that previous studies showed that learners who come from a family with both biological parents are more likely to attain higher levels of education than those who do not. Carter (1999) goes on to mention that that approach did not account for changes in the effects of family structure over time. For the most part, at higher levels of educational attainment there were no significant differences in the effects of family structure over time (Carter, 1999).

Research from the 1970s in the USA suggested that individual learners could overcome the exigencies of their social status through the education system. In low income countries the academic performance of learners in poor households was not as different from the performance of children from wealthy and privileged backgrounds as it was in high-income countries. This seems to challenge the views of the conflict theorists, who believed that education systems were biased against the poor; that public investments in education reinforced established socio-economic classes hence making the lives of poor children politically more problematic (Heyneman, 1989).

Bernstein (1962) is renowned for hi studies on how socioeconomic class intersect with upward mobility. He stated that only those who have access to particular “restricted codes” because of their social histories are likely to succeed. The divisions in South African society caused by Apartheid, make this a very relevant point.

Heyneman (1989) discusses the influence of socio-economic status versus the influence of “school quality” on academic progression. Heyneman (1989) states that the statistical power of socio-economic status is not uniform across societies and mentions that the statistical power of socio-economic status, as well as school quality, differs by age, gender, and subject matter. Heyneman (1989) claims that in general socio-economic status is more powerful in predicting achievement on those subjects over which the school is one of many sources of information and knowledge. This is the case for instance with art, language, and literacy. School quality tends to be more powerful in predicting achievement on those subjects over which the school curriculum is the primary source of theoretical information and experience, such as mathematics and science (Heyneman, 1989).

Numerous authors, namely Yorke (1997) and The Select Committee On Education and Employment UK, sixth report 2001 (as cited in Roberts et al, 2003) and contextualised by Pretorius and Le Roux (1998) in a South African perspective, all agree that learners from a low socio-economic background

are susceptible to academic failure. This is due to numerous factors such as poor financial support, low educational level and or background and inadequate support structures (family or academic support) to name a few.

De Beer (2005) discussed the implications of Financial Aid for Higher Educational Programmes in South Africa and highlights some of the difficulties surrounding this issue.

> "One needs to not only manage the funds responsibly and direct them most expediently, but one needs to address the challenge of financial aid data and information most aggressively; examine financial aid policy, its administering, the disbursement of funds – to whom, how, follow-up, profiles of needy learners, loans and bursaries. Furthermore, one is sometimes constrained by National Policy, the need to balance aid between needy and academically highly meritorious learners, to provide access, yet ensure equity and quality and, very importantly, to ensure that financial aid does not just draw the learner into the institution but sustains him/her through their studies." (de Beer, 2005, p.3).

Finance is a major issue facing a large proportion of the learner population in South Africa and results in a large number of learners withdrawing from their studies due to a lack of finance (Pretorius and Le Roux 1998). Financial restrictions and limitations are not only a concern of learners in the South African community. The issue of finance seems to be a universal problem (Spours, 1997) and is one the major factors which need to be addressed in higher education.

However, according to de Beer (2005) the most articulated aspect in post apartheid South Africa is the financial factor which makes it challenging for the majority of "drop out" learners to complete their studies. De Beer (2005) goes on to say that it is difficult to determine whether this is due to current financial problems or the legacy of their past financial scenarios.

2.4.1.2.1.2. Major Events

Holmes and Rahe (1967) first published the “Social Readjustment Rating Scale" in 1967 (cited in Birnbaum and Sotoodeh, 1991) and it has since been adapted to give some sort of proportional indication for some of the most “stressful” life events which a learner may have cope with during their academic career (see Appendix J). Death of a spouse, partner or parent is considered the most stressful event for an adult or a child, while divorce or relationship break- up, menopause, separation from living partner, a jail term, pregnancy or death of a family member all rate next highest on the scale. Interestingly, engagement and marriage are two events which also rate reasonably highly on the stress scale. Learners may experience a number of these stressful events while completing their education at a tertiary institution.

2.4.1.2.1.2.1. Violence

South Africa’s political and educational frameworks have been unsettled in recent decades (see Appendix M). This has resulted in uncertainty as well as frustrated learners who have been exposed to a variety of tumultuous events.

Langford (2004) has reported on interpersonal violence in American Higher Educational Institutions and stated that interpersonal violence can take many forms on campuses. Three of the most prevalent types are:

(1) Rape and sexual assault (increased incidence when related to alcohol consumption / drug dependence);
(2) Nonsexual physical assault (increased incidence when related to alcohol consumption/ drug dependence), including fights, muggings, hazing, and dating violence; and
(3) Hate crimes (relating to discrimination).

The U.S. Department of Education’s Higher Education Center for Alcohol and Other Drug Abuse and Violence Prevention (2006) report concurs with that of Langford (2004) however they also add that there are many types of campus violence, and the article goes on to mention that this includes rape, fighting,

sexual harassment, hate and bias-related violence, stalking, rioting, disorderly conduct, property crime, and even self-harm and suicide.

Langford (2004) claims that the estimates of campus violence range widely due to both the underreporting that skews official statistics and the use of differing definitions and data collection methodologies in surveys. Existing data indicates, however, that a substantial minority of college learners experience some type of violence and related consequences. Langford (2004) stated that in a nationally representative survey of college learners, approximately 17 percent of learners reported experiencing some form of violence or harassment in the previous year. Fisher, Cullen and Turner (2000) also found that many women do not characterize their sexual victimizations as a crime for a number of reasons (such as embarrassment, not clearly understanding the legal definition of rape, or not wanting to define someone they know who victimized them as a rapist) or because they blame themselves for their sexual assault.

2.4.1.2.1.2.2. Sexual Assault

Fisher, Cullen, and Turner (2000) discussed the issues of sexual assault at college campuses in the United States. College campuses host large concentrations of young women who are at greater risk for rape and other forms of sexual assault than women in the general population or in a comparable age group. Based on their findings; Fisher, Cullen and Turner (2000) estimate that the women at a college that has 10,000 female learners could experience more than 350 rapes a year.

College women are victimized both on campus and off campus. For nearly all types of sexual victimization, however, off-campus victimization is more prevalent (Fisher, Cullen, and Turner, 2000). This conclusion must be qualified because off-campus sexual victimizations may take place in bars and nightclubs or in learner residences close to campus. Thus, even if a learner is victimized off campus, she may be engaged in an activity that is

connected to her life as a learner at the college she attends (Fisher, Cullen, and Turner, 2000) (See Appendix K and Appendix O).

This concurs with a high level of gender-based violence in South African higher education institutions, according to a 2002 report by The African Gender Institute.

The Independent on Saturday newspaper reported the following on 22 April 2006 about the crime at Durban University of Technology.

> *"At city campus alone, learners said there were six muggings a day, right outside campus gates. Three cars had reportedly been stolen from the campus in as many weeks. SRC President Thami Shezi said that crime on all of the campuses was out of hand. Among many serious incidents over the past few weeks, a female learner had been raped at the ML Sultan Campus and two learners had been stabbed during a robbery outside the city campus."* (Barford and Baloyi, 2006, p.2).

2.4.1.2.1.2.3. Discrimination

Financial exclusion can be viewed as a form of discrimination. Learners who don't possess the financial means, facilities or come from families from a low socioeconomic stand point are excluded from attending higher education (Pretorius and Le Roux, 1998). As a result of the above mentioned factors, these learners are excluded by default and can be viewed as a form of discrimination. Courage (2006) found that learners in the Homoeopathy programme at Durban Institute of Technology between 1991 and 1995 made up 94% of the respondents who had failed a subject who first registered for the Master's Degree. The Homeopathic department is closely associated with the chiropractic department at DUT in terms of subject content until the end of the B-Tech. Therefore the results of Courage's research are extremely significant to the experiences of current chiropractic learners at DUT. Courage (2006) suggests that during this time the entire country was undergoing a massive political transformation, which had a substantial effect on the Institution as a whole. According to a homeopathic learner (anonymous)

(Courage, 2006) was cited as saying that 1992 was pre-democratic South Africa, so racism and poor cross cultural understanding, was marked.

Whether or not this had any direct influence on the failure rate during this period remains to be seen, but it does offer one possible explanation for the phenomenon (Courage, 2006).

Courage (2006) also discusses the possible impact of the instability, within the Department of Homoeopathy during that period, on learners. One of Courage's research participants described that period as a very unsettling period, where there was much unrest amongst the learners which made studying during this time almost impossible.

Blatant discrimination was suggested to play a pivotal role in failure by Courage (2006). According to a homeopathic learner (anonymous) (Courage, 2006) was cited as saying that many learners who failed this subject (not specified), should not have. Black learners didn't get a year mark, Indian and Jewish learners were also discriminated against, as were any learners who didn't get on with the lecturer.

2.4.2. Educational/Institutional Factors

The educational paradigm includes factors which are formed by the policies and procedures that outline the reference for teaching, learning and assessment strategies within educational institutions, as well as the academic support afforded to the learner during the course of his / her study.

According to de Beer (2005) there are a number of institutional factors contributing towards poor academic progression – such as failing to create an environment in or outside the classroom, which is conducive for learners' learning and educational needs. In the context of higher education programmes, particularly in applied health sciences, failure to implement or adhere strictly to the suggested admittance criteria may have negative

academic repercussions for the learner who is admitted, but not capable of handling the academic workload. The lack of appropriate role models or mentors in the academic environment should also not be negated, particularly within the South African context. The Department of Chiropractic has seen many changes in academic staff, administrative staff and Heads of Department over the years (SERTEC, 2001), limiting stable role models. Finally, some learners are overwhelmed with the transition from high school to university and become overly stressed by the dramatic changes (de Beer, 2005).

2.4.2.1. Learning/ Teaching/ Assessment

Mda and Mothata (2000) reported that South Africa has a high rate of illiteracy and semi-literacy. Many lecturers in the South African environment complain that learners lack the necessary literacy levels required for higher education (Volbrecht, 2002).

Investment in higher education literacy, according to McKenna (2004) is not an all or nothing affair, but changes over time and space and is dependent on conditions of power and compatibility between the target literacy practices and the individual's current multiple identities. Lack of academic ability may seem an obvious cause for academic failure however, as previously mentioned this may be influenced by motivational factors (Pretorius and Lemmer, 1998).

2.4.2.2. Skills in Studying and Learning

Recent research conducted by Courage (2006) has indicated that learners are generally rather dissatisfied with the help provided in higher education institutions in preparing them for the study skills they need. Lack of such study skills has been identified as one of the reasons for poor academic progression (Courage, 2006). There is a huge demand for study skills training; this will attempt to ensure that every learner is given the opportunity to develop the

skills involved in time-management, as well as the technical aspects of studying (Entwistle, 1992).

2.4.2.3. Differences Between Learning And Teaching Styles.

Felder (1993) described the apparent “mismatch” between learning styles and teaching styles. According to Felder (1993), everyone is both sensing and intuitive; however, most people tend to have a preference for one. Undergraduates tend to be sensors while professors tend to be intuitors, which results in a mismatch between teaching and learning styles (See Appendix L).

Felder (1993) discussed the preference for specific types of input modalities in terms of visual learners and verbal or oral learners. The visual learner needs pictures, diagrams, sketches, flow charts, etc to learn well, while the verbal learner needs explanation in spoken words or in written text. The concept of bias dominance is also discussed in that a learner will learn more when the information is presented in the input modality that is preferred. However, most people are visual learners while 90- 95% of course content is verbal (See Appendix L) (Felder and Brent, 1999).

The organization of information which is presented is also critical to the learning process. Induction starts with observations and conclusions are inferred and explained. Deduction starts with principles and conclusions are then derived and deduced. Induction is generally the natural human learning style and is better for long term retention of information. Deduction is the natural tertiary education teaching style and may be better for short term retention of more information. Felder and Brent (1999) suggested that most learners probably learn better inductively, whilst most lecturers teach deductively (See Appendix L).

It has been recognised that learners process information differently. Felder (1993) identify two types of learners, namely, active learners and reflective

learners. Most classes have both active and reflective learners, but most lecture environments are passive-active learners don't get to act and reflective learners don't get to reflect (See Appendix L). In the chiropractic programme, this influence is negated in that the outcomes of the programme dictate that learners participate actively in the learning process, reflect on the outcomes of the learning and change the process of their learning in order to suite the doctor-patient relationship.

Finally, in terms of understanding information, Felder (1993) that indicates learners can be either sequential learners or global learners (See Appendix L). Most learners, lecturers and curricula are sequential in nature, meaning that they progress steadily by functioning on partial understanding. Global learners, however, need to see the big picture in order to function properly according to Felder (1993). They are initially slow to grasp a concept but then progress in major leaps. Global learning is definitely in the minority, but is extremely valuable; unfortunately global learners are systematically weeded out as there is little support for this learning style (Felder, 1993).

2.4.2.4. Assessment Techniques

According to Gibbs and Simpson (2005) assessment is the most powerful lever teachers have to influence the way learners respond to courses and behave as learners. Courage (2006) reported in her study, that in the past, marking memorandums lacked definition or were often poorly correlated with the intended objectives which were hoped to have been achieved. This then often led to or opened the way for misinterpretation, bias, and ultimately subjectivity Courage (2006).

McEvoy and Welker (2000) state that academic failure is strongly related to the assessment techniques used to ascertain what learners know and how well they know it. Felder, (1993) recognised that tests perceived by learners as "unfair" may be the leading cause of poor learner evaluations of teaching. They go on to describe general tips for testing, including the reviewing of

instructional objectives before and after each test. Courage (2006) quotes one research participant as saying that the testing of the subject matter required "simply regurgitating" information presented in the textbook with very little room for assessing the understanding of the subject matter or the relevance of the matter to the profession.

With the introduction of Outcomes Based Education and Training (OBE) in South African Education in 1998, the need for clearly defined criteria has been identified (SAQA, 1998). Courage (2006) states that if this is transferred right the way through to the standards for assessment, evaluating criteria should be stringently defined in terms of "marking rubrics" rather than the outdated memorandums. Similarly, this should apply to all written, oral and practical assessments. Following the principles of the Outcomes Based Education and Training system the "marking rubrics" should be made completely transparent to assure the learners of fair objective assessment, avoid ambiguity, and give them the opportunity to accurately reflect what they know or have understood (SAQA, 1998). Likewise, it will afford examiners clear and justifiable guidelines for assessing learners and will eliminate the potential for false accusations regarding discrimination (Courage, 2006).

2.5 Conclusion

In conclusion, tracking the academic progression of a learner is a multi-factorial problem (Chazan, 1973 as cited in Pretorius and Le Roux, 1998), which needs to be handled with sensitivity especially when pertaining to the psychosocial factors. The many factors intersect and there is no agreement among researchers as to how these factors influence each other in determining learner success. In this literature review many of the factors have been briefly described as a set of discrete issues but in the life of a learner, they would overlap and blur. Thus this study has attempted within the constraints of the multiple and dynamic factors to investigate the variety of factors affecting chiropractic learners with the intention of gaining greater insight to their academic experience.

Chapter 3- Methodology

3.1. Introduction

This chapter dealt with the collection of data and the research methodology used. The process of statistical analysis is also discussed.

The primary data was the data collected from the questionnaires/participant responses and the data obtained once the statistical analysis was complete. Secondary data was the data obtained from the literature, Internet, books, journals etc. with which to compare the outcome of the results in the research study.

3.2. Study Design:

The Research was a prospective, cross sectional, descriptive (observational) survey, (Fink, 1995) which was based on a self-administered questionnaire (quantitative – Likert scale) (Salant and Dillman, 1994).

With the education system being focussed on the development of holistic approaches to teaching, learning and assessment, it would be preferred that a qualitative research method be utilised in order to gather in-depth perceptions (McKenna, 2006). This method however has problems of replicability and generalisability (McKenna, 2006). Therefore it was decided that the initial approach to investigating this area would best be served by means of a quantitative research approach even though this posed inherent limitations. Nevertheless it was also noted that this approach also has many advantages in tracking learner performance, as it can be audited, replicated, reviewed and documented (Salant and Dillman, 1994) in addition to providing preliminary data as to the effect of psychosocial factors on output. This preliminary study could thus serve to indicate areas of further in-depth qualitative studies at a later date.

3.3. Advertising /Recruitment

No advertising was used in this research, participation was voluntary.

Recruitment was done via:

- Email communication;
- Telephone communication;
- South African postal service and
- Verbal communication.

3.4. Sample

3.4.1. Sample Method

Self-selection sampling, based on participant response was applied.

3.4.2. Sample – Size

The total population size was 406 participants. This consisted of all current learners in the chiropractic programme as well as qualified chiropractors from Durban University of Technology in the field.

For the purposes of this research, 57 individuals were excluded from the sample. These included 38 first year chiropractic learners, as these learners have not yet completed an annual year of their degree. Three members of the focus group were excluded, as two of these members were current chiropractic learners at the time of the focus group and the remaining individual was a qualified Chiropractor from DUT/ DIT/ Technikon Natal. Due to their participation in the focus group, these individuals were excluded from the sample. Three members of the pilot study were excluded as they qualified from DUT/ DIT/ Technikon Natal. Due to the fact that they participated in the pilot study, they were excluded from the sample. The research supervisor and the co-supervisor were excluded

as they also had previous insight into the construction of the questionnaire. Ten qualified Chiropractors were excluded from the sample as the researcher could not obtain current contact details of any description. Lastly, two current Chiropractic learners and one qualified chiropractor were excluded as they transferred from the WITS/ UJ Chiropractic programme and they formed part of the exclusion criteria of the research as per the research methodology.

The final total sample was 349 participants.

For statistical validity the number of questionnaires required in the analysis process either needed to represent 10% of the population or 50 questionnaires, which ever is greater (Esterhuizen, 2005). In terms of this study, 50 questionnaires were greater therefore this was used for this research.

3.4.3. Sample – Group Allocation

The participants were allocated to one group, as this was a survey of an entire group and not a comparison between groups. In most cross sectional surveys the study population is representative of the group being studied (Fink 1995). However, in the case of this research project, the group was small enough for all members to be included in the study, should they agree to participate.

M. Tech and B.Tech Chiropractic learners from second year registration – fifth year of study were in the unique position of being able to reflect on current issues pertaining to their personal academic progression. Qualified Chiropractors were able to reflect on the issues presented in the questionnaire from the context of their successful progression through the M.Tech Chiropractic course.

Once the participants had completed the questionnaire, they were asked to refrain from including any personal information that may enable the researcher to identify the participant. (For example: no personal details, stamps etc). If the

individual did not wish to participate in the research they were asked to return the uncompleted questionnaire.

3.4.4. Sample – Characteristics

3.4.4.1. Inclusion

3.4.4.1.1. People

The following learners were included:

- All chiropractic learners that were currently registered with the DUT, outside of those that had registered for the first time for the programme and had as yet not completed any subjects that accrued towards the programme. These learners were included to obtain a current understanding from those learners within the system. These learners were able to reflect the immediate concerns and best practice.
- In addition to this all past learners from the DUT/ DIT/ Technikon Natal that have qualified through the Chiropractic Department were included. In order to obtain a historical perspective on the concerns and best practice that they may have had while learners.

3.4.4.1.2. Questionnaires

The questionnaire needed to be completed in full for the questionnaire to be considered valid. However, some questions did not pertain to certain individuals, e.g. asking 1st year students when they finished their research, and as the researcher did not give them a clear indication of the appropriate response and thus these questions were left blank. However, these questionnaires were not entirely omitted and the relevant remaining data was still used for statistical analysis.

3.4.4.2. Exclusion

3.4.4.2.1. People

The following individuals were excluded:

- Learners who have failed twice and by default never completed course at DUT/ DIT/ Technikon Natal.
- People who transferred from the Chiropractic programme to another programme.
- People who transferred from Wits Tech Chiropractic programme to DUT/ DIT/ Technikon Natal Chiropractic programme as, they were not subjected to the same study environment, psychosocial factors, lecturers etc.
- Lecturing staff/ learners that took part in the
  1. Focus group,
  2. The research proposal meetings,
  3. The researcher and supervisor.

  These individuals were part of questionnaire development as well as the research process; therefore they had insight and previous knowledge which placed them in an advantageous and biased position when answering the questionnaire. This would skew the results; therefore they could not participate in the research.

3.4.4.2.2. Questionnaires

Questionnaires that were not completed in full according to their year of study were excluded and were considered invalid if questions with respect to that particular year of study were incomplete. If a question was omitted from the questionnaire for a particular year of study, then the specific questionnaire was considered invalid and was omitted from the research.

3.5. Procedure

Contact details at minimum needed to include a physical address and / or telephone number/s. Chiropractors were contacted via a variety of methods, predominately email, but also telephone, and personal contact for those in the

area. Confirmation of contact details and willingness to participate in the study was required prior to sending out the questionnaires to the participants.

3.6. Critical Pathways In This Survey

3.6.1. Tracing Potential Participants

The ability to contact all the graduates and confirm their contact details correctly so that distribution and data collection ran smoothly was of vital importance to the success of this research. Some of the graduates' contact details had changed several times since they had qualified and the researcher experienced difficulties in tracing them. Similarly, a number of the female participants had married since graduation and their surnames had changed, which also presented the researcher with difficulty in establishing initial contact.

3.6.2. Bad Or Non- Responses

3.6.2.1. Role Of The Information Letter

In trying to ensure compliance of participants, it was imperative to thoroughly inform participants of the proposed research and to emphasize the importance of the information. Much care was taken in the presentation of the questionnaire to avoid the notion that the survey was simply a "marketing" ploy or that the information would be used against the respondent. A careful explanation of the intention of the study was laid out in the information letter that each potential participant received (Appendix H). The information letter also clearly explained the measures, which were taken to ensure the confidentiality of the responses, to avoid responses that may have been given because they sounded proper, rather than truthful (Salant and Dillman, 2004).

3.6.2.2. Time Constraints Of Participants

Another serious concern was that, due to the nature of the sample group, participants may be reluctant to spend their valuable time on completing the questionnaire. The questionnaire was therefore limited to only the essential questions revolving around pertinent areas that were identified by the researcher and confirmed by the pilot study (Courage, 2006).

3.6.2.3. Convenient Methods Of Response

To encourage participation in the study, it was important to make the methods by which participants could respond as flexible and convenient as possible. Hence, each participant was offered 3 methods by which they could respond. These methods will now be discussed in further detail.

3.7. Data Collection Method

3.7.1. Data Collection- Postage Method

1. The questionnaire (See Appendix E) was coded and the envelopes numbered randomly therefore the respondent's identity remained anonymous to the researcher.
2. Participants received a consent form (Appendix G) and information letter (Appendix H) with the researchers details attached should they have any questions or queries regarding the questionnaire. A letter of thanks was also sent out with every questionnaire (Appendix F).
3. The questionnaire was self administered (Salant and Dillman, 1994).
4. Posted questionnaires had a return self-addressed envelope.
5. A 12-week time lapse was allowed for the return of the completed questionnaires.

6. Participants were contacted again by either telephone or e-mail to confirm that the participant had received the questionnaire and to remind them to kindly complete and return the questionnaire.
7. All responses were sent to and received by the same independent person, clinic administrator at the Chiropractic office.
8. Questionnaires were returned to the clinic administrator at the Chiropractic office, she acted as the administrative support external to the research.
9. The names on the questionnaires were ticked off against a list of learners so that a response rate was determined. Thereafter the names were deleted from the questionnaires; this was done by the administrative Officer. Only then, did the researcher and the supervisor have access to the questionnaires.
10. Each participant's name was replaced by a file number so as to make the association of their participant's details to their names inaccessible to the researcher once the data had been captured.
11. The hard copy was then stored in the locked filing cabinet.
12. As answers were confidential, the questionnaires were stored in a locked filing cabinet in the custody of the researcher. Only the researcher and the research supervisor(s) have had access to the questionnaires.
13. The participants were considered as "not participating" in the study if the questionnaire was not returned within twelve weeks.
14. Data analysis was then completed.

3.7.2. Data Collection - Email Method

1. Participants received questionnaire (Appendix E), a consent form (Appendix G) and information letter (Appendix H) with the researchers details attached should they have any questions or queries regarding the questionnaire. A letter of thanks was also sent out with every questionnaire (Appendix F).
2. The questionnaire was self administered (Salant and Dillman, 1994).
3. Participants were contacted again by either telephone or e-mail to confirm that the participant had received the questionnaire and to remind them to kindly complete and return the questionnaire.
4. E-mailed questionnaires were returned to Mrs Ireland at the Chiropractic office, she acted as the administrative support external to the research.
5. In this instance (e-mail replies), the e-mail was printed by the independent party, the administrative Officer, and then deleted, with no traceable address or name appearing on the printed copy.
6. The names on the questionnaires were ticked off against a list of learners so that a response rate was determined. Thereafter the names were deleted from the questionnaires; this was done by the administrative Officer. Only then, did the researcher and the supervisor have access to the questionnaires.
7. Each participant's name was replaced by a file number, so as to make the association of their participant's details to their names inaccessible to the researcher once the data had been captured.
8. The hard copy was then stored in the locked filing cabinet.
9. As answers were confidential, the questionnaires were stored in a locked filing cabinet in the custody of the researcher. Only the researcher and the research supervisor(s) have had access to the questionnaires.
10. The participants were considered as "not participating" in the study if the questionnaire was not returned within twelve weeks.
11. Data analysis was then completed.

3.7.3. Data Collection - Self Administered Method

1. Participants received questionnaire (Appendix E), a consent form (Appendix G) and information letter (Appendix H) with the researchers details attached should they have any questions or queries regarding the questionnaire. A letter of thanks was also sent out with every questionnaire (Appendix F).
2. The questionnaire for current learners was administered in a semi-supervised fashion (Salant and Dillman, 1994).
3. For the purpose of this research, there were two scenarios, firstly Chiropractic learners from 1st -5th year were given questionnaires to complete in a group environment. They were all given the same instructions, and if an individual had any questions or comments, the researcher was at hand to answer the participant's questions.
4. Those participants who completed the questionnaire immediately, submitted it to the researcher in the venue, and the questionnaires were then taken directly to the independent party (Mrs Ireland) in order for the questionnaires to be coded appropriately.
5. If any questionnaires were completed at a later stage, they were returned to Mrs Ireland at the Chiropractic office, she acted as the administrative support external to the research.
6. The names on the questionnaires were ticked off against a list of learners so that a response rate was determined. Thereafter the names were deleted from the questionnaires; this was done by the administrative Officer. Only then, did the researcher and the supervisor have access to the questionnaires.
7. Each participant's name was replaced by a file number, so as to make the association of their participant's details to their names inaccessible to the researcher once the data had been captured.
8. The hard copy was then stored in the locked filing cabinet.

9. As answers were confidential, the questionnaires were stored in a locked filing cabinet in the custody of the researcher. Only the researcher and the research supervisor(s) have had access to the questionnaires.
10. The participants were considered as “not participating” in the study if the questionnaire was not returned within twelve weeks.
11. Data analysis was then completed.

3.8. Measurement Tool

3.8.1. Questionnaire

3.8.1.1. Questionnaire Construction

The questionnaire was developed by the factors that were identified in the literature review (Ditcher and Tetley, 1999; de Beer, 2005; Roberts et al, 2003 and Rendon et al, 1999) (See Chapter 2).

There are a large number of factors that affect a learner positively or negatively in an educational institution. For the purpose of this study the main focus was on psychosocial factors that affect learner progression and the research hoped to identify predominant factors that caused a lack of progression (Myburgh, 2005). Therefore more attention and focus can be paid to specific factors that affect learner progression ultimately increasing throughput and pass rates.

Learner progression is a key marker in charting the success of learners within an educational institution. However this marker is not able to identify the factors related to the learner that are responsible for the lack of progression, thus studies have identified global categories of factors that are implicated in the lack of progression (Ditcher and Tetley, 1999). These categories are related to issues of identity (McKenna, 2004), socio- economics (de Beer, 2005; Heynemann, 1989), educational paradigms (Felder, 1993) within which the learner develops and the

learners supporting psychosocial paradigm is moulded around the above mentioned factors.

The questionnaire was developed by the researcher and a homeopathy student (Courage, 2006) who was conducting similar research, but focusing more on subject failure as the main factor for a lack of academic progression. Dr. Courage's' research pertained to the homeopathic community at DUT/ DIT/ Technikon Natal whereas the researcher's population in this research included all Chiropractic learners as well as qualified practitioners. The researcher included subject failure as a factor, but psychosocial factors were the primary focus. Other factors such as demographic, personal, financial, academic (subject failure, academic literacy etc.) were also included.

3.8.1.2. Questionnaire Refinement

3.8.1.2.1 Focus Group

A group of 11 people were selected due to their similarity to the respondents who eventually completed the survey as regards to education level, age and possible language barriers (Fink and Kosecoff, 1985, Salant and Dillman, 1994) as well as educators who had a valid interest in the outcomes of the study.

The 11 Members Of The Focus Group Included:

- The researcher and the research supervisor. They guided the proceedings of the focus group;
- Two senior Chiropractic students. They were familiar with the academic requirements placed on Chiropractic learners, they themselves attended lectures at DUT/ DIT/ Technikon Natal and understood some of the stresses placed on the learners (Due to their participation in the focus group they are excluded from the participating in the research);
- Two Homeopathy learners. Homeopathy learners undergo similar educational processes as the Chiropractic learners.

- A qualified Chiropractor who qualified in the USA. He was able to offer an international perspective and acted as a neutral party.
- A qualified Chiropractor who qualified from DUT/ DIT/ Technikon Natal. She went through the same process as the research participants.
- A statistician. She was able to guide the researcher as how to word questions in order to obtain the desired result, as well as give appropriate advice on how the questionnaire needed to be structured in order to maximize statistical relevance.
- A graduate from an unrelated field who completed his studies at DUT/ DIT/ Technikon Natal. His was exposed to a similar environment as the Chiropractic learners.
- A member of staff who works at CHED (Central Higher Education Department). She was actively involved in the re- curriculation of various higher education programmes, including the Chiropractic programme.

Each Member Of The Focus Group Received:

- Informed consent form (Appendix A);
- Letter of information (Appendix B);
- Confidentiality statement (Appendix C);
- Code of conduct (Appendix D);
- A copy of the questionnaire (Appendix E).

The reason for having had a focus group was to stimulate the members thinking and encourages them to develop ideas about the topic (Salant and Dillman, 1994), in order to assess the relevance of questions presented in the developed questionnaire. As well as add to, delete from or modify or clarify the questions already presented. The focus groups also encouraged the members other than those doing the research to support the research process by increasing research relevance as well as contextualize the questionnaire (Salant and Dillman, 1994) in order to enhance the validity of the questionnaire. This was achieved by addressing the following:

Face Validity, where *Face validity* is the simplest type of validity, which is determined by agreement between researchers and those with a vested interest in the questionnaire (i.e. interpreted in this study as those participants of the focus group), that 'on the face of it' the tool seems valid, unambiguous and easily interpreted by a lay person. (Mouton, 1996)

Content Validity. An instrument has *content validity* when the content of the questionnaire is considered effective, and well rounded enough to be able to assess a particular concept. This was achieved by having the individuals in the focus group representative of the specific areas of expertise related to the research to be conducted as well as respondent representation. (Mouton, 1996)

The last concept associated with validity is criterion validity. *Criterion validity* is measured when a particular tool produces similar results when compared with another tool already known to be trustworthy. This is also called *concurrent* validity by Mouton (1996). However, this type of validity is not to be addressed as part of this current research and has only been included for completeness in discussing validity, as the purpose of this questionnaire is not to develop a gold standard in assessment tools with respect to questionnaire research (Mouton, 1996).

3.8.1.2.2. Recommendations As Per The Focus Group

As a result of the focus group numerous amendments were recommended. These changes have been grouped together according to 1. Grammatical changes 2, Conceptual changes 3. Generic changes.

Grammatical Or Numerical Changes-

These included changes in spelling, grammar and punctuation:
Question 1.10 was amended to state 1.9.

Question 3.4, 3.5 the ranges were altered.

Conceptual Changes-

These included rewording sentences, question 1.2, 1.3, 1.4, 2.1, 4.3, 5.1, 6.3.
Changing the meaning: Question 1.4, 2.1, 4.3, 5.1, 6.3.
Changing the structure of some of the questions, eg. Inserting tables, additional columns: Question 1.6, 1.7, 1.13, 1.14, 2.2.
Additional questions added: Question 1.9, 1.13, 2.3, 2.4, 3.1, 3.2, 4.1, 6.1, and 6.2.

Generic Changes-

These included factors such as placing questions in alphabetical order, alphabetical changes were made to question 1.1. The focus group stated at this point that the alphabetical order should be followed throughout the questionnaire.
The second generic change included removing questions from the questionnaire: Question 1.5 was removed from part A and placed into Part C (financial, question 3.4). Question 1.8 was removed from the original questionnaire and became incorporated into question 1.7.
Question 6.5 – 6.9 were permanently removed from the questionnaire as the study of was a quantitative design, and these questions in the questionnaire would have entailed changing the research design and methodology, as well as the researcher being taught interview techniques and analysis in order to facilitate qualitative analysis (McKenna, 2006).

The recommendations put forward by the focus group were carried out within the final questionnaire for questions 1.1, 1.6, 1.7, 1.7, 1.13, 1.14, 2.1, 2.2, 2.3, 3.1, 3.2, 3.4, 3.5, 4.1, 4.3.

The questionnaire was confirmed at the focus group and their recommendations were taken in to account. However, many of their suggestions were omitted due

to the fact that the researcher never completed the transcript immediately after the focus group. This happened to the following questions: 1.2, 1.3, 1.4, 1.9, 1.13, 1.14, 4.2, 5.1, 6.1, 6.2, and 6.3.

Detailed notes/ amendments were taken during the focus group by the researcher on an original copy of the questionnaire. These notes, however did not encompass all the relevant suggestions from the focus group. Therefore a recommendation for a future study would be to do the transcription as soon after the focus group as possible, once the final research proposal has been approved, before the questionnaire is sent to printing.

In addition, the pilot study recommended two changes to the questionnaire, firstly they insisted on inserting ranges to question 4.3 and secondly to split question 6.3 into two separate questions.

Psychosocial factors were identified from our literature review as well as a focus group, the researcher was aware that the factors that were identified do not include all the possible factors. Due to this reason some of the answers to the questionnaire allowed for other factors that were not listed in the questionnaire as an answer to be filled in by the participant. Therefore the participant would add to the researchers list of identified psychosocial factors.

3.8.1.2.3. Pilot Study

A pilot study was then completed, in order to attain construct validity, which is defined as a parameter that measures how accurately answers to questions in the questionnaire reflect theoretical predictions of a particular construct.

Thus the purpose of the pilot study was to answer the following questions (Fink and Kosecoff, 1985):

- Did the questionnaire provide the necessary information?

- Are certain questions in the questionnaire redundant or misleading?
- Are the questions appropriate for the individuals who participated in the survey?
- Did the information that the researcher collected, enable him to use the survey forms properly?
- Are the procedures standardized?
- How consistent was the information obtained by the survey?
- How accurate was the information obtained by the survey?

The pilot study was conducted during the final proposal review.

3.8.1.4. Description Of The Final Questionnaire

There were six sections to the questionnaire. The majority of the questions were fixed choice.

Demographic Questions Related To Participant:
Part A: Current Demographic Data.

This category dealt with defining the respondents according to their:
Age, questions: 1.2
Gender, questions: 1.1
Ethnic group, questions: 1.3
Marital status, questions: 1.4
Languages spoken, questions: 1.5

As well as the following constructs that dealt with the level of academic performance (as a reflection of the academic literacy):
Subjects completed at school, questions: 1.6
Previous qualifications, questions: 1.13; 1.14
Level at which the learner entered the programme, questions: 1.12

Which credits had previously been obtained, questions: 1.14
Markers for progression through the programme, questions: 1.7- 1.12; 4.4

Part B: Personal / Psychosocial History.

This category dealt with the following psychosocial issues related to family structure, current occupation, questions:1.15; 2.1.1; 2.3- 2.5; 3.3- 3.6; 4.1- 4.3; 4.5.6; 4.5.8, 4.5.9; 4.5.16; 4.5.17; 4.5.20- 4.5.22; 4.5.28; 4.5.30; 4.5.35; 4.5.39- 4.5.41; 4.5.45; 4.5.46;6.1- 6.5.

Part C: Financial Structure During Tertiary Education.

This category dealt with the following psychosocial issues related to financial and economic viability of the family unit, questions: 3.1- 3.3; 4.5.26; 4.5.43; 4.5.44;

Part D: Academic Progression And Education Methodology.

This category dealt with the following psychosocial issues:
Markers for progression: 1.7- 1.12; 4.4
Social literacy: 2.1.2; 4.5.2; 4.5.7; 4.5.12; 4.5.14; 4.5.15; 4.5.19; 4.5.23; 4.5.24; 4.5.35; 4.5.37- 4.5.39; 4.5.46.
Academic literacy: 1.6- 1.14; 2.2; 4.5.1; 4.5.3- 4.5.5; 4.5.10; 4.5.11; 4.5.13;4.5.17- 4.5.19;4.5.22; 4.5.27; 4.5.29; 4.5.31- 4.5.36; 4.5.42; 4.5.46.

Part E: Involvement In Co- Curricular Activities- Questions 5.1

Part F: Participant Opinion Questions- Questions 6.1- 6.9

3.8.2. Performance Indicators

Pass rates / Retention rates (Australia, 2005, The Review Of Higher Education Outcome Performance Indicators, p. 72).

Completion rates - members completed in minimum time), employment rates, starting salary rates. (Australia, 2005, The Review of Higher Education outcome performance indicators, 2005, p. 72), were factors that had been considered in the literature, but are unreliable as they are responder dependant or require calculations on single cohorts only once the cohort has exited the system. Therefore for the purposes of this study only pass rates will be used as a comparative variable.

3.9. Data Collection Frequency

This was only done once either per e-mail, letter (both self administered) or through face-to-face administration by the researcher.

3.10. Data Analysis

3.10.1 Statistician Assessment Of Questionnaire

Once the questionnaire was drawn up (after focus group and pilot procedure), it was sent to a statistician for review. This was to determine whether the way in which the questions were asked and answers given are optimally done for easy and applicable statistical analysis. The statistician's comments were taken into consideration and the researcher made the appropriate changes.

3.10.2 Statistical Analysis

Data was entered and analysed in SPSS version 11.5 (SPSS Inc, Chicago, Ill, USA). Descriptive analysis was achieved using frequency tables and bar charts for categorical variables, and summary statistics such as mean, standard deviation and range for quantitative variables. Inferential statistics involved examining factors associated with two major outcomes: any self reported subject failure and any objective subject failure. The latter outcome was determined from DUT student records. Failure was taken as achieving a final mark for any subject of < 50%. Chi square tests were done to assess associations between the outcomes and categorical factors, while independent two sample t-tests or Mann Whitney tests were used for quantitative variables and likert scale variables. A p value of <0.05 was considered as statistically significant.

The response was analysed statistically and the results appear in Chapter 4 and are discussed in Chapter 5.

Chapter 4

Results And Discussion Of Results

4.1 Introduction

The statistical findings and results obtained from the data is discussed in this chapter.

4.1.1. Primary Data

Primary data was obtained from respondents answering the questionnaire and various performance indicators were obtained from Management Information Systems at DUT.

4.1.2. Secondary Data

This particular data came from many different sources, which included: Textbooks, Journal articles and specialist internet search sites (e.g. Pubmed, Mantis).

4.1.3. Key Of Symbols

N = number
% = percentage
SD = standard deviation
P value = probability value
T value = the t statistic derived from a two sample t-test.

4.2. Results: Demographics

4.2.1. Gender, Age, Qualification

One hundred and sixty three respondents constituted the study sample, of which n=88 (54.0%) were female and n=75 (46.0%) were male. An analysis of the first-year intake by gender indicated that higher percentages of female learners than male learners enrolled in higher education institutions, despite the fact that male learners performed better than their female counterparts in Grade 12 (64% of males passed in 2001, versus 60% of females) (Cosser, 2004).

A comparison of 2001 preferences and 2002 enrolments in Australia reveals that the gender differentials are much larger for female than for male learners – suggesting either that females have less “choice” than males in their study directions, or that they are less sure than of their HE preferences while they are still at school (Australia, 2005 Department Of Education Science and Training). According to the South African Department Of Education, 53% of learners in public higher education are female, more specifically within DIT (in 2004), 50% of learners were female. These statistics were similar to the results of this study, which indicates that the chiropractic departments gender ratio, correlates to the statistics within the South African public higher education system.

As women's enrolments in undergraduate programs have surpassed those of men, some authors have argued that this constitutes a widespread crisis as the principle workforce constitutes males *(*Hollenshead and Miller, 2001).

Based on the results in this study and in congruence with Hollenshead and Miller (2001), it was shown that the predominance of learners was female and this trend is showing a favourable tendency for the female gender. This study therefore concurs with the higher proportion of females found in higher education, attaining their degrees in health to a larger degree than their male counterparts. This is however, contrary to the traditionally male dominated

profession that constitutes chiropractic (Engelbrecht, 2006), as well as the data extracted from this research in terms of chiropractors already qualified (table 1).

Table 1: Cross Tabulation Of Qualified Chiropractor By Gender.

		Gender.		Total
		Female	Male	
Qualified chiropractor	No	72	49	121
	Yes	16	26	42
Total		88	75	163

The respondents mean age was 24.8 years (SD 5.2 years, range 18 to 50 years). Forty-two respondents were qualified chiropractors (25.8%) while 121 (74.2%) were still studying. The ages of the 2002 PAL learners at Para West University in Australia ranged from 21 to 56, and there were about equal numbers in their 20's, 30's and 40's, with an average age of 36. The age ranges were the same in the second year of the PAL pilot, although overall they were younger than the single Para West group the year before.

In addition, the ages of the learners in the Diploma in University Studies over the years that it has been offered have consistently been older than for the University as a whole, which itself has an older learner body than many universities. Thus, no useful comparisons can be made from the national data on the ages of learners in enabling programs across Australia, since such programs do not have a minimum entry age. In 1998, for example, 43 per cent of such learners were under 20, an age range not eligible for either UniSA-PAL or the Diploma in University Studies in 2002. Interesting, but not surprising is that nearly a third of the learners in enabling courses were 25 years and older in 1998 (the most recent year for which national data is available) (Australian government department education science and training, n.d.).

Therefore it is not possible in this research to compare the values of ages in the higher education system, as it would seem that the parameters of entry into the

programmes are institutionally and / or nationally specific and thus the variance of age may not be comparable.

Of those still studying, their year of study is shown in Table 2. There were relatively few who were above their 7th year of study (n=8, 6.6%). One respondent had not yet qualified after 16 years of study. It is not certain, however it is thought that the respondent that indicated that s/he was unqualified after 16 years did so in error as all the respondents receiving the questionnaire where either qualified chiropractors or learners that where registered at the DUT/DIT at the time of the study. During this time no learner was registered on the DUT/DIT system as having been currently registered as well as having started the programme 16 years ago. Therefore, it is questionable that this response is correct.

Table 2: Year Of Study In 121 Respondents Who Indicated They Had Not Yet Qualified As Chiropractors

Year	Frequency	Percent
2nd	24	19.8
3rd	20	16.5
4th	16	13.2
5th	22	18.2
6th	21	17.4
7th	10	8.3
8th	3	2.5
9th	3	2.5
11th	1	0.8
16th	1	0.8
Total	121	100

.

With reference to Ditcher and Tetley's article, their range of respondents steadily increased from first year to third year and then consistently decreased from third year to their fifth or more of study. Their study showed a bell curve in terms of their respondent grouping. The description of their group of learners is as follows, First year learners (17%), second years (24.6%), third years (32.2%), fourth years (15.5%) and fifth or more years of study (10.6%). (See Appendix P)

Whereas in this current study, every learner in the chiropractic programme was included as well as every qualified chiropractor from DUT, thus skewing the comparison.

When comparing the year distribution of Ditcher and Tetley (1999) to those achieved in this research it becomes apparent that the following holds true:

- The sample represented in this study does not follow the smooth curve of increased learner numbers followed by decreased learner numbers as shown by Ditcher and Tetley (1999). This could be as a result of the smaller learner numbers within the chiropractic programme as compared to the target population in Ditcher and Tetley (1999).
- Ditcher and Tetley (1999) utilized only a sample population from within the university structure, thus predisposing the results to fit a perfect representation curve. In this study the researcher attempted to obtain a full sample response with the result that the representation of learners per year may be more accurate than Ditcher and Tetley (1999), who used predetermined portions of the sample.

As a result of the above statement it is possible to conclude that the learner representation per year in this study would support an accurate reflection of the samples responses to the questionnaire and thus the true reality of the learners.

In addition no comparative data is available in order for a comparison to the made to other chiropractic institutions; as such data does not exist in the literature.

4.2.2. Ethnic Composition

Ethnic group distribution of the sample is shown in Table 3. The vast majority of the sample was White (76.7%), with 18.4% Indian and 3.7% Black. As reported in Chapter 2, Cosser (2004) reported similar statistical findings in South Africa, with regard to the over-representation of white learners within realm of higher education and the reciprocal under representation of other race groups.

Table 3: Ethnic Group Of Respondents (n=163)

	Frequency	Percent
Asian	1	.6
Black	6	3.7
Indian	30	18.4
White	125	76.7
Other	1	.6
Total	163	100.0

In relation to their representation in the general population, black African and coloured learners were under-represented in the first-year intake (53% versus 79% for black Africans, 8% versus 9% for coloureds), while Indian/ Asian and white learners were over-represented (9% versus 2% for Indians / Asians, 30% versus 10% for whites) (Cosser, 2004). South African statistics from The Department Of Education Report of 2004 indicated that 73% of learners involved in public higher education were Black in 2004. Within DIT in 2004, 93% of learners attending the institution were Black. These statistics do not mirror the current ethnic ration in the chiropractic course.

Cosser, 2004 indicates that racial choices overturn popular perceptions about enrolment patterns, as it would seem that more black Africans are enrolled in Business and Commerce than in any other field, followed by the Social Sciences. For whites, however, the Social Sciences was the most heavily subscribed field, with fewer black Africans, coloureds, and Indians / Asians being enrolled in education than in any other field. Health Sciences however are least subscribed field for whites (Cosser, 2004). McKenna (2006), states that from her experience the education sector consists mainly of Black Africans and the Health Sciences consists predominantly of White and Indian ethnic groups.

This research is in congruence with McKenna, as the results showed the predominance of learners being white, secondly Indian and lastly an under-represented black learner population. This reflects that assertions of McKenna who indicates that racial equity in an applied health sciences programme such as chiropractic still represents certain cultural groups and the wealthier communities

(McKenna, 2006). This could be as a result of Black communities not being exposed to chiropractic and this results in a lack of knowledge with regards to the profession and it is this lack of awareness that decreases enrolment of black learners (Van As, 2005).

4.2.3. Marital Status

Table 4 shows that the majority of respondents were single (82.2%), while 14.7% were married. All four respondents who reported their marital status as "other" were engaged.

Table 4: Marital Status Of Respondents (n=163)

	Frequency	Percent
Single	134	82.2
Married	24	14.7
Divorced	1	.6
Other	4	2.5
Total	163	100.0

Lovik (n.d.) reiterates the point that most learners who apply to higher education are unmarried. In terms of their marital status, the Para West cohort in the first year of the pilot were predominantly single (56.3%), with equal numbers who were divorced and married (18.7%) (Australia, 2005 Department Of Education Science and Training). Furthermore Lovik's (n.d.) study showed that the majority of male graduate school applicants were unmarried (59.6%), while smaller proportions were married (40.4%). The same trend was true for the majority of female graduate school applicants that were unmarried (57.8%), again the smaller proportion were married (42.2%) (See Appendix Q).

Thus Lovik's (n.d.) results concur with this current study, where the majority of learners currently studying are unmarried.

Table 5: Cross Tabulation Of Gender By Marital Status.

		Marital status.				Total
		Single	Married	Divorced	Other	
Gender.	Female	74	12	0	2	88
	Male	60	12	1	2	75
Total		134	24	1	4	163

Interestingly Lovik (n.d.) also compared graduate degree recipients by gender and age; this showed the inverse of the applicant group. There were considerably more male (56.5%) and female (62.5%) graduate degree recipients who were married, whereas male (43.5%) and female (37.5%) were unmarried (See Appendix Q).

In difference to the literature this research showed that more males (12/60 = 20%) where married than females (12/75 = 16%) in the chiropractic programme. It however needs to be considered that these ratios indicate all respondents' responses; as a result it would seem that within the chiropractic population related to the DUT/DIT/Technikon Natal, that a greater percentage of male practitioners/undergraduates are married and a greater percentage of female practitioners / undergraduates are unmarried.

4.2.4. Language.

Figure 1 shows that the predominant first language was English (83.4%, n=136), followed by Afrikaans (9.8%, n=16). Second language was mostly Afrikaans (52.1%, n=85), followed by English (16.6%, n=27). Only 24 respondents had a third language, isiZulu being the most common (7.4%, n=12).

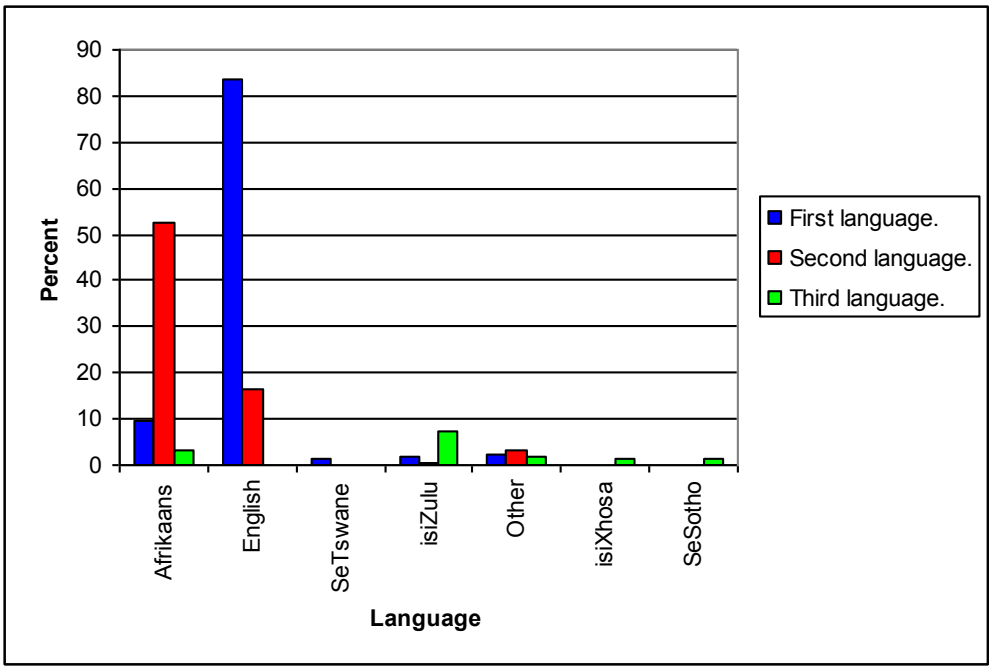


Figure 1: Predominant First, Second And Third Languages Of Respondents.

Language as a medium of instruction has always posed a difficulty in that there are always learners that will be taught in a language, which is different from their home language (the language in which they converse most comfortably). As a result, the educational community faces a difficult challenge to reconcile the increased expectations in terms of academic achievement for high school learners, while at the same time addressing learners whose development is lagging as they are taught to read, comprehend and write about subject matter in a language (for example Latin in the case of the chiropractic learners) with which they are not conversant and often find difficulty in expressing themselves (Carnegie, 2006 and Schlebusch and Thobedi, 2004). This situation is equally applicable in the South African context where schools may rely heavily on the learner's 'mother tongue' which may differ from the medium of instruction at tertiary institutions (such as the DUT/DIT/Technikon Natal) (Government Gazette, 2002).

Thus in this situation, as learners struggle to study in their second language (L2) English and are then also confronted with new terminology (for example Latin),

most of which the learner's will never use in normal conversation, an instant solution to a huge problem was needed (Knight, 2006 and Schlebusch and Thobedi, 2004). Without a resolution to this problem, there is an increased probability that the learner will not be able to progress on an academic level, based solely on their inability to communicate effectively in their second language (L2) (Knight (2006) and Ali (1995) (cited in Schlebusch and Thobedi, 2004).

This scenario is very well depicted in the study by Knight (2006), where it was found that Health Science learners entering the University of Port Elizabeth (UPE), coming from marginalized backgrounds (these learners could be from any race group); found it difficult to progress academically. The learning at the school level was minimal over many years, in addition to which cultural circumstances did not allow a broad exposure to scientific terminology and general reading and writing skills were poorly developed; as a result exceptional academic support was required to support these learners. This, Knight (2006) reported, was related not only to their inability to effectively communicate in their second language, but also in grasping the 'new language' of the medical sciences.

Thus it has been established in the literature that academic success in the Health Sciences is very dependant on subject specific semantics and a fully integrated understanding of language usage as well as text and narratives in the related textbooks (Knight, 2006).

4.2.5. Family Environment.

Figure 2 shows that the vast majority of respondent's biological parents held the role of parent or guardian while they were studying (79.63%). These findings are different from those suggested by Carter (1999), who stated "recent demographic changes in mortality and marriage behaviour have had a profound impact on the increasing proportion of children who will reach age 18 without both biological parents." Carter, 1999 goes on to state that previous studies showed that

learners who come from a family with both biological parents are more likely to attain higher levels of education than those who do not.

In congruence with the above the majority of respondents in this study (81%) reported that their living environment was undisrupted at the time of study (Figure 3).

The most frequently reported education level of respondents fathers was tertiary education (29%) followed by matric / grade 12 (26%). Mothers had mostly matric / grade 12 (31%) followed by tertiary education (24%) (Figures 4 and 5).

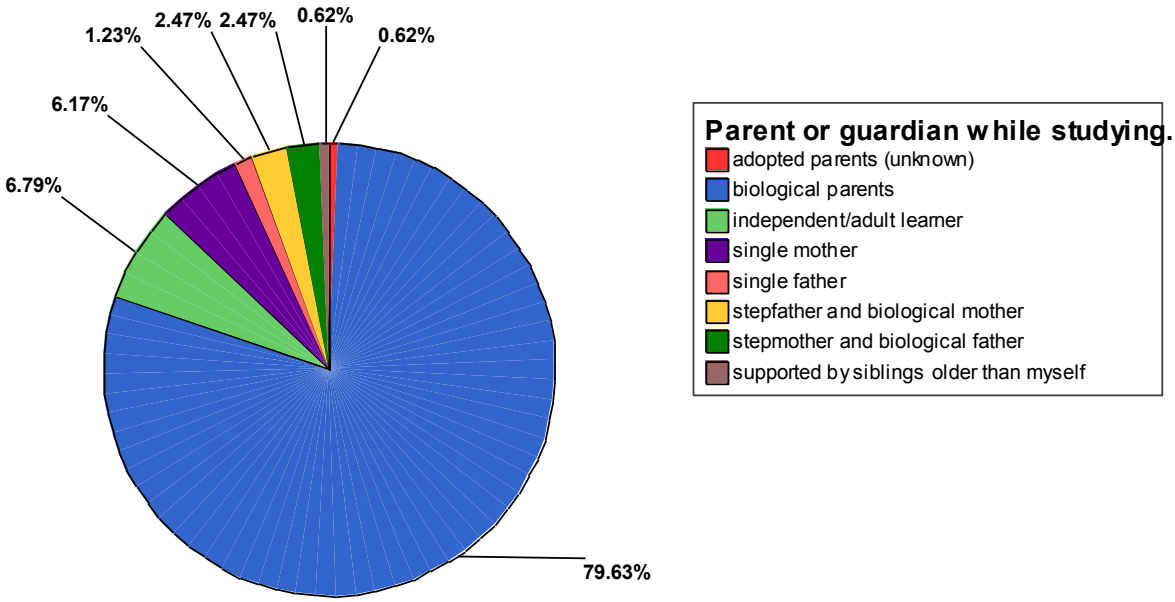
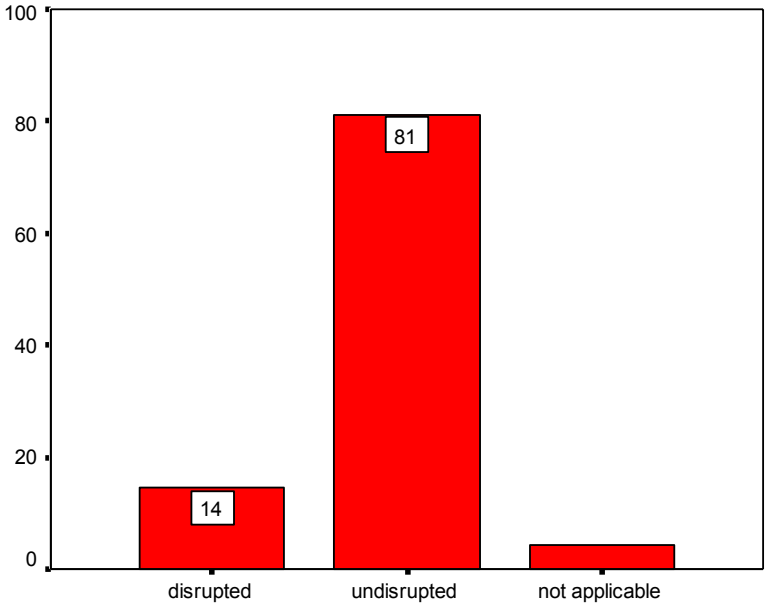
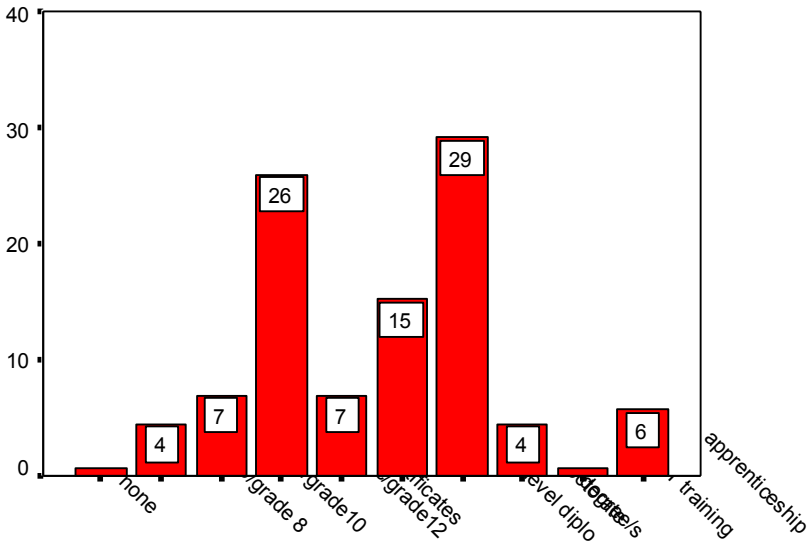


Figure 2: Role Of Parent Or Guardian While Studying.



What was your living enviroment like during time of study.

Figure 3: Living Environment At The Time Of Study.



Highest education level of father

Figure 4: Highest Education Level Of Father.

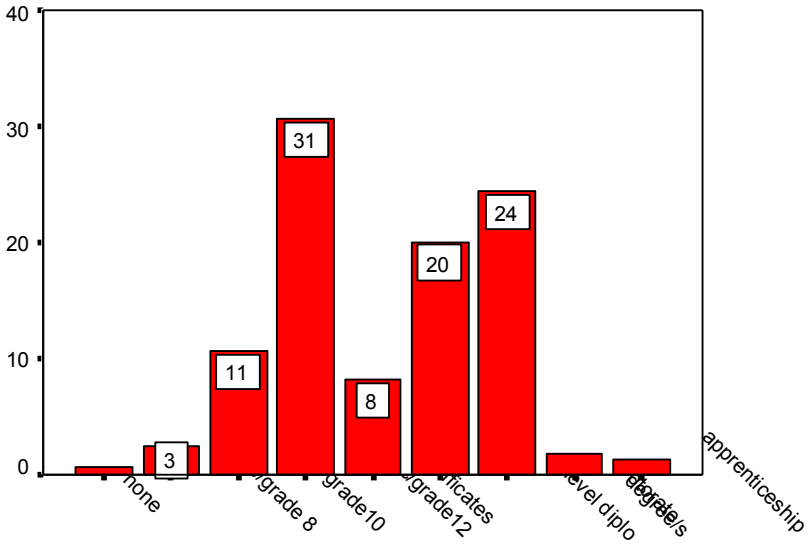


Figure 5: Highest Education Level Of Mother.

Congruent with the presence of both biological parents, there were an almost equal percentage of respondents who were supported by both parents (44%) and at least one parent earning a salary (42%). There were a relatively high proportion of respondents who reported an unstable income whilst studying (9%). This is shown in Figure 6.

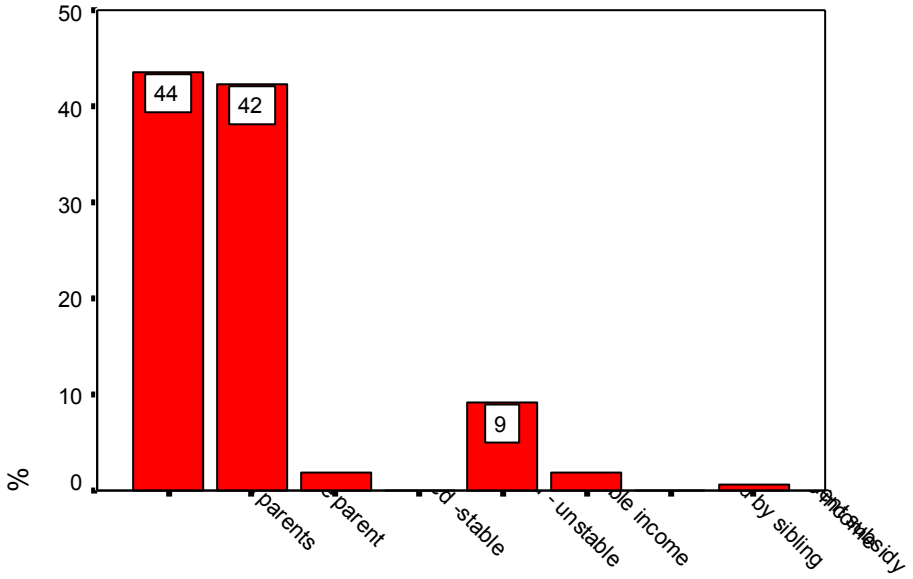


Figure 6: Family Income Source.

Figure 7 shows that mostly the respondents had their studies financed by their parents (66%), while 19% had a learner loan and only 5% were on scholarships or bursaries. The 10% “other” were mainly other family members, siblings, inheritance or through working.

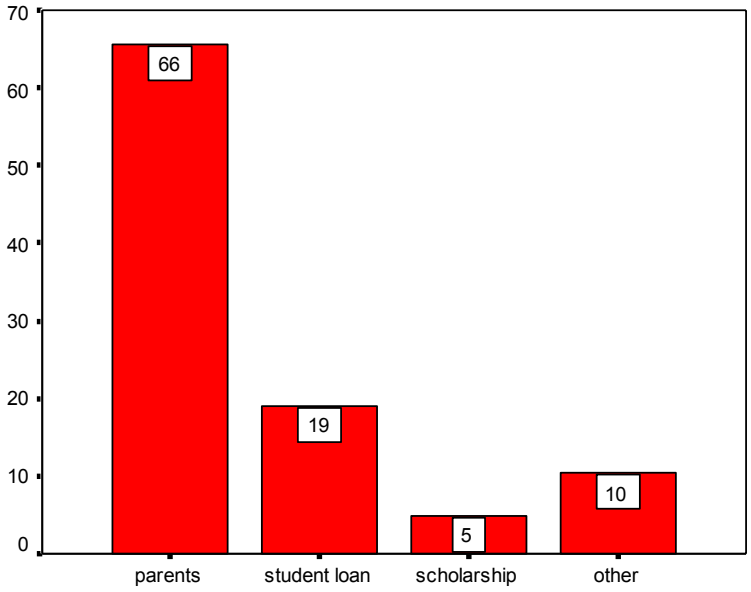


Figure 7: Study Finance Source.

In respect of work, the majority worked in occupations unrelated to their field of study (65%), while only 8% worked in their field of study. This is shown in Figure 8. If the individual worked in a related field this would enhance both their academic and social literacy skills, where as if the individual worked in an unrelated field, this would only develop their social literacy skills.

De Beer's (2005) comments on the financial implications in the post- apartheid higher education, seems to have no validity in the context of this study, given that the racial or ethnic distribution of the majority of the respondents is mostly white and therefore should not have come from a "previously dis-advantaged background." However, it may be interesting to note any changes within these statistics in future years as learners from a wider spectrum of racial and ethnic backgrounds enroll for this course.

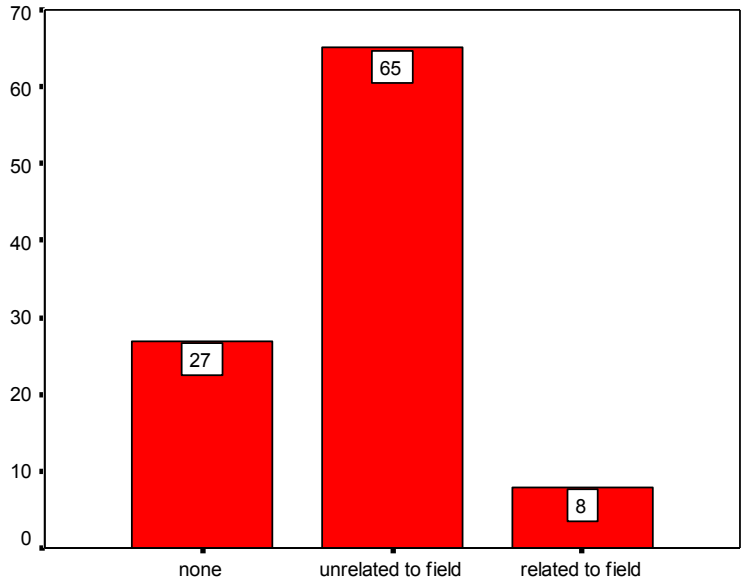


Figure 8: Personal Occupation During Time Of Study.

The number of dependants was analysed only for those who had not yet qualified since it was intended to give an idea of dependants during studying. Of those who answered the question, 93.5% (n=72) reported no dependants, 4(5.2%) reported one dependant, and 1 (1.3%) reported 3 dependants (data not shown). With a review of the literature no comparative studies could be found.

4.3. Results: Inferential Statistics.

4.3.1. Outcome 1: Self- Reported Subject Failure.

Respondents were asked if they had failed any subject during their chiropractic course at first attempt. Fifty-six respondents reported having failed at least one subject ever (34.4%). Responses to which subjects they had failed are shown in Tables 6 to 10 below. In first year, the most frequently failed subject was Chemistry (6.76%). In second year it was Biochemistry II (15.08%), and in third year Auxiliary Therapeutics III (9.35%) was the most common subject failed. Both chemistry as well as biochemistry are closely associated, it has been noted according to the literature that a lack of academic ability may seem an obvious cause for academic failure (Pretorius and Lemmer, 1998). Therefore individuals who achieved a poor physical science grade in high school may experience more difficulty with the above-mentioned subjects.

Clinical Chiropractic IV (4.49%) and the Research Project and Dissertation (2.44%) were the most frequent 5th year subjects failed / incomplete at the conclusion of the academic 5th year.

It should be noted that some 2nd years were still completing outstanding or failed 1st year subjects and therefore could not answer all the questions pertinent to the first year, hence the variation from the n = 163. This is also true of the third year learners still completing second year subjects. This would not hold true for the 4th year or 5th year learners, as they would not be able to complete these years without fully having completed either the third or fourth year respectively.

Table 6: First Year Subjects By Self-Reported Failure.

Subject		Fail	Withdraw/deregister without penalty	Complete the subject successfully	
Anatomy I	n	8	2	149	159
	%	5.03	1.26	93.71	
Physiology I	n	6	1	146	153
	%	3.92	0.65	95.42	
Philosophy, History and Principles I	n	0	1	158	159
	%	0.00	0.63	99.37	
Biology I	n	4	2	145	151
	%	2.65	1.32	96.03	
Chemistry I	n	10	2	136	148
	%	6.76	1.35	91.89	
Physics I	n	3	4	141	148
	%	2.03	2.70	95.27	
		7.8%	12		153

The figures 9 - 13 (bar graphs) associated with tables 6 - 10 are only related to the subjects with the greatest self-reported failure rate.

Figure 9: First Attempt To Complete The Subject (Chemistry).

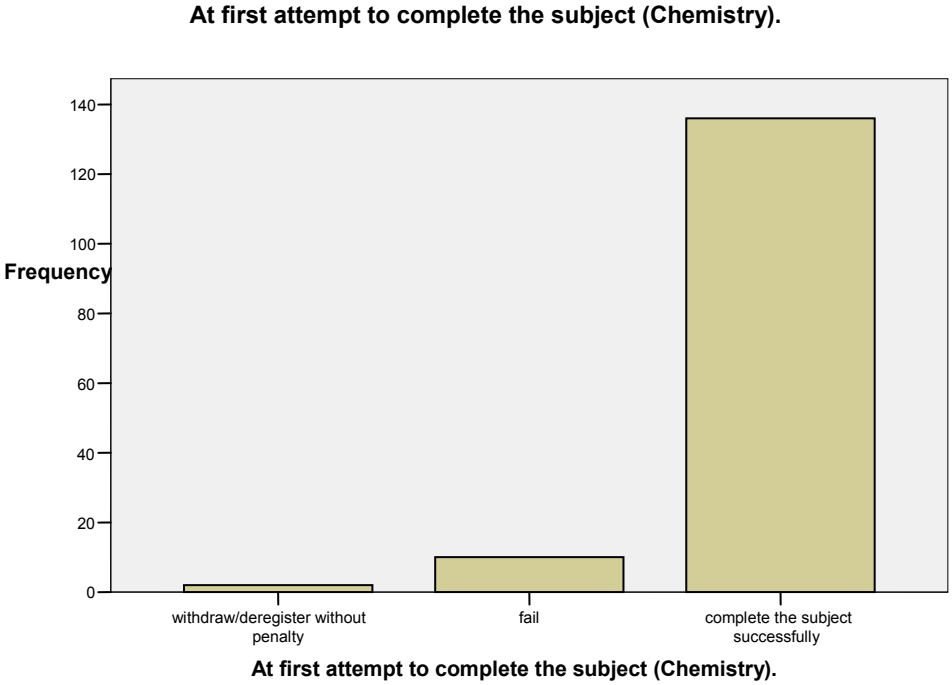


Table 7: Second Year Subjects By Self-Reported Failure.

Subject		Fail	Withdraw/deregister without penalty	Complete the subject successfully
Anatomy II	n	3	1	127
	%	2.29	0.76	96.95
Biochemistry II	n	19	1	106
	%	15.08	0.79	84.13
Epidemiology II	n	5	2	128
	%	3.70	1.48	94.81
General Pathology II	n	10	3	118
	%	7.63	2.29	90.08
Medical Microbiology I	n	1	1	130
	%	0.76	0.76	98.48
Physiology II	n	6	3	121
	%	4.62	2.31	93.08
Social studies I	n	0	2	133
	%	0	1.5	98.5
			13	

Figure 10: At First Attempt To Complete The Subject (Biochemistry2).

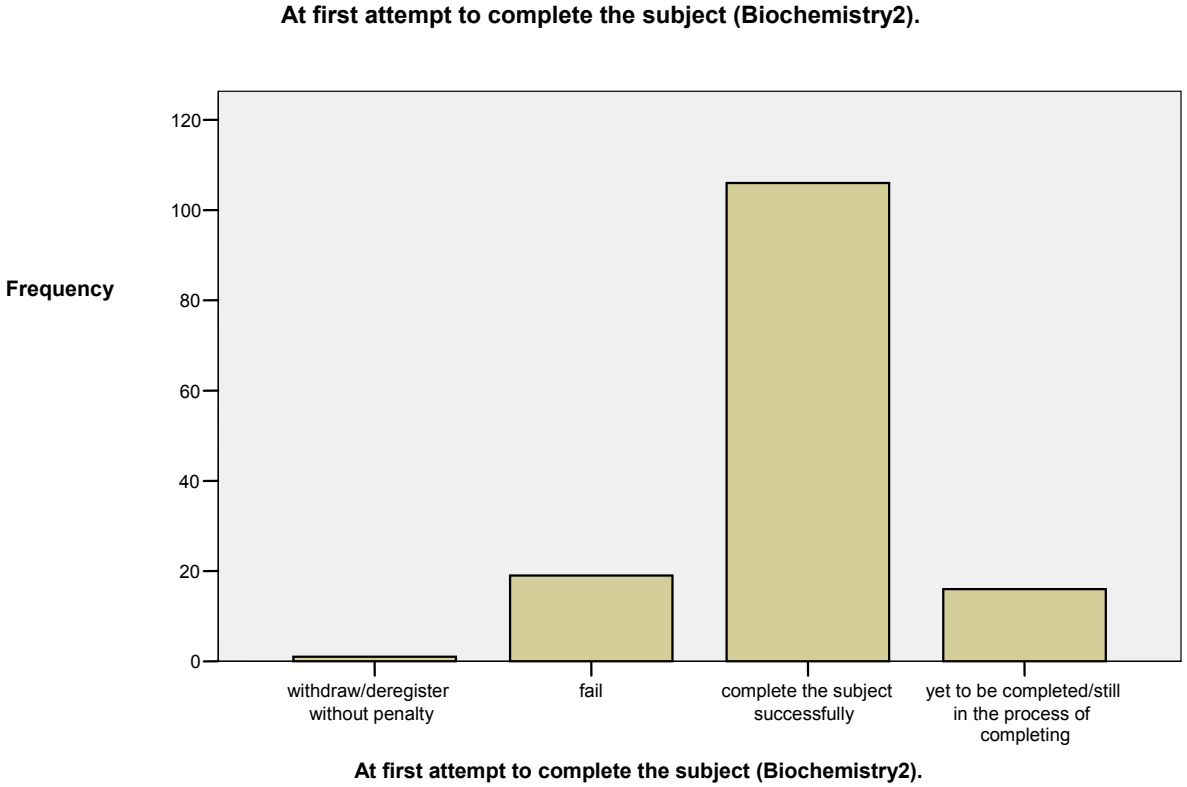


Table 8: Third Year Subjects By Self-Reported Failure .

Subject		Fail	Complete the subject successfully
Auxiliary Therapeutics III	N	10	97
	%	9.35	90.65
Chiropractic Principles and Practice III	n	2	106
	%	1.85	98.15
Diagnostics III	n	2	104
	%	1.89	98.11
Psychopathology III	n	2	109
	%	1.80	98.20
Systemic Pathology III	n	6	102
	%	5.56	94.44
		22	

Figure 11: At First Attempt To Complete The Subject (Auxiliary Therapeutics3).

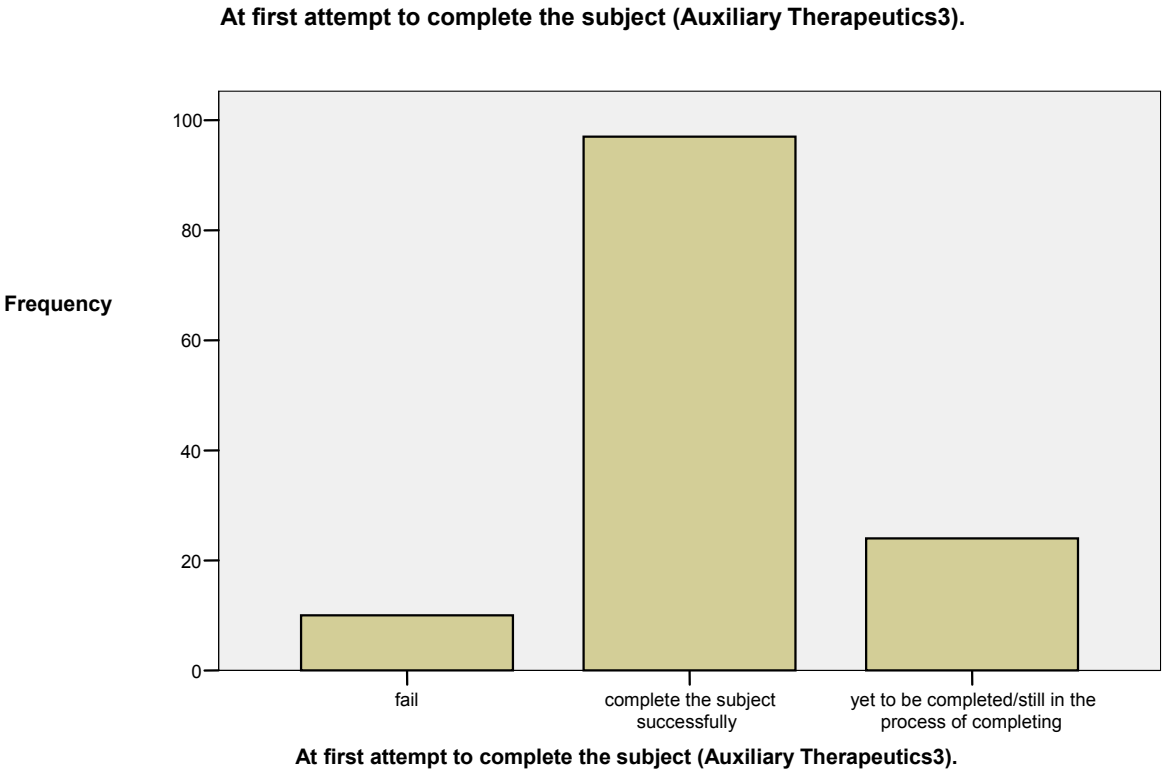


Table 9: Fourth Year Subjects By Self-Reported Failure.

Subject		Fail	Complete the subject successfully
Diagnostics IV	n	1	88
	%	1.12	98.88
Clinical Biomechanics and Kinesiology IV	n	0	89
	%	0.00	100.00
Clinical Chiropractic IV	n	4	85
	%	4.49	95.51
Chiropractic Principles and Practice IV	n	0	89
	%	0.00	100.00
Radiography IV	n	1	88
	%	1.12	98.88
Research Methods and Techniques IV	n	0	89
	%	0.00	100.00
		6	

Figure 12: At First Attempt To Complete The Subject (Clinical Chiropractic4).

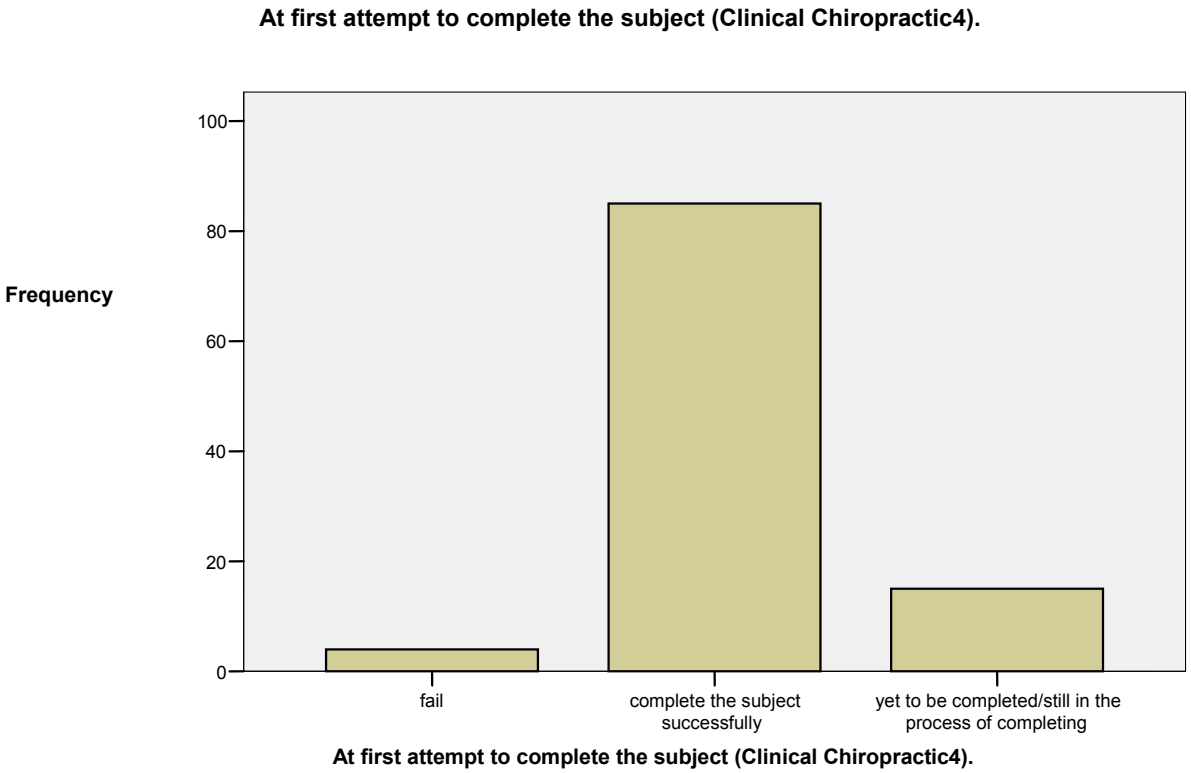
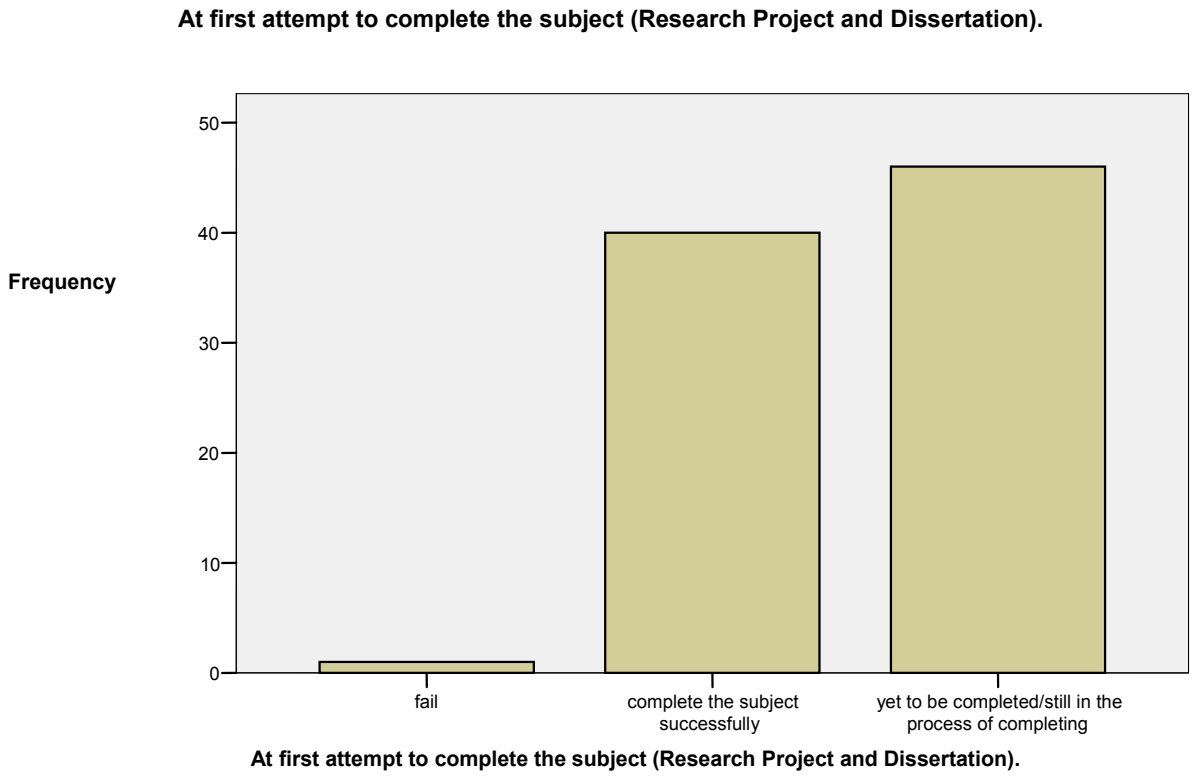


Table 10: Fifth Year Subjects By Self-Reported Failure.

Subject		Fail	Complete the subject successfully
Clinical Biomechanics and Kinesiology V	n	1	65
	%	1.52	98.48
Clinical Chiropractic V	n	1	65
	%	1.52	98.48
Chiropractic Principles and Practice V	n	0	66
	%	0.00	100.00
Practice Management and Jurisprudence V	n	0	67
	%	0.00	100.00
Research Project and Dissertation	n	1	40
	%	2.44	97.56
		3	

Figure 13: At First Attempt To Complete The Subject (Research Project And Dissertation).



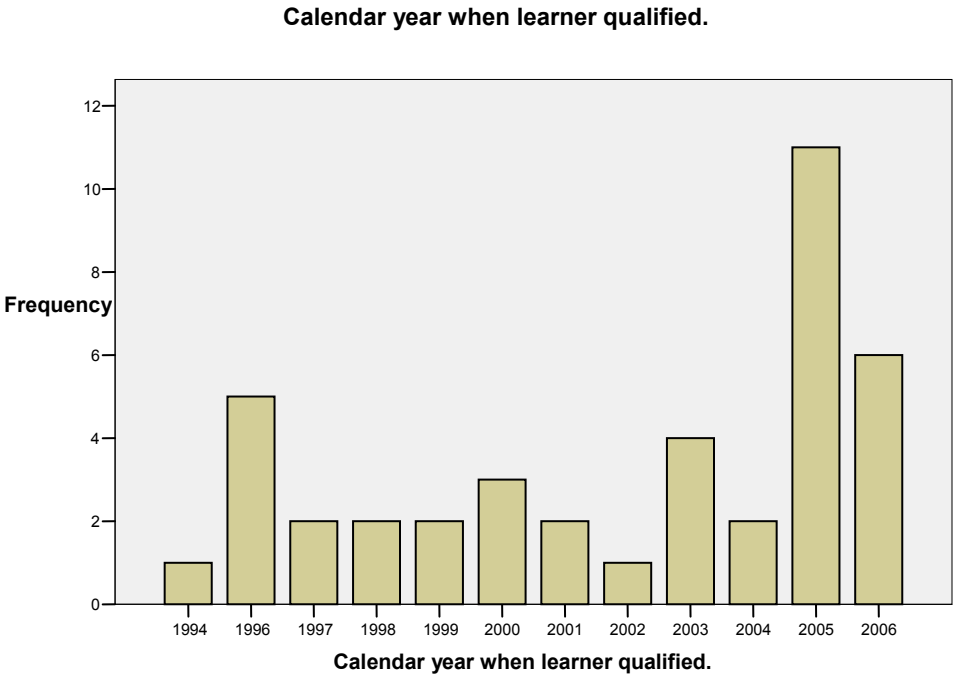
In respect of the research component of the chiropractic programme, it should be noted of the total number of respondents (163) constituted 41 qualified

practitioners and 122 learners as is evidenced by the table 11 and figure 14 below.

Table 11: Calendar Year When Learner Qualified.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1994	1	.6	2.4	2.4
	1996	5	3.1	12.2	14.6
	1997	2	1.2	4.9	19.5
	1998	2	1.2	4.9	24.4
	1999	2	1.2	4.9	29.3
	2000	3	1.8	7.3	36.6
	2001	2	1.2	4.9	41.5
	2002	1	.6	2.4	43.9
	2003	4	2.5	9.8	53.7
	2004	2	1.2	4.9	58.5
	2005	11	6.7	26.8	85.4
	2006	6	3.7	14.6	100.0
	Total	41	25.2	100.0	
Missing	System	122	74.8		
Total		163	100.0		

Figure 14: Calendar Year When Learner Qualified.



Furthermore, it should be noted that the M.Tech learners have 2 years in order to complete their research (Faculty of Health Sciences: Chiropractic Handbook, 2006) and therefore it is noted that there are learners within the “still completing” category (45) when compared to the 41 qualified chiropractors.

4.3.1.1. Demographics And Subject Failure.

4.3.1.1.1. Self-Reported Subject Failures.

Table 12: Cross Tabulation Of Self-Reported Failure Rate And Gender.

			Self-report failure		Total
			Yes	No	
Gender.	Female	Count	32	56	88
		% within Gender.	36.4%	63.6%	100.0%
	Male	Count	24	51	75
		% within Gender.	32.0%	68.0%	100.0%
Total		Count	56	107	163
		% within Gender.	34.4%	65.6%	100.0%

Pearson's chi square 0.342, p=0.559

From the above (table 12), it seems apparent that a slightly higher number of female learners (36.4%) experienced self-reported subjected failure as compared to their male counterparts (32.0%). Although the trend of increased numbers of female learners is apparent in this study, there was no statistical significance between the genders and thus inferences were based on the trends evidenced by the results (p=0.559)

A recent National Center for Education Statistics (NCES) report (cited in (Hollenshead and Miller), *Trends in Educational Equity of Girls and Women*, concludes that women are more likely than their male peers to hold high educational aspirations, to enroll in college, and to persist to degree attainment. This report nevertheless does not indicate, whether there would be a greater chance of the enrolled women experiencing a greater chance of self-reported subjected failure.

However it is indicated by Hollenshead and Miller (2001), in a fuller investigation of gender equity in higher education, that research requires individuals to look at all aspects of the academy, not simply at undergraduate degrees. Thus when looking at this it is noted that women receive more bachelor's degrees than men, even though men still outnumber women in the attainment of first professional degrees and Ph.D.s. These differences remain significant in projected figures to 2010. At the doctoral level, women are greatly underrepresented in the physical sciences, engineering, and business, while they predominate only in education, psychology, health professions and allied health professions. Furthermore, Heyneman (1989) indicates that specific subjects have a greater predictive value in terms of progression than others.

It would thus seem that the hindrances (in terms of the progression by female learners) would implicate those subjects associated most strongly with those from the fields of sciences, engineering, and business. This is congruent with the self-reported subjected failure, where the respondents seem to overwhelmingly agree that Chemistry (basic science), Biochemistry (basic science) and Auxiliary Therapy (applied science). It is further noted that the basic science subjects of Anatomy I, Physics, General Pathology and Anatomy II, which all require the application of abstract thought or algorithmic approaches that are structured are also subjects in which a higher self-reported subject failure exits. In the applied sciences the subject of Systemic Pathology also indicates a similar trend.

By implication this could infer that females tend to prefer the broader based less linear, less abstract subjects as opposed to their male counterparts. This however is an assumption in this study as the data is not fully conclusive in this regard. Thus it is suggested that further research be developed in order to test this assumption.

The distribution of any self-reported failing by year is shown in figure 15. From figure 15 it can be seen that the further that the learner has progressed, the higher the likelihood that they have failed a / multiple subject(s). Thus the

percentage of failure within the respondents increases with increased time in the Chiropractic programme.

This implication from the previous discussion would assert that there is a greater chance of male learners failing as the learners progress through the M.Tech (at higher levels), this is however not congruent with the literature (Hollenshead and Miller, 2001) where it is indicated that males attain higher degrees to a greater extent than females (due to the female learners being more likely to fail in the earlier years of study, in this study). It is however supportive of the assertion in the literature where Hollenshead and Miller (2001), indicate that females tend to achieve a higher number of qualifications in health related programmes.

Thus, the reasons for the failure rate as noted in this research varied between 10% in 3rd years to 100% in 8th, 11th and 16th years indicate at best a trend, with further research into gender specific traits in terms of self-reported subjected failure being recommended.

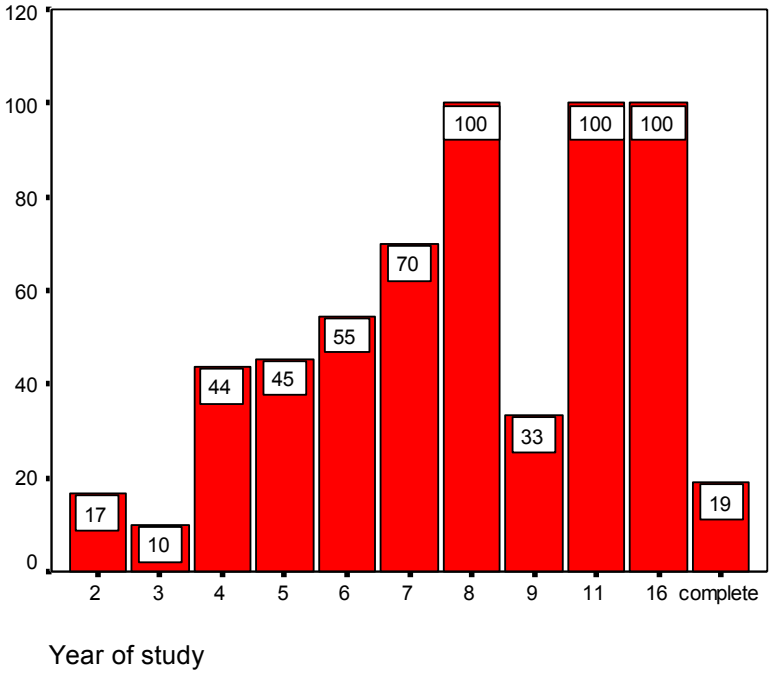


Figure 15: Self-Reported Failure Rate By Year Of Study.

4.3.1.1.2. Self-Reported Subject Failure Of Learners And Qualified Chiropractors.

The self-reported failure rate amongst those already qualified was 19%, whilst amongst those still studying was 39.7% overall (Table 13). There was a statistically significant difference in proportion of self-reported failure between qualified and non-qualified respondents (p=0.015, Table 13).

Table 13: Cross Tabulation Of Self-Reported Failure Rate By Qualified Or Non Qualified Chiropractor.

			Any self-reported subject failure		Total
			Yes	No	
Qualified chiropractor	No	Count	48	73	121
		Row %	39.7%	60.3%	100.0%
	Yes	Count	8	34	42
		Row %	19.0%	81.0%	100.0%
Total		Count	56	108	163
		Row %	34.4%	65.6%	100.0%

Pearson's chi square 5.879, p=0.015

There was a large discrepancy between self-reported subject failures amongst learners and qualified Chiropractors. The reported subject failure of the qualified chiropractors was half that of the learner group. This may be attributed to:

- Memory decay (Mouton, 1996) amongst the qualified chiropractors, where reporting is reliant on the respondents ability to remember the results/symbols of their respective subjects.
- The decrease in the quality of high school education could be the cause. It has been noted in this regard that since school quality of schooling tends to be a powerful indicator in predicting achievement on those subjects over which the school curriculum is the primary source of theoretical information and experience, such as mathematics and science (Heyneman, 1989), it is possible that with changes in education a change in the predictive value of these subjects occurs. School quality in South Africa has undergone substantial change over the past 10 years, with changes specifically to the method of teaching and learning (Schlebusch

and Thobedi, 2004), as well as combining government and private school examination (Schlebusch and Thobedi, 2004) and increased incongruency between school exit requirements and tertiary education entry requirements. (Unwembi's Resources, South African Government Information Publication, 2006). This, therefore, makes if difficult to ascertain the predictive value of subjects that were once utilized as predictors of success. With this change in the approach to education within the period of time that this study covered may therefore account for the differences between the qualified chiropractors and undergraduate learners.

- An element of reporting bias / differences between genders, as the qualified cohort in this study are predominantly male whilst the undergraduate cohort is predominantly female (table 1).
- The results being reflective of inclusion/exclusion bias in the study, as those who had not qualified due to failure or drop out, were excluded from the study.

4.3.1.1.3. Self-Reported Subject Failure And Ethnicity.

For statistical reasons ethnic group was reclassified into White, Indian/Asian, and Black and Other. There was no association between ethnic group and failure (p=0.820), as shown in Table 14. The proportion failing any subjects was similar in all ethnic categories.

Table 14: Cross Tabulation Between Self-Reported Failure And Ethnic Group.

			Any self-reported subject failure		Total
			Yes	No	
Ethnic group	White	Count	42	83	125
		Row %	33.6%	66.4%	100.0%
	Indian/Asian	Count	12	19	31
		Row %	38.7%	61.3%	100.0%
	Black and other	Count	2	5	7
		Row %	28.6%	71.4%	100.0%
Total		Count	56	108	163
		Row %	34.4%	65.6%	100.0%

Pearson's chi square 0.396, p=0.820

According to Cosser (2004) his survey found that a lower percentage of Coloured Grade 12 learners (57%) than learners of other population groups (74% for Africans, 80% for Indians, and 72% for Whites) aspired to enter higher education (Cosser, 2004). Accordingly phase 2 of the study by Cosser (2004), with regards to ethnicity a lower percentage of Coloured learners (68%) than learners of the other population groups (78% for Black Africans, 77% for Indians / Asians, and 78% for Whites) indicated that they had performed better than expected. Thus it would seem that motivation and aspirations to higher education are large motivators fro performance in higher education. This concurs with the results of this study where the majority of the respondents indicated no self-reported subject failure.

4.3.1.1.4. Self- Reported Subject Failure & Age.

Age did not influence failure significantly (p=0.601). The mean age in those who had failed any subject was 24.54 while in those who had not failed was 24.99 years. This is shown in Table 15.

Table 15: T-Test For Mean Difference In Age Between Those Who Had Failed A Subject And Those Who Had Not.

	Any self-reported subject failure	N	Mean	Std. Deviation	Std. Error Mean	T statistic	p value
Age in years	No	105	24.99	5.263	.509	-0.524	0.601
	Yes	56	24.54	5.201	.695		

In this study, age did not seem to play a role in failure, however according to Ditcher and Tetley (1999), age (in years) or maturity of the learner can play a major role in their academic progression. The mature learner is more focused on their studies and adapts more rapidly to the study environment as well as the pressures of a heavy or challenging academic workload (Ditcher and Tetley, 1999). In addition, the potential for a career / study direction change in the more mature learner is a decision that is not lightly made by the mature age learner as the restrictions of finance (to study and maintain lifestyle), lack of parental dependence, reliance on a spouse or significant other during the course of the studies and pressures to ensure minimal time is spent in the programme. This results from the need to ensure income stability as soon as possible, all have greater bearing and focus the learners learning and thus act as a strong intrinsic motivator when compared to the less mature learner.

Thus, the converse or lack of maturity may also play a role in academic failure according to Ditcher and Tetley (1999) as the strong intrinsic motivators are not present.

In contrast to the above statement, mature learners who start their studies later on in their lives and have not been exposed to higher education demands immediately prior to the onset of their studies may find it difficult to adapt to the academic environment. Whereas an individual who is academically mature (been exposed to higher education prior to the onset of their chiropractic studies), has a greater amount of experience and can cope with the academic pressures

of a heavy course workload and can also balance social and extracurricular pressures as they have developed the coping mechanisms of an autonomous learner (Timmins, 2003).

Table 16: Progression According To Academic Maturity.

Academic foundations	*Purposeful learning*	*Autonomous learning*
Getting organised	Participation and involvement	Creating own academic agenda
Attending	Engaging material	Acting on own agenda
Completing requirements	Using material	Self-directed learning

Thus in summary, academic maturity (and the related improved progression) increases with time spent in an educational programme with the converse being true, thus it is not a given that the age (years) of the learner is directly proportional to the levels of academic maturity as the academic maturity relates to the time spent in an educational programme. Therefore, it stands to reason, that irrespective of age, the absence of academic maturity could be a predictor of lack of progression (failure) within an educational programme.

Thus with respect to the results in this study the age (years) of the learner did not play a significant role, however with respect to academic maturity this statistic does not allow us to accept or refute through comparison with the literature, the effect academic maturity on progression.

4.3.1.1.5. Self-Reported Subject Failure & Marital Status.

For statistical reasons, marital status was reclassified into single or married. Overall there a significantly higher proportion of failure in the single respondents (37.9%) compared with the married respondents (12.5%) (p=0.016), however, this was probably due to proportionately more qualified chiropractors being married (as seen from table 17).

Table 17: Cross tabulation Of Qualified Chiropractors By Marital Status.

		Marital status.				
		Single	Married	Divorced	Other	Total
Qualified chiropractor	No	112	6	0	4	122
	Yes	22	18	1	0	41
Total		134	24	1	4	163

When qualified chiropractors were excluded, the proportions were similar (40% in single and 33.3% in married, p=1.000, Table 18).

Table 18: Cross Tabulation Of Self-Reported Subject Failure By Marital Status In Non Qualified Chiropractors (n=121).

			Any self-reported subject failure		Total
			yes	no	
Marital status	Single	Count	46	69	115
		Row %	40.0%	60.0%	100.0%
	Married	Count	2	4	6
		Row %	33.3%	66.7%	100.0%
Total		Count	56	108	121
		Row %	39.7%	60.3%	100.0%

Fisher's exact p=1.000

The events of marriage and / or starting a family are very stressful events in ones life and generally include a large amount of financial expense (De Beer, 2005 and Ditcher and Tetley, 1999). However many individuals find support and encouragement in marriage, as it also provides stability.

While many choose to attend graduate school and to marry, there has been concern among educators regarding the causes of high dropout rates of especially married doctoral learners (Sanderson, Dugoni, Hoffer and Myers, 1999); thus indicating that marriage may have a negative effect on the academic progression.

In contrast to this Lovik's study in 2004 showed that more males and females that were married received/completed their degrees than learners who were unmarried. This may indicate that the learner receives more stability within a marriage and support from their partner than would be the case for single learners who have added pressures placed on them that cannot be spread between 2 people in a marriage partnership.

In addition, and since women have represented the majority of graduate enrollees for the last several years (Syverson, 1997)), and family life issues are a major factor affecting graduate education; it has been suggested that female learners who anticipate having children should consider starting a family while enrolled in graduate school rather than waiting until after graduation (Lynch, 2002). Nevertheless, the impact of parenthood on graduate learners thus affects a variety of major decisions ranging from participation at academic conferences to career decisions and may therefore negatively affect the progression of the learner involved (Sanderson et al., 1999).

In this study the majority of current learners are predominantly single (Table 4), upon application to enter the programme and remain so for the duration of the course. It therefore does not seem like an important factor in the context this programme.

4.3.1.1.6. Self-Reported Subject Failure & Languages.

Similar proportions of English and non English first language respondents reported failing any subjects. Table 19 shows that there was no association between failing and English first language (p=0.903).

Table 19: Cross Tabulation Of Self-Reported Subject Failure By English First Language (N=163).

			Any self-reported subject failure		Total
			Yes	No	
English first language	Yes	Count	47	89	136
		Row %	34.6%	65.4%	100.0%
	No	Count	9	18	27
		Row %	33.3%	66.7%	100.0%
Total		Count	56	108	163
		Row %	34.4%	65.6%	100.0%

Pearson's chi square 0.015, p=0.903

It has been established in the literature that academic success in the Health Sciences is very dependant on subject specific semantics and a fully integrated understanding of language usage as well as text and narratives in the related textbooks (Knight, 2006).

This scenario is very well depicted in the study by Knight (2006), where it was found that Health Science learners entering the University of Port Elizabeth (UPE), coming from marginalized backgrounds (these learners could be from any race group); found it difficult to progress academically. The learning at the school level was minimal over many years, in addition to which cultural circumstances did not allow a broad exposure to scientific terminology and general reading and writing skills were poorly developed; as a result exceptional academic support was required to support these learners. This Knight (2006) reported, was related not only to their inability to effectively communicate in their second language, but also in grasping the 'new language' of the medical sciences.

It would however, seem from the results obtained in this study that the influence of language is not significantly associated with self-reported subject failure, which is in difference to the results obtained by Knight (2006). Furthermore this would seem to imply that there are other factors that could compensate for the inability of the learner to communicate effectively in their 2nd or 3rd languages. This study however did not delve into the possible compensatory mechanisms that these learners could have / did employ during the course of their study and it is suggested that this area be explored more fully in order to enhance the use of the coping mechanisms within the Health Sciences.

4.3.1.2. Academic Background And Subject Failure.

4.3.1.2.1. Matric / Grade 12 Subjects.

Of individual matric / grade 12 subjects taken, only the symbol obtained for physical science was statistically significantly associated with self-reported subject failure (p=0.001). In general respondents were more likely to fail a subject if they obtained a lower symbol for physical science. This is shown in Table 20.

Table 20: Cross Tabulation Of Matric / Grade 12 Symbol For Physical Science And Self-Reported Subject Failure.

			Any self-reported subject failure		Total
			Yes	No	
Symbol for Physical Science.	A (above 80%)	Count	1	11	12
		Row %	8.3%	91.7%	100.0%
	B (70-79%)	Count	4	32	36
		Row %	11.1%	88.9%	100.0%
	C (60-69%)	Count	23	30	53
		Row %	43.4%	56.6%	100.0%
	D (50-59%)	Count	12	11	23
		Row %	52.2%	47.8%	100.0%
	E (40-49%)	Count	2	3	5
		Row %	40.0%	60.0%	100.0%
Total		Count	42	87	129
		Row %.	32.6%	67.4%	100.0%

Physical science at high school includes both physics and chemistry, which were both subjects numerous individuals battled within the chiropractic programme, as the results of this study show.

Learners may have difficulty with the above subjects as it may be related to the fact that the entrance requirements for the chiropractic programme require only mathematics as a compulsory requirement with biology or physical science being indicated as supplementary requirements (Faculty of Health Sciences: Chiropractic Handbook, 2006). This infers that any applicant could have any one of the following combinations for entry – mathematics with physical science or mathematics with biology. Subsequently, those learners that fulfil the first possibility are less likely to have a lack of progression (more likely to progress well), when compared to those learners that fulfil the entrance requirements as based on the second possible combination. Thus, it would seem that as a result of this study that the principle subject should be amended (i.e. physical science substituted for mathematics) or alternatively the option combination of mathematics with biology should be eliminated from the entrance requirements thus having the only option available as a combination of mathematics and physical science.

This is further supported by the fact that physical science is a subject that involves the science of matter and energy and their interactions (e.g. concepts of vectors and scalars, abstract thought principles, three-dimensional visualization of forces) in addition to incorporating a large number of mathematical principles connecting the matter and energy interactions (http://www.thefreedictionary.com/physical%20science, 2006 and http://en.wikipedia.org/wiki/Physical_science, 2006), in addition to which it is also associated with the principles and core concepts of Chemistry and to a limited extent Biochemistry which are the most failed subjects in first and second year respectively.

According to De Beer (2005) in the context of higher education programmes, particularly in applied health sciences, failure to implement or adhere strictly to the suggested admittance criteria may have negative academic repercussions for the learner who is admitted but not capable of handling the academic workload. In the case of the chiropractic programme it is not the failure to adhere to the admittance requirements as much as the fact that the requirements allow for a separate subset of learners to be deficit in their academic literacy prior to entering the programme that may set some learners up for failure and thus failure of progression.

4.3.1.2.2. Matric Aggregate.

Self-reported overall matric / grade 12 aggregate symbol was significantly associated with any failure (p=0.039). Table 21 shows that as respondent's overall matric / grade 12 symbol decreased from A to C, they were more likely to fail a subject. Respondents who got a C symbol aggregate for matric / grade 12 were the most likely to fail a subject at DUT/DIT/Technikon Natal (47.4%). However, those who got a D symbol were only 20% likely to fail.

Table 21: Cross Tabulation Of Matric / Grade 12 Aggregate Symbol And Self-Reported Subject Failure.

			Any self-reported subject failure		Total
			Yes	No	
Matric / grade 12 aggregate	A (above 80%)	Count	1	9	10
		Row %	10.0%	90.0%	100.0%
	B (70-79%)	Count	21	52	73
		Row %	28.8%	71.2%	100.0%
	C (60-69%)	Count	27	30	57
		Row %	47.4%	52.6%	100.0%
	D (50-59%)	Count	1	4	5
		Row %	20.0%	80.0%	100.0%
Total		Count	50	95	145
		Row %	34.5%	65.5%	100.0%

Pearson's chi square 8.362, p=0.039

Individuals who obtained higher matric / grade 12 symbols were generally more prepared to handle larger academic workloads and more difficult subject content. They seem to have developed coping mechanisms during their studies to improve and stream line the learning process, as well as being better able to identify with the subject content (McKenna, 2004). Therefore, respondents who obtained higher matric / grade 12 symbols were less likely to fail subjects in the higher education setting.

As the learners' ability to cope academically decreases, the chance exists that some of these learners are overwhelmed with the transition from high school to university and become overly stressed by the dramatic changes (De Beer, 2005). Some of these changes include the shift from the controlled environment of school and family, where either the school controls the system of learning, or the family, to a less rigorous system where the student is expected to drive the process. This is especially true as at a higher education institution the learner is expected to adapt to an environment in which they are expected to accept personal responsibility for both academic and social aspects of their lives, which often creates anxiety and distress (Conway, 2004). This anxiety and stress often detracts from their academic coping ability and thus may set the learner up for failure. Thus it is often assumed that as the individuals' matric / grade 12 symbol decreases, their ability to cope with the stresses of studying also decreases (Conway, 2004).

This study however, showed that individuals who achieved a D aggregate were less likely to fail subjects than those achieving a C aggregate and more similar to the B aggregate achievers. Although these individuals appear to have less academic ability and thus have less coping mechanisms, they seem to be able to overcome their lesser academic ability. Factors such as perseverance and motivation could play a role here, where motivation is one of the key traits, which assist learners of varying academic abilities; more specifically the concept of intrinsic motivation plays a pivotal role (Conway, 2004). Intrinsic motivation exists

when someone works because of an inner desire to accomplish a task successfully whether it has some external value or not. Learners, who are motivated, learn in accordance with their academic abilities. Moreover, motivated learners make the lecturer's job easier; they tend not to disrupt the instructional environment; they listen and discuss topics when appropriate. When learners are motivated, lecturers also report greater job satisfaction, thus motivation strengthens the whole education enterprise, establishing a healthy culture of teaching and learning (Pretorius and Lemmer, 1998).

Thus even though a lack of academic ability may seem an obvious cause for academic failure it is possible that this may be moderated by other factors, as previously mentioned this may principally be motivational factors (Pretorius and Lemmer, 1998).

4.3.1.2.3. Previous Qualifications.

Previous qualifications (including incomplete qualifications) included:

- 3 respondents with certificates,
- 2 with National certificates,
- 7 with diplomas,
- 23 with degrees,
- 1 with advanced diploma,
- 2 with an Honours degree,
- 6 with Bachelors degrees and
- 2 with Masters degrees.

In total, 39 (23.9%) had another complete or incomplete qualification. In isolation none of these qualifications were associated with failure, however, together the presence of any other qualification was statistically significantly protective for failure (p=0.013). Table 22 shows that 39.5% of those without any other qualification reported failing a subject, while 17.9% of those with any other qualification reported ever failing a subject.

Table 22: Cross Tabulation Of Self-Reported Subject Failure By Any Other Qualification (n=163).

			Any failure		Total
			yes	no	
Any other qualification	no	Count	49	75	124
		Row %	39.5%	60.5%	100.0%
	yes	Count	7	32	39
		Row %	17.9%	82.1%	100.0%
Total		Count	56	107	163
		Row %	34.4%	65.6%	100.0%

Pearson's chi square 6.119, p=0.013

It would therefore seem that individuals who have studied previous qualifications, immaterial of whether the qualification was completed or incomplete, have developed coping mechanisms during their studies as well as the academic literacy skills to improve their future study endeavours (Lazarus and Folkman, 1984, cited in Naughton, 1997). These learners have formulated learning structures and techniques, which work for them. Through the learners past experiences they aware of what environments are conducive to quality of study, therefore they do not spend unnecessary hours studying like first time learners. In addition they have developed proper time management skills, which enable them to balance the numerous aspects of their social and academic lives (Lazarus and Folkman, 1984, cited in Naughton, 1997).

It could, however, also be stated that individuals with previous qualifications are less able to reach the zone of proximal development (Vygotsky, 2006). This is defined as that environment in which he/she is academically extended slightly beyond where that individual feels academically both capable and competent at. This could result in boredom or lack of motivation and increased likelihood of failure.

The results of this study however concur with the former assertion and seem to refute the possibilities implied by Vygotsky (2006). This may stem from the fact

that mature age learners are required to make a conscious choice when changing career paths and thus they may have higher levels of motivation to succeed in their newly chosen career (Naughton, 1997).

These results concurs overall with the conclusion reached under the heading of 4.3.1.1.4, where it was indicated that the academic maturity of the learner was related significantly to the lack of failure or increased progression.

4.3.1.3. Psychosocial Events And Self-Reported Subject Failure.

4.3.1.3.1. Type Of Psychosocial Event.

With respect to this research there was only one event that individually affected the risk of self-reported subject failure significantly, ***death in the family*** (p=0.013) (Table 23).

Death of a spouse, partner or parent is considered the most stressful event for an adult or a child, according to Holmes and Rahe (1967) who first published the “Social Readjustment Rating Scale" in 1967 and it has since been adapted to give some sort of proportional indication for some of the most “stressful” life events which a learner may have cope with during their academic career (see Appendix J) (Birnbaum and Sotoodeh, 1991).

The researcher did not clarify in the questionnaire whether the death was of natural causes or of a violent and sudden nature. This would have given the researcher specific insight into the impact the death might have had on the individual. If the death was due to a terminal illness the individual could prepare themselves for the death, however if the death was sudden and unexpected, this would be far more traumatic and more difficult for the individual to deal with. In addition the lack of knowledge as to whether the death was as a result of violence leaves the researcher unable to conclude that the effect was or was not

related to the high crime figures for South Africa (as per Appendix M, N and O, from the South African Police Service, 2005 and Barford and Baloyi, 2006).

In addition this research showed that ***chronic health problems*** (p=0.056) and ***major accidents*** (p=0.062) were borderline non-significant risk factors for self - reported subject failure. With a significant increase being projected regarding the percentage of learners that will be living with HIV / AIDS in years to come (Gouws and van der Merwe,(2004), it will be interesting to observe if any changes occur in relation to the importance of chronic health problems and self - reported subject failure in the future.

Gouws and van der Merwe (2004) argue that if learners become infected it might happen a few years before the start of their studies, but that the HIV / AIDS syndrome most probably appear / present during the course of their studies, thus affecting their ability / ies to cope, their retention in the education system and thus the throughput related to the programme within which they find themselves. With respect to the chiropractic programme this effect would also become more prominent as it stands to reason that the learners would only find out about the concerns / issues related specifically to medical management of HIV / AIDS after they potentially have already been exposed to it.

All other factors related to significant and possibly life-changing events showed that there was no relationship between the event and the self-reported subject failure.

Table 23: Association Between Events And Self-Reported Subject Failure.

Event	% with subject failure in exposed (overall 34.4%)	Pearson's Chi square value	P value
Alcoholism	40.9%	0.484	0.480
Birth of a child	37.0%	0.103	0.825
Abuse	50.0%	1.156	0.282
Chronic health problems	48.5%	3.663	**0.056**
Death of family member	46%	6.207	**0.013**
Divorce	46.7%	1.110	0.292
Drug abuse	28.6%	0.109	0.742
Violence	31.3%	0.076	0.783
Immigration	42.9%	0.491	0.484
Loss of parent's employment	29.4%	0.206	0.650
Major illness	29.6%	0.321	0.571
Major accident	52.4%	3.473	**0.062**
Marriage	34.5%	0.000	0.987
Depression	36.1%	0.063	0.802
Separation/Divorce	40%	0.150	0.698
Suicide	50%	0.676	0.411
Victim of violent crime	33.3%	0.008	0.930

4.3.1.3.2. Number Of Personal Psychosocial Events.

The total number of ***personal psychosocial events*** reported was totalled for each respondent. This ranged from 0 to 5. There was no difference between the number of personal events and self-reported subject failure (p=0.496), shown in Figure 16.

This may be because the psychosocial event(s) each result in the application of an analytical model of the decision-making process by all individuals involved in the event(s) (Greenberg and Baron, 2003, p. 359). Thus the individual develops mechanisms in order to cope with all of the above psychosocial factors that may cause a degree of stress in an individual's life transiently, making them stronger and more able to cope with future events. Thus, it is how they deal with or cope with this repeated stressor that determines their progression in life, as these stressors are necessary for all round development, as various coping mechanisms are developed (Naughton, 1997). In addition Naughton (1997)

states that the effects of stress are directly linked to coping, which involves coping on a variety of disciplines namely ***biological/physiological, emotional, physical and social aspects***. Thus Naughton (1997) proposes 'that there is an optimal level of coping which minimizes cost and maximizes benefits on all levels of the various factors combined' (Naughton, 1997).

In order to maximize benefits and minimize costs, a factor such as motivation is a key ingredient to developing the coping mechanisms and strategies to assist advancement. However for the purposes of this study, specific coping mechanisms will be highlighted, the researcher is aware of the various coping mechanisms, but chooses only to elaborate on a two.

Naughton, 1997 described a number of coping mechanisms individuals develop, one of the most important coping mechanisms is the cognitive approach to coping. This involves how the individual mentally approaches the situation. Firstly, they evaluate the situation at hand to assess whether it is a threat, loss or a challenge. Secondly, they evaluate the coping resources around them; these may include a variety of options such as physical, physiological or social resources, self-esteem and self-efficacy to name a few. The combination of which determined the unique coping strategy of the individual (Lazarus & Folkman, 1984, cited by Naughton, 1997).

Another coping mechanism is called the learned component, which incorporates social learning theories, which assume that much of human motivation and behaviour is the result of what is learnt through experiential reinforcement, and stress management techniques that have been found to help ease stress (Naughton, 1997).

These three principle approaches employed by the learner will facilitate the ability of the learner to cope and to learn to cope with the various events, thus enabling them to overcome burdens and stressors in life. In the chiropractic context, where the larger proportions of learners from disrupted home environments (refer to 4.3.1.4.1.) and those from homes where they have only one parent (refer to

4.3.1.4.1.) have met with success (progression), it would seem to indicate that they have developed the appropriate intrinsic coping mechanisms to deal with stressors and thus are more able to cope with the demands of academia which could be perceived as a lesser stressor (Naughton, 1997).

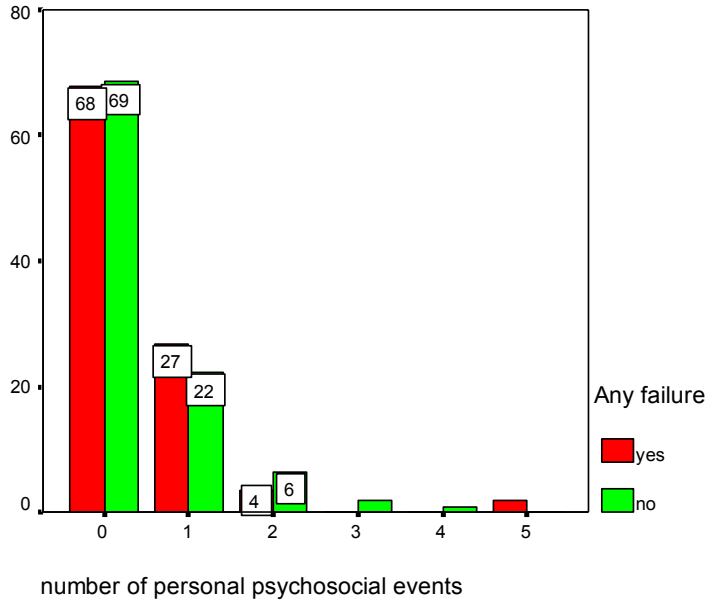


Figure 16: Number Of Personal Events By Any Self-Reported Subject Failure (Percentage Of Respondents).

4.3.1.3.3. Number Of Immediate Family Events.

Number of ***immediate family events*** ranged from 0 to 9. There was no statistically significant association between number of immediate family events and failure (p=0.235). Overall the prevalence having subject failure was 10% higher in those who had any immediate family events than in those without any immediate family events, but this difference was not statistically significant. This is shown in Figure 17.

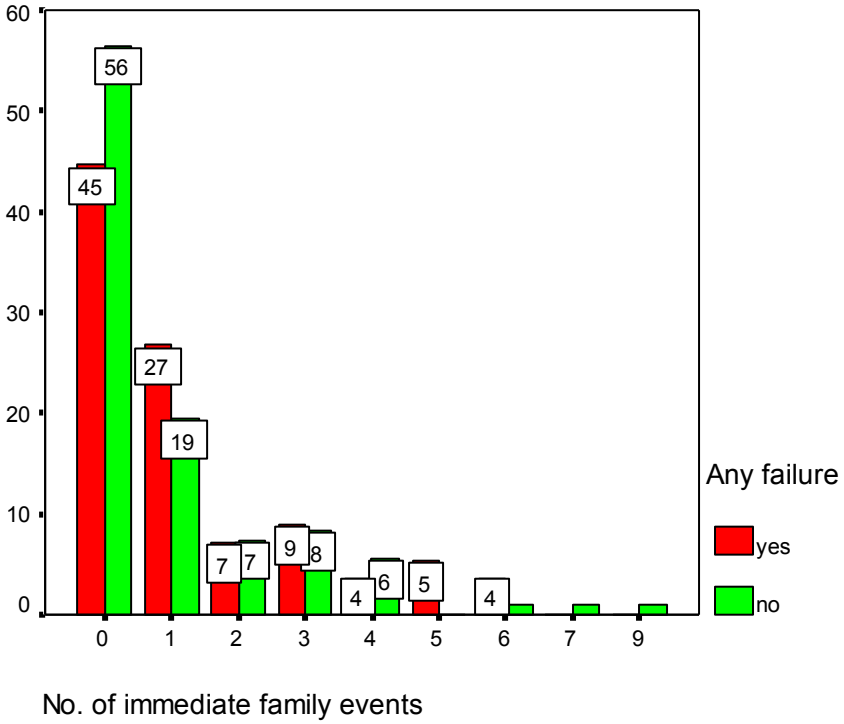


Figure 17: Number Of Immediate Family Events By Any Self-Reported Subject Failure (Percentage Of Respondents).

This is in contrast to the intra-personal / intrinsic coping mechanisms that were discussed above (under 4.3.1.3.2 and related to figure 10). Thus it would seem that extrinsic stressors that cannot be controlled for by the individual learner has a greater impact on their ability to progress or increased their chance of failure. This may be related to the timing of events that are outside the control of the individual learner whereby they can occur at times when the learner is under the most academic stress or at inopportune times as compared to the controlled intra-personal or intrinsic coping whereby the learner is able to defer dealing with the situation until they have the space and time to deal with the problems at hand.

4.3.1.4. Family Structure And Living Environment & Self-Reported Failure.

4.3.1.4.1. Parents.

There was no association between who took the role as parent while studying (biological parent vs. non biological parent) and any self-reported subject failure (p=0.415). Of those with biological parents, 35.7% reported any subject failure, while of those without biological parents 27.3% reported failure, thus in the case of chiropractic students, having one's biological parents was a slight risk for failure.

In addition, there was no association between a disrupted living environment and any self-reported failure (p=0.829); although it was noted that 30.4% of those with a disruptive environment reported failure, while 34.1% of those with an undisruptive environment reported any failure.

In contrast to this, Carter (1999) reported that previous studies showed that learners who come from a family with both biological parents are more likely to attain higher levels of education than those who do not. Carter (1999) also found that at any given time, growing up in a non-intact family clearly had a negative effect on adult educational progression but claimed that the analysis showed that the effect is somewhat more diverse than that which was previously recognized. Thus he concluded that for the most part, at higher levels of educational attainment there were no significant differences in the effects of family structure over time (Carter, 1999).

It could therefore be suggested that the results of this study differ from that of Carter (1999), as they have been modified by one or more of the following factors:

- Individuals with non-intact families acquire better coping skills and are required to be more self-reliant.

- Individuals with non-intact families are more likely to have a disrupted lifestyle without the supportive environment of both biological parents (emotionally, financially and logistically) and thus are required to learn to fend for themselves.
- With the primary exit level of a master's degree for the chiropractic programme (South Africa, Allied Health Professions Act No. 63, 1982), the average age of the learners in the programme or currently studying is higher than would be the expected norm with standard three year degrees / diplomas where the learner would exit the system at a younger age. This implies that the learner population in this study has had more time in order to develop coping and structural mechanisms in order to support their academic advancement, as supported by Lazarus and Folkman (1984) (cited in Naughton, 1997).

4.3.1.4.2. Income.

There was no association between family income source (both parents, one parent and other source) and self-reported failure (p=0.891).

Finance, according to de Beer (2005), would seem to play a major role in the academic progression of a learner. Large variations in socioeconomic status make this particularly relevant in the South African context. This does not seem to be the case in this study even in the face of that there is no denying that finances are a major issue for learners entering higher education, because of the socioeconomic group in this study. Nevertheless the learners in this study seem to be able to source adequate finances and handle the financial pressures involved over the long-term M.Tech studies.

This concurs with the findings noted in Figure 7 (refer to 4.2.5 figure 7), which shows that the respondents mostly had their studies financed by their parents (66%), while 19% had a learner loan and only 5% were on scholarships or bursaries. The 10% "other" were mainly other family members, siblings,

inheritance or through working. Thus, it would seem that the learners had a variety of income(s) that were relatively stable and did not rely on only one source as implied by the National Commission on Higher Education (NCHE) (1999), where it was stated that many lower middle class families cannot send their children to higher education institutions because their income is higher than the limit that qualifies them for financial aid but overall family income is too low to pay full costs, particularly for more than one child. This seems to have been overcome by the students in this study by allowing for diversified sources of income generation in order to pay for their studies.

4.3.1.5. Factors Influencing Progression (Self-Reported Subject Failure).

Several factors were significantly associated with self-reported failure (Table 24), insignificant associations (as listed below) were omitted from the presentation and discussion as their statistical results did not significantly contribute to the outcomes of the study.

(**Note:** Statements listed here are as per the questionnaire).

- Time allocated on the timetable to the subject was sufficient.
- Personal conflict with the subject lecturer existed.
- The method of examination within the subject was fair.
- Duplicated notes were available.
- My health as a learner hindered my progress through the chiropractic course.
- Time management / Organizational skills were a key factor to your success.
- My inability to manage stress lead to my failure.
- The lecturers were out of touch with learners' needs.
- Lecturer communication skills were a factor.
- Encouragement & support from lecturers played a key role in my success.
- Clear & informative course outlines aided my progression.

- Personal or family difficulties disrupted my progression.
- Appropriate feedback from lecturers to learners aided my progression.
- I attended most the lectures.
- Resources were available to aid my studies (Library, computers, etc)
- Financial problems/security contributed to my failure.
- I feel that maturity played a key role in my academic success.
- Learning support programs were available.
- I am satisfied with my choice of course of study.
- Overhead projected notes were used frequently.
- Printed notes were readily available and given out timeously.
- Study guides were available.
- No notes were provided.
- The subject was particularly relevant to the profession.
- When/ if I experienced difficulty with a particular subject(s), I could easily and comfortably seek help.
- If I asked for help from the subject lecturer, I received satisfactory support or help.
- I am satisfied with my career choice as a chiropractor.
- I would study Chiropractic again, given the choice.
- Transport to the Technikon caused me to miss lectures during the course of study.
- My progress was delayed due to the research process.
- I didn't have sufficient funding to purchase essential subsidiary study materials (e.g. Textbooks, Lab coats etc.)
- I could not make ends meet irrespective of personal and / or other income sources.
- My personal academic success was not related to fulfilled expectations of the course.
- My personal academic success was related to congruence between expectations and reality of the course.

Factors significantly associated with self-reported failure are shown in Table 18 (below). The items were graded on a Likert scale, thus the higher the mean score, the stronger the group agreed with the statements. Those statements with a positive t value indicated items associated with failure and those items with a negative t value where the factors associated with progression (or lack of failure). The factor that scored the highest in favour of learner failure was heavy course workload, followed by inability to manage stress.

Table 24: Factors Significantly Associated With Any Self-Reported Subject Failure.

	Factor	Mean (SD)		t statistic	p value
		Any failure	No failure		
1	Practical examinations conducted with at least two examiners/moderators.	2.93 (1.173)	3.46 (1.264)	-2.596	0.010
2	Self motivation was a factor.	3.96 (0.990)	4.31 (0.960)	-2.133	0.035
3	You didn't work hard enough/insufficient effort.	2.92 (1.222)	2.46 (1.248)	2.210	0.029
4	Assessment procedures were not related to my progression.	3.09 (0.807)	2.73 (0.863)	2.544	0.012
5	My inability to manage stress lead to my failure.	2.81 (1.134)	2.11 (1.066)	3.643	<0.001
6	Social literacy skills played no role in the course.	2.73 (1.169)	2.29 (1.085)	2.291	0.023
7	Academic literacy skills played no role in the course.	2.62 (1.276)	2.15 (1.197)	2.215	0.028
8	Heavy course workload was a factor in my failure.	3.47 (1.187)	2.54 (1.165)	4.311	<0.001
9	Misunderstanding course requirements contributed to my failure.	2.84 (1.007)	2.37 (1.079)	2.441	0.016
10	I was able to balance study and social commitments.	3.49 (1.034)	3.84 (0.921)	-2.170	0.032
11	I put in consistent effort to succeed.	3.80 (0.951)	4.18 (0.882)	-2.520	0.013
12	Academic ability/previous academic background had no bearing on my progression. Maturity and age	3.22 (1.284)	2.62 (1.169)	2.969	0.003
13	I had a personal problem with the specific nature of the subject.	3.47 (1.012)	2.88 (1.073)	3.314	0.001

There are a variety of factors in table 24, which the researcher has categorized previously in chapter two. The factors highlighted in 1 and 4 are related to the

institutional or educational paradigm. There was a 50:50 split in terms of these factors contributing academic success or failure, which does not give a clear indication of the impact or role this paradigm, plays on academic progression.

According to Gibbs and Simpson (2005), assessment is the most powerful lever teachers have to influence the way learners respond to courses and behave as learners. This lever is modified by factors related to the type, magnitude and scale of the assessments as well as how they are administered. The variance found in this study (possibly classifiable as a contradiction) could be as a result of the modifiers to the assessment having been associated with specifically either of the responses in either 1 or 4. For example, 1 may have been related to the practical assessments where it is common practice for there to be 2 examiners present at the time of the assessment to ensure fair assessment, where statement 4 may not have been interpreted in this way. Thus, the results of this research, although they concur with the above (Gibbs and Simpson, 2005), could indicate that further research in this area is warranted to elucidate the differences in perception and the degree to which the modifiers play a role.

Factor numbers 2, 3, 5, 8, 11 were related to the intrinsic psychosocial paradigm. An individual's level of motivation is a good indication of the amount of effort they put into everything they do (Entwistle, 1992). According to Entwistle (1992) responsible, motivated learners follow through on a given task and complete it to the best of their ability, often without direct or frequent supervision. The effort they put into their studies and their dedication may be due to the fact they are motivated, the converse is true with regards to unmotivated learners. These learners are easily distracted and get frustrated when the work content or load is too difficult for them (Entwistle, 1992). This research concurs with the above statement, as the more motivated the learner the more effort they inject into their studies, and this adds their academic progress. This is particularly true in this study where it would seem that in the chiropractic context, where the larger proportions of learners from disrupted home environments (refer to 4.3.1.4.1.) and those from homes where they have only one parent (refer to 4.3.1.4.1.) have

met with success (progression), it would seem to indicate that they have developed the appropriate intrinsic coping mechanisms and have a source of motivation or perseverance that is not evident in the other learners who have both parents as well as undisrupted home environments.

Factors in 6 and 7 are related to intrinsic psychosocial paradigm; however they are also sometimes described in conjunction with the theory of identity and thus are more specific to the learner (McKenna, 2004). From the results it is evident that the respondents seem to have interpreted these concepts similarly to the way they are described in the literature (McKenna, 2004). However with the concepts of social and academic literacy not being defined in the questionnaire, it is possible that respondents may have misinterpreted these concepts based on the fact that these terms arise from higher education jargon that may not be readily interpreted by non-academics within the appropriate context. Responses to both questions nevertheless indicated that these factors contributed to the learner's academic failure. This tends to indicate that the learner understood the principle and identified the fact that they were unable to take on the literacy practice, either academically or socially in order to tackle the subject or a specific portion of the programme appropriately to result in success (progression or lack of failure).

4.3.1.5.1. Studying / Lecture Time & Self-Reported Failure.

The number of hours per week that the respondents spent studying was significantly associated with self-reported failure (p=0.013). Figure 18 below shows that those who did not report any failure (i.e. progressed), spent more time studying.

Table 25: Number of hours per week dedicated to studying in general

	Please indicate the number of hours per week that you dedicated to studying in general.
Mann-Whitney U	2413.500
Wilcoxon W	4009.500
Z	-2.158
Asymp. Sig. (2-tailed)	.031

The results of this study do not concur with a study conducted by Plant et al (2004). According to Plant et al (2004), the length of time that a learner spends studying is not as important as the learners study skills and academic literacy ability. Plant et al (2004) indicated that the above mentioned factors play more of a role in academic progression than the amount of time spent studying. According to Plant et al (2004), the overall amount of study time only emerged as a significant predictor of performance when the quality of the study environment was quiet, reliable and consistent. It is therefore suggested that further research into identifying the relationship between time and the academic literacies be completed.

Percentage of lectures attended was not significantly associated with self-reported failure (p=0.614). This is not congruent with Ditcher and Tetley (1999), who indicate that the time spent attending lectures is directly proportional to the academic progress of the learner. However it does highlight the complex issues of learner's perceptions that need to be addressed around lecture attendance and the reasons that lead to lecture absenteeism as indicated by (Hughes, 2005).

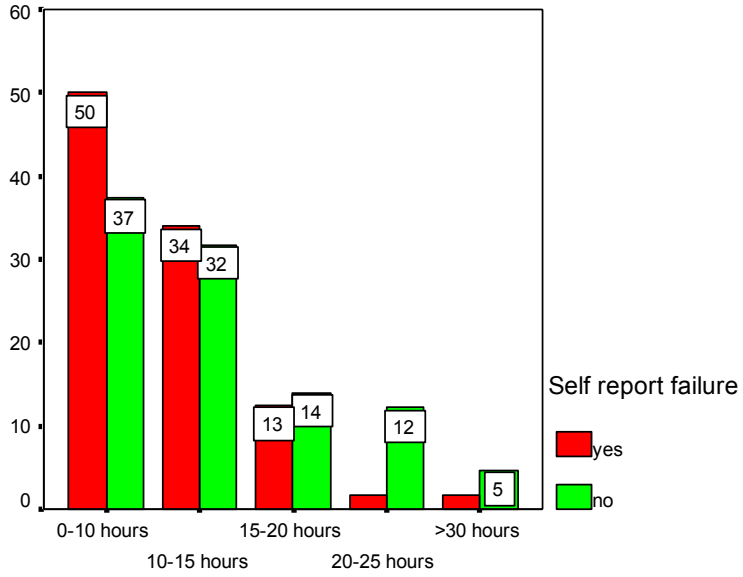


Figure 18: Hours Per Week For Studying By Self-Reported Subject Failure.

4.3.2. Outcome 2: Objective Subject Failure.

Note: The objective failure of learners was determined by the use of the DUT learner records from the Management Information Services. These data included the pass rates, the retention rates as well as individual achievements per student per subject per year.

The following 5 tables show the number who failed each subject by year of subject from the objective data. The percentage is calculated out of a total who attempted that subject. Thus, for the first year subjects the denominator is 163 but from second year subjects onwards the denominator is variable.

Table 26: First Year Subjects By Objective Failure.

Subject and code		fail
Anatomy I	n	12
	%	7.36
Physiology 1	n	9
	%	5.52
Philosophy, History and Principles I	n	13
	%	7.98
Biology I	n	8
	%	4.91
Chemistry I	n	19
	%	11.66
Physics I	n	10
	%	6.13

Table 27: Second Year Subjects By Objective Failure.

Subject		fail
Anatomy II	n	11
	%	8.3
Biochemistry II	n	28
	%	19.7
Epidemiology II	n	8
	%	5.8
General Pathology II	n	17
	%	12.1
Medical Microbiology I	n	1
	%	0.8
Physiology II	n	11
	%	8.4
Social studies I	n	4
	%	3.2

Table 28: Third Year Subjects By Objective Failure.

Subject		fail
Auxiliary Therapeutics III	n	0
	%	0
Chiropractic Principles and Practice III	n	0
	%	0
Diagnostics III	n	1
	%	0.9
Psychopathology III	n	9
	%	9.1
Systemic Pathology III	n	8
	%	8.2

Table 29: Fourth Year Subjects By Objective Failure.

Subject		fail
Diagnostics IV	n	0
	%	0
Clinical Biomechanics and Kinesiology IV	n	0
	%	0
Clinical Chiropractic IV	n	0
	%	0
Chiropractic Principles and Practice IV	n	0
	%	0
Radiography IV	n	1
	%	1.3
Research Methods and Techniques IV	n	0
	%	0

Table 30: Fifth Year Subjects By Objective Failure.

Subject		fail
Clinical Biomechanics and Kinesiology V	n	0
	%	0
Clinical Chiropractic V	n	0
	%	0
Chiropractic Principles and Practice V	n	0
	%	0
Practice Management and Jurisprudence V	n	0
	%	0
Research Project and Dissertation	n	0
	%	0

Note: most of the marks were missing for research project and dissertation

It must also be noted that the HEMIS database that was utilized for the reporting of objective data did not reflect failures by sub minima as indicated in the Faculty of Health Sciences: Chiropractic Handbook (2006). This implies that the number

of failures reflected for the subjects in the above tables (tables 26 – 30) does not accurately reflect the true failures by sub minima. Thus, the objective reporting of failures can at best be utilized as a guide, but not as a categorical comparator with respect to the self-reported data.

The prevalence of any failure, using objective data (DUT learner records from the Management Information Services) was 44.8% (n=73). This was 10.4% higher than the estimate from self-reported data. Thus there was a significant difference between the self-reported and objective failure (McNemar's chi square p=0.001).

Table 31: Cross Tabulation Of Self-Reported And Objective Subject Failure.

			Any failed objective data		Total
			Yes	No	
Any self-reported subject failure	Yes	Count	52	4	56
		% of Total	31.9%	2.5%	34.4%
	No	Count	21	86	107
		% of Total	12.9%	52.8%	65.6%
Total		Count	73	90	163
		% of Total	44.8%	55.2%	100.0%

McNemar's chi square p=0.001

This could be accounted for by the fact that four respondents (2.5%) falsely reported failing a subject (false positives) and 21 (12.9%) falsely reported not failing a subject (false negatives), however, the majority of reports were concordant. The summarized data are shown in Table 31.

Some of the "inaccurate data" could be a result of memory decay (Mouton, 1996), as some of the respondents qualified many years ago (the earliest qualification occurred in 1994 from the Technikon Natal in 1994). Their ability to recall whether they failed a subject may thus not have been accurate.

Other variables may also have affected the responses could have been issues related to the,

- Incorrect interpretation of the information letter.
- Hawthorne Effect or observer effect (Mouton, 1996) where it is possible that the respondent wanted to please the researcher by creating links between sections of the questionnaire by using specific answers to support what the respondent thought that the researcher wished to attain.
- In addition, the respondent might have been afraid of the personal content of their responses or they may have been afraid of issues related to confidentiality even in view of the fact that measures where taken in the methodology in order to ensure respondent anonymity (see section 3.7.1, 3.7.2 and 3.7.3).
- Lastly the respondent may have been rushed in the answering of the questionnaire and subsequently made unintentional errors in the answering process.

4.3.2.1. Demographic Factors Associated With Objective Failure.

As with the self-reported subject failure, objective failure was not associated with any specific demographic findings. Thus, even though gender, age, ethnic group, marital status, and language were shown to have an impact on academic progression, this study did not support this assumption in either the objective reporting of failure or the self-reported reporting of failure. This was most probably due to the fact that this questionnaire was not solely geared to assessing whether demographic data affected the learners academic ability, unlike the literature quoted in chapter two of this dissertation (Cosser, 2004; Hollenshead and Miller, 2001)

The only exceptions with respect to significance in both objective and self-reported reporting are with respect to the year of study ($p=0.015$) and to whether or not the respondent was qualified or still studying ($p=0.014$). In the case of the former significant association, it therefore becomes evident that the further the

learner has progressed, the more likely they are to have reported a / several failed subject(s) whether it is reported objectively (through the MIS) or through self-reporting.

In the case of the latter association there is congruence between self-reporting and objective information analysis through DUT MIS indicating that 28.6% of qualified chiropractors had had any subject failure, while 50.4% of those still studying had experienced failure. This is shown in Table 13.

Table 32: Cross Tabulation Of Qualified Chiropractor By Any Objective Failure.

			Any failed objective data		Total
			Yes	No	
Qualified chiropractor	No	Count	61	60	121
		Row %	50.4%	49.6%	100.0%
	Yes	Count	12	30	42
		Row %	28.6%	71.4%	100.0%
Total		Count	73	90	163
		Row %	44.8%	55.2%	100.0%

Pearson's chi square 6.015, p=0.014.

Notwithstanding the similarities in respect of significance levels attained, objective failure was 10.7% higher than self-reported failure amongst the current learners. Objective failure was 9.6% higher than self-reported failure amongst the qualified chiropractic group.

This could be due to under reporting from the current learner population and a combination of memory decay from the qualified chiropractor population (Mouton, 1996). This concurs with the discussion under point 4.3.1.1.2 and reinforces the inferences made with respect to comparisons between qualified chiropractors and chiropractic learners.

4.3.2.2. Academic Background.

4.3.2.2.1. Matric / Grade 12 Subject.

Only the symbol obtained for physical science was significantly associated with failing using objective data ($p<0.001$). Table 20 shows that the percentage experiencing subject failure increased as the physical science symbol decreased. Which is in almost in congruence with the results found in the self-reported subject failure and re-enforces the inferences made from the results discussed under 4.3.1.2.2, were the percentages in the objective failure category steadily increased as the symbol for physical science decreased. This was, however, not the case with self-reported subject failure where the symbol for physical science (D) was more protective against failure than the symbol C. In objective reporting the symbol for physical science decreased to a D symbol as the percentage failure increased (a linear inverse relationship exists in the objective reporting). The findings in the self-reported section of this study may therefore have been a function of the incorrect self-reporting with the objective comparisons being less prone to bias and manipulation by the respondent (Mouton, 1996).

Table 33: Cross Tabulation Of Matric / Grade 12 Symbol For Physical Science And Objective Subject Failure.

			Any failed objective data		Total
			Yes	No	
Symbol for Physical Science.	A (above 80%)	Count	2	10	12
		Row %	16.7%	83.3%	100.0%
	B (70-79%)	Count	7	29	36
		Row %	19.4%	80.6%	100.0%
	C (60-69%)	Count	27	26	53
		Row %	50.9%	49.1%	100.0%
	D (50-59%)	Count	12	11	23
		Row %	52.2%	47.8%	100.0%
	E (40-49%)	Count	5	0	5
		Row %	100.0%	.0%	100.0%
Total		Count	53	76	129
		Row %	41.1%	58.9%	100.0%

Pearson's chi square 20.387, p<0.001

4.3.2.2.2. Matric / Grade 12 Aggregate.

Matric / grade 12 aggregate (self-reported) was borderline non-significantly associated with any objective failure (p=0.056). Table 34 shows that the percentage failing any subject increased as the matric / grade 12 symbol got lower. This trend is a repeat of the self-reported subject failure 4.3.1.2.2. and thus supports the inferences made in respect of the outcomes related to matric / grade 12 aggregate correlations with learner failure and progression which is congruent with the assertions of (Pretorius and Lemmer, 1998).

Unlike self-reported subject failure, a 'D' matric / grade 12 aggregate did not decrease the chances of subject failure; this would indicate that coping mechanisms do not substitute for a strong academic background as was previously discussed with regards to self-reported subject failure. This does not mean that coping mechanisms are not important or that they do not play a role in learners adapting to the various stresses of higher education. It merely indicates perhaps that they play a lesser role.

Table 34: Cross Tabulation Of Matric / Grade 12 Aggregate Symbol And Objective Subject Failure.

			Any failed objective data		Total
			Yes	No	
Matric / grade 12 aggregate	A (above 80%)	Count	3	7	10
		Row %	30.0%	70.0%	100.0%
	B (70-79%)	Count	25	48	73
		Row %	34.2%	65.8%	100.0%
	C (60-69%)	Count	32	25	57
		Row %	56.1%	43.9%	100.0%
	D (50-59%)	Count	3	2	5
		Row %	60.0%	40.0%	100.0%
Total		Count	63	82	145
		Row %	43.4%	56.6%	100.0%

Pearson's chi square 7.546, p =0.056

4.3.2.2.3. Previous Qualification.

Table 35 shows that there was a borderline non-significant association between having any other complete or incomplete qualification and objective failure. There was a slightly lower percentage of failure in those participants with another qualification (33.3%) than in the group without another qualification (48.4%), but this difference was not quite statistically significant (p=0.099).

Table 35: Cross Tabulation Of Objective Subject Failure By Any Other Qualification (n=163).

			Objective failure		Total
			Yes	No	
Any other qualification	No	Count	60	64	124
		Row %	48.4%	51.6%	100.0%
	Yes	Count	13	26	39
		Row %	33.3%	66.7%	100.0%
Total		Count	73	90	163
		Row %	44.8%	55.2%	100.0%

Pearson's chi square 2.719, p=0.099

This concurs with the previous findings as found under 4.3.1.2.3 and therefore supports the discussion presented previously under the self-reported subject failure.

4.3.2.3. Psycho-Social Factors And Objective Failure.

No individual psychosocial event was associated with objective failure significantly, neither was the number of personal or immediate family events (data not shown) significantly related to objective reporting of failure.

Psycho-social factors and objective failure correlations were not congruent with the results achieved in self-reported subject failure, which could indicate that the individual who suffered a psychosocial event ***perceived*** that this event affected their academic progression whereas the impact of these events were ***actually not*** significant enough to affect their studies.

4.3.2.4. Family Structure And Living Environment.

There was no association between who took the role as parent while studying (biological parent vs. non biological parent) and any objective subject failure ($p=0.331$). Of those with biological parents, 46.5% reported any subject failure, while of those without biological parents 36.4% reported failure, thus having your biological parents was a slight risk for failure. This is in congruence with the self-reported subject failure as discussed under section 4.3.1.4.1.

In addition, there was no association between a disrupted living environment and any objective reported failure ($p=0.554$). Fifty two point two percent of those with a disruptive environment reported failure, while 42.6% of those with an undisruptive environment reported any failure, so a disruptive environment was a non-significant risk for failure.

The percentages in the objective grouping are substantially higher than the self-reported group. The results although inflated in the objective group are congruent with the results in the self-reported group; both stated that having biological parents was a risk for subject failure. Similar reasons could apply here as was reported in self-reported subject failure above (4.3.1.4.1.).

Objective and self-reported data differed with regards to the learners living environment; where the objective data showed that a disrupted living environment was a better indicator of subject failure. Thus with respect to an objective assessment, it would seem that living at home is more stable. It is however interesting to note that the results of the self-reported subject failure indicate that there is a fine line separating the development of coping skills in the two different settings and that each would seem to have their own pros and cons. The cons however seem to be buffered by the presence, nature and type of supporting mechanisms that the learner has in order to support themselves academically and socially.

Objective failure was not associated with family income source (p=0.599), or with study finance source (p=0.590). This result is congruent with the self-reported data under 4.3.1.4.2.

4.3.2.5. Factors Influencing Progression (Objective Subject Failure).

Factors identified as significantly associated with objective subject failure were similar to those identified for self-reported failure. The factor strongest associated with failure was heavy course workload, followed by the objective association that the lack of academic literacy skills was responsible for failure. The other significant factors are shown in Table 36. Insignificant associations (as listed below) were omitted from the discussion, as their statistical results did not significantly contribute to the outcomes of the study:

- Time allocated on the timetable to the subject was sufficient.
- Personal conflict with the subject lecturer existed.
- Practical examinations conducted with at least 2 examiners /moderators.
- Duplicated notes were available.
- Self-motivation was a factor.
- Time management / Organisational skills were a key factor to your success.
- The lecturers were out of touch with learners' needs.
- Lecturer communication skills were a factor.
- Encouragement & support from lecturers played a key role in my success.
- Clear & informative course outlines aided my progression.
- Appropriate feedback from lecturers to learners aided my progression.
- I attended most the lectures.
- Resources were available to aid my studies.(Library, computers, etc)
- Financial problems/security contributed to my failure.
- I feel that maturity played a key role in my academic success.
- Learning support programs were available.
- I am satisfied with my choice of course of study.
- Overhead projected notes were used frequently.
- Printed notes were readily available and given out timeously.
- Study guides were available.
- No notes were provided.
- The subject was particularly relevant to the profession.
- When/ if I experienced difficulty with a particular subject(s), I could easily and comfortably seek help.
- If I asked for help from the subject lecturer, I received satisfactory support or help.
- I am satisfied with my career choice as a chiropractor.
- I would study Chiropractic again, given the choice.
- Transport to the Technikon caused me to miss lectures during the course of study.
- My progress was delayed due to the research process.

- I didn't have sufficient funding to purchase essential subsidiary study materials (e.g. Textbooks, Lab coats etc.)
- I could not make ends meet irrespective of personal and / or other income sources.
- My personal academic success was not related to fulfilled expectations of the course.
- My personal academic success was related to congruence between expectations and reality of the course.

Table 36: Factors Significantly Associated With Any Objective Subject Failure.

	Factor	Mean (SD)		t statistic	p value
		Any failure	No failure		
1	The method of examination within the subject was fair.	3.23 (0.965)	3.68 (0.859)	-3.111	0.002
2	You didn't work hard enough/insufficient effort.	2.99 (1.191)	2.33 (1.236)	3.312	0.001
3	Assessment procedures were not related to my progression.	3.01 (0.776)	2.73 (0.905)	2.070	0.040
4	My health as a student hindered my progress through the chiropractic course.	2.57 (1.396)	2.11 (1.062)	2.263	0.025
5	My inability to manage stress lead to my failure.	2.66 (1.167)	2.11 (1.057)	2.801	0.006
6	Social literacy skills played no role in the course.	2.73 (1.144)	2.21 (1.070)	2.864	0.005
7	Academic literacy skills played no role in the course.	2.72 (1.324)	1.99 (1.073)	3.769	<0.001
8	Heavy course workload was a factor in my failure.	3.35 (1.234)	2.47 (1.120)	4.053	<0.001
9	Misunderstanding course requirements contributed to my failure.	2.88 (1.089)	2.20 (0.931)	3.645	<0.001
10	Personal or family difficulties disrupted my progression.	3.19 (1.319)	2.64 (1.195)	2.586	0.011
11	I was able to balance study and social commitments.	3.52 (1.026)	3.88 (0.902)	-2.328	0.021
12	I put in consistent effort to succeed.	3.81 (0.929)	4.25 (0.870)	-3.107	0.002
13	Academic ability/previous academic background had no bearing on my progression.	3.17 (1.265)	2.54 (1.150)	3.245	0.001
14	I had a personal problem with the specific nature of the subject.	3.32 (1.071)	2.89 (1.066)	2.473	0.015

Factors 1, 11, 12 (table 36) had a negative t-statistic and therefore contributed to academic success, whereas factors 2-10, 13, 14 (table 35) had a positive t-statistic and therefore these factors all contributed to failure.

Factors 1, 3, 8, 9 ((table 36), all related to the educational paradigm/system which governs, manages and implements the structures utilized in higher education. Factors 3, 8 and 9 were significant in both the objective and self - reported analysis and contributed to failure. There was however a factor in the

objective reporting (number 1) and a factor in self-reported (number 1 (4.3.1.5)) that contributed to academic progression; however the majority of factors in this category indicate that institutional and educational factors contribute predominately to failure. Therefore, these are factors (at a higher education level) especially within the health sciences, need to be addressed and strategically implemented in order to deal with or attempt to resolve the identified issues.

Heavy course workload (according to both objective (8) and self-reported data (4.3.1.5)) scored the highest rated factor, which contributed to subject failure. The inability of the learner to cope with the large volume of work might indicate that a lack of previous academic ability (4.3.1.2.3.and 4.3.2.2.3), as well as lesser academic and social coping mechanisms play an important part in subject failure and thus should be addressed as part of the recurriculation process, as a decrease work load with a structured approach to achieve the same outcomes would be more beneficial for the learners in that it would aid their progression through the chiropractic programme. Heavy course workload also places additional stress both psychologically and emotionally which contributes to the intrinsic psychosocial dilemma. If the learner is already deficient in this area then their ability to develop the appropriate coping mechanisms is lessened (Naugthon, 1997).

Factors 4, 10 and 13 (table 36) were all factors, which contributed to subject failure. These factors were categorized as extrinsic psychosocial factors in chapter two, these factors the learner was not able to control, such as family health/difficulties, previous academic background and personal illness incurred during time of study. Personal or family difficulties or traumatic life events, as pointed out by LeJeune (2000), may result in failure regardless of the other factors. This research concurs that the above statement by LeJeune (2000). It would therefore be recommended, that further research into this area be explored in the future to ascertain the value and total contribution that the extrinsic psychosocial paradigm plays in a learner's academic progression.

Academic literacy skills, although rated the second most influential factor for subject failure in the objective data set, was not as highly rated in respect of self-reported subject failure (4.3.1.5). Nevertheless this outcome still indicates that academic literacy/academic ability is a major marker to predict subject failure during the course of study within the chiropractic programme as both were indicators of subject failure to varying degrees.

The interpretation of intrinsic factors (11 and 12 (table 36)) were the same for both objective and self-reported sections (10 and 11(table 24)), where they contributed to academic progression (negative t-statistic)

Factors 2, 5, 6, 7, 11, 12, 14 (table 36) within the objective analysis as well as various factors in (table 24) are all related the intrinsic psychosocial paradigm; these were factors which the learner was able to control or had the ability to control. Within this paradigm were factors such as, motivation, the amount of effort invested in studies, the ability to adapt to social as well as academic environments and pressures and their ability to mange stress. The learner to some degree or other had the ability to or was able to develop the coping mechanisms to adapt to the situation at hand. However, this study showed that this was not the case for this specific research population, the large majority of questions related to the intrinsic psychosocial paradigm indicated that the learner did not possess the skills to cope with the social or academic stressors of the course at various levels.

4.3.2.5.1. Studying / Lecture Time.

There was a significant association between hours per week spent studying and objective failure (p=0.027). Figure 19 shows that those who spent longer hours studying were less likely to fail. This is in congruence with the number of hours per week that the respondents spent studying and was significantly associated with self-reported failure (p=0.013). Thus both objective and self-reporting

findings indicate that the time spend studying is directly proportional to a decrease in the percentage failures.

It would therefore be suggested that students actively be encouraged to spend time with their reference and source materials in order to facilitate interaction with the materials from which and through which they are expected to learn, understand and mould themselves into their chosen professions.

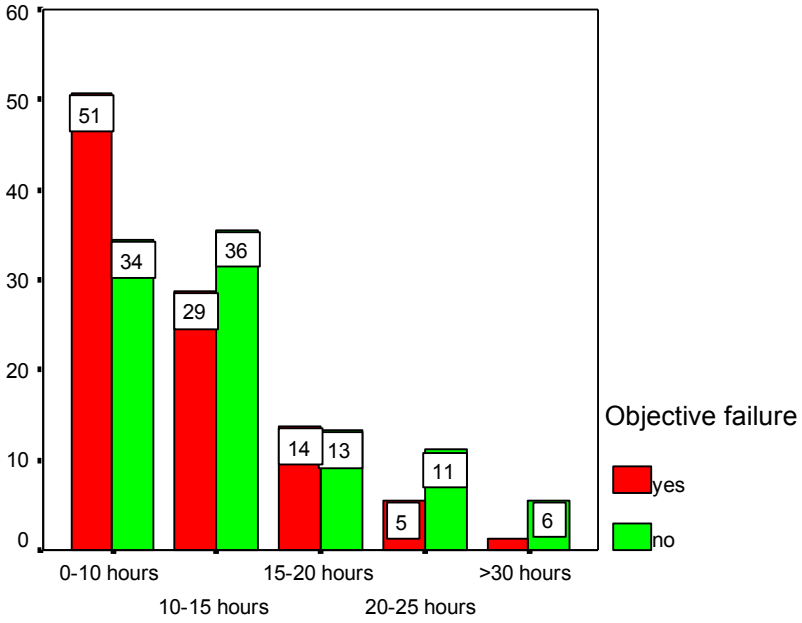


Figure 19: Hours Per Week For Studying By Objective Subject Failure.

Percentage of lectures attended was significantly associated with objective failure (p=0.040). This is shown in Figure 20, where those who experienced failure were more likely to attend fewer lectures than those who did not experience failure. This is not congruent with the self-reported subject failure association its association with lecture attendance where it was found that the percentage of lectures attended was not significantly associated with self - reported failure (p=0.614).

The objective results are congruent with Ditcher and Tetley (1999) who claim that irregular attendance at lectures is a factor related to the learner, which contributes to poor academic progression. It would however seem, that the suggestion by Entwistle (1992) where he discusses the value of lectures in terms of motivating learners and transmitting information, as well as the social function of sharing ideas, which ultimately leads to co-operative learning that is more relevant than the perception that the attendance of lectures is not related to subject failure (as indicated by the self-reported subject failure).

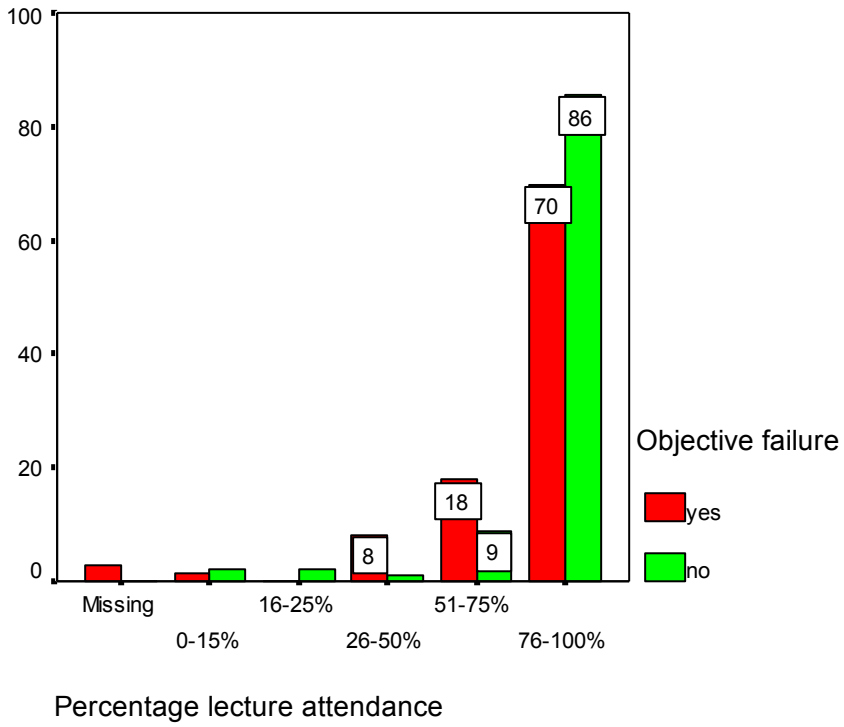


Figure 20: Percentage Lecture Attendance By Objective Subject Failure.

It is however, also noted that the self-reported subject failure also contained inconsistencies, which may account for at least in part a fraction of the disparity that is seen between the objective and self-reported findings in this study (refer to 4.3.2).

4.4. Descriptive Statistics Related To Present / Future Career.

4.4.1. Exposure To Career During Studies.

The majority reported that career opportunities were discussed during studying (36%), however, a fairly large percentage said no (28%) or don't know (23%) [cumulatively 51%]. The individuals who responded that career opportunities were not articulated or that they "don't know", may have been those learners who were not at lectures.

This is shown in Figure 21. Of those who had heard about career opportunities, the majority responded that they had heard during the course of study (Figure 22). For future research it is recommended that the "not applicable" option in the answer should be incorporated into the "No" response, as the response given under each category essentially refers to a negative answer. This can be illustrated by the fact that if the learner believes that the response was "not applicable", it is the same as them responding "no" to the question.

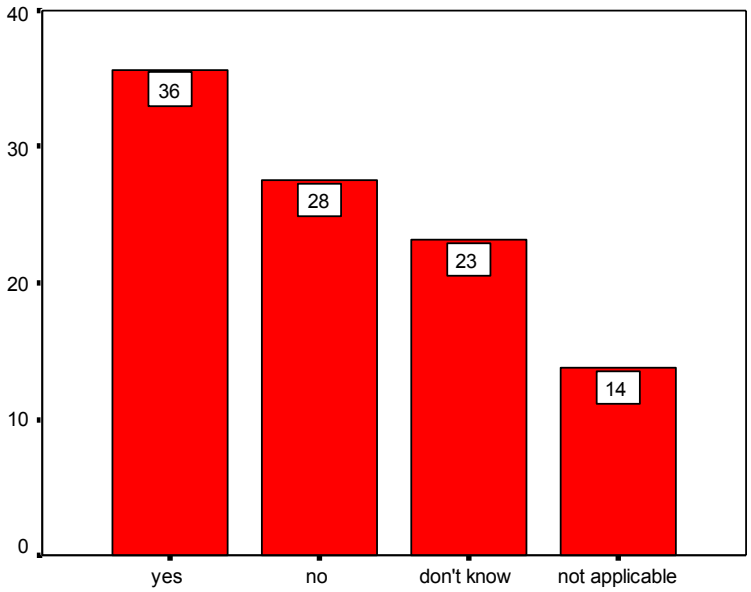


Figure 21: Knowledge Of Career Opportunities During Studying.

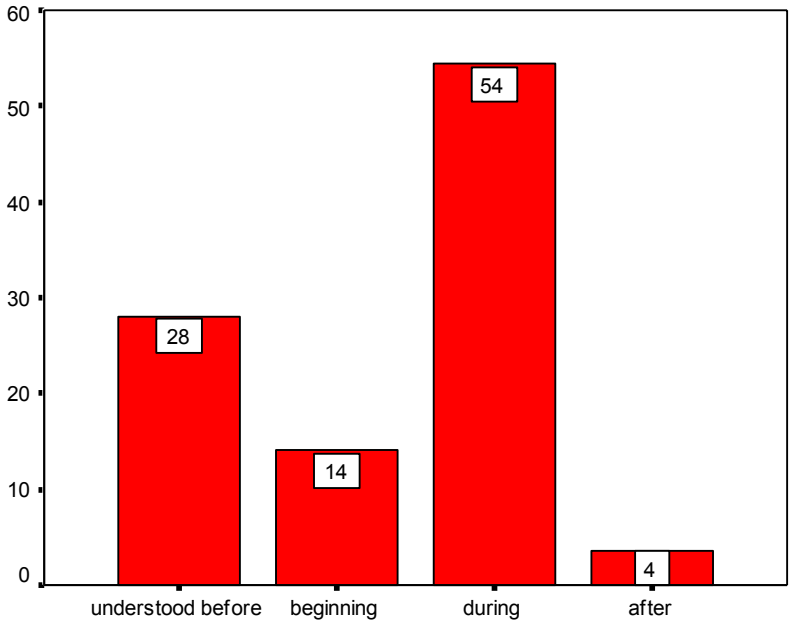


Figure 22: Respondents' Response To When They Heard About Career Opportunities (N=57).

4.4.2. Exposure To Career Outside Of Studies.

Respondents were equally likely to have heard about chiropractic from their schools or family (45% each), while only small percentage heard about it from other heath professionals. This is shown in Figure 23.

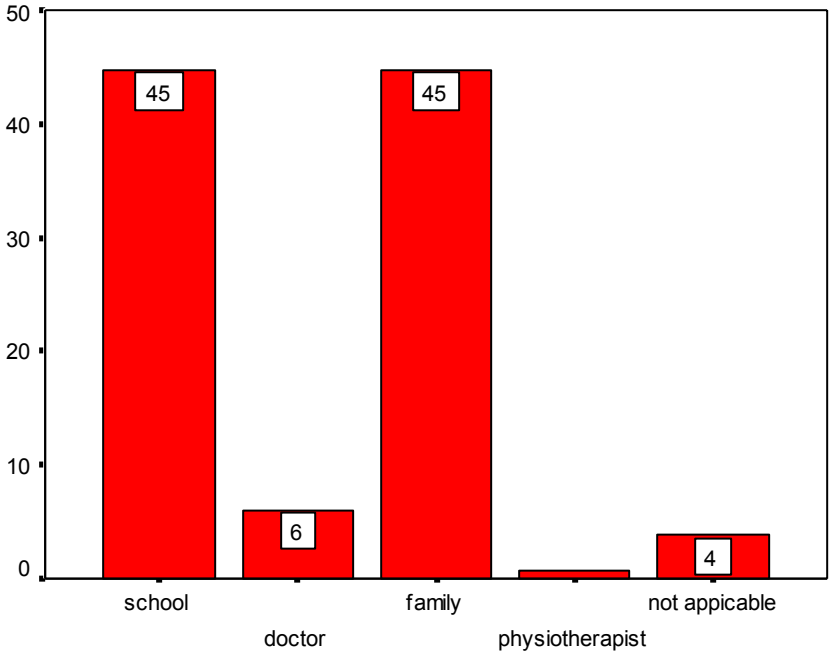


Figure 23: Participants' Response To When They First Heard About Chiropractic.

This is congruent with the results achieved by the collective research of Louw (2005), Hunter (2004) and Van As (2005). It was evident when their results between these studies were compared that the medical professionals had little understanding of chiropractic and often times negative associations towards the profession and thus, were not likely discussed as a potential career in chiropractic with scholars (especially the general practitioners and to a lesser extent the physiotherapists). The career guidance counsellors (Van As (2005)) on the other hand, seemed to have a slightly better understanding than the general practitioners and physiotherapists (Louw (2005), Hunter (2004) respectively). Therefore, it would stand to reason that the principle form of guidance would come from the career guidance counsellors in addition to which the family plays a significant role in the formation of the child / adult and their prospective career, however no information is available in determining the level of understanding with respect to chiropractic by the general public as no such literature is available in the South African context.

4.4.3. Motivational Factors.

Of those who had experienced any failure, self-belief was the most frequently reported factor that motivated them to continue studying (59%), while motivation (46%) and family pressure (32%) also contributed. This is shown in Figure 24.

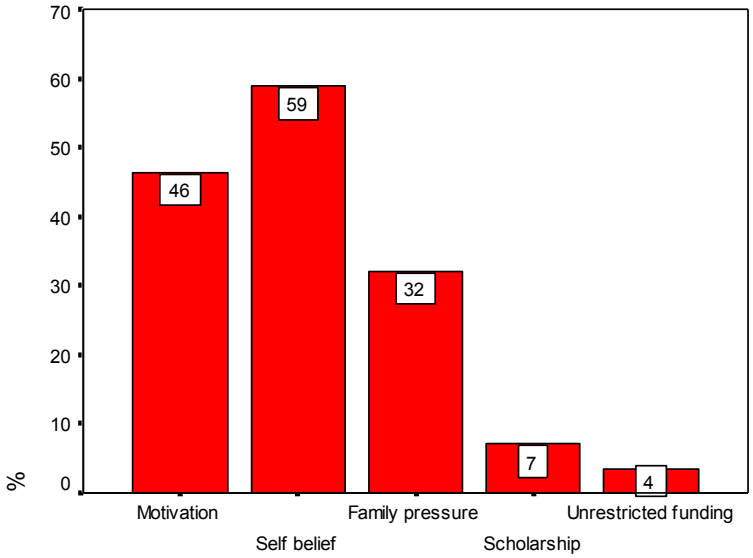


Figure 24: Factors That Encouraged Respondents Who Had Failed A Subject To Continue Studying.

Factors such as motivation and self-belief are closely linked to one another, these factors proved to be the most significant factors to inspire learners who had failed a subject. Both LeJeune (2000) and Ditcher and Tetley (1999) identify Low Motivation as a factor, which may contribute to poor academic progression.

While intelligence may be a desirable quality among learners, motivation is even more so. Learners, who are motivated, learn in accordance with their academic abilities. Moreover, motivated learners make the lecturer's job easier; they tend not to disrupt the instructional environment; they listen and discuss topics when appropriate thus facilitating a whole and enriching learning experience which contributes to their progression (Pretorius and Lemmer, 1998).

4.5. Summary.

The self-reported failure rate in the sample was 34.4% (25 in wrong category, as per question 4.3.2., Table 31) and the objective failure rate was 44.8%. Thus, the respondents tended to under-report subject failure, it therefore stands to reason that memory decay (Mouton 1996) may have played a role in skewing the reported data. The strength of the discrepancy between objective analysis and self-reported data is however negated in part by the similar trends seen between the subjects failed per year, where Chemistry I was failed in first year, Biochemistry II in the second year. In subsequent years, the subjects differ between the objective and self-reported statistics which may be accounted for by the differential reporting within the HEMIS database, which does not reflect all subject failures accurately (especially those by sub minima) and thus leads to an error in reporting.

Therefore, these trends support inferential statistics that were drawn from this study in that they indicate the variance induced by the self-reporting is not too dissimilar to those shown objectively allowing for conclusions to be drawn on self-reported data where no objective data exists.

With respect to more specific results, qualified chiropractors experienced significantly less failure than those still studying in both the self-reported and objective analysis, but this could be due to sample bias as the qualified chiropractors responded in a self selected manner (even with electronic follow-up) thus being a more select group than all learners that gave the opportunity for face to face follow up. In addition, the previous educational background of the learner (now qualified or still studying) may account for the higher failure rate of current learners as this reflects the decrease in high school education quality (Heyneman, 1989). This is further compounded by the element of reporting bias between genders where qualified chiropractors tend to have a higher predominance of males whereas the current learners have a higher predominance of females (4.3.1.1.2.).

With respect to the specific demographics of the current learners versus the qualified chiropractors as well as the demographics compared to the progression (or lack of progression) indicted that there were no specific demographic factors was associated with failure with the exception of the learners' previous qualifications (object and self-reported) that was protective of failure.

With respect to the previous academic record, the grade obtained for physical science in matric / grade 12 and overall matric / grade 12 aggregate were significant predictors of failure (both self-reported (with the exception of the 'D' symbol) and objective). This concurs with the suggestion that the Natural and Mathematical Sciences are an alternative entry point into the Health Sciences and, to a lesser extent, into Engineering and Other Applied Sciences, and that a sizeable proportion of learners who want to study in Science, Engineering and Technology, end up studying in the Humanities (Cosser, 2004). Furthermore, this suggests that the current entry requirements be scrutinized more closely with respect to progression and amended according to the outcomes of such an exercise.

In terms of the extrinsic factors, family structure and living environment did not affect self-reported or objective failure. Even though it was noted that death in the family affected self-reported failure, but not objective failure. The number of personal and immediate family psychosocial events did not affect failure. The number of psychosocial events had no impact on the learner's academic progression, the learner seemed to be able to develop the appropriate coping mechanisms and as a result the psychosocial factors had very little influence on the academic progression of the learner.

Academic factors that were identified to be associated with failure indicated that the most significant factor was 'heavy workload'. This would indicate that the educational paradigm (lecturing styles, assessment procedures etc.) as well as the intrinsic psychosocial factors (motivation, coping mechanisms, academic and social literacy) played the greatest part in the learner progression. Time spent

studying was important for both objective and self-reported failure. Thus objective and self-reporting findings indicate that the time spend studying is directly proportional to a decrease in the percentage failures.

Lecture attendance in the self-reported data indicated that the percentage of lectures attended was not significantly associated with self-reported failure, whereas the objective data showed that those who experienced failure were more likely to attend fewer lectures than those who did not experience failure.

4.6. Hypothesis Discussions.

This study investigated the role of psychosocial factors in the progression of learners in an applied health sciences master's programme - a higher education perspective.

Therefore the purpose of this study is threefold and each of these aims along with there objectives will now be discussed:

1. To investigate the extent to which the identified psychosocial factors affect pass rates.

Null Hypothesis One

The identified psychosocial factors do not affect pass rates.

	Acceptance of Null Hypothesis	Rejection of Null Hypothesis
Objective Reporting	**The following factors were not significant and therefore did not affect the pass rates, thus the Null Hypothesis was accepted / not rejected for the following categories:** ❖ Matric / grade 12 aggregate ❖ Previous Qualification ❖ All psychosocial event ❖ Number of personal or immediate family events ❖ Role as parent ❖ Living / learning environment (disrupted / undisrupted) ❖ Family income source ❖ Study finance source	**The following factors were significant and therefore did affect the pass rates, thus the Null Hypothesis was rejected for the following categories:** ❖ Year of study ❖ Symbol in physical science at matric / grade 12 level **In addition, it was noted that the following statements were significantly negatively associated with progression and thus :** ❖ You didn't work hard enough/insufficient effort. ❖ Assessment procedures were not related to

With the following statements being insignificantly associated with progression and thus not affecting progression of the student

- Time allocated on the timetable to the subject was sufficient.
- Personal conflict with the subject lecturer existed.
- Practical examinations conducted with at least 2 examiners /moderators.
- Duplicated notes were available.
- Self- motivation was a factor.
- Time management / Organisational skills were a key factor to your success.
- The lecturers were out of touch with learners' needs.
- Lecturer communication skills were a factor.
- Encouragement & support from lecturers played a key role in my success.
- Clear & informative course outlines aided my progression.
- Appropriate feedback from lecturers to learners aided my progression.
- I attended most the lectures.
- Resources were available to aid my studies.(Library, computers, etc)
- Financial problems/security contributed to my failure.
- I feel that maturity played a key role in my academic success.
- Learning support programs were available.
- I am satisfied with my choice of course of study.
- Overhead projected notes were used frequently.
- Printed notes were readily available and given out timeously.
- Study guides were available.
- No notes were provided.
- The subject was particularly relevant to the profession.
- When/ if I experienced difficulty with a particular subject(s), I could easily and comfortably seek help.
- If I asked for help from the subject lecturer, I received satisfactory support or help.
- I am satisfied with my career choice as a chiropractor.
- I would study Chiropractic again, given the choice.
- Transport to the Technikon caused me to miss lectures during the course of study.
- My progress was delayed due to the research process.

my progression.

- My health as a student hindered my progress through the chiropractic course.
- My inability to manage stress lead to my failure.
- Social literacy skills played no role in the course.
- Academic literacy skills played no role in the course.
- Heavy course workload was a factor in my failure.
- Misunderstanding course requirements contributed to my failure.
- Personal or family difficulties disrupted my progression
- Academic ability/previous academic background had no bearing on my progression.
- I had a personal problem with the specific nature of the subject
- Hours per week spent studying and objective failure
- Lectures attended

In addition, it was noted that the following statements were significantly positively associated with progression and thus :

- The method of examination within the subject was fair.
- I was able to balance study and social commitments.
- I put in consistent effort to succeed.

	❖ I didn't have sufficient funding to purchase essential subsidiary study materials (e.g. Textbooks, Lab coats etc.) ❖ I could not make ends meet irrespective of personal and / or other income sources. ❖ My personal academic success was not related to fulfilled expectations of the course. ❖ My personal academic success was related to congruence between expectations and reality of the course.	

Self-Reporting	**The following factors were not significant and therefore did not affect the pass rates, thus the Null Hypothesis was accepted / not rejected for the following categories:** ❖ Previous Qualifications ❖ Marital Status ❖ Chronic health problems ❖ Major accidents ❖ Number of personal psychosocial events ❖ Number of immediate family events ❖ Type of psychosocial event: Alcoholism Birth of a child Abuse Divorce Drug abuse Violence Immigration Loss of parent's employment Major illness Marriage Depression Separation/Divorce Suicide Victim of violent crime ❖ Role of Parents/ guardians while studying ❖ Income **With the following statements being insignificantly associated with progression and thus not affecting progression of the student** ❖ Time allocated on the timetable to the subject was sufficient. ❖ Personal conflict with the subject lecturer existed. ❖ The method of examination within the subject was fair. ❖ Duplicated notes were available. ❖ My health as a learner hindered my progress through the chiropractic course. ❖ Time management / Organizational skills were a key factor to your success. ❖ My inability to manage stress lead to my failure. ❖ The lecturers were out of touch with learners' needs. ❖ Lecturer communication skills were a factor. ❖ Encouragement & support from lecturers played a key role in my success.	**The following factors were significant and therefore did affect the pass rates, thus the Null Hypothesis was rejected for the following categories:** ❖ Year of study ❖ Death family member ❖ Number of hours spent studying per week ❖ Symbol in physical science at matric / grade 12 level ❖ Matric / grade 12 aggregate symbol **In addition, it was noted that the following statements were significantly negatively associated with progression and thus :** ❖ You didn't work hard enough/insufficient effort. ❖ Assessment procedures were not related to my progression. ❖ My inability to manage stress lead to my failure. ❖ Social literacy skills played no role in the course. ❖ Academic literacy skills played no role in the course. ❖ Heavy course workload was a factor in my failure. ❖ Misunderstanding course requirements contributed to my failure. ❖ Academic ability/previous academic background had no bearing on my progression. Maturity and age. ❖ I had a personal problem with the specific nature of the subject. **In addition, it was noted that the following statements were significantly positively associated with progression and thus :** ❖ Practical examinations conducted with at least two examiners/moderators. ❖ I was able to balance study and social commitments ❖ I put in consistent effort to succeed. ❖ Lectures attended ❖ Self motivation

	❖ Clear & informative course outlines aided my progression. ❖ Personal or family difficulties disrupted my progression. ❖ Appropriate feedback from lecturers to learners aided my progression. ❖ I attended most the lectures. ❖ Resources were available to aid my studies.(Library, computers, etc) ❖ Financial problems/security contributed to my failure. ❖ I feel that maturity played a key role in my academic success. ❖ Learning support programs were available. ❖ I am satisfied with my choice of course of study. ❖ Overhead projected notes were used frequently. ❖ Printed notes were readily available and given out timeously. ❖ Study guides were available. ❖ No notes were provided. ❖ The subject was particularly relevant to the profession. ❖ When/ if I experienced difficulty with a particular subject(s), I could easily and comfortably seek help. ❖ If I asked for help from the subject lecturer, I received satisfactory support or help. ❖ I am satisfied with my career choice as a chiropractor. ❖ I would study Chiropractic again, given the choice. ❖ Transport to the Technikon caused me to miss lectures during the course of study. ❖ My progress was delayed due to the research process. ❖ I didn't have sufficient funding to purchase essential subsidiary study materials (e.g. Textbooks, Lab coats etc.) ❖ I could not make ends meet irrespective of personal and / or other income sources. ❖ My personal academic success was not related to fulfilled expectations of the course. ❖ My personal academic success was related to congruence between expectations and reality of the course.	

Demographic Information	**The following factors were not significant and therefore did not affect the pass rates, thus the Null Hypothesis was accepted / not rejected for the following categories:** ❖ Gender ❖ Ethnicity ❖ Age ❖ Language ❖ Marital status	**The following factors were significant and therefore did affect the pass rates, thus the Null Hypothesis was rejected for the following categories:** ❖ Qualified Chiropractor & Current chiropractic learner

2. To investigate the extent to which the identified psychosocial factors affect throughput rates.

Null Hypothesis Two

The identified psychosocial factors do not affect throughput rates.

Rejection of the null hypothesis occurs for:

- ❖ Physical science symbol achieved at matric / grade 12 level.
- ❖ Overall matric / grade 12 aggregate.
- ❖ Previous qualifications.

- ❖ Self-reported subject failure of Chemistry I, Biochemistry II, Auxiliary Therapy III, Clinical Chiropractic IV and Research Project and Dissertation in the respective years.

Acceptance of / non rejection of the Null Hypothesis occurred for all other factors.

3. To assess correlations between objectives 1 and 2 noted above in order to determine the impact of identified psychosocial factors on the learners in the M.Tech Chiropractic programme.

Null Hypothesis Three

There are no noted correlations between objective one and objective two.

Taking into consideration the significant and insignificant findings with respect to pass rates and / or failure rates in objectives one and two, one is able to ascertain that there are particular categories reported both objectively and through self-reporting that are either similar or different. In this the third objective we assess those categories that were similar in both the objective and self-reported findings in that those areas of similarity result in the rejection of the Null Hypothesis as stated here.

<table>
<tr><td colspan="2">Rejecting Null Hypothesis Three for the following noted correlations between objective and self-reporting:</td></tr>
<tr><td>Objective</td><td>Self-reported</td></tr>
<tr><td><u>The following factors were not significant and therefore did not affect the pass rates, thus the Null Hypothesis was accepted / not rejected for the following categories:</u>

❖ Previous Qualification
❖ Number of personal psychosocial events
❖ Number of immediate family events
❖ Role of Parents/ guardians while studying
❖ Family income source
❖ Study finance source

<u>With the following statements being insignificantly associated with progression and thus not affecting progression of the student</u>

❖ Time allocated on the timetable to the subject was sufficient.
❖ Personal conflict with the subject lecturer existed.
❖ Duplicated notes were available.
❖ Time management / Organizational skills were a key factor to your success.
❖ The lecturers were out of touch with learners'</td><td><u>The following factors were not significant and therefore did not affect the pass rates, thus the Null Hypothesis was accepted / not rejected for the following categories:</u>

❖ Previous Qualifications
❖ Number of personal psychosocial events
❖ Number of immediate family events
❖ Role of Parents/ guardians while studying
❖ Family income source
❖ Study finance source

<u>With the following statements being insignificantly associated with progression and thus not affecting progression of the student</u>

❖ Time allocated on the timetable to the subject was sufficient.
❖ Personal conflict with the subject lecturer existed.
❖ Duplicated notes were available.
❖ Time management / Organizational skills were a key factor to your success.</td></tr>
</table>

needs. ❖ Lecturer communication skills were a factor. ❖ Encouragement & support from lecturers played a key role in my success. ❖ Clear & informative course outlines aided my progression. ❖ Appropriate feedback from lecturers to learners aided my progression. ❖ I attended most the lectures. ❖ Resources were available to aid my studies.(Library, computers, etc) ❖ Financial problems/security contributed to my failure. ❖ I feel that maturity played a key role in my academic success. ❖ Learning support programs were available. ❖ I am satisfied with my choice of course of study. ❖ Overhead projected notes were used frequently. ❖ Printed notes were readily available and given out timeously. ❖ Study guides were available. ❖ No notes were provided. ❖ The subject was particularly relevant to the profession. ❖ When/ if I experienced difficulty with a particular subject(s), I could easily and comfortably seek help. ❖ If I asked for help from the subject lecturer, I received satisfactory support or help. ❖ I am satisfied with my career choice as a chiropractor. ❖ I would study Chiropractic again, given the choice. ❖ Transport to the Technikon caused me to miss lectures during the course of study. ❖ My progress was delayed due to the research process. ❖ I didn't have sufficient funding to purchase essential subsidiary study materials (e.g. Textbooks, Lab coats etc.) ❖ I could not make ends meet irrespective of personal and / or other income sources. ❖ My personal academic success was not related to fulfilled expectations of the course. ❖ My personal academic success was related to congruence between expectations and reality of the course.	❖ The lecturers were out of touch with learners' needs. ❖ Lecturer communication skills were a factor. ❖ Encouragement & support from lecturers played a key role in my success. ❖ Clear & informative course outlines aided my progression. ❖ Appropriate feedback from lecturers to learners aided my progression. ❖ I attended most the lectures. ❖ Resources were available to aid my studies.(Library, computers, etc) ❖ Financial problems/security contributed to my failure. ❖ I feel that maturity played a key role in my academic success. ❖ Learning support programs were available. ❖ I am satisfied with my choice of course of study. ❖ Overhead projected notes were used frequently. ❖ Printed notes were readily available and given out timeously. ❖ Study guides were available. ❖ No notes were provided. ❖ The subject was particularly relevant to the profession. ❖ When/ if I experienced difficulty with a particular subject(s), I could easily and comfortably seek help. ❖ If I asked for help from the subject lecturer, I received satisfactory support or help. ❖ I am satisfied with my career choice as a chiropractor. ❖ I would study Chiropractic again, given the choice. ❖ Transport to the Technikon caused me to miss lectures during the course of study. ❖ My progress was delayed due to the research process. ❖ I didn't have sufficient funding to purchase essential subsidiary study materials (e.g. Textbooks, Lab coats etc.) ❖ I could not make ends meet irrespective of personal and / or other income sources. ❖ My personal academic success was not related to fulfilled expectations of the course. ❖ My personal academic success was related to congruence between expectations and reality of the course.
The following factors were significant and therefore did affect the pass rates, thus the Null Hypothesis was rejected for the following categories: ❖ Year of study ❖ Symbol in physical science at matric / grade 12 level.	**The following factors were significant and therefore did affect the pass rates, thus the Null Hypothesis was rejected for the following categories:** ❖ Year of study ❖ Symbol in physical science at matric / grade 12 level.

In addition, it was noted that the following statements were significantly negatively associated with progression and thus : ❖ You didn't work hard enough/insufficient effort. ❖ Assessment procedures were not related to my progression. ❖ My inability to manage stress lead to my failure. ❖ Social literacy skills played no role in the course. ❖ Academic literacy skills played no role in the course. ❖ Heavy course workload was a factor in my failure. ❖ Misunderstanding course requirements contributed to my failure. ❖ Academic ability/previous academic background had no bearing on my progression. ❖ I had a personal problem with the specific nature of the subject **In addition, it was noted that the following statements were significantly positively associated with progression and thus :** ❖ I was able to balance study and social commitments. ❖ I put in consistent effort to succeed.	**In addition, it was noted that the following statements were significantly negatively associated with progression and thus :** ❖ You didn't work hard enough/insufficient effort. ❖ Assessment procedures were not related to my progression. ❖ My inability to manage stress lead to my failure. ❖ Social literacy skills played no role in the course. ❖ Academic literacy skills played no role in the course. ❖ Heavy course workload was a factor in my failure. ❖ Misunderstanding course requirements contributed to my failure. ❖ Academic ability/previous academic background had no bearing on my progression. ❖ I had a personal problem with the specific nature of the subject. **In addition, it was noted that the following statements were significantly positively associated with progression and thus :** ❖ I was able to balance study and social commitments ❖ I put in consistent effort to succeed.

Chapter 5

5.1. Conclusion:

Learner progression and tracking a learner's academic success or failure is a multi-factorial problem. Therefore, one has to address each individual factor in order to improve pass rates and reduce the delays in qualification. The following synopsis highlights the results of this investigation into the psychosocial factors as they affect chiropractic learners.

With respect to the self-reported failure rate in the sample, it was found to be 34.4% (17 in wrong category) and the objective failure rate was 44.8%. Thus, the respondents tended to under-report subject failure. It is possible that memory decay (Mouton 1996) may have played a role in skewing the reported data. The strength of the discrepancy between objective analysis and self reported data is however negated in part by the similar trends seen between the subjects failed per year, where chemistry was failed in first year and biochemistry in the second year. Subjects from third year onwards could not be compared due to the inaccuracy of information received from the HEMIS database. It must also be noted that the HEMIS database that was utilized for the reporting of objective data, did not reflect failures by sub minima as indicated in the Faculty of Health Sciences: Chiropractic Handbook, 2006. This implies that the number of failures reflected for the subjects from first to fifth year does not accurately reflect the true failures by sub minima. Thus, the objective reporting of failures can at best be utilized as a guide, but not as a categorical comparator with respect to the self-reported data.

Therefore the above trends indicate that although there seems to be a conflict between objective and self-reporting, they are not to dissimilar and thus support inferential statistics that were drawn from this study in that they indicate the variance induced by the self-reporting is not too dissimilar to those shown

objectively allowing for conclusions to be drawn on self reported data where no objective data exists.

With respect to more specific results, qualified chiropractors experienced significantly less failure than those still studying in both the self-reported and objective analysis, but this could be due to sample bias as the qualified chiropractors responded in a self selected manner (even with electronic follow-up) thus, being a more select group than all learners that gave the opportunity for face to face follow up. In addition, the previous educational background of the learner (now qualified or still studying) may account for the higher failure rate of current learners as this reflects the decrease in high school education quality. This is further compounded by the element of reporting bias between genders where qualified chiropractors tend to have a higher predominance of males whereas the current learners have a higher predominance of females (4.3.1.1.2.).

The specific demographics of the current learners versus the qualified chiropractors, as well as the demographics compared to the lack of progression, indicated that there were no specific demographic factors associated with failure with the exception of the learners' previous qualifications (object and self-reported) that was protective of failure (lack of progression).

With respect to the previous academic record, the grade obtained for physical science in matric / grade 12 and overall matric / grade 12 aggregate were significant predictors of failure [both self-reported (with the exception of the 'D' symbol) and objective]. These shifts suggest that the Natural and Mathematical Sciences are an alternative entry point into the Health Sciences and, to a lesser extent, into Engineering and Other Applied Sciences, and that a sizeable proportion of learners who want to study in Science, Engineering and Technology, end up studying in the Humanities. Furthermore, this suggests that the current entry requirements should be scrutinized.

In terms of the extrinsic factors, family structure and living environment did not affect self-reported or objective failure. Even though it was noted that death in the family affected self-reported failure, but not objective failure. The number of personal and immediate family psychosocial events did not affect failure. The number of psychosocial events had no impact on the learner's academic progression, the learner seemed to be able to develop the appropriate coping mechanisms and as a result the psychosocial factors had very little influence on the academic progression of the learner.

Academic factors that were identified to be associated with failure, indicated that the most significant factor was 'heavy workload'. This would indicate that the educational paradigm (lecturing styles, assessment procedures, etc.) as well as the intrinsic psychosocial factors (motivation, coping mechanisms, academic and social literacy) played the greatest part in the learner progression. Time spent studying was important for both objective and self-reported failure. Thus, both objective and self-reporting findings indicate that the time spent studying is directly proportional to a decrease in the percentage failures.

Lecture attendance in the self-reported data indicated that the percentage of lectures attended was not significantly associated with self-reported failure, whereas the objective data showed that those who experienced failure were more likely to attend fewer lectures than those who did not experience failure.

Thus definite trends were established between the self-reported and objective reporting.

Thus this area of investigation is certainly, an area that requires further investigation in the future in order to obtain more conclusive results.

5.2. Recommendations:

5.2.1. Research generic issues:

Firstly it must be recognised that quantitative research has limitations, however the approach also had many advantages in tracking learner performance, as it can be audited, replicated, reviewed and documented (The Review of Higher Education Outcome Performance Indicators, 2005), in addition to providing preliminary data as to the effect of psychosocial factors on output. This preliminary study would result in clear indication of how further in-depth qualitative studies could progress. Therefore it is recommended that qualitative research is conducted to gain a deeper and potentially more accurate and thorough understanding of specific factors identified from this research.

5.2.2. Questionnaire.

- Questions 1.9-1.11 in the questionnaire should be corrected. These questions only pertain to 5th and 6th year students or qualified chiropractors; therefore 1st-4th year students were not able to answer the questions. In order to remedy this, it would be suggested that in future use of such a questionnaire, a 'not applicable' option is given as these students are not at that particular stage of the research process which would enable them to answer the question.

- The questionnaire went through a pilot study, however repetition (question 2.3), ambiguity (question 6.3) was still missed as well as grammatical errors (question 4.5). It is, therefore, recommended that a more structured process to the piloting procedure be adopted.

- In question 4.3 many respondents commented that answering the questionnaire was made slower in question 4.3 as the heading did not follow

on from page seven to page eight. The respondent had to turn back or manually write in at the top of the page the headings. In future, it would be recommended that the headings be inserted at the top of every page to encourage easy flow and decrease time wastage.

- Questions 2.4 and 2.5 needed clarification, as these questions asked the respondent to comment whether the factors stated from question 2.3 either contributed to their academic success or failure. Questions 2.4 and 2.5 however did not specify which specific factor the respondent was referring to. These questions should have been rephrased or an option should have been given for the respondent to indicate which factor they were commenting on.

- Question 4.4 instructions were incorrect; it read 'please cross all relevant subjects', where the question should have stated 'please insert the appropriate number in the box provided'.

- No definitions given for social or academic literacy, therefore the respondents may not have understood how to answer the questions related to these issues.

5.2.3. Methodology.

- The qualified chiropractors were under represented in terms of questionnaire returns. This was largely due to the mode with which the questionnaire was delivered. The qualified Chiropractors were emailed questionnaires and at two-week intervals a reminder email was sent out to encourage participation. Face to face contact would have been a better option in this regard however for this study the implications were highly impractical.

- With regards to the learner population of the sample, the researcher was able to make contact within the class environment. The Questionnaires were self-administered and predominantly collected at the end of the lecture. This method also allowed for appropriate supervision, as the researcher was able to answer any queries the respondents may have had at that moment. It also facilitated accurate tracing of the missing respondents. Therefore, a recommendation for future study would be to use a self-administered method of delivering the questionnaire, as this would improve the response rate.

- It was noted that some respondents moved from “learner” to “qualified” during the course of the research. This needs to be kept in mind for future studies of this nature and appropriate timing needs to be considered, especially for purposes of recording exact numbers of learners or qualified chiropractors.

- Comparing each respondent’s Matric results to their results achieved at a higher education level would have improved the accuracy of the respondents’ answers. Unfortunately, the researcher was unable to obtain each respondent's Matric marks or symbols from the Hemis Database. The MIS department at DUT stated that the Matric results prior to 2004 were extremely inaccurate and in many cases the information with regards to each learner had not been loaded on their system. This weakened the study’s possible outcomes and it is recommended that systems within the institutions be

maintained at a high level in order to extract information regularly and for purposes of review.

5.2.4. None participants.

- No data was collected from graduates who dropped out of the course. It is recommended that this population should be investigated in the future.

5.2.5. Future.

- This study should be repeated every 5 years to determine if any changes in trends occur, as currently the demographics of the sample population do not reflect the demographic distribution of the South African population.

- Delays in qualifying as a result of other components of the course, such as research should be investigated in the future.

- It is recommended that a comparative study be done between qualified Chiropractic graduates and qualified Homoeopathic graduates with regards to subject failure in the formative years of the course.

- An institutional survey should be done to investigate how Chiropractic learners compare to learners from other faculties/ departments.

- Due to the socioeconomic slant in the study sample, it would be recommended that replication of the study be done in other departments at DUT/DIT/Technikon Natal. This could provide useful/further insights to the general DUT/DIT/Technikon Natal population.

- An inter-institutional comparison between Chiropractic learners at University of Johannesburg and Durban University of Technology should be done.

- Perhaps based on the results of this study, where physical science was considered the most accurate academic marker for subject failure within the chiropractic programme, the pre-requisite subject upon application should perhaps be physical science and not mathematics.

- The literature was congruent with the self-reported failure of physical science and female learners. More female learners failed than did male learners. By implication this could infer that females tend to prefer the broader based less linear, less abstract subjects as opposed to their male counterparts. This however is an assumption in this study as the data is not fully conclusive in this regard. Thus, it is suggested that further research be developed in order to test this assumption.

In conclusion, this study has provided some interesting findings in terms of the factors influencing failure and success among chiropractic learners at DUT/DIT/Technikon Natal. In particular, it was highlighted that the psychosocial paradigm appears to have little to no impact/relationship to success, while previous academic background (particularly physical science), previous tertiary education qualification and the ability to take on requisite academic and social practices seem to be important correlators.

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Appendix A
INFORMED CONSENT FORM

(TO BE COMPLETED BY THE PARTICIPANTS OF THE FOCUS GROUP)

DATE:

TITLE OF RESEARCH PROJECT:

A study investigating previously identified factors affecting academic progression and the role these play in M Tech Chiropractic at Durban Institute of Technology.

NAME OF SUPERVISOR:
Dr C. Korporaal (0832463562)

NAME OF RESEARCH STUDENT:
Bruce Grant 0847077789 / 031 204 2205 (D.I.T)

Please circle the appropriate answer	**YES /NO**	
1. Have you read the research information sheet?	Yes	No
2. Have you had an opportunity to ask questions regarding this study?	Yes	No
3. Have you received satisfactory answers to your questions?	Yes	No
4. Have you had an opportunity to discuss this study?	Yes	No
5. Have you received enough information about this study?	Yes	No
6. Do you understand the implications of your involvement in this study?	Yes	No
7. Do you understand that you are free to		
a) Withdraw from this study at any time?	Yes	No
b) Withdraw from the study at any time, without reasons given	Yes	No
c) Withdraw from the study at any time without affecting your future health care or relationship with the Chiropractic day clinic at the Durban Institute of Technology.	Yes	No
8. Do you agree to voluntarily participate in this study	Yes	No
9. Who have you spoken to regarding this study?		

If you have answered NO to any of the above, please obtain the necessary information from the researcher and / or supervisor before signing. Thank You.

Please print in block letters:

Focus Group Member: _____ Signature: _____

Witness Name: _____ Signature:_____

Researcher's Name: _____ Signature:_____

Supervisor's Name: _____ Signature:_____

Appendix B
LETTER OF INFORMATION – FOCUS GROUP

Dear Participant,

I would like to welcome you into the focus group of my study.

The title of my research project is:
An investigation attempting to identify a possible factor/s affecting academic progression and the role these play in M Tech Chiropractic at Durban Institute of Technology.

Background to the study:
It has been stated in the literature that there are many factors that affect academic progression. This research is an inquiry into which factors current students of chiropractic as well as qualified chiropractors deem most influential with regards to academic progression. Despite the importance of this issue, there has been no extensive research into this field within the chiropractic community.
This is supported by the fact that current issues which dominate education quality debates concern the degree to which nations are differentiated; not by educational access but by quality, congruency and relevance of the delivery of the programme (The Higher Education Act, 1997).

Perceptions of students who experience subject failure are valuable in determining factors which influence subject failure. Qualified chiropractors are able to reflect on the issues presented in the questionnaire from the context of understanding the requirements of practice. Delays in qualification also generate "bottle necks" which has the potential to place strain on the education system and on resources. Any delay in qualification has negative financial implications for both the students involved as well as for the institution.
Thus the reason for holding the focus group is to stimulate individuals thinking and encourage them to develop ideas about the topic (Salant and Dillman, 1994). Focus groups also encourage individuals other than those doing the research to support the research process by increasing research relevance. (Salant and Dillman, 1994).

In order to understand the outcomes required for the focus group it is important to understand the objectives set out for this study:

1. To identify the possible factors affecting academic progression within the qualification of M.Tech: Chiropractic.
2. To compare the results gathered to the existing academic data in different educational settings.
3. To identify the degree to which these factors affect and are correlated with progression/throughput.

Therefore the research would require you as members of the focus group to assist in identifying as many pertinent factors as possible as a result of your participation or association with the programme.

Your participation in this study is much appreciated and you are assured that your comments and contributions to the discussion will be kept confidential. The results of the discussion will only be used for research purposes.
If you have any further questions please feel free to contact me.

Bruce Grant (084 7077 789 / 031 204 2205 (D.I.T)

Appendix C
CONFIDENTIALITY STATEMENT – FOCUS GROUP DECLARATION

IMPORTANT NOTICE:
THIS FORM IS TO BE READ AND FILLED IN BY EVERY MEMBER PARTICIPATING IN THE FOCUS GROUP, BEFORE THE FOCUS GROUP MEETING CONVENES.

1. All information contained in the research documents and any information discussed during the focus group meeting will be kept private and confidential. This is especially binding to any information that may identify any of the participants in the research process.
2. The returned questionnaires will be coded and kept anonymous in the research process.
3. None of the information shall be communicated to any other individual or organisation outside of this specific focus group as to the decisions of this focus group.
4. The information from this focus group will be made public in terms of a journal publication, which will in no way identify any participants of this research.
5. Once this form has been read and agreed to, please fill in the appropriate information below and sign to acknowledge agreement.

Member represents	Member's Name	Signature	Contact Details

Appendix D
CODE OF CONDUCT

This form needs to be completed by every member of the Focus Group prior to the commencement of the focus group meeting.

As a member of this committee I agree to abide by the following conditions:

1. All information contained in the research documents and any information discussed during the focus group meeting will be kept private and confidential. This is especially binding to any information that may identify any of the participants in the research process.

2. Due respect to be given to every suggestion and comment by any member of the focus group and be debated with reference to the outcomes of the research.

3. The information gathered from this focus group by the researcher will be made public in terms of a mini dissertation and journal publication. The researcher will ensure that any participants in the focus group and research remain anonymous and confidential.

Member represents	Member's Name	Signature	Contact Details

Appendix E

Part A: Current Demographic Data

Personal Details

1.1 Gender**:** (Please cross the relevant block)

Female	1	Male	2

1.2 Age: _____ (years)

1.3 Ethnic Group: (Please cross the relevant block)

Asian	1	Black	2
Coloured	3	Indian	4
White	5	Other (specify)	

1.4 Marital Status: (Please cross the relevant block)

Single	1	Married	2
Divorced	3	Widowed	4
Other(specify)			

1.5 Languages spoken: (Please cross the relevant block)

		Predominant First Language	Predominant Second Language	Predominant Third Language
1.	Afrikaans			
2.	English			
3.	isiNdebele			
4.	isiSwazi			
5.	XiTsonga			
6.	seTswana			
7.	TshiVenda			
8.	isiXhosa			
9.	isiZulu			
10.	Sepedi			
11.	SeSotho			
12.	Other: (Please specify):			

Educational Details

1.6 Subjects taken at matric level

Please complete ALL relevant columns

Column 1 – please place crosses in this column for all subjects taken at the matric level.

Column 2 - please place crosses in this column for all subjects not taken at the matric level

Column 3 / 4 – place the symbol alongside those subjects taken (as per column 1), ensure that the symbol is placed in either the higher grade or standard grade column as appropriate for you.

A= above 80% B= 70%- 79% C= 60%- 69%

D= 50%- 59% E= 40%- 49% F= below 40%

		Column 1	Column 2	Column 3	Column 4
		Did subject	Did not do subject	Higher grade	Standard grade
	Subject	Yes	No	Symbol	Symbol
1	English, 1st language				
2	Afrikaans, 1st language				
3	Zulu, 1st language				
4	English, 2nd language				
5	Afrikaans, 2nd language				
6	Zulu, 2nd language				
7	History				
8	Physical Science				
9	Mathematics				
10	Biology				
11	Accounting				
12	Business Economics				
13	Geography				
14	Technical Drawing				
15	Computer Science				
16	Home Economics				
17	Drama				
18	Art				
	Other please specify:				
19					
20					
21					

1.7 In what year did you first register as a first year chiropractic student at DIT/ Technikon Natal for the Chiropractic programme: _____?

1.8 Age at time of first registration at DIT/ Technikon Natal:

[ ] years

1.9 Calendar year when your fifth year was completed:

[ ]

1.10 Calendar year when your research was completed:

[ ]

1.11 Calendar year when you qualified:

[ ]

1.12 What year of study did you start the chiropractic programme (The year of study is indicated if you registered for the major subject of that year) (Please cross the relevant block)

1st year	(if anatomy I was done in year one)	1
2nd year	(Anatomy II and Physiology II)	3
3rd year	(Systemic pathology III and Diagnostics III)	5
4th year	(All subjects)	2
5th year	(All subjects)	4

1.13 Please specify the level and name of **ALL** qualifications at the time of First Registration at DIT/ Technikon Natal, as well as whether the qualification was completed or incomplete and which institution was attended for the qualification. Please indicate by crossing complete (C), or incomplete (IC).

Please indicate all previous qualifications that apply

E.g.

Masters :	***Homoeopathy***	DIT	C	~~IC~~	9

Qualification	Name of qualification	Institution attended	Complete	Incomplete	
Matric			C	IC	1
Certificate :			C	IC	2
National Certificate :			C	IC	3
Diploma :			C	IC	4
Degree :			C	IC	5
Advanced Diploma :			C	IC	6
Honours :			C	IC	7
Bachelors :			C	IC	8
Masters :			C	IC	9
PhD :			C	IC	10
Other(specify):			C	IC	11
			C	IC	12

1.14 Did you receive any credits or exemptions for any of the subjects in the chiropractic course? Please specify which subjects. (Please cross the relevant subject.)

Year 1	
Anatomy I	1
Physiology I	2
Philosophy, Principles & History I	3
Biology I	4
Chemistry I	5
Physics I	6

Year 2	
Anatomy II	7
Biochemistry II	8
Epidemiology I	9
General Pathology II	10
Medical Microbiology I	11
Physiology II	12
Social Studies I	13

Year 3	
Auxiliary Therapeutics III	14
Chiropractic Principles and Practice III	15
Diagnostics III	16
Psychopathology II	17
Systemic Pathology III	18
Year 5	
Clinical Biomechanics and Kinesiology V	25
Clinical Chiropractic V	26
Chiropractic Principles and Practice V	27
Practice Management & Jurisprudence V	28
Research Project and Dissertation	29

Year 4	
Diagnostics IV	19
Clinical Biomechanics and Kinesiology IV	20
Clinical Chiropractic IV	21
Chiropractic Principles and Practice IV	22
Radiography IV	23
Research Methods & Techniques I	24

1.15 What is your current occupation? (Please cross the relevant block)

Chiropractic	1
Homemaker	2
Homeopath	3
Medical representative	4
Studying for a further qualification **specify :**	
Unemployed	5
Working in chiropractic related field (e.g. chiropractic assistant)	6
Working in health professional field (e.g. pharmacy / health shop assistant)	7
Working in totally unrelated field : **specify :**	

Part B: Personal/Psychosocial History

2.1.1 Who took on the role as your parent or guardian while you were studying? (Please cross the relevant block)

Adopted parents (related uncle/ aunt etc)	1
Adopted parents (unknown)	2
Biological parents	3
Independent / Adult learner	4
Other parental figures (religious leaders etc)	5
No parental figures (orphaned/ welfare)	6
Single mother	7
Single father	8
Stepfather + biological mother	9
Stepmother + biological father	10
Stepparents/ Guardians	11
Supported by siblings older than yourself	12

2.1.2 What was your living environment like during time of study? (Please cross the relevant block)

Disrupted (environment NOT conducive to studying or working towards studies)	1
Undisrupted (environment conducive to studying or working towards studies)	2
Not applicable	3

2.2 Highest education level of parents or guardian. (Please cross the relevant block)

Mother	None	1	Std 6 / Grade 8	2
	Std 8 / Grade 10	3	Matric / Grade 12	4
	Certificates	5	Tertiary level diploma/s	6
	Tertiary degree/s	7	Doctorate	8
	ABET training	9	Apprenticeship	10
	Other: (please specify):			

Father	None	1	Std 6 / Grade 8	2
	Std 8 / Grade 10	3	Matric / Grade 12	4
	Certificates	5	Tertiary level diploma/s	6
	Tertiary degree/s	7	Doctorate	8
	ABET training	9	Apprenticeship	10
	Other: (please specify):			

2.3 Major psychosocial events during period of study:
(**Please cross all relevant options**)

	Personal	Immediate Family	Environment / Extended family	
Alcoholism				1
Birth of a child				2
Abuse				3
Chronic Health problems				4
Death of family member				5
Divorce				6
Drug abuse				7
Violence				8
Immigration				9
Loss of parent(s) employment				10
Major illness				11
Major vehicle/ household accident				12
Marriage				13
Alcoholism				14
Depression				15
Separation / Divorce				16
Suicide				17
Victim of violent crime				18
Other: (please specify if possible):				
Not applicable				19

2.4 Did you find that the above factors contributed to your success during the chiropractic programme? (Please cross the relevant block)

Strongly disagree	Disagree	Neutral	Agree	Strongly agree	NA

2.5 Did you find that the above factors contributed to your failure during the chiropractic programme? (Please cross the relevant block)

Strongly disagree	Disagree	Neutral	Agree	Strongly agree	NA

Part C: Financial Structure during Tertiary Education

3.1 Family income. (Please cross the relevant block)

Both parents with stable income	1
One parent with stable income	2
Unstable income	3
No income	4
Retired parents with stable income	5
Retired parents without income	6
Supported by Siblings	7
Government subsidised/ Welfare	8
Other financial support: **Specify:**	

3.2 How did you finance your studies? (Please cross the relevant block)

Both parents	1
One parent	2
Other family member(Uncle etc)	3
Retired parents	4
Student loan	5
Self financed	6
Legal guardians	7
Beneficiaries / Inherited monies	8
Supported by Siblings	9
Scholarship/ bursary	10
Government subsidised/ Welfare	11
Other financial support **Specify:**	

3.3 Personal occupation during study period. (Please cross the relevant block)

None	1
Unrelated to field of study (Bartending etc)	2
Related to field of study (Health shop etc)	3

3.4 Number of Dependants:

3.5 Personal Income Per Annum during period of study: (Please cross the relevant block)

Zero	1	R0- 999	2
R1000- R2999	3	R3000- R4999	4
R5000- R6999	5	R7000- R8999	6
R9000- R10999	7	R11000- R12999	8
R 13000- R14999	9	R15000- R19999	10
R20000- R24 999	11	R25000- R29999	12
R30000- R34999	13	R35 000- R39999	14
R40000- R44999	15	> R45 000	16
Not Applicable	17		

3.6 Average estimated expenses for 1 year (include tuition, rent, petrol, food etc) (Please cross the relevant block)

Zero	1	R0- 999	2
R1000- R2999	3	R3000- R4999	4
R5000- R6999	5	R7000- R8999	6
R9000- R10999	7	R11000- R12999	8
R 13000- R14999	9	R15000- R19999	10
R20000- R24 999	11	R25000- R29999	12
R30000- R34999	13	R35 000- R39999	14
R40000- R44999	15	> R45 000	16
Not Applicable	17		

Part D: Academic progression and Education methodology

4.1 Studying was generally done… (Please cross the relevant block)

On a daily basis	1
On a weekly basis	2
At the end of a chapter	3
Only in preparation for a test	4
The night before a test	5
No studying was done	6

4.2 Please indicate the average number of hours per week that you dedicated to studying in general: (Please cross the relevant block)

0- 10 hours	1
10- 15 hours	2
15- 20 hours	3
20-25 hours	4
>30 hours	5

4.3 Please indicate on the scale your percentage lecture attendance during the chiropractic programme? **(**Please cross the relevant option)

0-15%	**16-25%**	**26-50%**	**51-75%**	**76-100%**

4.4 At the first attempt to complete the subject, did they 1-withdraw or de-register without penalty, 2-fail, 3-complete the subject successfully, 4- yet to be completed/still in the process of completing. (Please cross ALL relevant subjects)

Year 1	
Anatomy I	
Physiology I	
Philosophy, Principles & History I	
Biology I	
Chemistry I	
Physics I	

Year 2	
Anatomy II	
Biochemistry II	
Epidemiology I	
General Pathology II	
Medical Microbiology I	
Physiology II	
Social Studies I	

Year 3	
Auxiliary Therapeutics III	
Chiropractic Principles and Practice III	
Diagnostics III	
Psychopathology II	
Systemic Pathology III	

Year 4	
Diagnostics IV	
Clinical Biomechanics and Kinesiology IV	
Clinical Chiropractic IV	
Chiropractic Principles and Practice IV	
Radiography IV	
Research Methods & Techniques I	

Year 5	
Clinical Biomechanics and Kinesiology V	
Clinical Chiropractic V	
Chiropractic Principles and Practice V	
Practice Management & Jurisprudence V	
Research Project and Dissertation	

4.5 Please rate the following factors and indicate how these factors influenced your progression or lack thereof? (Please cross the relevant block)

	Strongly disagree	Disagree	Neutral	Agree	Strongly agree	NA
Time allocated on the timetable to the subject was sufficient.	1	2	3	4	5	6
Personal conflict with the subject lecturer existed.	1	2	3	4	5	6
The method of examination within the subject was fair.	1	2	3	4	5	6
Practical examinations conducted with at least 2 examiners /moderators.	1	2	3	4	5	6
Duplicated notes were available.	1	2	3	4	5	6
Self motivation was a factor.	1	2	3	4	5	6
You didn't work hard enough/Insufficient effort	1	2	3	4	5	6
My health as a student hindered my progress through the chiropractic course.	1	2	3	4	5	6
Time management/Organisational skills were a key factor to your success.	1	2	3	4	5	6
Assessment procedures were not related to my progression.	1	2	3	4	5	6
My inability to manage stress lead to my failure.	1	2	3	4	5	6
Social literacy skills played no role in the course.	1	2	3	4	5	6
Academic literacy skills played no role in the course.	1	2	3	4	5	6
The lecturers were out of touch with students' needs.	1	2	3	4	5	6
Lecturer communication skills were a factor.	1	2	3	4	5	6
Encouragement & support from lecturers played a key role in my success.	1	2	3	4	5	6
Heavy course workload was a factor in my failure.	1	2	3	4	5	6
Clear & informative course outlines aided my progression.	1	2	3	4	5	6

Misunderstanding course requirements contributed to my failure.	1	2	3	4	5	6
Personal or family difficulties disrupted my progression.	1	2	3	4	5	6
I was able to balance study & social commitments.	1	2	3	4	5	6
I put in consistent effort to succeed.	1	2	3	4	5	6
Appropriate feedback from lecturers to students aided my progression.	1	2	3	4	5	6
I attended most the lectures.	1	2	3	4	5	6
Resources were available to aid my studies.(Library, computers, etc)	1	2	3	4	5	6
Financial problems/security contributed to my failure.	1	2	3	4	5	6
Academic ability/ Previous academic background had no bearing on my progression.	1	2	3	4	5	6
I feel that maturity played a key role in my academic success.	1	2	3	4	5	6
Learning support programs were available.	1	2	3	4	5	6
I am satisfied with my choice of course of study.	1	2	3	4	5	6
Overhead projected notes were used frequently.	1	2	3	4	5	6
Printed notes were readily available and given out timeously.	1	2	3	4	5	6
Study guides were available.	1	2	3	4	5	6
No notes were provided.	1	2	3	4	5	6
I had a personal challenge with the specific nature of the subject.	1	2	3	4	5	6
The subject was particularly relevant to the profession.	1	2	3	4	5	6
When/ if I experienced difficulty with a particular subject(s), I could easily and comfortably seek help.	1	2	3	4	5	6
If I asked for help from the subject lecturer, I received satisfactory support or help.	1	2	3	4	5	6
I am satisfied with my career choice as a chiropractor.	1	2	3	4	5	6
I would study Chiropractic again, given the choice.	1	2	3	4	5	6
Transport to the Technikon caused me to miss lectures during the course of study.	1	2	3	4	5	6
My progress was delayed due to the research process.	1	2	3	4	5	6
I didn't have sufficient funding to purchase essential subsidiary study materials (e.g. Textbooks, Lab coats etc.)	1	2	3	4	5	6
I could not make ends meet irrespective of personal and / or other income sources.	1	2	3	4	5	6
My personal academic success was not related to fulfilled expectations of the course.	1	2	3	4	5	6
My personal academic success was related to congruence between expectations and reality of the course.	1	2	3	4	5	6

Part E: Involvement in co- curricular activities

5.1 Which of the following did you participate in?

	Time allocated to activity (hrs/week)	
Sports/ Leisure		1
Conferences		2
Guest lectures		3
Promotional drives		4
Other: (Please specify):		

Part F: Participant opinion questions

6.1 Were career opportunities articulated during course of study? (Please cross the relevant block)

Yes	No	Don't know	Not Applicable

6.2 If yes to 6.1. When did you hear about the career opportunities? (Please cross the relevant block)

Understood career options before beginning study	beginning	during	after

6.3 When did you first hear of chiropractic? (Please cross the relevant block)

school	Doctor	Family	Physiotherapist	Not applicable
Other (please specify):				

6.4 Where did you first hear of chiropractic? (Please cross the relevant block)

Chiropractor	Doctor	Family	Physiotherapist	Not applicable
Other (please specify):				

6.5 What encouraged you to continue chiropractic after failing a subject? (Please cross the relevant block)

Motivation	Self belief	Not Applicable
Family pressure / expectations	Maintaining a scholarship	Unrestricted funding
Other please specify:		

Appendix F- Letter of thanks

Dear Respondent

I would like to extend my most sincere thanks for your participation in my research.

Your time and contribution is much appreciated.

Kind regards

…….
Bruce Grant
Student researcher

……..
Dr. C. Korporaal
Research supervisor

Appendix G
INFORMED CONSENT FORM

DATE:

TITLE OF RESEARCH PROJECT:
A study investigating the role of psychosocial factors in the progression of learners in an applied health sciences master's programme- a higher education perspective.

NAME OF SUPERVISOR:
Dr C. Korporaal (0832463562)

NAME OF RESEARCH STUDENT:
Bruce Grant 0847077789 / 031 204 2205 (D.I.T)

Please circle the appropriate answer	**YES /NO**	
1. Have you read the research information sheet?	Yes	No
2. Have you had an opportunity to ask questions regarding this study?	Yes	No
3. Have you received satisfactory answers to your questions?	Yes	No
4. Have you had an opportunity to discuss this study?	Yes	No
5. Have you received enough information about this study?	Yes	No
6. Do you understand the implications of your involvement in this study?	Yes	No
7. Do you understand that you are free to		
a) Withdraw from this study at any time?	Yes	No
b) Withdraw from the study at any time, without reasons given	Yes	No
c) Withdraw from the study at any time without affecting your future health care or relationship with the Chiropractic day clinic at the Durban Institute of Technology.	Yes	No
8. Do you agree to voluntarily participate in this study	Yes	No
9. Who have you spoken to regarding this study?		

If you have answered NO to any of the above, please obtain the necessary information from the researcher and / or supervisor before signing. Thank You.

Please print in block letters:

Respondent: _____ Signature: _____

Witness Name: _____ Signature:_____

APPENDIX H- Letter of Information

Dear Participant,

I am a student currently pursuing my M.Tech: Chiropractic qualification at the Durban Institute of Technology.

Study Title:
A study investigating the role of psychosocial factors in the progression of learners in an applied health sciences master's programme- a higher education perspective.

Background to study:
Student progression (pass rates) and throughput (output) are important markers which assess the academic progression of a student. However these markers are not able to identify the factor(s) that are responsible for the lack of progression or throughput, therefore there is a need for further studies to identify possible social factors that affect student progression.

Numerous studies have been done from other academic disciplines, however we have no idea how these previously identified factors impact the health profession, if at all. This study attempts to identify the role that these factors play or don't play in the chiropractic programme at the DIT.

Objective of Study:
To develop a questionnaire for use in this study based on the factors available from the literature. Secondly to identify the role these factors play in the academic progression of students within the chiropractic qualification as well as to identify the degree to which these factors affect progression/throughput. The research is trying to establish if there is a relationship between the identified factors and the your academic progression. Lastly the research wants to compare the results gathered to the existing academic data in different educational settings.

Confidentiality:
As with all surveys, the information you furnish will be treated in the utmost confidence. Please return the questionnaire in the stamped addressed envelope included for your convenience. Questionnaires will be returned to a Faculty Officer who is acting as the administrative support external to the research (Neutral party), this to attain anonymity.

Your time, opinion, and assistance with this project are invaluable and greatly appreciated.

Yours sincerely,

…… ……
Bruce Grant Dr. Charmaine Korporaal
Research Student Supervisor

Appendix I - Transcript

Mr. R: I would like to welcome you all to my focus group. If there are no questions we can start immediately. I'm going to read the question number and part out for all questions. Part A, current demographic data.

Ms T: Can you tell me a bit about your study design?

Mr. R: It is a self-administered questionnaire. The entire chiropractic population including undergraduates and post graduates will be given questionnaires to complete in full. These questionnaires will either be personally handed to the participant or emailed to the participants.

Ms T: I'm still not sure about the objectives and the hypotheses. I feel that the results will be more descriptive.

Mr. R: I will only be looking at people that have qualified from DIT. I have old contact details for participants and will try to contact them. Question 1.1. Any queries?

Ms F: Must be alphabetical order, and that goes for the entire questionnaire, everything must be in alphabetical order.

Mr. R: Question 1.2. Any queries?

Ms T: The age. Is it current?

Mr. R: Yes. Question 1.3. Race. Any queries?

Ms F: Asian must be qualified eg. Indian, Chinese, etc.

Mr. R: 1.4 marital status. Any queries?

Ms N: Married then or now? Very important as this can affect ones studies.

Mr. R: Leaving in or out?

Ms F: Put in current.

Ms M: If current, then important.

Mr. B: Put in marital status at time of study.

Ms: I took that out of my study as I couldn't see the relevance?

Mr. B: I think it is relevant if they get married during their time of study.

Ms M: But that will come out in the table of psychosocial factors, whether they were married or not.

Ms F: You can lave it in for demographics.

Ms V: It shows time management.

Group: Leave it in.

Mr. R: Will come back to that question.

Ms F: The heading states current demographic data, so you need to find out their details, so leave it in.

Mr. R: Question 1.5. Any queries?

Ms M: If this question is placed in the psychosocial table or worded while studying, then it is relevant. But not necessarily now.

Ms M: Shouldn't the question state number of dependants while studying.

Ms T: That's correct and I think the question has financial implications, remove it from here and put it in part C- financial.
Group- Agreed

Mr. R: Question 1.6 and Language spoke. Any queries?

Ms F: Must list all the official languages of our country due to ethical reasons.

Mr. B: What happens if you speak two separate languages equally?
Ms F: Must I leave the question as 1st, 2nd, and other languages?

Ms M: This question is to see if language barriers influenced ones studies.

Group: Yes, that's fine.

Mr. R: Educational details. Question 1.7

Ms M: Cut the details relevant to the course.

Mr. B: But people might have done those other subjects and as a result suffered academically.

Mr. R: What does the group think?

Ms T: Put in yes/no column for each subject and whether they did the subject on higher or standard grade. This will show if the individual was properly equipped to do the chiropractic programme.

Mr. R: Is that ok? Great, let's carry on. Question 1.8.

Group: Include 1.8 into question 1.7.

Mr. R: 1.10. Sorry should state question 1.9.

Ms F: Do you mean, when did you first register for the chiropractic programme?

Ms M: Give them a table of dates, so it makes it easier for the respondent.

Mr. R: I think I need to state when did they first register, an eg. In 1989, the tech did not have the facilities, so people were disadvantaged in that way, and the merger was very disruptive etc.

Ms F: You need to include what year did you qualify? Important to know when you started and when you finished? State them as two separate questions.

Ms M: You need to include what year did you start/register for the programme, what year did you graduate, what year did you qualify, what year did you finish your research? Then you can identify where the time lag is, with research, academics etc.

Mr. R: Is that ok with the group?

Group: It's ok.

Mr. R: Question 1.11

Mr. J: … (Inaudible)

Ms N: In what year did you start?

Mr. R: Are you asking about question 1.12?

Ms N: Yes

Ms F: If did 3 years medicine.

Mr. R: The major subject of first year was anatomy, then you would be registering for first year, systemic pathology is the major subject for third year and so on.

Mr. J: So a chiro student will understand this.

Mr. R: Yes

Group: That's fine then.

Mr. R: Question 1.13.

Ms M: What happens if they have more than one degree?

Ms F: Everyone I presume did matric.

Ms M: What time frame. Can leave open.

Mr. J: …….(inaudible)

Ms F: Did they come from another chiropractic institute or where they received their other degree (institute attended)_?

Mr. R: Must I break up the question, add to it or reword it?

Mr. J: State the name of the qualification, institution attended and whether they completed the degree or it ws incomplete.

Mr R: Is that ok with everyone?

Ms T: Maybe you need to decide whether they are going to put their highest qualification or all their qualifications. I would recommend that they state all their qualifications.

Mr. R: As this would indicate their academic maturity.

Ms T: Yes

Ms F: If they have two masters for example they can just list them, doesn't matter which is higher/ more difficult.

Mr R: Question 1.14

Ms F: I think you should list all the subjects, in case people can't remember the names of the subjects.

Ms M: …….(inaudible), general philosophy …….(inaudible) possibly code and use later on …….(inaudible). I used a code eg: anatomy 1 = a, and so on. Therefore can use a key.

Ms F: It will make the questionnaire a bit fatter. But… (Inaudible)

Mrs. T: Too complicated using a key. Create more columns, one labeled “name of qualification”, the other “institution attended” and finally move the number column to the end.

Group: Agreed

Mr R: Question 1.14, any more suggestions?

Ms F: List all the subjects per year; this requires no thought for the respondent.

Group: Good suggestion. Agreed.

Mr. R: 1.15.

Mr. J: Add they are working as a chiropractor…….(inaudible)

Group: No problems

Mr. R: Part B; 2.1. Psychosocial factors.

Ms F: Those who don’t have parents? Maybe you should have another category.

Ms T: Who took on the role as parent or guardian while studying?

Mr. J: This question seems a bit too personal ……. (Inaudible)

Group: Let’s move on.

Mr. R: Question related to total number of siblings? Any comments?

Ms F: This question wants to find out how many dependants the guardian has. For eg, to see if there is a set up were a total of 17 children is supported by one parent which means that the tech going child will not get adequate attention. Also shows major financial status.

Mr. T: You need to find out how many people are living at home, to see if they are distracted, bad study environment etc.

Mr. R: Do I also need to include not only how many people are there at the living environment, but was it conducive to studying.

Mr. R: 2.1. Is this question ok?

Mr. J: Maybe you should revisit this whole question. Look at if you are married, have kids, look at all the aspects as opposed to trying to simplify the question.

Ms M: One can't assume that it was difficult for them.

Ms F: But that's what the study is about, that is what holds people back?

Ms T: Add while you were studying to the question, this will give the question more relevance.

Mr. R: Any more queries regarding this question?

Group: No that's fine.

Mr. R: 2.2?

Mr. B: Education level of parents, guardian, mom, dad.

Ms F: Put column male and female, mom and dad and so on and then they can tick their highest academic level.

Mr. R: 2.3; any other factors.

Ms M: And also …….(inaudible)

Mr. J: Pregnancy, marriage, children.

Ms F: Do they live with alcoholics …….(inaudible) family/living environment.

Mr. J: See if can't generalize ……. (Inaudible)

Ms F: Environment/…….(inaudible)

Ms T: …….(inaudible)

Mr. J: How about relating the question to the individual, immediate family, extended family etc.

Ms M: And the next question (2.4) could look at how these factors contributed or impacted on the student, either leading to failure, or it didn't affect them.

Ms V: …….(inaudible) anorexia, bulimia, health problems.

Ms N: Were they married, before or after?

Ms F: ……. (Inaudible) husbands ……. (Inaudible).

Ms T: It might be too personal and then people won't want to answer truthfully.

Ms F: But their names aren't on the questionnaire, so it's anonymous.

Mr. J: Use a scale, eg strongly agree, agree, disagree, etc, or numbers from one to five, so you can identify how much of an impact these factors had on their lives/academics.

Mr. R: So I should use one table and include all the information at once, or have questions after to assess the impact.

Mr. J: Try both options and see what it looks like and how people handle the question from your test questionnaire and make a decision from there.

Mr. R: 2.3. Any queries.

Group: Those are enough factors.

Ms M: Split into two questions. As these factors either contributed to their success or failure.

Group: Fine, go with that.

Mr. R: Part C; question 3.1 any other factors, members?

Mr. J: The last option here needs to be open ended, eg please specify.

Group: No other additions

Mr. R: Did you finance your studies? 3.2; must I leave the questions open ended, make the same changes as above.

Ms N: …….(inaudible)

Ms F: Loan or bursary, and so on.

Ms N: what happens if they used more than one option to finance their studies?

Mr. R: Does that make it more difficult to analyze statistically?

Ms T: ……..(Inaudible)

Mr. R: anything else for 3.2. No. Let's move on.

Mr. R: 3.3. Must the question be open ended?

Mr. J: …… (Inaudible)

Ms F: One can own bonds or shares that will cover you so you don't have to work.

Mr. R: 3.4 and 3.5

Ms F: Varies from year to year.

Ms F: Put in living expenses.

Ms N: Difficult for people to relate and remember what they spent on petrol in 1990 for example…….(inaudible)

Ms M: Can't compare someone who started in 1989, and now.

Mr. J: The amounts need to change, eg. 0-11999, and so on for each!

Mr. R: Must I rather omit if there is a problem or is irrelevant?

Ms M: You're going to get an inaccurate answer.

Ms F: What fraction of income was spent on living expenses and studies? You need to include it to compare did they have enough money to get by during their studies, so you can see how many people battled financially to get through the course.

Ms M: Again you can't compare someone who started in 1989, and now.

Ms T: ……. (Inaudible) can't get much work out of it.

Ms N: …….. (Inaudible) For one month ….. (Inaudible) Average expenses for 1 year.

Mr. R: Must I leave it in or out?

Group: In, it's important

Mr. R: Part D: Please indicate the number of hours you spent studying per week.

Ms N: State average outside lectures.

Ms M: How do you compare hours? When I did a pilot study it ranged from 5 to 36. It didn't help.

Ms N: Put in a range.

Ms F: Oh outside lecture time.

Mr. R: Shows diligence and academic commitment, time management.

Mr. R: 4.2.

Ms M: …….(inaudible) others prior to …….(inaudible) say someone studying homeo and has failed and then registered in 3rd year chiro. Put section for comments.

Mr. R: 4.3

Mr. J: ……. (Inaudible)

Ms T: Rewrite all of these into statements and not questions, as you won't strongly disagree with a question.

Mr. R: Do you want to blend or randomize or put in blocks; circle the academic.

Ms T: Change to dictated notes were available.

Ms F: Insufficient effort made by whom …….(inaudible) eg. Lecturers, you and so on.

Mr. R: Must I reword the statements and be specific, clarify the statements and ensure that there is no ambiguity?

Mr. J: …….(inaudible)

Ms N: …….(inaudible)

Ms F: If studied chiro, but now a manager. Am I happy? This is not clear. Need to state that they are happy with their career choice as a chiropractor, and they can agree or disagree.

Ms V: …….(inaudible)

Ms N: …….(inaudible)

Ms F: All the negative questions have to be reversed.

Ms T: …….(inaudible), you must word them all the same way, it would probably be better to have them all mixed, and just let me know whether they are positively or negatively slanted.

Mr. R: Any other questions or problems? No. Part E. 5.1.
Involvement in co-curricular activities?

Ms F: During the course of study/ while studying.

Ms N: …….(inaudible)

Mr. R: No outside the course/studies, i.e. not during lecture time, in the evenings etc.

Ms F: Other studies or interests.

Ms N: …….(inaudible)

Ms N: Recreation is important. You can see how much time they spent on these activities and if it helped for their studies.

Ms F: Do you want to find out how much time spent on chiro or what?

Ms F: What is this question asking?

Mr. R: Assessing their time management skills or over commitment to other areas outside their field of study.

Mr. R: Must I use 2 tables or reword to find out if the person was distracted from their studies. Or leave it open for positive or negative comments.

Ms T: ……(inaudible)

Ms N: Do you want to quantify time?

Ms N: ……(inaudible)

Mr. J: ……(inaudible)

Mr. B: I twill be different per year, in first year you are able to do more sport as you have more time, so for the first 4 years, did you do this; if next 2 years, did you do this.

Ms F: Bruce you for example spent a lot of time in second year playing sport, but now you don't or can't, how would you answer the question

Mr. W: Sport and recreation, leisure and hobbies are totally different things. Is this asking if sport took you away from their studies, because sport can also enhance their studies.

Mr. B: Four your first four years of study let's say, did you do and list the sports and for how long, and then when you where in your fifth year did you carry on with the sport, leisure, etc.

Ms M: But then you're assuming that it held them back.

Mr. B: Well then list the sports, leisure for each year. Because say they were in the national team in first year and then..(Inaudible)

Mr. R: (Inaudible)

Ms F: You also want to find out how much time they spent on their chiropractic education that wasn't part of formal study, observing people, doing the Mr. Price, what ever .

Mr. R: Would it then be better to make two tables or reword this table and make it longer.

Mr. W: You can add in if these helped you or not.

Mr. R: So add a positive or negative slant? Or leave it open to say whether it impacted positively or negatively?

Ms F: (Inaudible)

Ms T: It's up to you.

Mr. R: No, no stats is not my field.

Ms N: (Inaudible)

Ms T: (Inaudible)

Mr. R: Open question after asking them to comment on the question above.

Ms T: You need to add a time aspect to the question.

Ms V: You could add these as factors in the big table as factors that hinder or enhance progression.

Ms F: But you still need to quantify time.

Mr. J: (Inaudible), you could then correlate to the information stated earlier, (Inaudible), you can then see if it was or wasn't a factor.

Ms N: Was it a factor? Or was it a stumbling block?

Mr. R: So you all agree that I need an open question later to determine whether it was or wasn't a factor slowing them down, and to quantify time?

Group? See what you come up with from the pilot study.

Mr. R: Part F; open ended questions. 6.1.

Ms M: If I was the reader I would say yes to and not read the rest. Were career opportunities articulated before, after, during study?

Ms T: But the one question says before and the other states during.

Ms M: But if you read the question you are likely to just go yes.

Mr. J: Word the question were they articulated, a. before, b. during and so on.

Group: Go with that.

Mr. R: 6.2. Problems?

Mr. J: If I had heard that question, where did you her about chiropractic, don't you also want to know when they first heard of chiropractic. Aupair…. I would have thought through my GP…… (Inaudible)

Ms F: Or other physicians, health care professional, homeopath.

Mr. R: Question 6.3 Problems?

Mr. R: Question 6.4. What prevented you from giving up after failing a subject/s.

Ms T: …….(inaudible)

Ms M: A lot of homeopaths …….(inaudible) motivated …….(inaudible) I may interpret as this and another as that.

Ms F: Motivation or something else. Motivation to do what, continue studying, to change careers…

Mr. J: Don't try and bias the question in any way, try and keep it as neutral as possible.

Ms T: …….(inaudible)

Ms M: …….(inaudible)

.

Ms N: Their was someone in my class who passed all the way through to fifth year and then didn't qualify, so research was the only thing standing between her becoming a chiropractor.

Mr. R: Delving into research opens a big can of worms.

Ms V: ……(inaudible)

Mr. R: It's intense and I've be told not viable to look at research.

Ms T: ……(inaudible)

Ms C: That group will be worth max 7 people.

Mr. R: Question 6.4. And 6.5.

Mr. R : Easier tests…

Ms V: ……(inaudible), what would have improved your ability to pass., this would put the question in the past tense.

Ms T: ……(inaudible)

Ms M: ……(inaudible)

Ms V: People answering must give a personal response.

Mr. R: 6.5 what would have assisted you in qualifying on time?

Ms F: add, within the expected time.

Ms M: In your cover letter state what the expected time is.

Ms F: Within the 6 years.

Ms M: Give a definition of time; if applicable.

Ms F: Every one feels that if they got 90%, they could have got 95%.

Ms T: …….(inaudible)

Mr. R: 6.6. Any queries.

Ms M: You don't need that question necessarily. When did you start, when did you complete 5th year, finish your research?

Mr. R: Must I scrap it?

Group: …….(inaudible)

Ms F: Administrative . 6.6 can leave the next 2 questions.

Ms F: What else did you feel contributed to your delayed qualification?

Ms V: Was it administrative?

Ms F: Yes follow on questions. So maybe 6.6 can cover the next two questions as well.

Mr. J: …….(inaudible)

Mr. R: Administrative leads into Research as well.

Ms N: Did research hinder you from qualifying?

Ms F: A student with me had a visa problem and that hindered her.

Mr. R: That's the follow on question what specific administrative delays did you encounter.

Ms N: I'm just wondering why research …….(inaudible)

Ms C: Put in brackets give an example.

Mr. J: That's just a recommendation …….(inaudible)

Ms F: If you say in 6.6 what do you feel contributed to your delayed qualification? What factors, like I went overseas for 2 years and that prevented me or held me back. Or did I start a family. You nearly went to the Olympic Games.

Mr. J: It requires then a very personal answer.

Ms M: In my research, I got like paragraphs at the end, as they had all read the questionnaire and they actually wanted to have a say as well. Have questions at the end with both positive and negative factors, what contributed and prevented your qualification. So leave it as broad and leave as many lines as possible. Then you can wipe out all the above questions.

Mr. R: Is that it? Are there any queries or questions?

Group: Yes we are done.

Mr. R: I would like to thank you all for attending and providing input for my research.

Bruce Grant, 5th year researcher

Appendix J

Holmes and Rahe, Social Readjustment Rating Scale

This allows you to determine the total amount of stress you are experiencing by adding up the relative stress values, known as Life Change Units (LCU), for various events. A score of 250 or more is considered high. Persons with a low stress tolerance may find themselves overstressed with a score of 150. The test is used to determine disease susceptibility. With s score of 150 or less, you have a 37% chance of becoming seriously ill. Between 150 to 300 and it jumps to 51%. Over 300 and there's an 80% chance of serious illness in the next 2 years.

Unfortunately, the concepts in this have become seriously outdated. This was originally published in 1967 and since then, there's been much evidence that sometimes events like divorce or a 2nd mortgage can greatly reduce stress. So consider this when using it.

Adapted from the "Social Readjustment Rating Scale" by Thomas Holmes and Richard Rahe. This scale was first published in the Journal of Psychosomatic Research. 1967, vol. II p. 214.

STRESS	EVENT VALUE
DEATH OF SPOUSE	100
DIVORCE	60
MENOPAUSE	60
SEPARATION FROM LIVING PARTNER	60
JAIL TERM OR PROBATION	60
DEATH OF CLOSE FAMILY MEMBER OTHER THAN SPOUSE	60
SERIOUS PERSONAL INJURY OR ILLNESS	45
MARRIAGE OR ESTABLISHING LIFE PARTNERSHIP	45
FIRED AT WORK	45
MARITAL OR RELATIONSHIP RECONCILIATION	40
RETIREMENT	40
CHANGE IN HEALTH OF IMMEDIATE FAMILY MEMBER	40
WORK MORE THAN 40 HOURS PER WEEK	35
PREGNANCY OR CAUSING PREGNANCY	35
SEX DIFFICULTIES	35

GAIN OF NEW FAMILY MEMBER	35
BUSINESS OR WORK ROLE CHANGE	35
CHANGE IN FINANCIAL STATE	35
DEATH OF A CLOSE FRIEND (not a family member)	30
CHANGE IN NUMBER OF ARGUMENTS WITH SPOUSE OR LIFE PARTNER	30
MORTGAGE OR LOAN FOR A MAJOR PURPOSE	25
FORECLOSURE OF MORTGAGE OR LOAN	25
SLEEP LESS THAN 8 HOURS PER NIGHT	25
CHANGE IN RESPONSIBILITIES AT WORK	25
TROUBLE WITH IN-LAWS, OR WITH CHILDREN	25
OUTSTANDING PERSONAL ACHIEVEMENT	25
SPOUSE BEGINS OR STOPS WORK	20
BEGIN OR END SCHOOL	20
CHANGE IN LIVING CONDITIONS (visitors in the home, change in roommates, remodeling house)	20
CHANGE IN PERSONAL HABITS (diet, exercise, smoking, etc.)	20
CHRONIC ALLERGIES	20
TROUBLE WITH BOSS	20
CHANGE IN WORK HOURS OR CONDITIONS	15
MOVING TO NEW RESIDENCE	15
PRESENTLY IN PRE-MENSTRUAL PERIOD	15
CHANGE IN SCHOOLS	15
CHANGE IN RELIGIOUS ACTIVITIES	15
CHANGE IN SOCIAL ACTIVITIES (more or less than before)	15
MINOR FINANCIAL LOAN	10
CHANGE IN FREQUENCY OF FAMILY GET-TOGETHERS	10
VACATION	10
PRESENTLY IN WINTER HOLIDAY SEASON	10
MINOR VIOLATION OF THE LAW	5

STRESS SCALE FOR YOUTH

STRESS	EVENT VALUE
DEATH OF SPOUSE, PARENT, BOYFRIEND/GIRLFRIEND	100
DIVORCE (of yourself or your parents)	65
PUBERTY	65

PREGNANCY (or causing pregnancy)	65
MARITAL SEPARATION OR BREAKUP WITH BOYFRIEND/GIRLFRIEND	60
JAIL TERM OR PROBATION	60
DEATH OF OTHER FAMILY MEMBER (other than spouse, parent or boyfriend/girlfriend)	60
BROKEN ENGAGEMENT	55
ENGAGEMENT	50
SERIOUS PERSONAL INJURY OR ILLNESS	45
MARRIAGE	45
ENTERING COLLEGE OR BEGINNING NEXT LEVEL OF SCHOOL (starting junior high or high school)	45
CHANGE IN INDEPENDENCE OR RESPONSIBILITY	45
ANY DRUG AND/OR ALCOHOL USE	45
FIRED AT WORK OR EXPELLED FROM SCHOOL	45
CHANGE IN ALCOHOL OR DRUG USE	45
RECONCILIATION WITH MATE, FAMILY OR BOYFRIEND/GIRLFRIEND (getting back together)	40
TROUBLE AT SCHOOL	40
SERIOUS HEALTH PROBLEM OF A FAMILY MEMBER	40
WORKING WHILE ATTENDING SCHOOL	35
WORKING MORE THAN 40 HOURS PER WEEK	35
CHANGING COURSE OF STUDY	35
CHANGE IN FREQUENCY OF DATING	35
SEXUAL ADJUSTMENT PROBLEMS (confusion of sexual identity)	35
GAIN OF NEW FAMILY MEMBER (new baby born or parent remarries or adopts)	35
CHANGE IN WORK RESPONSIBILITIES	35
CHANGE IN FINANCIAL STATE	30
DEATH OF A CLOSE FRIEND (not a family member)	30
CHANGE TO A DIFFERENT KIND OF WORK	30
CHANGE IN NUMBER OF ARGUMENTS WITH MATE, FAMILY OR FRIENTS	30
SLEEP LESS THAN 8 HOURS PER NIGHT	25
TROUBLE WITH IN-LAWS OR BOYFRIEND'S OR GIRLFRIEND'S FAMILY	25
OUTSTANDING PERSONAL ACHIEVEMENT (awards, grades, etc.)	25
MATE OR PARENTS START OR STOP WORKING	20
BEGIN OR END SCHOOL	20
CHANGE IN LIVING CONDITIONS (visitors in the home, remodeling house, change in roommates)	20

CHANGE IN PERSONAL HABITS (start or stop a habit like smoking or dieting)	20
CHRONIC ALLERGIES	20
TROUBLE WITH THE BOSS	20
CHANGE IN WORK HOURS	15
CHANGE IN RESIDENCE	15
CHANGE TO A NEW SCHOOL (other than graduation)	10
PRESENTLY IN PRE-MENSTRUAL PERIOD	15
CHANGE IN RELIGIOUS ACTIVITY	15
GOING IN DEBT (you or your family)	10
CHANGE IN FREQUENCY OF FAMILY GATHERINGS	10
VACATION	10
PRESENTLY IN WINTER HOLIDAY SEASON	10
MINOR VIOLATION OF THE LAW	5

Appendix K

As shown, 2.8 percent of the sample had experienced either a completed rape (1.7 percent) or an attempted rape incident (1.1 percent). The victimization rate was 27.7 rapes per 1,000 female students.

Exhibit 3: Extent of Rape, by Number of Victims, and Number of Incidents, by Type of Victimization Incident

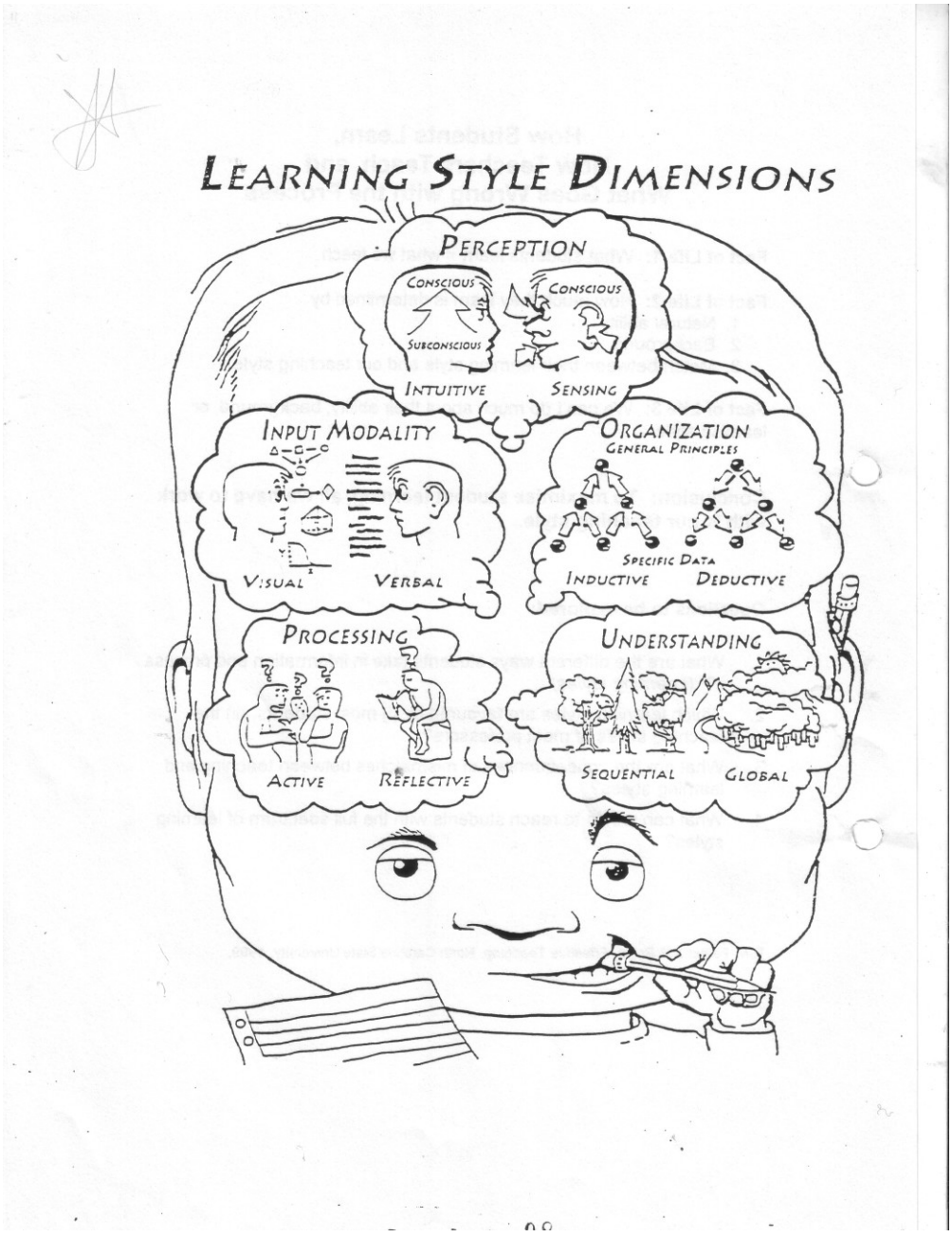
	Victims			Incidents	
Type of victimization	**Number of victims in sample**	**Percentage of sample**	**Rate Per 1,000 female students**	**No. of incidents**	**Rate per 1,000 female students**
Completed rape	74	1.7	16.6	86	19.3
Attempted rape	49	1.1	11.0	71	16.0
Total	123	2.8	27.7a	157	35.3

a. Total has been rounded (from 27.665 to 27.7).

Exhibit 5: Extent of Sexual Victimization

	Victims			Incidents	
Type of Victimization	**No. victims in sample**	**Percentage of sample**	**Rate per 1,000 female students**	**No. of incidents**	**Rate per 1,000 female students**
Completed or attempted					
Completed sexual coercion	74	1.7	16.6	107	24.1
Attempted sexual coercion	60	1.3	13.5	114	25.6
Completed sexual contact with force or threat of force	85	1.9	19.1	130	29.2
Completed sexual Contact without force	80	1.8	18.0	132	29.7
Attempted sexual contact with force or threat of force	89	2.0	20.0	166	37.6
Attempted sexual contact without force	133	3.0	29.9	295	66.4
Threats					
Threat of rape	14	0.31	3.2	42	9.5
Threat of contact with force or threat of force	8	0.18	1.8	50	11.3
Threat of penetration without force	10	0.22	2.3	50	11.3
Threat of contact without force	15	0.34	3.4	75	16.9
Total	568			1,161	

APPENDIX L



(Felder and Brent, 1999, p. 153)

Appendix M										
Common assault										
in the RSA for the Financial Years 1994/1995 to 2003/2004										
Cases reported										
Province	1994/1995	1995/1996	1996/1997	1997/1998	1998/1999	1999/2000	2000/2001	2001/2002	2002/2003	2003/2004
Eastern Cape	27,416	28,688	29,317	28,321	27,251	29,663	30,174	30,129	29,887	27,627
Free State	20,227	19,813	19,437	19,423	20,757	23,530	24,878	25,307	26,890	26,885
Gauteng	49,204	48,195	44,488	42,167	41,933	48,335	53,924	60,468	70,151	74,322
KwaZulu-Natal	27,297	27,858	26,671	25,816	26,649	29,842	32,984	35,575	39,266	37,965
Mpumalanga	8,718	9,565	9,824	9,439	9,349	10,917	12,083	12,830	14,801	15,232
North West	11,814	13,676	13,966	14,722	14,655	16,585	17,697	19,249	19,211	18,534
Northern Cape	7,660	8,356	8,062	8,294	8,516	9,172	9,145	8,975	9,918	10,190
Limpopo	13,650	13,446	14,710	15,099	15,401	16,954	19,599	21,601	20,725	17,848
Western Cape	34,262	36,409	36,548	38,036	39,167	47,026	48,378	47,752	51,677	52,339
RSA Total	200,248	206,006	203,023	201,317	203,678	232,024	248,862	261,886	282,526	280,942
Ratio per 100 000 of the population										
Province	1994/1995	1995/1996	1996/1997	1997/1998	1998/1999	1999/2000	2000/2001	2001/2002	2002/2003	2003/2004
Eastern Cape	457.6	468.3	465.2	442.2	416.1	445.5	440.7	468.1	462.5	425.2
Free State	795.7	767.4	738.1	729.1	767.1	866.8	891.5	935.0	988.9	982.8
Gauteng	698.4	671.5	605.4	566.2	552.7	619.1	684.9	684.2	773.9	790.1
KwaZulu-Natal	337.5	338.5	316.9	302.8	307.1	334.4	367.0	377.4	410.8	389.3
Mpumalanga	327.5	351.4	350.8	331.7	321.3	363.5	397.1	410.8	466.7	469.6
North West	365.5	416.2	416.3	433.6	424.7	465.6	496.2	524.6	516.8	489.2
Northern Cape	933.0	1,006.7	959.4	980.4	996.0	1,048.0	1,047.7	1,090.9	1,207.9	1,245.6

Limpopo	296.5	283.4	298.4	299.7	296.6	317.7	355.4	409.6	388.9	330.0
Western Cape	896.7	938.4	923.7	950.7	963.8	1,127.5	1,154.4	1,055.4	1,121.0	1,105.0
RSA Total	516.0	520.5	500.3	489.0	485.0	538.9	569.7	584.3	621.6	605.7
Percentage Increase/ Decrease										
Province	1994/1995 to 1995/1996	1995/1996 to 1996/1997	1996/1997 to 1997/1998	1997/1998 to 1998/1999	1998/1999 to 1999/2000	1999/2000 to 2000/2001	2000/2001 to 2001/2002	2001/2002 to 2002/2003	2002/2003 to 2003/2004	1994/1995 to 2003/2004
Eastern Cape	4.6%	2.2%	-3.4%	-3.8%	8.9%	1.7%	-0.1%	-0.8%	-7.6%	0.8%
Free State	-2.0%	-1.9%	-0.1%	6.9%	13.4%	5.7%	1.7%	6.3%	0.0%	32.9%
Gauteng	-2.1%	-7.7%	-5.2%	-0.6%	15.3%	11.6%	12.1%	16.0%	5.9%	51.0%
KwaZulu-Natal	2.1%	-4.3%	-3.2%	3.2%	12.0%	10.5%	7.9%	10.4%	-3.3%	39.1%
Mpumalanga	9.7%	2.7%	-3.9%	-1.0%	16.8%	10.7%	6.2%	15.4%	2.9%	74.7%
North West	15.8%	2.1%	5.4%	-0.5%	13.2%	6.7%	8.8%	-0.2%	-3.5%	56.9%
Northern Cape	9.1%	-3.5%	2.9%	2.7%	7.7%	-0.3%	-1.9%	10.5%	2.7%	33.0%
Limpopo	-1.5%	9.4%	2.6%	2.0%	10.1%	15.6%	10.2%	-4.1%	-13.9%	30.8%
Western Cape	6.3%	0.4%	4.1%	3.0%	20.1%	2.9%	-1.3%	8.2%	1.3%	52.8%
RSA Total	2.9%	-1.4%	-0.8%	1.2%	13.9%	7.3%	5.2%	7.9%	-0.6%	40.3%

Appendix N

Crime Information Analysis Centre - South African Police Service

Crime in the RSA for the period April to March 1994/1995 to 2003/2004 Crime Information Anlysis Centre (CIAC)

RSA Total

	April to March									
Crime Category	**1994/1995**	**1995/1996**	**1996/1997**	**1997/1998**	**1998/1999**	**1999/2000**	**2000/2001**	**2001/2002**	**2002/2003**	**2003/2004**
Murder	25,965	26,877	25,470	24,486	25,127	22,604	21,758	21,405	21,553	19,824
Rape	44,751	49,813	51,435	51,959	49,679	52,891	52,872	54,293	52,425	52,733
Attempted murder	26,806	26,876	28,576	28,145	29,545	28,179	28,128	31,293	35,861	30,076
Assault with the intent to inflict grievous bodily harm	215,671	223,097	231,497	234,819	237,818	261,804	275,289	264,012	266,321	260,082
Common assault	200,248	206,006	203,023	201,317	203,678	232,024	248,862	261,886	282,526	280,942
Robbery with aggravating circumstances	84,785	77,167	66,163	73,053	92,630	98,813	113,716	116,736	126,905	133,658
Common robbery	32,659	45,683	50,676	54,932	64,978	74,711	90,215	90,205	101,537	95,551
Indecent assault	4,009	5,127	5,224	4,920	4,968	6,106	6,652	7,683	8,815	9,302
Kidnapping	4,101	4,174	4,091	4,036	4,267	4,902	4,916	4,433	3,071	3,004
Abduction	2,802	2,175	2,057	2,951	3,147	3,372	3,302	3,132	4,210	4,044
Neglect and ill-treatment of children	3,070	2,634	2,264	2,297	2,173	2,497	2,487	2,648	4,798	6,504
Culpable homicide	12,560	13,885	13,679	13,492	13,004	11,706	10,635	10,944	11,202	11,096

Public violence	917	993	891	1,102	1,107	1,195	1,038	907	1,049	979
Carjacking (Sub Category of Robbery Aggravating)	-	-	12,912	13,052	15,773	15,172	14,930	15,846	14,691	13,793
Truck hijacking (Sub Category of Robbery Aggravating)	-	-	3,732	4,657	6,134	5,088	4,548	3,333	986	901
Bank robbery (Sub Category of Robbery Aggravating)	-	-	561	463	493	450	469	356	127	54
Robbery of cash in transit (Sub Category of Robbery Aggravating)	-	-	359	236	223	226	196	238	374	192
House robbery (Sub Category of Robbery Aggravating)	-	-	-	-	-	-	-	-	9,063	9,351
Business robbery (Sub Category of Robbery Aggravating)	-	-	-	-	-	-	-	-	5,498	3,677
Arson	10,948	9,611	10,110	9,863	10,037	9,583	8,945	8,739	9,186	8,806
Malicious damage to property	123,305	129,679	129,781	126,542	129,164	134,346	139,455	145,451	157,070	158,247
Crimen Injuria	33,381	35,262	36,500	39,373	41,291	49,510	57,611	60,919	63,717	59,908
Burglary at residential premises	231,355	248,903	244,665	251,579	274,081	289,921	303,162	302,657	319,984	299,290
Burglary at business premises	87,600	87,377	87,153	90,294	94,273	93,077	91,445	87,114	73,975	64,629
Theft of motor vehicle and motorcycle	105,867	98,669	97,332	102,571	107,448	103,041	100,030	96,859	93,133	88,144
Theft out of or from motor vehicle	183,367	191,833	174,675	179,191	190,027	195,411	200,532	199,282	195,896	171,982

Stock theft	47,287	43,429	41,992	41,573	41,492	41,429	41,536	41,635	46,680	41,273
Illegal possession of firearms and ammunition	10,999	12,336	12,750	13,386	14,714	15,387	14,770	15,494	15,839	16,839
Drug related crime	45,928	39,334	40,363	42,452	39,493	43,602	44,939	52,900	53,810	62,689
Driving under the influence of alcohol or drugs	25,699	23,040	24,522	28,749	25,109	26,035	25,512	24,553	22,144	24,886
All theft not mentioned elsewhere	386,292	387,612	375,180	399,042	441,521	496,345	559,636	576,676	620,240	606,460
Commercial Crime	63,056	60,949	62,182	63,292	63,350	67,915	66,573	58,462	56,232	55,869
Shoplifting	66,302	63,338	61,786	63,522	64,597	66,046	67,665	68,404	69,005	71,888

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CONTENTS: Crime Statistics: 1994/1995 to 2003/2004

Appendix O- Rape										
in the RSA for the Financial Years 1994/1995 to 2003/2004										
A Financial year (SAPS) the period consisting of the months of April to December of a given year and January to March of the following year.										
Cases reported										
Province	1994/1995	1995/1996	1996/1997	1997/1998	1998/1999	1999/2000	2000/2001	2001/2002	2002/2003	2003/2004
Eastern Cape	5,700	6,265	6,699	7,224	6,407	7,098	6,854	6,759	6,066	7,027
Free State	3,707	3,944	3,856	3,835	3,472	3,582	3,541	3,839	3,733	3,828
Gauteng	11,660	12,442	12,883	12,732	11,784	12,425	12,336	12,576	12,091	11,926
KwaZulu-Natal	7,308	8,372	8,926	8,579	8,618	9,365	9,196	9,346	9,489	9,230
Mpumalanga	2,577	2,990	3,301	3,069	3,147	3,329	3,556	3,687	3,534	3,714
North West	3,973	4,710	4,576	4,734	4,518	4,672	4,716	5,046	5,038	5,004
Northern Cape	1,384	1,654	1,473	1,482	1,494	1,489	1,526	1,460	1,472	1,531
Limpopo	2,764	3,171	3,398	3,674	3,856	3,965	4,361	4,795	4,472	4,158
Western Cape	5,678	6,265	6,323	6,630	6,383	6,966	6,786	6,785	6,530	6,315
RSA Total	44,751	49,813	51,435	51,959	49,679	52,891	52,872	54,293	52,425	52,733
Ratio per 100 000 of the population										
Province	1994/1995	1995/1996	1996/1997	1997/1998	1998/1999	1999/2000	2000/2001	2001/2002	2002/2003	2003/2004
Eastern Cape	95.1	102.3	106.3	112.8	97.8	106.6	100.1	105.0	93.9	108.2
Free State	145.8	152.7	146.4	144.0	128.3	132.0	126.9	141.8	137.3	139.9
Gauteng	165.5	173.4	175.3	170.9	155.3	159.1	156.7	142.3	133.4	126.8
KwaZulu-Natal	90.4	101.7	106.0	100.6	99.3	104.9	102.3	99.2	99.3	94.7
Mpumalanga	96.8	109.8	117.9	107.8	108.1	110.8	116.9	118.1	111.4	114.5
North West	122.9	143.3	136.4	139.4	130.9	131.2	132.2	137.5	135.5	132.1

Appendix P

Abstract from Ditcher and Tetley (1999)

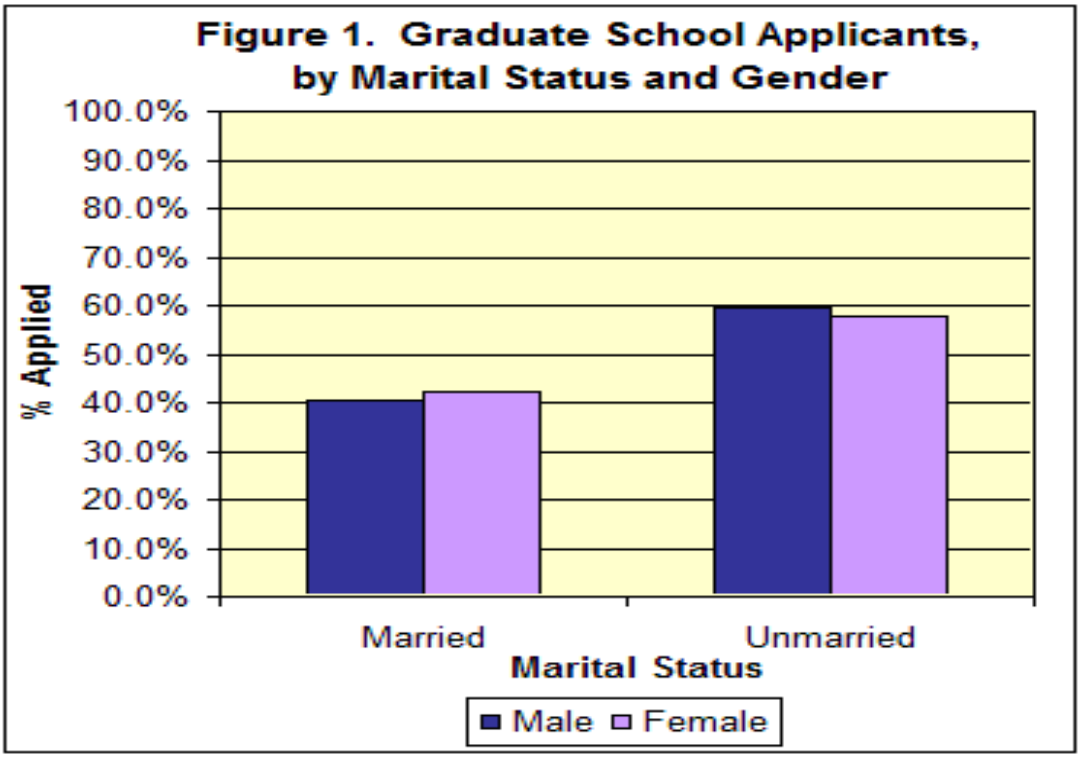
Students	
Year of study	Frequency
1st	45 (17.0%)
2nd	65 (24.6%)
3rd	85 (32.2%)
4th	41 (15.5%)
5th or more	28 (10.6%)
Total	264

Appendix Q

All tables and figures are from Lovik, 1992.

Graduate School Applicants, by Marital Status and Gender

	Marital Status		
Gender	Married	Unmarried	**Total**
Male	87,102 (40.4%)	128,498 (59.6%)	215,600 (100.0%)
Female	109,636 (42.2%)	150,164 (57.8%)	259,800 (100.0%)



Graduate Degree Recipients, by Marital Status and Gender

Gender	Marital Status		Total
	Married	Unmarried	
Male	5,650 (56.5%)	4,350 (43.5%)	10,000 (100.0%)
Female	7,813 (62.5%)	4,688 (37.5%)	12,500 (100.0%)