TERTIARY STUDENTS' LOCUS OF CONTROL AND APPROACHES TO STUDYING

BY

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Thesis presented in fulfilment of the requirements for the Master's Degree in Technology: Education in the School of Teachers Education at the Cape Technikon

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Declaration

I the undersigned hereby declare that the work contained in this thesis is my own original work and has not previously in its entirety or in part been submitted at any tertiary institution for a diploma or degree. I do further declare that the opinions contained herein are my own and not necessarily those of the Technikon.

Signature...   Date....25/07/97..................

ABSTRACT

Students today face increasing demands and challenges. This has important implications for education and its relevance in a rapidly changing world.

It is against this background that the problem of success or failure at tertiary level, especially in the first year of study, is particularly significant as is evident from increased interest in and research undertaken into the factors and determinants involved in success or failure. Two variables that have received considerable attention in recent studies are (1) approaches to studying and (2) locus of control. They have been investigated both as independent factors and as part of a cluster of factors, but the relationship between these two variables has not yet been explored within the technikon context.

In terms of students' approaches to studying there are two important schools of thought. One model (Entwistle & Ramsden, 1983) focuses on qualitative differences between the different categories of approaches to studying. In terms of this model students are classified as either using a reproducing/surface, a meaning/deep or an achieving/strategic approach.

The 'Qualitative Individual Differences' model (Meyer, Parsons & Dunne, 1990a; 1990b), emphasises the qualitative individual differences in terms of students' approaches to studying. This model defines the concept of study orchestration as the contextualised study approach individual or groups of students adopt. The term *orchestration* captures the unique nature of individual

approaches to studying viewed as a qualitative responsive approach to a qualitatively perceived educational context.

The first model therefore views approaches to studying mainly from the point of view of categorical differences, whereas the second focuses on qualitative individual (across and within categories) differences. In this study students' approaches to studying were measured by the **Extended Approaches to Studying Inventory (EASI)**, a variation on the original Approaches to Studying Inventory (ASI) developed by Entwistle & Ramsden (1983).

Locus of control can be seen as either a personality disposition or a generalised causal expectancy. Two theoretical approaches towards locus of control can be identified. The first is based on Social Learning Theory (Rotter, 1966) and the second the Attributional Theory (Kelley, 1972; Weiner, 1974). The concept of perceived locus of control was initially considered as a single dimension in which an individual could be located between internal and external poles. Many researchers have since proposed that the concept should rather be viewed as a multidimensional construct.

Locus of control can be defined as the manner in which a person feels that he himself or factors in the situation determine his behaviour, or as an individual's expectancy that individual actions are instrumental in producing results or that events are determined by fate, chance, luck, the external context or a dimension referred to as "powerful other".

In the past locus of control has been used in research as a global construct, but current researchers are emphasising its multidimensional nature. According to this view locus of control consists of a variety of different dimensions, e.g. academic, social, etc. Of particular interest is how academic

locus of control is related to other educational variables and (in particular) to approaches to studying. A number of instruments for determining students' academic locus of control (e.g. the **Multidimensional-Multiattributional Causality Scale**; the **Multidimensional Measure of Children's Perceptions of Control**; the **Academic Locus of Control scale** and the **Internal Control Index**) were analysed and compared.

These instruments were analysed according to predetermined criteria formulated in terms of the specific aims of this research project and the technikon context. This analysis aimed to determine (a) whether the existing instruments are adequate or valid measurements of academic locus of control, (b) the best existing instrument or (c) whether empirical evidence suggests the need for the development of an alternative instrument. The existing instruments did not meet all the criteria, and therefore a composite instrument was developed, based on selected items derived from the original instruments.

This thesis reports on the exploration of the association between students' approaches to learning and their academic locus of control using the modified locus of control instrument developed for this purpose. This instrument (together with the EASI) was administered to 45 third year and 86 first year students in Electrical Engineering at the Cape Technikon. The results were analysed by factor-analysis, firstly to determine the empirical relationship between different theoretical approaches to locus of control and secondly to determine the conceptual association between constructs of approaches to studying and academic locus of control. In both cases the results are very encouraging and tentative conclusions (in view of the exploratory nature of this research project) are discussed. The results indicate its potential to be useful as an adequate basis for further research with regard to the variables of locus of control and approaches to learning.

Attributional retraining especially could have significant potential to be a helpful interventional tool to address unfavourable academic locus of control perceptions and lead to improved associated approaches to studying. This in turn could lead to the qualitative improvement of academic outcomes. This constitutes an important area for further research, especially in South Africa, where increasing demands will have to be met in an education system still suffering from inadequacies from the historical and ideological past.

In the final chapter avenues for further research are identified and implications for intervention, teaching and assessment strategies are discussed in the context of the results obtained in this research project. The research provided a clearer understanding as to the conceptual basis of factors which might contribute to success or failure in higher education, particularly within the technikon context.

Insights gained from this research could be applied to improve (a) the measurement of academic locus of control, (b) the identification of students who might be 'at risk' owing to theoretically unfavourable perceptions of control or approaches to studying and (c) academic outcome through improved intervention programmes, teaching methods and teacher training.

OPSOMMING

Studente word vandag deur toenemende eise en uitdagings gekonfronteer. Dit het daarom belangrike implikasies vir opvoedkunde en vir die relevantheid daarvan in 'n vinnig veranderende wêreld.

Dit is teen hierdie agtergrond in die besonder dat die probleem van sukses of mislukking, veral in die eerste jaar van studie, ibetekenisvol is. Dit word aangedui deur die verhoogde belangstelling in en navorsing wat onderneem is ten opsigte van die faktore en determinante betrokke by sukses en mislukking op tersiêre vlak. Twee veranderlikes wat baie aandag in resente navorsing ontvang het, is (1) benaderinge tot leer en (2) lokus van kontrole. Hierdie veranderlikes is al ondersoek as afhanklike faktore en ook as deel van 'n groep faktore, maar die verband tussen hierdie twee faktore is nog nie binne 'n technikon-omgewing ondersoek nie.

Daar kan twee belangrike beskouings ten opsigte van studente se benadering to leer geïdentifiseer word. Die Entwistle & Ramsden (1983) model, fokus op kwalitatiewe verskille tussen die verskillende kategorieë van benaderinge tot leer. Studente kan in terme van hierdie model geklassifiseer word volgens die bepaalde benadering tot leer wat hulle openbaar. Dit kan wissel van 'n reproduserende, 'n betekenis- of 'n prestasie-benadering tot leer.

Die 'Kwalitatiewe Individuele Verskille' model (Meyer, Parsons & Dunne, 1990a; 1990b), beklemtoon die kwalitatiewe individuele verskille in terme van studente se benadering tot leer.

Hierdie beskouing definieer die konsep *studie orkestrasie* ('study orchestration') as die gekontekstualiseerde leerbenadering wat 'n individu of groep studente aanneem. Die term *orkestrasie* omvang die unieke aard van individuele leerbenaderinge, wat dui op die perseptuele benadering van 'n individu tot 'n kwalitatief waargenome opvoedkundige omgewing.

Die eerste model benader leerbenaderinge tot leer hoofsaaklik vanuit kategoriese verskille, terwyl die tweede fokus op kwalitatiewe individuele (oor en binne groepe) verskille. Studente se leerbenadering is gemeet deur die "**Extended Approaches to Studying Inventory (EASI)**", 'n variasie van die oorspronklike "Approaches to Studying Inventory", ontwikkel deur Entwistle & Ramsden (1983).

Lokus van kontrole kan beskou word as 'n persoonlikheidsdisposisie of 'n algemene oorsaaklike verwagting. Twee teoretiese benaderings tot lokus van kontrole kan geïdentifiseer word. Die eerste is gebaseer op die Sosialeleerteorie (Rotter, 1966) en die tweede op die Attribusieteorie (Kelley, 1972; Weiner, 1974). Die konsep *perseptuele lokus van kontrole* was aanvanklik as 'n enkele dimensie beskou, waar 'n individu tussen interne en eksterne pole geplaas kon word. Verskeie navorsers het sedertdien voorgestel dat die konsep van lokus van kontrole eerder beskou moet word as 'n multi-dimensionele konstruk.

Lokus van kontrole kan gedefinieer word as die mate waarin die persoon voel dat hyself of faktore in die omgewing sy gedrag bepaal of as 'n individu se verwagting dat individuele optrede resultate bepaal of dat dit bepaal word deur noodlot, geluk, die eksterne omgewing of 'n dimensie waarna daar verwys word as "die magtige ander". In die verlede is lokus van kontrole beskou en in navorsing gebruik as 'n globale konstruk, maar verskeie navorsers beklemtoon die multi-

dimensionele aard van die konstruk. Volgens hierdie benadering bestaan die konsep van lokus van kontrole uit verskillende dimensies, byvoorbeeld akademiese, sosiale, ensovoorts. Van besondere belang is watter verband daar tussen akademiese lokus van kontrole en ander veranderlikes (in die besonder benaderinge tot leer) bestaan.

'n Aantal meetinstrumente (bv. die **"Multidimensional-Multiattributional Causality Scale**; die **Multidimensional Measure of Children's Perceptions of Control**; die **Academic Locus of Control Scale** en die **Internal Control Index"**) om studente se akademiese lokus van kontrole te bepaal, word geanaliseer en vergelyk.

Hierdie meetinstrumente word geanaliseer aan die hand van voorafbepaalde kriteria wat geformuleer is in terme van die spesifieke doelwitte van hierdie navorsingsprojek en die technikonomgewing. Hierdie analise het ten doel gehad om, in terme van lokus van kontrole, te bepaal: (a) of die huidige meetinstrumente voldoende is, (b) watter een die "beste" meetinstrument is (c) of 'n alternatiewe meetinstrument ontwikkel moet word. Die bestaande meetinstrumente het nie al die kriteria bevredig nie, daarom is besluit om 'n saamgestelde meetinstrument, gebaseer op items van die oorspronklike meetinstrumente, te ontwikkel.

In hierdie navorsingsprojek word daar verslag gedoen oor die ondersoek na die verband tussen studente se benadering tot leer en hul akademiese lokus van kontrole deur die saamgestelde lokus van kontrole meetinstrument te gebruik. Hierdie meetinstrument (tesame met die EASI) is geadministreer aan 45 eerste jaar en 86 derde jaar studente in Elektriese Ingenieurswese aan die Kaapse Technikon. Die resultate word geanaliseer deur faktoranalise, eerstens om die empiriese verhouding tussen verskillende teoretiese benaderinge tot lokus van kontrole vas te stel en

tweedens om die konseptuele verband tussen akademiese lokus van kontrole en benaderinge tot leer te bepaal. Die resultate in albei gevalle is baie belowend en tentatiewe gevolgtrekkings (na aanleiding van die ondersoekende aard van hierdie navorsingsprojek) word bespreek. Die resultate toon dat die instrument potensiaal het as 'n bruikbare basis vir verdere navorsing in terme van akademiese lokus van kontrole en benaderinge tot leer.

Attribusionele heropleiding ("attributional retraining") in die besonder kan oor die potensiaal beskik om 'n intervensionele hulpmiddel te wees wat ongunstige persepsies in terme van akademiese lokus van kontrole aanspreek. Dit kan op sy beurt lei tot verbeterde geassosieerde benaderinge tot leer en kwalitatiewe verbetering in akademiese prestasies. Hierdie aspek vorm 'n belangrike terrein vir verdere navorsing, veral in Suid-Afrika, waar toenemende eise aangespreek sal moet word deur 'n opvoedkundige sisteem wat gebuk gaan onder leemtes vanuit die historiese en ideologiese verlede.

In die laaste hoofstuk word terreine vir verdere navorsing asook implikasies in terme van intervensie, onderrig- en evaluering-strategieë bespreek. Die navorsingsprojek verskaf 'n duideliker begrip ten opsigte van die konseptuele basis van sommige van die faktore wat moontlik kan bydra tot sukses of mislukking in hoër onderwys, en in besonder in die technikon omgewing.

Die insigte in terme van hierdie navorsingsprojek het die potensiaal om toegepas te kan word om die volgende te verbeter: (a) die meting van akademiese lokus van kontrole, (b) die identifisering van studente wat moontlik kan misluk as gevolg van 'n teoreties ongunstige persepsie van lokus van kontrole of benaderinge tot leer en (c) akademiese resultate deur verbeterde intervensie-programme, onderrigmetodes en onderwyseropleiding.

ACKNOWLEDGEMENTS

I would like to express my sincere gratitude towards my supervisor, Prof Phillip G. Parsons for his enduring patience, guidance and support throughout the work on this project.

My appreciation also to:

The Electrical Engineering students and their lecturer's that were involved in the research project. Without their contribution and willing support this project could not have become a reality.

My colleagues at the Cape Technikon, who displayed interest in my work and who encouraged and supported me, especially at times when I became demotivated or discouraged.

My friends and family, for their encouragement, love and support, which was always there even if my repeated statement of "Nearly finished", on their inquiries, sometimes sounded never-ending to them.

The Centre for Scientific Development of the Human Sciences Research Coulcil for their financial assistance. Opinions expressed and conclusions arrived at are those of the author and are not necessarily to be attributed to the Centre for Scientific Development.

Finaly, my sincerest thanks to my heavenly Father, who have given me so much throughout my life, without whom I could not have attempted or achieved this thesis.

CONTENTS

1.1 INTRODUCTION

What relationship exists between tertiary students' perceived (academic) locus of control and their approaches to studying ? Before addressing this question in more detail, a general background of higher education and related aspects will be discussed. This background is important because education can be described as "a soft, slimy, swamp of real-life problems" (Schon, 1987:3). According to Biggs (1993:74) it is important to be able to "map the state of the swamp, and not just the anatomy of its alligators". Understanding the context ("swamp") therefore not only gives educational researchers a holistic perspective of educational realities, but places the particular aspects ("alligators") being studied into context. This context is of great importance for education in the current age, especially in South Africa which is undergoing transformation.

The focus is on how different aspects in the context of higher education can contribute to how students control and approach their learning. That this is a complicated and extensive area of study will become clear in the discussion that follows. Improved understanding of this by teachers and students could play a significant role in qualitatively improving perceived control and developing theoretical desirable approaches to studying. This in turn could have a positive influence in improved academic outcomes at tertiary level.

1.2   THE ROLE OF HIGHER EDUCATION

Learning in (higher) education is a complex and multi-dimensional activity. Various factors, in a complex inter-relationary process, can play a role in learning. It is especially in terms of the "products", i.e. learning outcome of the learning process, that this is significant. Different purposes, demands of accountability, technological innovations and the dynamic nature of society are some of the aspects that contribute to the complexity of higher education.

It is important to bear in mind that the role of higher education is strongly influenced by the current dynamic context which in turn has important implications for teaching and learning, especially in terms of how it affects the control of the learning process and the way students approach their studying. Before some of the implications related to the changing nature of society are discussed, a few general comments and statements concerning higher education will be addressed.

1.2.1   Purpose of higher education

The purposes of higher education can generally be summarised as follows:

(a)   Preparation for employment or a career
(b)   Personal development
(c)   Learning to learn.

Dekker & Van Schalkwyk (1995:33) identifies the following categories of objectives of educational systems:

(a)   Intellectual (knowledge, understanding, insight, etc)

(b)   Occupational , career and economic (occupational training, entrepreneurship, etc)

(c)   Personal (development of life skills, freedom, responsibility, etc)

(d)   Social (social development, preparation for social life in community, etc.)

(e)   Political (political literacy, citizenship, etc.).

Higher education therefore aims to provide students with the knowledge and skills required in their vocation or career; to develop their ability to think, reason and to solve problems; and to develop personal and life skills (Ashton, 1995:410; Entwistle, 1995:34; Gravett, 1993:64; Knapper, 1995:14). Although all these purposes might not be developed in the same manner or might not be viewed as equally important in different educational settings, it is important that every institution evaluate its aims and objectives, and how these are achieved. There is general consensus that a holistic development of a learner's potential (as suggested by the abovementioned purposes) should be striven for, although it might not always be the case in practice (Schmeck, 1988:4). Critical research can be an important tool, not only to determine if institutions are achieving this, but also to identify and effect improvements that may be necessary.

Purpose can focus effort and provide an important source of control to the student. A student who lacks purpose in his learning, does not really know towards which goal he is working. This could not only demotivate him, but lead to ineffective control over the progress of his learning.

1.2.2 Control in the learning process.

Control can be defined as the "power or authority to direct, order or limit" (Oxford Advanced Learners' Dictionary, 1995). The fundamental question here is what level of power or authority people possesses to direct, order or limit their lives. This process takes place in all the different aspects of human life. Who and what controls our lives? People tend to make certain attributions in terms of control in their lives. These attributions are generally based on their past experiences, their expectations and perspectives concerning causal behaviour and their perceived abilities (Weiner, 1974; Kelly, 1972). People thus have a general viewpoint as to who, what and how their lives are controlled. Figure 1.1 and 1.2 provides a holistic representation of different aspects that can be involved in an educational context.

Figure 1.1	Different aspects that affect and control education.

(Dekker & Van Schalkwyk, 1995:33)

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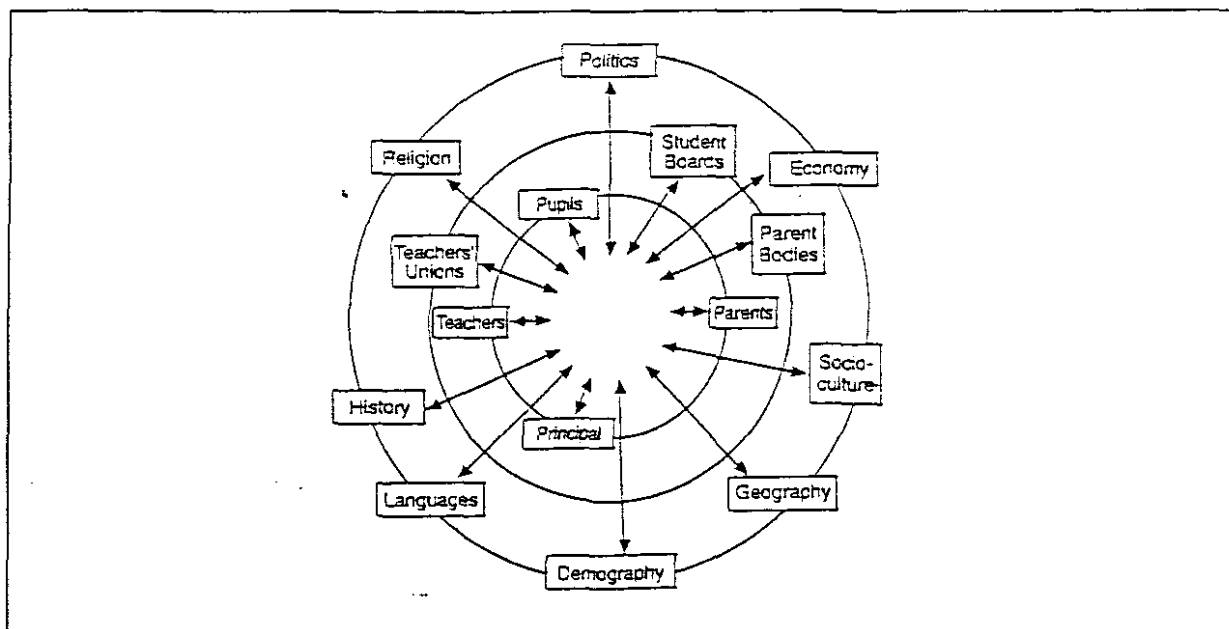
From Figure 1.1, p. 4 and 1.2, p. 5 it is clear that (educational) control can be approached from different perspectives. Different levels of educational control can be distinguished in the educational situation. On the basis of Figure 1.1, p 4 and 1.2, p. 5 educational control can be classified in the levels given in Table 1.1, p. 5.

Figure 1.2	Macro- and Constituent Micro-systems in Tertiary Education.
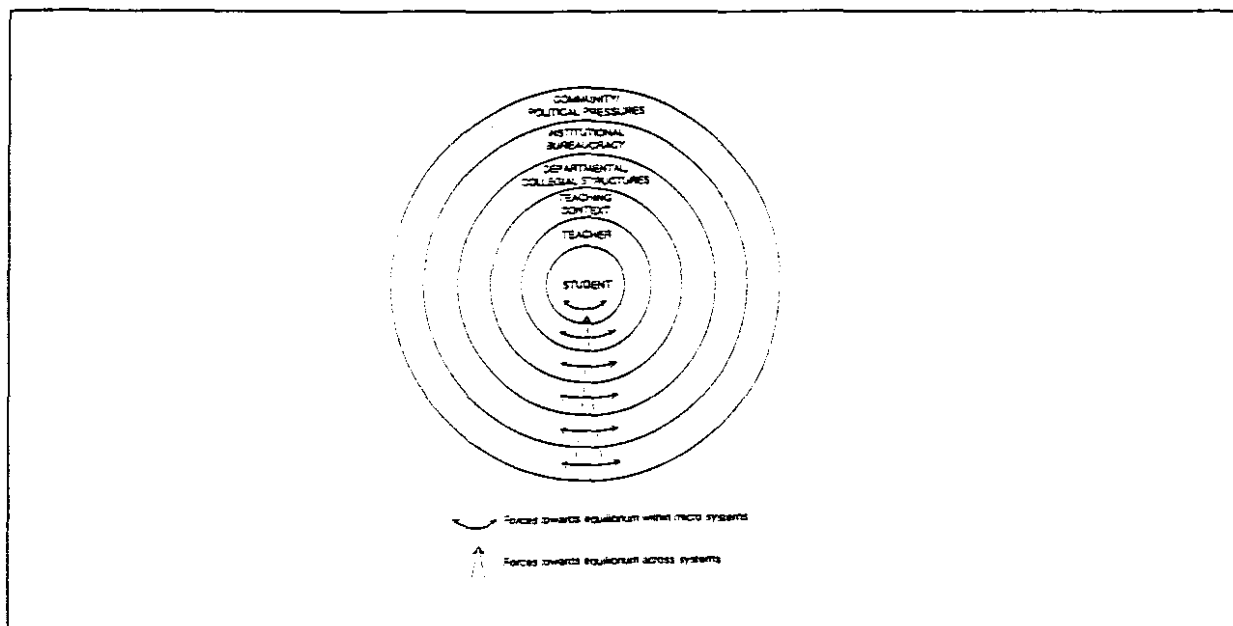
(Biggs, 1993:75)

Table 1.1	Three different levels of educational control.

LEVEL	EXAMPLE	DESCRIPTION
Macro	Government; educational departments; Institutions	Determine general educational principals and aims.
Intermediate	Principals and Teachers	Implementing these principals and aims.
Micro	Individual student	Responsible for managing his/her own learning.

It is important to keep in mind that student (micro), teacher (intermediate) and organisational (macro) control are not always easily separated in empirical situations, because they interact with each other. This implies that administrators, teachers and students are all involved in controlling the learning process. It is specifically the interaction between teacher and student that could play an important role in terms of the control of the learning process and associated learning outcomes. Both the teacher and the student have particular responsibilities relating to the control of the learning process. What quality of control does the student and teachers perceive in the learning process ? The interaction between these perceptions could yield interesting insights into student learning at tertiary level.

Characteristics of our dynamic contemporary society like increasing complexity, choices, technology, dehumanisation, student centred learning, etc. raises a variety of questions. One of these deals specifically with how these characteristics can affect the way people take control (or fail to) in the different aspects and situations of their lives. This is particularly relevant in education and learning. The nature and rate of current changes in society results in students of today increasingly being confronted with the aspect of control. How do students take (or fail to take) control of the learning process ?

Some of the characteristics mentioned will be discussed in more general terms in the following sections. Although the author is primarily interested in how these characteristics relate to the aspect of control, some other important aspects will also be addressed to provide an adequate description of the context in which a construct like control operates. The aspect of control and the

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factors that contribute to students developing self-actualised (self-controlled) lives, is an important focus of educational research. This project focuses on control, albeit a particular form thereof. This will be discussed in more detail in Chapter Three.

1.2.3 Accountability in higher education

Higher education in South Africa, as in the rest of the world, is receiving considerable attention. The expansion in the number of students, in expenditure and research being undertaken, together with the increasing demands of society, high failure rates of especially first year students and the quest for quality in teaching confronts higher education with the question of accountability (Evans & Abbot, 1995:191; Knapper, 1995:12; Packwood & Sinclair-Taylor, 1995:217; Parsons, 1993:24; Ramsden, 1991).

Accountability indicates someone (or an institution) accepting the responsibility for the consequences or outcomes of their actions. Without going into an extended philosophical discussion, a few general conclusions concerning accountability will be mentioned.

Morrow (1989:1-2) warns that it is very difficult to advocate direct accountability between teaching and the learning outcomes achieved by learners. Such an approach could be dangerous and could create an imbalance where all responsibility in the learning process would be invested in the teacher and very little in the learner himself. Such an approach could even lead to teachers and institutions being expected to "guarantee" learning success. (For a more detailed discussion see Morrow, 1989:1-9).

Does this imply that teachers or institutions do not have to be accountable for their academic outcomes ? No, rather accountability in education should be seen as the commitment of teachers and institutions to adequately develop the potential of the learner, to meet the expectations and needs of society and to prepare people for the future. (These aspects are clearly more subjective and qualitative than the traditional approach which sees academic outcomes as learners achieving a certain percentage/mark, passing a subject or obtaining a qualification). This could be achieved when teachers, students and institutions approach teaching and learning in a responsible manner where there is a commitment to (a) quality in teaching, learning and research, (b) new and creative ideas, approaches and methods and to (c) see learning as a holistic process where the "whole" person is developed in a balanced way (Packwood & Sinclair-Taylor, 1995:217). According to Sunter (1987:40-41; 1990) we need a high quality of education if South Africa is to become a "Winning Nation".

Accountability does not apply to teachers and institutions only but also to the learner. The learner in higher education has the responsibility to learn and should therefore be an active participant in the learning process. This extends the concept of accountability. Every person (teachers, the institution and the learner) have their own responsibilities in the learning process and everyone should be aware of what his or her particular task is. It is clear that how students, teachers and institutions perceive accountability could play a role in determining their perceived control associated in the learning process. For example, if students held the teacher absolutely accountable for their learning success or failure, they would probably ascribe greater control to the teacher than to themselves (see Killen, 1994:201).

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1.2.4 A crisis in education

As has been stated earlier in 1.2, p. 2 it is vital to understand that the complex and dynamic nature of the contemporary (as well as the future) society should be kept in mind. Various researchers (Heese & Badenhorst, 1992:vii-x; Morrow, 1989:1; Spier in McGreggor, 1992:455; Spier, 1995; Ullyatt, 1989:159) have voiced their concern over the "crisis" in which education finds itself. Much of this "crisis" in education revolves round the question of whether students are being adequately prepared for the future and their role in society.

Toffler (1970:360-361) described this crisis in education as follows:

> "What passes for education today, even in our "best" schools and colleges, is a hopeless anachronism. Parents look to education to fit their children for life in the future. Teachers warn that a lack of an education will cripple a child's chances in the world of tomorrow. Government ministries, churches, the mass media - all exhort young people to stay in school, insisting that now, as never before, one's future is almost wholly dependent upon education."

> "Yet for all this rhetoric about the future, our schools face backwards towards a dying system, rather than forwards to an emerging society. Their vast energies are applied to cranking out Industrial Men - people tooled for survival in a system that will be dead before they are".

Although Toffler stated the above more than twenty years ago, it is still very relevant for today. Ullyatt (1989:159) is of the opinion that if radical and drastic transformation of the total educational system is not initiated then we are "in a headlong rush to self-destruction". In support of this warning Spier (1995:39) emphasises that we need a dynamic, creative transformational approach towards education if we want to address the needs and problems prevalent in society. This is in line

with Toffler's (1970:360-361) view that the answers and solutions to our problems will have to be found and developed from a perspective which is focused in the future. If we keep on looking in the past for answers and concentrating on "outdated" knowledge and skills we will be heading for "future shock" (Toffler, 1970) or "self-destruction" (Ullyatt, 1989).

Although most would agree that education finds itself in a crisis, it does not mean that there are not any positive aspects. There are indications that there are teachers and administrators who use innovative methods, ideas and approaches in the learning that takes place. Continuous research is an important tool not only to develop our understanding of the learning process but to encourage these positive aspects.

Today there is a strong call for relevant, authentic and accountable education (Steyn, 1995:25; HRSC, 1992; Sunter, 1990). Although these concepts have different meanings for various people, they address important aspects which lie at the foundation of society. Crisis always implies a question of control. Do we manage (control) the crisis or does it manage (control) us ? Students are in most cases the "innocent" sufferers of such crises. How do they deal with this and how does it affect their learning ?

1.2.5   Higher education in a dynamic society

There is a general realisation that, for society adequately to meet the demands in the future, education in general and higher education specifically should play an important role in providing people with the knowledge and skills to meet these demands. As the demands for food, housing,

employment, services, lifeskills, etc., increase education should empower students to adapt to these demands as well as develop their potential to live in a dynamic society (Spier, 1995:39-42).

In the current information age, which especially applies to developed or 'first world' countries, the focus is fundamentally on the accumulation and extension of knowledge. This age is also characterised by rapid and fundamental technological change and advances. This is accentuated by the dominance, and increasing importance of service related industries (including education) (Sunter, 1990; Toffler, 1970; 1990).

"Knowledge is power" (Spier, 1995:37) is a statement regularly used to describe the nature of the information age. This has significant implications for education which aims to prepare people for the future. According to Spier (1995:37) "access to information is of crucial importance if we are to change the fate of many who belong to the ranks of the previously disadvantaged because of lack of knowledge". In other words, persons who have access to and understanding of relevant knowledge will have "power", i.e. their ability to make choices, to play a constructive role in society and to maintain higher quality of life could be significantly increased.

In the information orientated world of today students are confronted by a wide spectrum of information, in increasing amounts, that they not only have to absorb, but also have to try and understand. Against this background, students today face increasing demands and challenges. Increasing demands on our human resources have important implications for education and its relevance in a rapidly changing world (Monteith, 1993; Slabbert, 1993; Toffler, 1970; 1990). This emphasises the question of control. How do students deal or cope with the modern dynamic

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society? Are students today being adequately prepared to cope with (control) the changes that they will experience ?

The rate in which knowledge is increasing can be seen in the estimated 6000 to 7000 articles published **per day** in the natural sciences alone (Slabbert, 1993:38). From this statistic it is obvious that knowledge learned today could be outdated tomorrow. How should higher education deal with this changing reality ? This question emphasises that we should improve our understanding of the factors which play a role in education and learning. According to Spier (1995:39) "technology is providing humankind with new options for which it is as yet ill-prepared in terms of outdated institutions and obsolete mindsets." This statement by Spier emphasises the responsibility of education to develop the skills of learners, so that they will be more prepared for the future.

Although South Africa is largely classified as a developing country, there is evidence of first world characteristics together with third world characteristics. This is largely the result of the unique historical and political developments South Africa has experienced. The educational situation in South Africa thus exhibits characteristics of developed and developing countries. Higher education in South Africa suffers from a certain dualism: experiencing similar developments as in other first world countries on the one hand, and lagging behind in terms of certain developments other countries have already experienced on the other.

South Africa is particularly experiencing dramatic and extensive social, political, economic and educational transformation. Students will have to learn to adapt to these changes and the demands

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that they will bring about. Again this would confront teachers, institutions and students with control. How do we control this transformation and what implications or influences will it hold for them ?

According to Pretorius (1988:101-129) modern society is characterised by the process of depersonalisation. When this process is taken to the extreme then people are dehumanised. Depersonalisation occurs when the uniqueness of the individual is ignored or denied. A person then loses his or her identity as a unique individual. Technology, industrialisation, urbanisation, the mass media, etc. can contribute to individuals feeling depersonalised. Especially in the cities, where the individual is confronted by many people and has to compete with many others to survive. This has been identified as a symptom of modern city living - the so-called "ratrace".

This explains, to an extent, why many first year students go through a difficult process of adapting to the social (and learning) environment in which they find themselves. At the university, technikon or college (which is generally found in the major cities) the new students are confronted by a different situation to that at secondary level (Meyer & Scrivener, 1995:53). The tertiary level has opened up a bigger new world for students. They are confronted by a variety of people, subjects, lecturers, responsibilities, choices, etc. which makes them realise that life is not as simple as it seemed when they were younger.

The computer, the tool of the information age, specifically confronts people with how much control they have over their lives. This implies that people are increasingly struggling to maintain a sense of control over their lives. Students specifically are confronted by the question of control in relation to

their learning outcome. Students in other words are being confronted with the following questions: Who or what is responsible for (controls) my success (or failure) ? Who and what determines success (or failure) in higher education ?

In summary it could be concluded that the knowledge and skills which were relevant for students in the past might not be relevant and adequate today and in the future (Packwood & Sinclair-Taylor, 1995:217; Toffler, 1970:360-361). Higher education thus has an important responsibility to prepare students for the future so that they can adapt to (and control) the changes and requirements they will have to face. The way students perceive themselves to be in control of their learning (or not in control) could play an important role in how they would approach their learning tasks. A sense of being in control would therefore tend to lead to a more positive approach to studying.

1.3   WHAT IS LEARNING ?

Against the above background, an age-old questions arises. What is learning ? (Slabbert, 1993). This question has become very relevant for educationalists in the light of the challenges and requirements of contemporary society. In the past different answers or perspectives were formulated in relation to this question, which to a large extent arose from the particular context in which it was being addressed. Technological developments created different frameworks or paradigms against which to define a particular reality, for example learning (Sunter, 1990).

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The importance of this question becomes increasingly clear in view of the rate of current change, not only in South Africa but world-wide. Especially higher education should take cognisance of the realities it will be facing in the future. If we accept that the fundamental purpose of higher education is learning, then the importance of the factors which are involved in the learning process are fundamental to our understanding of the learning process. How a student interprets the way learning is defined in the practical learning situation, can have an important impact on the amount of control the student believes he possesses and the way he would tend to approach learning tasks.

According to Samuelowics & Bain (1992:95) various researchers, (for example, Ausubel, Novak & Hanesian (1978), Biggs (1989, 1990), Bruner (1966), Pask (1976), Rogers (1969) and West & Pines (1985)) distinguish between a quantitative or qualitative approach to learning. Learning therefore could be viewed as either "the accumulation of factual knowledge, often through the process of memorisation", or "as a way of interpreting the world". Slabbert (1993:38) employs the same distinction in that learning can be defined either as "receiving and storing information or content to be reproduced at an appropriate time", or as "the process where the learner constructs meaning through certain competencies" (see Gunstone & White 1992:12; Schmeck, 1988:3).

Schmeck (1988:3) argues that the perceptions (as described above) represent two extremes towards learning that can vary across the whole spectrum. He labels this variation *conceptions of learning*. This implies that learning should be viewed as consisting of different qualitative dimensions rather than a single qualitative dimension. Säljö (1979) initially identified the following five qualitatively different conceptions of learning:

(1)   The increase of knowledge
(2)   Memorising
(3)   Acquisition of facts, procedures etc
(4)   Abstraction of meaning
(5)   An interpretation process aimed at the understanding of reality.

Marton, Dall'alba & Beaty (1993:283) in their study also found (as for example Van Rossum &

Schenk, 1984; Martin & Ramsden, 1987) the five conceptions described by Säljö (1979), although

their categories of descriptions are somewhat different and they also found a sixth conception. The

six qualitatively different ways of learning, according to Marton *et al.* (1993:283) are:

(1)   Increasing one's knowledge
(2)   Memorising and reproducing
(3)   Applying
(4)   Understanding
(5)   Seeing something in a different way
(6)   Changing as a person.

It is clear that learning, as a construct, exhibits qualitative different dimensions and that each of

these dimensions contribute to the larger reality, called learning. This implies that learning is

therefore not a single dimension or activity. This has important implications for teaching and

assessment practices. (Some of these will be addressed further in 1.4, p.18-19).

Slabbert (1993:38) concludes that a qualitative definition of learning should be favoured over a

quantitative definition which is typical of the traditional approach in the past. According to him

education in the past has focused too much on the content of subjects rather on the understanding,

skills and competencies which are associated with knowledge. Learning should therefore be

viewed as "a process of constructing meaning   through discovery" . From this perspective

education should primarily focus on the how of teaching, rather than on the what of teaching (Slabbert, 1993:38).

Teaching (or learning) in this perspective is thus not just the transfer of knowledge or content, but rather the mastering of competencies through which content is obtained. Content only serves as a means by which competencies are acquired (Slabbert, 1993:38-39). Thus knowledge only for the sake of knowledge is not really meaningful. It is the use, skills, meaning and competencies acquired from knowledge that are important (Packwood & Sinclair-Taylor, 1995:218). As Gourley (1994:7) correctly states: "Knowledge is not the same as wisdom". The statement earlier, "knowledge is power" would be more accurate if expanded to read: "Competence gained through knowledge is power". Competence gained provides one with a sense of achievement and the feeling of being able to control that particular situation.

From an analysis of the future Toffler (1970:374) concludes that it will become increasingly important for students to "learn how to learn" to be able to effectively deal with the challenges and changes of education. In line with Toffler, but from a different perspective, Rogers (1983:1) argues that traditional education has not necessarily taught students how to learn, but rather how to memorise. For teachers "learning how to learn" can be an important tool to adequately prepare students for the future. Being prepared could imply that students will be able to manage (control) the challenges and demands facing them in the future.

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1.4   ACHIEVEMENT OR ACADEMIC OUTCOMES

Academic outcome is generally indicated by a quantitative description where students receive a certain mark, percentage (GPA - grade point average), when a student passes a subject/ course or obtains a certain qualification (Biggs, 1993; Killen, 1994:199; Potterton & Parsons, 1995:56). Whether a single mark can adequately describe the extent of a student's knowledge and skills as is usually the case in higher education, is being questioned (Killen, 1994:199; Potterton & Parsons, 1995:56-57). According to Potterton & Parsons (1995:56-57) this type of academic outcome does not appear to be good a indicator of an individual student's total capabilities.

Gibbs (1991:1) argues that there generally exists a difference between the criteria employers emphasise when evaluating students as prospective employees, and the criteria higher education emphasises in their learning outcome. This "double-message" can be very confusing to the students and can play an important role in the approach students adopt towards their learning (Potterton & Parsons, 1995:57; Fyfe, 1995:342; Clarke, 1995:1; McDowell & Mowl, 1995:131).

What is suggested is that traditional assessment practices and how academic outcome is presented, should be extended to include qualitative criteria for assessment of the student. Student profiles or Records of Student Achievement (ROSA) have been indicated by research to be helpful in introducing a qualitative approach towards assessment (Potterton & Parsons, 1995). If "real" or "authentic" learning involves the how of the learning process together with knowledge, rather than just the content of knowledge itself, it stands to reason that there should be a distinction between different types of learning outcome. This distinction would largely rest on the way learning is

defined (Slabbert, 1993:38).

This distinction is very important when addressing the question of factors which can influence learning. When investigating the relationship of certain determinants of learning (which in most cases are based on subjective evaluations) with academic achievement, a definition of learning is implied. If learning is perceived as the reproduction of stored information, then learning outcome will be an assessment of how well a student was able to store and reproduce that particular information. On the other hand if learning is perceived as the construction of meaning (which is obviously a more complex and abstract process) then learning outcome would focus on the particular competencies a student should be able to perform.

Outcome based on the latter is more subjective (whereas the other perspective is more objective) and therefore very difficult (in view of the current assessment practices and approaches) to assess. It is therefore no surprise that tertiary academic achievement generally tends to concentrate on the former perspective. This could be because it is based on a more objective (and therefore quantitatively more measurable) definition of learning and the absence or lack of tested, reliable and valid qualitative assessment methods and techniques.

The distinction above should be kept in mind when researchers investigate any hypothetical relationship between different (educational) variables and academic achievement. The findings and conclusions drawn from such research could be influenced by the perception, definition and application of learning in higher education. This statement needs further explanation, because it highlights one of the fundamental problems in educational research.

The problem in defining abstract concepts related to education (as is the case with all abstract concepts) is that there might not always be a significant association (overlap) between how such a concept is perceived, defined and applied in the learning situation - the more significant the association between them, the more valid and accurate the definition of the concept. This implies that a person or institution could define something (e.g. learning) in a particular way but apply it totally differently.

From the discussion above it is clear that assessment practices can influence the way students learn. Various researchers are of the opinion that the way students are assessed or evaluated (methods, type, etc.) can determine (control) how students will learn (Clarke, 1995; Fyfe, 1995; McDowell & Mowl, 1995 Potterton & Parsons, 1995). The quality of assessment methods can therefore modify the ways in which students engage particular learning tasks. Assessment therefore provides a framework for the approaches students could adopt towards their studying.

It is important to realise that the relationship between how learning is defined and how it is assessed could play an essential role in determining or controlling the outcome of the learning process.

1.5   A SEARCH FOR DETERMINANTS OF SUCCESS

The same quantitative-qualitative distinction that applied earlier in 1.3 to learning (and its assessment) will logically be part of success-failure. The way learning (and teaching) is defined and how assessment takes place could also play a role in determining how success (or failure) would be perceived. Success and failure can provide the student with powerful feedback on the engagement of learning tasks. Success can reinforce gained knowledge and competencies to provide the student with improved control in the learning process.

Success (or failure) is a very relative concept, and is viewed differently by various researchers. Success has generally been indicated by a percentage in a subject, passing a subject or course or obtaining a qualification. Although such a perception would give an indication of the potential of a learner, it should be realised that a single mark, grade, percentage or symbol does not indicate the total potential of the learner - under different environments and conditions - (Potterton & Parsons, 1995:56). As was mentioned earlier, there is growing awareness that a more holistic approach towards learning is needed. This also implies a more holistic approach towards the determinants of success and how we define success. This means that we have to extend our concept and perception concerning success in learning in higher education.

A wide variety of factors have been investigated in relation to success in learning (Killen, 1994:200). Due to the complexity of the learning process, the dynamic inter-relational relationship between different factors and the variety of theoretical approaches, methods and analytical techniques used in the research, to compile a comprehensive list of the factors which could possibly

influence learning in higher education would be beyond the scope and space of this project. One also has to keep in mind that every educational setting is unique and could exhibit unique factors together with general factors. The brief description that follows intends to provide a general background in terms of some of the factors that have been identified as contributing to success at tertiary level.

Figure 1.3, p. 22 gives a general summary of some of the significant factors which can influence learning:

Figure 1.3   Factors influencing learning

Figure 1. The Dunn and Dunn Learning Styles Model

LEARNING STYLES MODEL

Designed by
Dr. Rita Dunn
Dr. Kenneth Dunn

ELEMENTS

Stimuli

Environmental

Emotional

Sociological

Physical

Psychological

Simultaneous or Successive Processing
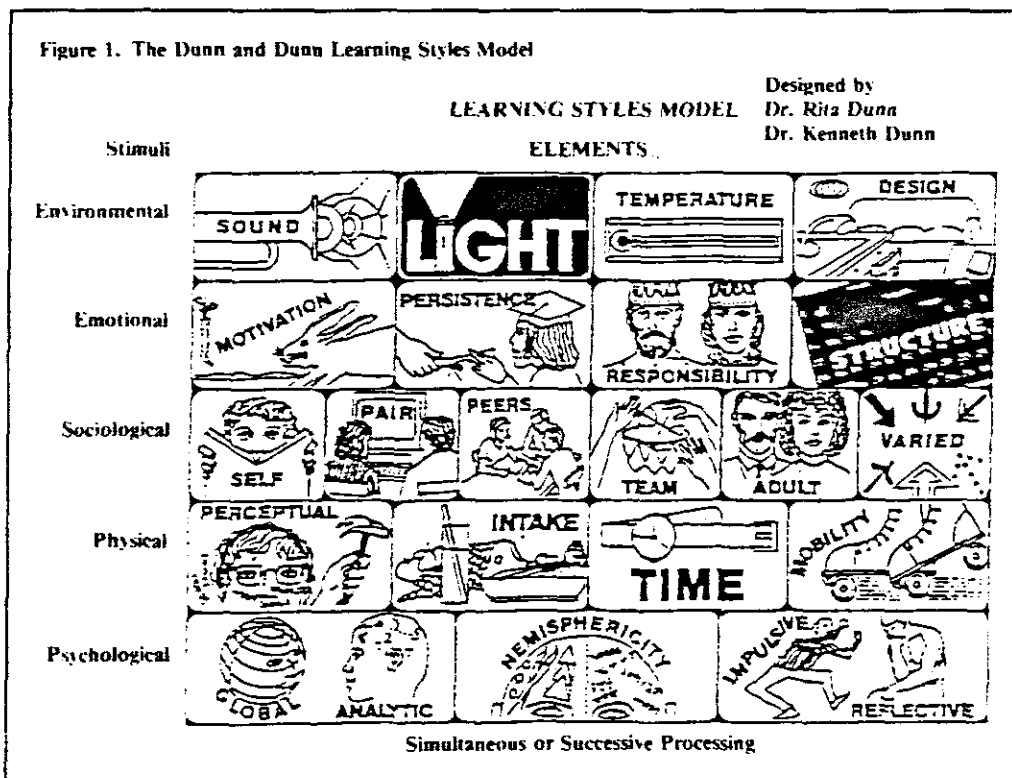
(Dunn et al., 1995:356)

Not all the factors in figure 1.3, p. 22 will influence learning in the same way or to the same extent. The particular context, and the persons involved (lecturers, students and administrators) determine which factors have the greatest influence on learning. The Dunn & Dunn model emphasises the holistic influence of a variety of factors. Although certain factors can be viewed as particularly relevant (e.g. motivation) it is important to keep in mind that learning outcome is the result of not just one or two factors, but rather the product of the interaction of a variety of factors. Improved understanding of the factors that contribute to successful academic outcome could provide a greater sense of control and a positive approach to studying to students.

Extensive research has been undertaken in higher education into the field of academic achievement (see, for example, Butler & Orion, 1990; Dart & Clarke, 1991; Entwistle & Meyer, 1992; Killen, 1994; Perry & Penner, 1990; Slabbert, 1993, Van Overwalle, 1989; Watkins, 1987). Academic achievement is seen as the outcome of a learning process and more specifically relates to how students engage their learning.

Various studies have been undertaken to improve the quality of student learning at tertiary level. Although these studies have approached student academic outcomes from a wide spectrum of different theoretical perspectives, a range of factors relevant to academic achievement have constantly been found to be associated with student outcome.

Van Overwalle (1989:287-308), in a study undertaken at the Vrije Universiteit Brussel in Belgium, provides an overall framework of the determinants found in his study to be related to the learning

outcome of tertiary students. From existing literature Van Overwalle (1989:288-291) identifies the following main categories or sets of determinants related to academic achievement:

(a) Past performance and academic ability
(b) Social factors
(c) Perceived causality
(d) Motivation
(e) Learning strategies.

Multidimensional scaling analyses used by Van Overwalle (1989:287) in his study reveal that the characteristics are structured along two main dimensions: causal locus (internal vs external) and control (controllable vs uncontrollable).

A summary of the factors and their structure is given in Table 1.2, p. 24.

Table 1.2   Determinants of academic achievement

	CONTROLLABLE	UNCONTROLLABLE
INTERNAL	Method of study	Expectancy of success
	Progress in study	Self-concept of ability
	Study effort	Foreknowledge
	Choice of study	Quality of knowledge
	Study organisation	Understanding lectures
	Following courses	Stress and fear
EXTERNAL	Help and support	Difficulty of exams
	Information on exams	Black-out at exams
	Attitude of examiner	Verbal presentation

(Van Overwalle, 1989:304).

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Van Overwalle's study provides firm support for the factors listed in Table 1.2, p. 24 and comparable associations were found to correlations reported in the meta-analyses of existing literature (Van Overwalle, 1989:303).

Prior performance at midterm tests was revealed in this study to be the most salient factor in student achievement. Second to this was academic self-concept, expectations of success, study timing and working strategies. In terms of working strategies it was found that their general efficacy rather than specific methods were indicated. This was because associations with deep and surface strategies were found to be insignificant.

Other substantial associations were: regular study effort, general satisfaction with choice of study, and prior knowledge. Factors like the structuring of knowledge, difficulty of tests, help and support from others, information and directions on exams, fear of exams and teacher attitude were also found to produce significant associations (Van Overwalle, 1989:304-305).

The motivation to learn and student effort are generally viewed as two important factors in success or failure (Agar & Knopfmacher, 1995:122; Killen, 1994:208). A positive relationship has been indicated through research between motivation and locus of control, and deeper levels of learning and academic achievement, although there is little evidence to suggest that this relationship is causal in nature. (See Findley & Cooper, 1983; Keith, Pottebaum & Eberhardt, 1986; McCombs, 1988; Wankowski, 1991b; Watkins, 1987)

In a study investigating the differences between students' and lecturers' perceptions of factors influencing students' academic success at university, Killen (1994:199) found that students attributed success or failure to four main sources: (a) their lecturers, (b) their course, (c) themselves and (d) other external factors. Lecturers also attributed success or failure to these four areas, but tended to emphasise different factors within each category. According to Killen (1994:209) the differences between students' and lecturers' ratings of factors which contribute to student failure, reveal a difference in perception of the amount of control which students have over success as well as a difference in the level of responsibility lecturers have for student success. The two aspects of control and responsibility mentioned here, have been referred to earlier in 1.2.2.

An interesting tendency observed by Killen (1994:201) is that, specifically in terms of failure, students generally blame their lecturers and lecturers on the other hand generally blame the students. The results of Killen's (1994) study supports similar findings by Schmelzer *et al.* (1987) in that "students were more likely to attribute the cause to the instructor when they failed than when they succeeded" (Schmelzer in Killen, 1994:208). Students therefore, as most people tend to do, find it easier to accept responsibility (or control) for their success than for their failure.

A reason for this could be the view, strongly entrenched in society, that success is inherently "good" and failure inherently "bad". This is reflected in general statements like: "Success is the only thing that matters"; "The end (success) justifies the means"; "It does not matter how you do it, as long as you win (succeed)"; etc. Is it any wonder that people are confused as to the role of failure in their lives? This is especially problematic for the student who has to deal with the possibility of

failure in the learning process. In today's competitive society this is very relevant.

In other words when you succeed society labels you as "okay", but when you fail you are "not okay" (Harris, 1969). People (and students) tend to get the message that the chances of being accepted in society are greater when you are successful than when you fail. This explains why many students find learning such an anxious and stressful experience. "Fear of failure" can be strong motivation for students to study hard so that they can avoid the negative implications of failure (See Van Overwalle, 1989:304-305).

From the discussion above it can be seen that there are a variety of factors which influence student academic outcome. Most of these factors are supported by sound empirical evidence. Although most of these factors are accepted as playing an important role in student outcome, there were inconsistencies found in different international studies. An aspect which should be kept in mind is that there is a wide degree of variability in terms of the different research hypotheses, research methods, analytical techniques, approaches, etc. that can be identified in the different international studies. Although many studies have concurring and confirmatory value, it is usually very difficult to directly compare the results obtained in different educational settings. Because of this and the variety of other factors involved, the inter-relationship between these factors is not always fully understood and needs to be investigated further.

Two variables that have been identified (see 1.5, p. 22-24) by various researchers in extensive research, as playing an important part in the learning process are (1) **approaches to learning** (Biggs, 1978; Entwistle & Ramsden, 1983; Marton & Säljö, 1976a, 1976b; Parsons & Meyer, 1990; Van Overwalle, 1989) and (2) **locus of control** (Connell, 1985; Dart & Clarke, 1991; Duttweiler, 1984; Hyman, Stanley & Burrows, 1991; Lefcourt, *et al.*, 1979; Trice, 1985; Watkins, 1987).

These variables have been investigated as independent factors and also as part of a cluster of factors, but the relationship between these two variables has not yet been explored within the technikon context. For a number of years researchers at the Cape Technikon have engaged in extensive research into student learning at tertiary level. Important research has been undertaken in terms of students' approaches to studying and efforts to remedy the learning approach of "at risk" students (Parsons & Meyer, 1990).

"At risk" generally indicates a student who could be at risk/in danger of failing a subject or a course. According to the author, this could be extended further in that it could also indicate a student who has not sufficiently or adequately developed his/her potential and therefore could be "at risk", not being adequately prepared for the demands of society. Categorising students as "at risk" based on their approaches to studying is discussed in more detail in 5.4. Similarly a student can be identified as "at risk" because of theoretically unfavourable perceptions of control.

The author is of the opinion that by including the concept locus of control, through the investigation of the relationship between students' approaches to studying and their perceived locus of control, it could supplement and extend our understanding of factors influencing students' academic achievement (see Rossouw & Parsons, 1995). Ashton (1995:414) and Beaty & Hunt (1995:419) agree that it is important for students to have a keen awareness and good understanding of how their learning styles, perceptions and expectations influence their learning. When a student has a clearer understanding of what determines his learning success as well as how these factors apply to himself they generally have more control when engaging their learning.

Although this sounds obvious, many tertiary students appear not to understand the factors which could play a role in determining their success. As was mentioned earlier, many students do not know how to learn and depend on ineffective study methods when engaging in learning tasks (Rogers, 1983:1; Toffler, 1970:374; Tait, Speth & Entwistle, 1995:324). The study skills that students require in higher education differ from those needed on secondary level and many students enter higher education without adequate study skills (Tait, Speth & Entwistle (1995:324). According to Tait, Speth & Entwistle (1995:323) it is often assumed that students entering higher education know how to study and have developed adequate study skills.

Aspects like adequate planning, time management, understanding, goaldirectedness, etc. are sometimes absent or only partially incorporated in learning strategies. Factors like approach to studying, motivation, effort, workload, assessment methods, etc. can play an important role in the utilisation of these particular aspects. Research evidence indicates that the teaching and assessment practices can contribute to this situation.

When students have a better understanding of the factors which can influence their learning, they would have better control in the learning process, because they possess qualitative knowledge on how certain factors (and their perceptions of these factors) could contribute to success or failure. It is therefore only when students understand why they have succeeded or failed, that they can accept responsibility for it, feel in control of their learning and can develop.

1.6 PURPOSE OF THIS STUDY

The first aim of this pilot study is to investigate and compare different theoretical perspectives of (academic) locus of control as they apply to higher education. If this comparison indicates sufficient conceptual overlap a synthesis of the different theories will be put forward in order to supplement and extend the current theoretical foundation of the locus of control construct.

Secondly, certain existing instruments to measure students' academic locus of control will be evaluated using predetermined criteria formulated in terms of this research project. This aims to determine: (a) whether the existing instruments are adequate for valid measurements of academic locus of control, (b) which of the existing instruments is the best or (c) whether empirical evidence suggests the need for the development of an alternative instrument.

The final phase of this project will investigate the relationship between students' perceived academic locus of control and their approaches to studying. This research aims at providing a clearer understanding of the conceptual basis of these two factors which could contribute to success or failure in higher education. This could provide a basis for further research and investigation, especially in terms of future intervention programmes that aim to improve student learning outcomes.

CHAPTER TWO

LOCUS OF CONTROL

2.1 INTRODUCTION

Earlier research into student learning was largely characterised by educational psychology, which was restricted to the prediction of academic outcome through factors such as IQ, socio-economic status, personality and cognitive styles, special abilities, prior knowledge, interest in subject matter, etc. In the last few decades this approach has been modified considerably, where contemporary research into student learning has developed as research area in its own right (Biggs, 1987:1).

This new approach recognised that learning undertaken by students in high school, college and university has its own context and parameters and that this cannot be adequately captured by a simple quantification, such as a grade-point average, mark, symbol, etc. The variation found in terms of the content and nature of learning, and in the way students perceive their performance, its importance to them and what constitutes an acceptable level of performance to them, is therefore difficult (if not impossible) to reflect in a single quantification (Biggs, 1987:1).

The problems associated with the measurement of academic outcome or performance has been discussed, specifically in terms of assessment (see 1.4, p. 18). This remains one of the important concerns of past and contemporary research into student learning. Although research has provided us with revolutionary new approaches and empirical findings, it is worrying that the traditional view

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regarding assessment is still generally prevalent in many educational settings (see Biggs, 1987; Clarke, 1995; Fyfe, 1995; Killen, 1994; McDowell & Mowl, 1995; Potterton & Parsons, 1995).

There is general consensus in contemporary research on the recognition of qualitatively different **ways** in which student engage learning. The major source of disagreement, according to Biggs (1987:1), concerns the role of situational and personality factors in determining observed approaches to learning. Some researchers (e.g. Entwistle & Ramsden, 1983; Marton & Säljö, 1976a; 1976b; Ramsden, 1987) emphasise the situationally specific determinants of learning. According to this approach, students learn in the way they do because they construe their current situation in a way that determines their approach to the task: learning in order to meet set requirements with minimal effort will be qualitatively different from the learning done in pursuit of a special prize.

Other researchers (e.g. Biggs, 1970a, 1970b; Dunn *et al.*, 1995; Honey & Mumford, 1986; Kolb, 1984; Van Overwalle, 1989) postulate that students are predisposed towards specific approaches to studying according to their particular personalities. Personological factors therefore determine the particular approach a student will adopt in a given education context. According to Biggs (1978) the link between 'approach' and outcome is mediated by personological factors, in particular 'locus of control' and 'metalearning' as well as contextual influences. In other words there is an important relationship between personality and the influences from the environment students have to deal with. Issues pertaining to student learning should be addressed with reference to this relationship, the nature of which is fully investigated in this study.

This leads to a typical "nature-nurture debate" where the basic question is: Which of situational or personological factors is **causal** in determining the approach students adopt when they learn? Biggs (1987:93) emphasises that variation in student learning can be more adequately explained through the investigation of the interaction between different areas of factors, than by primarily focusing on one "causal" area. Learners react in a way typical for them across situations, as well as in a way dictated by a particular situation. This view accentuates the interaction between person and situation (Biggs, 1987:1.)

The author is of the opinion that the inclusion of the concept locus of control, through the investigation of the relationship between students' approaches to studying and their locus of control, could supplement and extend our understanding of factors influencing students' academic achievement.

2.2 THE CONCEPT OF LOCUS OF CONTROL

Rotter (in Plug *et al.*, 1988:277) defines *locus of control* as the manner in which a person feels that he himself (internal control) or factors in the situation (external control) determine his behaviour. Brown (1990:337), on the other hand, defines locus of control as an individual's expectancy that "events in their environment are contingent upon their behaviour". Thus (i) **Internal** control equates to a belief that individual actions are instrumental in producing results; and (ii) **External** control equates to a belief that events are determined by fate, chance or luck.

According to Van Overwalle (1989:289), locus of control can be seen as either a personality disposition (Rotter, 1966) or a generalised causal expectancy (Brown, 1990:377). Rotter (1966),

who initially proposed the concept, perceived locus of control as a single dimension in which an individual could be located between internal and external poles. Hyman *et al.* (1991:403) mentions that many researchers have since proposed that the concept should be seen as a multidimensional construct.

Levenson (in Brown, 1990:377) argues that the concept of external control defined above is too broad and should be divided into two dimensions of (i) fate, chance or luck and (ii) a dimension referred to as "powerful other". The rationale for his argument is that people who perceive the world as unordered, will behave differently from those who perceive some form of social order - thus some powerful other in control.

In terms of locus of control two theoretical approaches can be identified. The first is based mainly on the **social learning theory** and specifically on Rotter's (1966) ideas. This approach has been primarily concerned with the identification of individual or dispositional tendencies in perceptions of control and also with the studying of the relations between such tendencies and broad outcomes such as school achievement.

The other is based on the **attribution theory** (Kelley, 1972; Weiner, 1974). This approach focuses on the identification of those situation-specific variables which produce reliable differences in causal perceptions across subjects, and relating these differences to specific outcomes such as expectancy of, or affective responses to, success and failure (Butler & Orion, 1990:63).

Thus *social learning theory* suggests that locus of control is an expectancy, whereas *attributional theory* suggests that locus of control is but one of a more specific set of attributions.

2.3   SOCIAL LEARNING THEORY

Social learning theory is described by Plug *et al.* (1988:339) as a personality theory where behaviour is explained as the result of the interaction between personality and environmental factors. Attention is given to the learning of behaviour and personality characteristics on the grounds of the interaction between external reinforcement and cognitive factors. According to Engler (in Laubscher, 1991:25) social learning theory represents a synthesis of the classical and cognitive learning theories and shows similarities with the classical learning approach based on Thorndike's law of effect.

The main assumptions of the social learning theory are as follows :

(a)   *Interaction with the environment* : Personality is much more than a set of inherent characteristics which a person carries with him. It is rather a potential to react in a certain way in a specific situation. Behaviour can thus change according to changing situations.

(b)   *Unity of the personality* :   Personality reveals a unity in so far as the life-experiences and interactions with the environment of a person influence each other. New life-experiences are influenced by happenings in the past and what has been learned in the past will be influenced by new experiences.

(c)   *Goal-directiveness of behaviour* : Behaviour is also goal-directed. The concept of reinforcement should be broadened, according to Rotter, to any action or happening which reflects an individual's moving in the direction of a chosen goal. The behaviour of a person is in other words not **just** the reaction on an impetus to lessen or neutralise a so-called drive, but directed towards a specific goal (Laubscher, 1991:25-26).

The following concepts are central to the social learning theory:

(a)   *Potential of behaviour* : Indicates the potential for specific behaviour to appear in specific situations. In any given situation there are a number of possible ways a person can act. The potential of behaviour is specific to particular behaviour and the associated reinforcement. A certain behaviour within a particular situation thus has a greater probability than others, depending on the behaviour and specific situation. The goal of specific behaviour also plays a role in determining the probability of its appearance in a situation.

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(b)   *Expectations* : Rotter (1966) broadens the concept of reinforcement in terms of goal directed behaviour. He views it as a process through which humans develop certain attitudes and cognitive images in terms of which situations are experienced as reinforcing.

Humans evaluate the characteristics of the environment which gradually elicits certain responses, and develop their own subjective expectations of consequences associated with certain behaviour. Expectations are subjective and influenced by previous experiences, so that two persons can have different expectations even though they are striving towards an identical goal. It is, in other words, not the goal *per se* which is important, but also the way in which a person perceives it that must be taken into account.

(c)   *Reinforcement value* : Reinforcement value indicates the importance or prevalence that a person attaches to a particular reinforcer. Reinforcement value is unique for each person and the value of a reinforcer can be determined by happenings in the past. It is important to note that reinforcers do not work or appear in isolation. Rather the interactions between different reinforcers should be taken into account. A particular reinforcer might hold implications for future reinforcers, so that the expectations attached to future reinforcers can contribute to the value of the contemporary reinforcers.

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(d) *The psychological situation* : This refers to any part of the situation to which a person

reacts. The subjective meaning which people attribute is important. The psychological

situation thus determines the value of a reinforcer or the extent of an expectation.

Experience teaches that a goal is achieved much more readily in one situation than in

another and also that goal-achievement is more important in one situation than in

another. A situation holds different meanings for different persons and these meanings

influence the responses of persons (Laubscher, 1991:27-32).

2.4   LOCUS OF CONTROL ACCORDING TO ROTTER

The consequences of reinforcement depend, according to Rotter (in Laubscher, 1991:33), on the

perception of the individual that there should be a causal relationship between his behaviour and the

reinforcement. Locus of control is thus a generalised expectancy which can differ from person to

person and which can lead to different behavioural responses.

As Rotter (1966:1) explains:

"...when a reinforcement is perceived by the subject as following some action of his own
but not being entirely contingent upon his actions ..... it is typically perceived as the result of
luck, chance, fate, as under the control of powerful others, or as unpredictable because of
the great complexity of the forces surrounding him. When the event is interpreted in this
way ..... we have labelled this a belief in external control. If the person perceives that the
event is contingent upon his own behaviour or his own relatively permanent characteristics,
we have termed this a belief in internal control".

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Persons thus differ in terms of the extent to which they believe that their actions are self-determined or conversely influenced by external factors, for example: A person who has achieved a good result (e.g. 80 %) on a test might attribute this result to his own efforts and control (by studying hard, etc.). This is an example of internal control. Another person might attribute his good results (e.g. 80 %) to external factors such as luck, the easy marking scheme of the teacher, easy questions asked in the test, etc. This is an example of external control (Laubscher, 1991:34).

Although locus of control could be classified as one of two extremes (internal or external pole), Hampson (in Laubscher, 1991:35) is of the opinion that the construct should be viewed as a continuum with degrees of internality or externality. People are then classified according to their **tendency** to perceive internality or externality of causal control. It is important to understand that these perceptual tendencies of persons (in terms of causal control) will differ from person to person and from situation to situation.

2.5   ATTRIBUTION THEORY

According to Freeman, Sears & Carlsmith (1978:102) an attribution can be defined as the inference an observer makes about the internal state of himself or another person on the basis of overt (observable) behaviour. Linked to his research in attribution, Heider (in Freeman *et al.*, 1978:102), identifies two strong motives in all human beings, namely

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(a)   a need to form a coherent understanding of their surrounding world

(b)   a need to control the environment.

The ability to predict (at least approximately) how people are going to behave is paramount if these motives are to be satisfied. The making of some prediction about other people's behaviour (even if it is only a probability rather than a certainty) is essential to a stable, coherent view of things around us. Without being able to predict other people's behaviour (to a certain extent) we cannot have a satisfactory level of control over our environment. For example, we need to predict that the person behind the counter in the shop will give us a newspaper when we ask for one. The person behind the counter must then also be able to predict that we will pay for the newspaper that he has given us.

Heider (in Freeman *et al.*, 1978:103) states that people invest considerable energy in searching for causal explanations for other people's (and their own) behaviour. It should be kept in mind that this is largely a subconscious and automatic process. People are not always consciously aware of this process and its results.

According to the attribution theory there are two dimensions that underscore perceptions of causality:

(a)   *External vs internal causes* : In most perceptions of causality a central issue is whether to attribute a given event or act to internal states or external forces. External attributions would ascribe causality to anything external to the person, for

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example the general environment around him, the specific person he is interacting with, the role constraints he is operating under, the proffered rewards or threatened punishments for his actions, luck, the specific nature of the task.

Internal attributions would ascribe causality to internal causes, e.g. personality traits, motives, emotions, moods, attitudes, abilities, effort, or anything else the person carries around (internally) with him (Freeman *et al.*, 1978:104).

(b)   *Stability of cause* : This deals with whether a particular cause can be or is stable or unstable. People need to know whether the cause is a relatively permanent feature (thus stable) of an external object (or situation) or of the internal dispositions of another person (or himself) (Freeman *et al.*, 1978:104).

It is important to bear in mind that the stability mentioned above should be interpreted in terms of the attributions of people about the stability of causes. In other words it is the stability perceived by people of a particular cause (again perceived) that is at issue.

Weiner's typology for simple achievement tasks is given in Table 2.1, p. 42. According to Weiner (Freeman *et al.*, 1978:104) students' success or failure at a particular task can usually be attributed to one or more of the following four possible causes: ability, effort, luck, and task difficulty.

Table 2.1   Weiner's typology for simple achievement tasks.

	LOCUS OF CONTROL	
Stability	**Internal**	**External**
Stable	Ability	Task difficulty
Unstable	Effort	Luck

(Freeman *et al.*, 1978:104).

A number of researchers have investigated the relationship between different measurements (based on different theoretical perspectives) of locus of control (see, for example, Goodman & Walters, 1987; Hyman *et al.*, 1991). Hyman *et al.* (1991:409) concluded that problems associated with the measurement of locus of control derived from the attribution perspective could be ascribed to the application of an inadequate two dimensional model, as proposed by Weiner (1974), instead of a three-dimensional model as the same author later proposed (1986).

Early attributional scales were based on a two dimensional model, with stability as one dimension and the other locus of control. More recently Weiner (1986) and Hyman *et al.* (1991) have proposed that the theoretical model should be modified to define a third dimension. Weiner (1986) proposes controllability as this third dimension, where causal beliefs can be classified on a controllable-uncontrollable continuum. This suggests that the initial single locus of control dimension should be divided into two dimensions of **locus** (the 'location' of causality - internal versus external) and **control** (the associated 'processes of control' resulting from the particular locus - controllable versus uncontrollable factors).

2.6   CONNELL'S MODEL OF PERCEIVED CONTROL

Connell (1985) uses a conceptually different approach, based largely on social learning perspectives. Although he acknowledges the role of attributional theorists, he does not include any specific differentiation from attributional theory (e.g. ability, effort, etc), which he acknowledges as a conceptual limitation in his measurement of locus of control.

Connell thus includes a control dimension which reflects the unknown control children associate with educational success or failure. Connell's (1985) unknown control dimension therefore represents a measurement of the **controllability** dimension that could help to define academic locus of control more adequately - which is in line with the proposals of Hyman *et al.* (1991) and Weiner (1986) mentioned earlier.

Connell's model is based on the **perceived control** (whereas attributional theorists focus on the **locus** of control) children attribute to their experience of educational success or failure, and to an extent on a partial merging or combination of attributional and social learning perspectives.

2.7   SYNTHESIS OF DIFFERENT PERSPECTIVES

Both the attributional and dispositional perspectives of control are based on the assumption that people have some idea of the factors that determine outcome (Butler & Orion, 1990:63).

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Whereas the social learning theory focuses on individual or dispositional **tendencies** in terms of perceptions of control and the studying of the relations between such tendencies and **broad outcomes**, such as **(school) achievement**, the attribution theory focuses on the identification of **situation-specific variables** that produce reliable **differences** in causal perceptions across people and with the relation of these differences to **specific outcomes**, such as **expectancy of**, or **affective responses to, success** and **failure**.

Although social learning theory and attribution theory represent different conceptual backgrounds in relation to the concept of locus of control, the two theoretical approaches should be seen as supplementing each other, rather than being opposing viewpoints. The integration of these two theoretical perspectives, in the opinion of the author, gives educational researchers a more powerful conceptual and theoretical foundation in relation to the locus of control construct.

2.8   CONCLUSION

As stated in 2.2, p. 34 a number of researchers have since proposed that locus of control should be seen as a multidimensional construct. This implies that there are unique qualities associated with the different domains within the global locus of control construct and that these domains should be studied separately. Lefcourt *et al.* (1979) started to move in this direction with their goal-specific rather than generalised measures, although his instrument incorporates both achievement and affiliation measures. For the purposes of the affiliated study the author proposes that it be refined further to focus only on the **academic domain**, thereby producing an **academic** or **achievement**

scale, and that this academic (or achievement) locus of control should first be investigated as a substantive domain on its own.

It was on the basis of the above, and the aims formulated in 1.6, p. 30 (i.e. the adequacy of existing instruments, the best instrument, an alternative instrument ?) that it was decided to analyse certain existing instruments for the measurement of academic locus of control. These instruments will be analysed according to the predetermined criteria, in Table 2.2, p. 46, specifically formulated in terms of this research project.

Table 2.2 Criteria for the measurement of academic locus of control.

(1)   The items of the instrument should be specific to achievement in higher education.

(2)   The instrument itself should address the issue in terms which relate to perceptions of the educational context.

(3)   The instrument should include perceptions of both success and failure.

(4)   The different subscales should have reliable and effective discriminatory value and these results should be consistent over time and in different tertiary settings.

(5)   The results should be able to inform intervention.

The analysis of certain selected instruments against these criteria are described in detail in 4.2, p. 71.

CHAPTER THREE

APPROACHES TO STUDYING

3.1   INTRODUCTION

In line with the posited aims of this research project it is not the purpose here to review in detail the attributes of the various perspectives towards student learning and the associated instrumentation, but essentially to provide a general framework concerning approaches to studying, so that the simultaneous analysis with locus of control (discussed in chapter two) can be understood.

There are a variety of different approaches or perspectives in terms of the construct approaches to studying. Terminology (although used differently by various researchers and with their own unique meanings) that has been associated or linked to approaches to studying are: styles of learning; perspectives of learning; orientations towards learning; study orchestration; intention (motivation) in learning; conceptions of learning; etc (Biggs, 1978; Entwistle & Ramsden, 1983; Richardson, 1995;   Säljö, 1979).   Approaches to studying therefore exemplifies a complex and multi-dimensional construct (Meyer & Scrivener, 1995:44).

Approaches to learning operate to a large extent on the educational context   and how this influences or determines particular qualitative approaches of students towards learning tasks.

3.2 APPROACHES TO STUDYING

3.2.1 Approaches to studying and the learning context

Most researchers acknowledge this as one of the important relationships in the understanding of student learning (Parsons, 1992:32). It was mentioned in 2.1, p. 31 that one of the focuses of research is the question of how situational or contextual factors can influence students' study approaches (Biggs, 1987:1). This is perhaps best summarised by Ramsden (in Parsons, 1992:32):

> "The central argument of the research is that the **quality** of student learning depends on the students' approach to learning. The approach is in turn dependent on the students' previous experience and on how he or she interprets the requirement of the learning context".

Gibbs (1992) views the learning environment as a major factor which influences students' views (cf. their approach) of learning. In Figures 3.1 to 3.4 (see pp. 48-49) the association between contextual factors and approaches to studying is described by various researchers. Learning environments (or contexts) can be classified, according to Fyfe (1995:342), on a spectrum ranging from 'open' to 'closed'. When most learning decisions are in the hands of the institution, the environment can be described as inflexible or closed, whereas environments that involve a great deal of learner choice, can be described as flexible or open. The level of 'openness' students perceive in a particular course or institution, could have important implications for students' engagement of learning tasks, especially in terms of the perceived level of control they possess. Various researchers (see discussion concerning assessment in 1.4, p. 18) regard assessment strategies as a major factor in the learning environment that can qualitatively influence students' views of learning in higher education.

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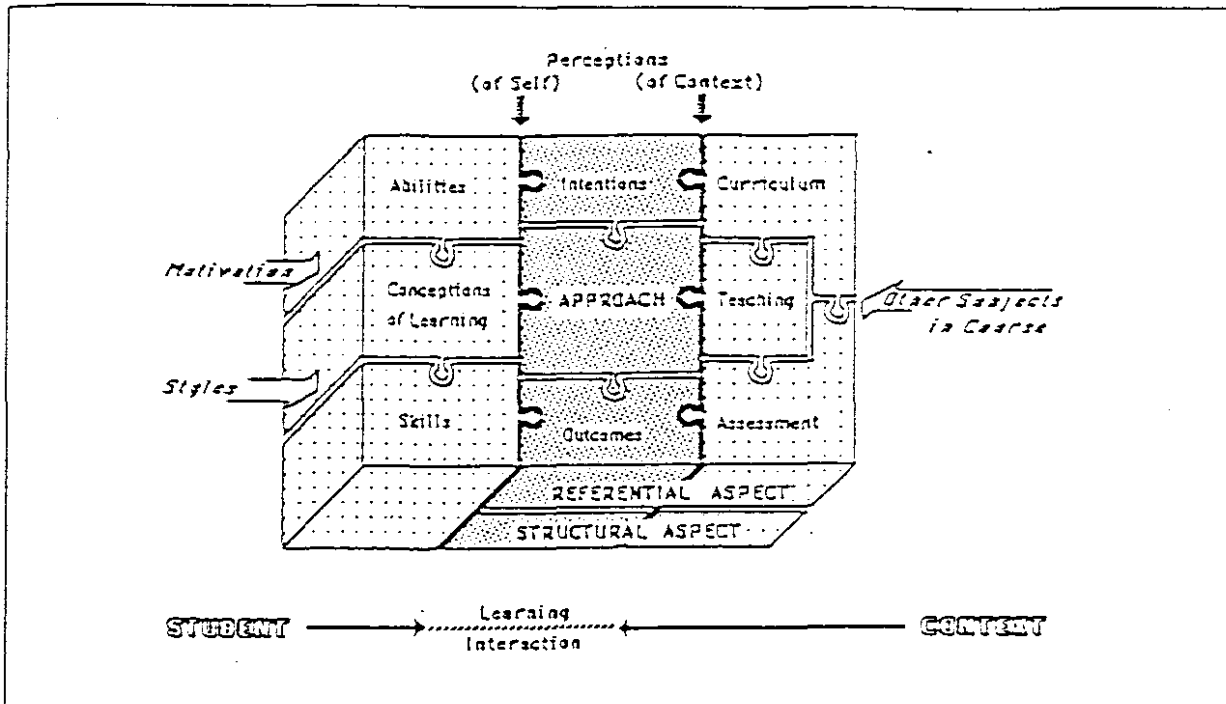
(Eizenberg, 1988:197)

Figure 3.2   Presage, Process and Product in Student Learning
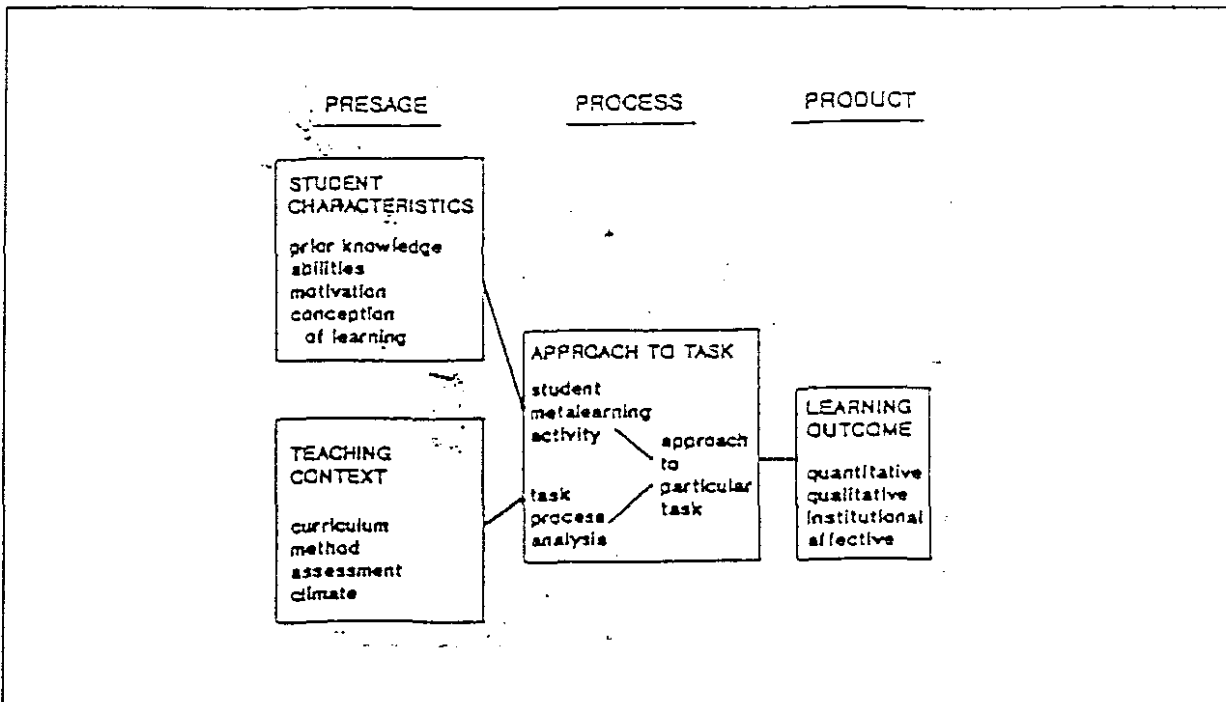
(Biggs, 1989a:11)

Figure 3.3   Understanding student learning.
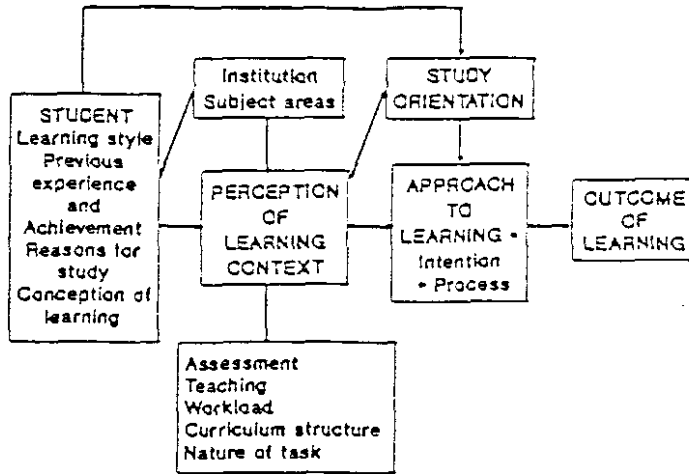
(Ramsden, 1985:53)

**Figure 3.4   A Heuristic Model of the Teaching Learning Process in
Higher Education.**
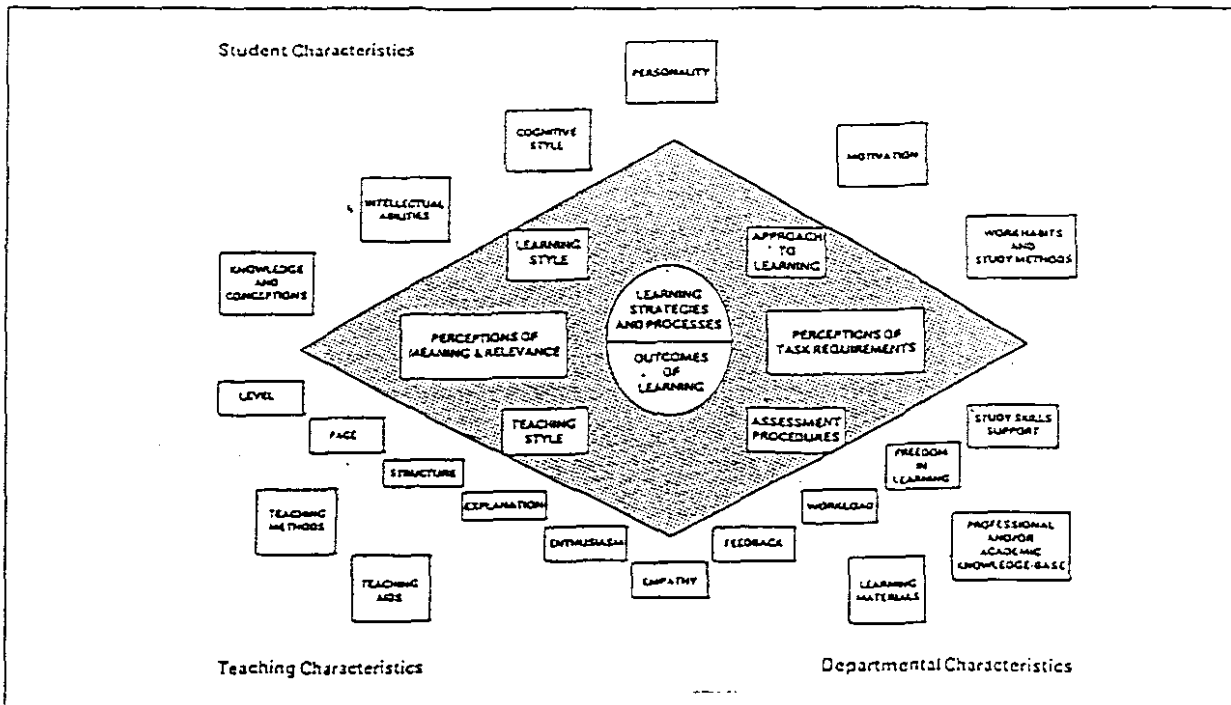
(Entwistle & Tait, 1990:26)

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3.2.2 Conceptions of learning

Marton (1981) introduced the term "phenomenography", as a new research perspective. Phenomenography does not describe objective reality, but rather focuses - as a second-order perspective - on people's ideas and conceptions of that reality. The individual's experiences, perceptions, conceptions and understandings of the world as he sees it, and not as the observer thinks he sees it, is the primary concern in this perspective. We are therefore describing perceptions and the perceptual world of the learner (Parsons, 1991:125). These perceptions can also be classified into categories of descriptions - not different categories of reality, but different categories of descriptions of reality.

The phenomenographical research focuses on how students view a particular reality (i.e. learning), how these views could be categorised qualitatively and interpretatively how these particular views affect or influence associated behaviour (i.e. learning outcome). Students can therefore experience similar situations (reality), but conceptualize them differently, for example:

Supporters of two different teams watch the same match (reality), but can form different interpretations or ideas as to what actually took place. What happened objectively will be interpreted through a qualitative perceptual "filter".

Marton & Säljö (1976a; 1976b) introduced 'deep' and 'surface' levels of processing and thus acknowledged the existence of **qualitative individual differences** in the conscious engagement of learning tasks by students, according to their perceptions formed of the nature in which the

accomplishment of 'learning' would subsequently be ascertained. According to Richardson (1995:500) the broad distinction between deep and surface approaches to studying appears to be a universal feature of all systems of higher education. The specific different conceptions of learning identified by Säljö (1979) and Marton *et al.* (1993) have been mentioned in 1.3.

3.2.3 Presage, Process and Product in student learning

Biggs (1970a, 1970b) initially sought to characterise student's approaches to studying as "the product of a number of different enduring personality characteristics" through the application of the Study Behaviour Questionnaire (SBQ). In a revised instrument, the Study Processes Questionnaire (SPQ), Biggs (1978) found three second-order factors which he interpreted as representing "the 'reproducing', 'internalising' and 'organising' dimensions of study processes". Biggs (1987; 1993) identifies presage, process and product as the three main components of his systems model of teaching and learning (see Figure 3.2, p. 48).

Presage factors include characteristics of the student and of the teaching context. These two factors also highlight the two different approaches (described in 2.1) that educational research exhibit towards student learning and associated approaches to studying. In terms of process component there are three ways of approaching a learning task: surface, deep and achieving. Students' perceptions of the teaching context can affect their motives and predispositions as well as their immediate decisions for action. It is important that the interaction between student **and** context characteristics (see Figure 3.2, p. 48) could play a vital role in the perceptions that students form about teaching and learning.

According to Biggs (1993:75) only a deep approach is task-centred and task-appropriate, the other two are (as far as the task is concerned) pathologies. A deep approach is therefore the "ideal" approach for students to develop. Certain factors (e.g. students and context characteristics) contribute to student developing "less ideal" approaches. This aspect will be addressed again in chapter six. The product or outcome of learning (as described in chapter one) can be described quantitatively by determining "how much" was learned or qualitatively by determining "how well and in what way" it was learned (Biggs, 1993:75-76).

Biggs (1978) therefore focuses, in his conceptually conservative model of student learning, on **process factors** that make up the **'learning process complex'**. This complex comprises three approaches to learning where each contrastingly different approach consists of a motive and a matching strategy. The three study motives of 'deep', 'surface' and 'achieving' was combined with a corresponding strategy to form the broader approaches to studying. According to Richardson (1995:508-509) subsequent research by Biggs (1987) and others (O'Neil & Child, 1984; Watkins & Akande, 1992; Christensen, Massey & Isaacs, 1991; Kember & Gow, 1990, 1991) to reproduce the original structure have been less than successful. Not more than a generalised surface and deep approach to studying has been found.

3.2.4 Study orientations

A more comprehensive model of student learning by Entwistle & Ramsden (1983) states that qualitatively different forms of **motivation** were not just supported by corresponding forms of **intention** (deep, surface or strategic approach), but also by additional corresponding **processes**, **learning styles** and **pathologies** (see Pask, 1976), while other constructs related to study habits

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and attitudes also played an important role in defining the conceptual boundaries of qualitatively different study 'orientations'. In Table 3.1, p. 54 the defining characteristics of the three different approaches are summarised.

The potential to change the manner in which students engage in learning tasks and so possibly change learning outcomes, is implied by operating on the **context** of learning. The context was now also seen in a wider conceptual perspective as consisting of more than just perceptions of task requirements. Ramsden (1979) identifies and adds a 'strategic' approach, based on a particular category of students which could be described as "cue-seekers" or "cue-conscious", to deep and surface approaches. These students are characterised by concentrating on aspects including possible exam questions and attempting to make a good impression.

According to Richardson (1995:502) research studies into approaches to studying have obtained clear evidence for the following two major factors:

(a)   a 'meaning orientation' factor indexed by the subscales concerned with deep approach, inter-relating ideas, the use of evidence and logic, intrinsic motivation and comprehension learning; and

(b)   a 'reproducing orientation' factor indexed by the subscales concerned with surface approach, syllabus-boundness, fear of failure, disorganised study methods, negative attitudes to studying, globetrotting and improvidence.

The existence of the strategic approach (as identified by Ramsden, 1979) has not been consistently confirmed by subsequent research, although many studies have produced some evidence. Several studies have failed to reproduce certain subscales, particularly those associated with an achieving orientation and with the styles and pathologies scale (Richardson, 1995:505).

Table 3.1	Defining characteristics of three approaches to studying.

APPROACH	FEATURES
Deep	• Intention to understand • Vigorous interaction with content • Relate new ideas to previous knowledge • Relate concepts to everyday experience • Relate evidence to conclusion • Examine the logic of the argument
Surface	• Intention to complete task requirements • Memorise information needed for assessments • Failure to distinguish principles from examples • Treat task as an external imposition • Focus on discrete elements without integration • Unreflectiveness about purpose or strategies
Strategic	• Intention to obtain highest possible grades • Organise time and distribute effort to greatest effect • Ensure conditions and materials for studying appropriate • Use previous exam papers to predict questions • Be alert to cues about marking schemes

(Entwistle, 1987:16)

The Approaches to Studying Inventory (ASI) devised by Entwistle & Ramsden (1983) is possibly the most widely used questionnaire on student learning in higher education (Richardson, 1995:502). The ASI is currently undergoing extensive revision. In particular different researchers aim to produce an abbreviated inventory that focuses on more reliable study orientations. Table 3.2, p. 55 contains the subscale structure and clarification of the most used version of the ASI (64 items in 16 subscales):

Table 3.2   Subscales of the Approaches to Studying Inventory (ASI)

SUBSCALE	MEANING
Meaning orientation:	
Deep approach	Active questioning in learning
Inter-relating ideas	Relating to other parts of the course
Use of evidence and logic	Relating evidence to conclusions
Intrinsic motivation	Interest in learning for learning's sake
Reproducing orientation:	
Surface approach	Preoccupation with memorisation
Syllabus-boundness	Relying on staff to determine learning tasks
Fear of failure	Pessimism and anxiety about academic outcomes
Extrinsic motivation	Interest in courses for the qualifications they offer
Achieving orientation:	
Strategic approach	Awareness of implications of academic demands made by staff
Disorganised study methods	Unable to work regularly and effectively
Negative attitudes to studying	Lack of interest and application
Achievement motivation	Competitive and confident
Styles and pathologies:	
Comprehension learning	Readiness to map out subject area and think divergently
Globetrotting	Over-ready to jump to conclusions
Operation learning	Emphasis on facts and logical analysis
Improvidence	Over-cautious reliance on details

(Ramsden & Entwistle, 1981:371)

The basic premises of the Entwistle & Ramsden (1983) model are:

Students that use a **reproducing** (or surface) approach are characterised by an intention to reproduce the material to be learnt, avoiding failure by focusing on specific details and using rote learning strategies.

Students with a **meaning** (or deep) approach are characterised by an intention to understand the material to be learnt, and strategies such as reading widely, using a variety of resources, relating unfamiliar to familiar, discussions, reflection, etc.

Students with an **achieving** (or strategic) approach are characterised by an intention to excel by using highly organised learning processes. This approach makes use of aspects of the previous two approaches (Van Overwalle, 1989:290 ; Dart & Clarke, 1991:317.)

The relationship between approaches to studying and academic success is very complex and it is difficult to synthesise many of the different results obtained from various studies (Richardson, 1995:514). A number of studies have found that success can be predicted on the basis of scores on the subscales of the ASI. Academic performance tends, in particular to be positively related to a deep approach, intrinsic motivation and strategic approach, but negatively related to a surface approach, disorganised study methods and negative attitudes to studying. Although it is generally accepted that a deep approach tends to promote successful engagement of learning tasks, further research to provide more specific and interventionally usable evidence is needed. Richardson (1995:514) concludes that "poor academic performance appears to be associated with a disintegration or fragmentation of the normal patterns of studying behaviour". The concept of study orchestration, described in the next section, could be helpful in our understanding of this 'disintegration' - especially on an individual level.

3.2.5 Study orchestration

Since the research undertaken by Marton & Säljö (1976a; 1976b) and the early model of student learning by Biggs (1978), there have been some extensive developments in terms of students' approaches to learning (Meyer, 1991; Richardson, 1995:507). Various researchers have extended and modified the concept of approaches to learning as well as the associated instrumentation (Entwistle & Ramsden, 1983; Meyer, 1991; Parsons & Meyer, 1990; Richardson, 1995). The

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construct 'study orchestration' can be described as a variant of the Entwistle & Ramsden (1983) model in the previous section. This concept builds and extends on the basic aspects of the Entwistle & Ramsden model (Meyer, 1991; Meyer, Parsons & Dunne, 1990a; 1990b).

Meyer (1991) defines the concept of *study orchestration* as the contextualised study approach individual or groups of students adopt. The term *orchestration* captures the unique nature of individual approaches to studying viewed as a qualitative responsive approach to a qualitatively perceived educational context.

The following three important aspects of student learning are recognised by this concept:

(a) the existence of **qualitative individual differences** in the manner in which students approach and engage learning tasks,

(b) the **contextual influence** on such engagement, and

(c) the existence of **differing conceptions of learning itself** among individual students (Meyer, 1991.)

In other words the **'Entwistle & Ramsden'** model approaches *learning from qualitative* **categorical** differences, whereas the **'qualitative individual differences'** model focuses on qualitative **individual** (across and within categories) differences.

Many researchers (Biggs, 1987:12; Parsons, 1993:24; Meyer & Parsons, 1996; Entwistle, 1995:34; Jackson, 1995:158) recognise approaches to studying as discipline, subject or context specific. According to Entwistle (1995:34) students in higher education are expected to learn how

to think and use evidence in ways that are characteristic of the discipline or subject they are studying. Although commonalities exist, variations in approaches to studying are not only possible between students of different disciplines, but also within the same individual and between the different subjects he studies (Biggs, 1987:12). *Study orchestrations* are therefore not fixed attributions which apply across all educational contexts, but rather individual, unique and related to a specific context (Parsons, 1993:24). The particular approach to studying used in the fields of mathematics, medicine, philosophy, etc. could exhibit qualitatively idiosyncratic or unique features. This implies that, in relation to approaches to studying, the primary focus in research (and the design of intervention) should be addressed within a particular subject or discipline, rather than attempting to generalise the results across different disciplines.

3.3   TWO DIFFERENT PERSPECTIVES

The following two perspectives on student learning show qualitative differences to those already described. Brief descriptions are reviewed as (a) they have been formulated from different conceptual perspectives, (b) areas of overlap and/or variation between these perspectives and those described so far need to be identified and (c) the qualitative difference between 'American' and 'European/Australian' research into student learning (see Knapper, 1995:16) needs to be highlighted.

According to Knapper (1995:16) European/Australian research on deep and surface learning approaches have been largely disregarded in North America. Although there is no clear evidence of this, Knapper suspects that this can be attributed partly to a "suspicion of qualitative methods,

partly to ethnocentrism, and partly to the fact that the research is seen as more 'value-laden' than typical US work on **learning styles**, where it is generally accepted that all styles have their own merits".

In view of the above there are several key questions to be asked, regarding educational research in higher education. What are the similarities and differences between educational research undertaken from different perspectives? What contributes to these similarities and differences ? Could a synthesis between, for example American and European/Australian approaches, be proposed ? These important questions will have to be addressed through further investigation and research.

The learning styles of Kolb, Honey and Mumford and the Dunn & Dunn model of learning are discussed briefly together with some concluding remarks.

3.3.1   The learning styles of Kolb and Honey & Mumford

Figure 3.5, p. 59 is a reproduction of Kolb's (1984) learning cycle based on the work of Lewin (1936). The cycle is to be followed in sequence, but can be entered at any point. Kolb (1984) recognises that all individuals are not equally well equipped to deal with each stage of the learning cycle. Honey & Mumford (1986) developed their Learning Styles Questionnaire (LSQ) based on Kolb's model. They identify four different learning styles which equate with the four stages in the learning cycle of Kolb (1984).

Figure 3.5	Kolb's learning cycle.
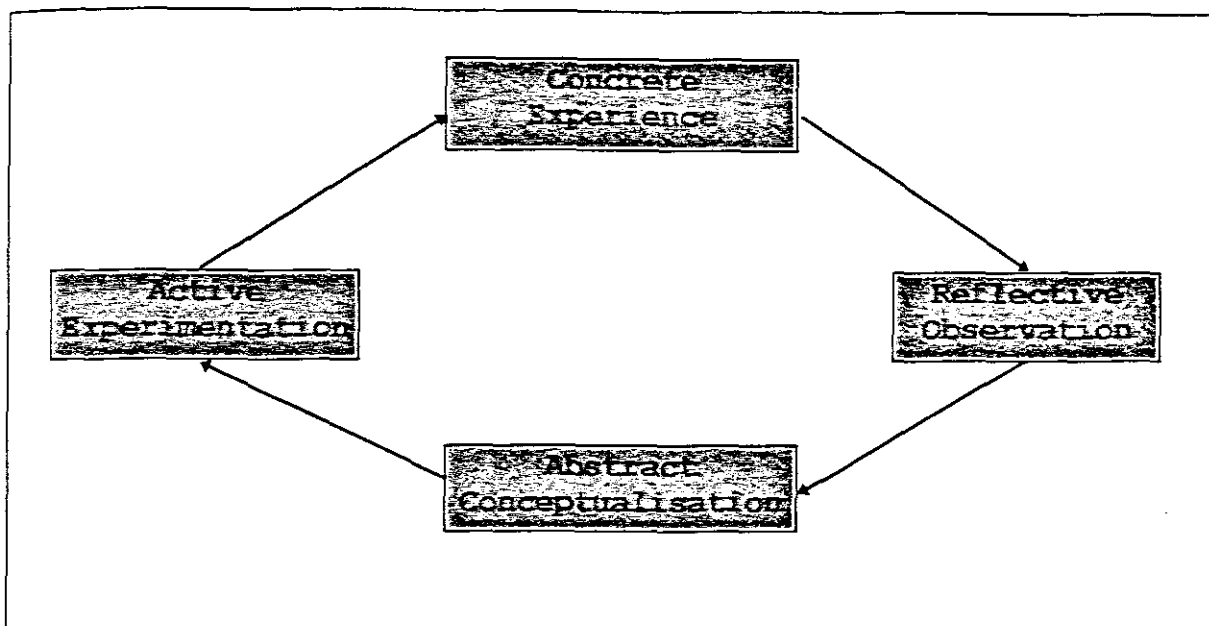
(Kolb, 1984)

A description of the different styles is given in Table 3.3, p. 60. For a more extensive description see Appendix E. According to Richardson (1995:512) the LSQ is subject to serious methodological criticisms and exhibits very little overlap with other questionnaires (e.g. ASI, SPQ, etc) on an empirical level. Newstead (1992) concludes from his own research that the LSQ "was not a useful instrument for assessing individual differences in student learning".

Table 3.3	Learning styles.

LEARNING STYLE	EXPLANATION	KOLB'S LEARNING STAGE
Activists	They involve themselves fully and without bias in new experiences.	Concrete Experience
Reflectors	They like to stand back and ponder their experiences and observe them from different perspectives.	Reflective Observation
Theorists	They adapt and integrate observations into complex but logically sound theories.	Abstract Conceptualisation
Pragmatists	They are keen to try out ideas, theories and techniques to see if they work in practice.	Active Experimentation

(Honey & Mumford, 1986)

3.3.2 The Dunn & Dunn model of learning

The Dunn and Dunn Learning Style Model focuses, according to Dunn *et al.* (1995), on "identifying individuals' preferences for instructional environments, methods, and resources" and is based on the theoretical postulates given in Table 3.4, p. 61.

Table 3.4   Theoretical postulates of the Dunn & Dunn model of learning.

NO	THEORETICAL POSTULATES
1	Learning style is a developmental and biological set of personal characteristics that makes identical instructional environments, methods and resources ineffective for some learners and effective for others.
2	Most people have learning-style preferences, but individuals' learning-style preferences differ significantly.
3	The impact of accommodating the individual instructional preferences that exist can be measured reliably.
4	The stronger the preference, the more important it is to provide compatible instructional strategies.
5	Increased academic achievement and improved student attitudes towards learning results when individual learning-style preferences are accommodated through complementary instructional and counselling interventions.
6	Students, given responsive (matched learning-style) environments, resources, and approaches attain statistically higher achievement and attitude test scores than students with dissonant (mismatched) treatments.
7	Most teachers can learn to use learning styles as a corner stone of their instruction.
8	When concentrating on new or difficult academic material, most students can learn to capitalise on their learning-style strengths.
9	The less academically successful the individual, the more important it is to accommodate learning-style preferences.

(Dunn, *et al.*, 1995:354)

Learning style is defined by Dunn *et al.* (1995:353) as the way in which individuals begin to concentrate on, process, internalise, and retain new and difficult academic information. When instruction is provided that does not complement the learning styles of students, they may not be totally restricted in their learning, but higher achievement would be possible if (especially failing) students were taught with strategies that complemented their learning-style preferences.

The essence of Dunn's argument is therefore that the aim of teaching is to match the learning style preference of the student within instruction strategies that complement his preferences. This confers an important responsibility on the teacher. The question is how this can be adequately achieved in large classes of students and within a culture of high research demands on lecturers, vocational and institutional stress, burnout and other escalating pressure in higher education.

3.3.3 Conclusion

The model of Kolb (1984) and Honey & Mumford (1986) typically focuses on personality characteristics where approaches to studying generally is concerned with contextual determinants. Where approaches to studying emphasise qualitative differences in terms of approaches - i.e. certain approaches are categorised as qualitatively 'better' or theoretically more desirable - there is little (if any) indication of theoretically preferred learning styles. This could be a result of the qualitative difference between American and European/Australian research (discussed earlier). Supporters of American models would therefore argue that each learning style has its own merit and that one style should not be promoted above other styles.

The Dunn & Dunn (Dunn *et al.*,1995) model has a strong individual and holistic focus. Primarily the teaching context has to adapt to the particular individual preference (resonant of the focus on individualism in contemporary America ?) that a student exhibits. There is a call for improvement of the educational context (especially teaching) similar to the perspectives of Entwistle & Ramsden (1983). The individual focus also overlaps with Meyer (1991) and his qualitative individual differences model.

From the brief discussion of two of the alternative approaches it is apparent that there is a need for further research in clarifying the conceptual differences and similarities between different models of student learning, especially those arising from varying theoretical frameworks.

3.4   THE EXTENDED APPROACHES TO STUDYING INVENTORY (EASI)

The EASI, as a variant of the original Approaches to Studying Inventory - ASI (Entwistle & Ramsden, 1983), was modified and extended by Meyer (1991) to include a set of contextual variables. The EASI is used for exploring the manifestations of student learning at individual level, whereas the ASI is used for a qualitative categorical analysis. The subscales and conceptual grouping of the EASI is given in Table 3.5, p. 64. The definition of the different subscales of the EASI is given in Appendix F.

The ASI and EASI has been used extensively in educational research (Richardson, 1995:503). The EASI has produced a strong body of evidence in extensive research undertaken (and in progress) at the University of Cape Town and the Cape Technikon, in terms of students' perceived intentions and contextual perceptions that can be instrumental in forming characteristic approaches to studying (Meyer & Dunne, 1991; Meyer & Parsons, 1989a; 1989b; 1996; Meyer, Parsons & Dunne, 1990a; 1990b; Parsons & Meyer, 1990). The current research project builds on (and extends) this existing research base.

Table 3.5   The conceptual scheme of the EASI subscales.

ASSOCIATED INDIVIDUAL PERCEPTIONS OF:

Motivation	Intrinsic	IM
	Extrinsic	em
	Achievement	Am
	Fear of failure	ff
Intention	Deep approach	DA
	Memorising approach	ma
	Strategic approach	St
Learning style	Comprehension	CL
	Operation	oL
	Globetrotting (Comp)	gl
	Improvidence (Oper)	ip
Processes	Relating ideas	RI
	Fragmentation	fa
	Use of evidence	UE
	Reflection	RE
Study methods	Syllabus-boundness	sb
	Disorganised study methods	ds
Context	Workload	wl
	Books (deep)	BD
	Assessment (deep)	AD
	Relationships (deep)	RD
	Relationships (surface)	rs

3.5 LOCUS OF CONTROL AND APPROACHES TO STUDYING - RESEARCH FINDINGS TO DATE

Contrary to the findings of Biggs (1985) and Entwistle & Kozéki (1985) Van Overwalle (1989a:301) establishes no significant correlation between strategies such as deep or surface learning and first year attainment. In terms of locus of control it was found that internal locus related positively with academic performance (Van Overwalle, 1989a:301).

Watkins (1987) investigates the "presence of causal predominance between locus of control and measures of student approaches to learning" by means of a longitudinal study. In the initial survey first year students' academic locus of control is measured by a tertiary form of the Intellectual Achievement Responsibility (IAR), (Perry, 1982) and their learning processes by the Approaches to Studying Inventory (Ramsden & Entwistle, 1981). A follow-up survey was conducted two years later on a sample of students (who also participated in the initial survey) in their third year of study.

His findings can be summarised as follows:

(1) internal locus of control was not related to first year academic success

(2) there was no evidence of any developmental trend in relation to locus of control

(3) there was no support for the hypothesis that differences in approaches to learning in age, gender and faculty may be due to systematic differences in locus of control

(4) there was tentative support for the contention that the acceptance of personal control over one's learning success is a causal factor in the adoption of less superficial and more achievement oriented approaches to learning

(5) there was no evidence that internality (in terms of locus of control), related to deep-level approach to learning.

Dart & Clarke (1991) aimed to increase the understanding of teacher education students' of the learning process by focusing on their own learning experiences. In this programme a specific atmosphere was created which encouraged "reflective" learning. Students therefore did not just learn content, but specifically concentrated on constructing meaningful learning (similar to Slabbert's definition of learning on p. 15 in chapter one) from their own experiences.

The students were grouped into four classes and completed measures of academic locus of control (The Academic Locus of Control Scale, ALC - Trice, 1985) and study processes, (The Study Processes Questionnaire, SPQ - Biggs, 1987) before and after a semester course in a specially designed programme in Educational Psychology. In the programme students had to take greater responsibility for their own learning by being exposed to a variety of learning experiences which included: negotiation of the curriculum; peer discussion and teaching; learning contracts; self, peer and collaborative assessment and critical reflection on these and other learning experiences by means of an ongoing learning log.

In contrast to findings of Watkins (1987), Dart & Clarke (1991) found that all four classes taking part in the study increased in Deep Motive, Achieving Strategy and Deep Achieving Approach, while interaction effects occurred for Deep Strategy, Achieving Motive and Achieving Approach. In terms of locus of control it was found that only class four developed a more internal locus of control, while the other classes showed no change.

Dart & Clarke (1991) do not mention any specific finding in terms of the association between locus of control and approaches to learning, although some apparent association is clear from their discussion of the results of their programme. In this study the researchers did not actively set out to change students' approaches to studying or locus of control, but focused on creating *meaningful learning* for their students. In other words they concentrated on how students achieve meaningful learning, which is in line with the perspective of Slabbert (1993:38) referred to in 1.3, p. 16. This implies that the posited link between certain determinants of learning (such as explored in the current research project) should not necessarily be seen in a direct interventional perspective. *This conclusion is tentative at this stage and further research needs to be undertaken to clarify this particular aspect.*

Meyer & Parsons (1996) explored the existence of discipline-specific forms of learning behaviour, specifically related to student learning in Mathematics. The EASI, supplemented by subscales of causal attribution for (academic) success and failure (Lefcourt *et al.*, 1979) was used to "investigate patterns in learning behaviour that may be discipline-specific to Mathematics (Meyer & Parsons, 1996). Factor analysis of the underlying dimensions of the EASI and the locus model produce the following results:

*   A surface dimension associated with an attribution for failure in terms of lack of effort [(EFF)] and lack of ability.[(ABF)]

*   A 'strategic/deep' dimension linked to attribution for success in terms of effort [(EFS)] and ability.[(ABS)]

*   An external causal attribution factor associated with attribution for success in terms of good luck [(LUS)] and favourable circumstances [(COS)], and attribution for failure in terms of lack

of ability [(ABF)] and unfavourable circumstances [(COF)], in the absence of attributing success to effort [(-EFS)] and failure to lack of effort. [(-EFF)]

* A pure 'deep' dimension that appears to be independent of any causal attribution for success or failure. Meyer & Parsons (1996) infer that this may be peculiar to the study of Mathematics.

Meyer & Scrivener (1995:46-47) assessed students in the Department of Materials at Imperial College at two different occasions using a modified and Extended version of the Approaches to Studying Inventory (EASI) supplemented by contextual perception and causal attribution variables:

* At the commencement of the 1993 academic year students were requested to indicate how they previously engaged in the studying of Science in the final secondary school year.

* Three months later the students were again requested to report their learning behaviour in the context of the Materials Science and Engineering course.

The data obtained were used as "a basis for initial risk assessment, and as comparative base for establishing subsequent changes that would be presumed to be essentially attributable to the effects of the course" (Meyer & Scrivener, 1995:46). Factor analysis of the underlying dimensions of the EASI and the locus model produce the following results:

* A dimension that suggests, in the absence of deep approach[(DA)] and intrinsic motivation[(IM)], manifestation of perceptions of heavy workload[(wl)], disorganised studying[(ds)], fragmented approach[(fa)], improvidence[(ip)] linked to success attributed to favourable context.[(COS)]

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* A contrasting, but complementary dimension of variation compared to factor 1. In the absence of deep intention to understand[D.A] and making use of evidence[U.E] a narrow focus on relational aspects of learning that is disorganised[dis], a reluctance to expend intellectual effort beyond stated requirements[sb] linked to an internal attribution for academic failure in terms of lack of effort.[EFF]

* A dimension that is essentially motivational; fear of failure[ff], linked to an absence of internal attribution for academic failure in terms of lack of ability[ABF], to syllabus boundness[sb], and workload.[wl]

Analysing the research described above, it is clear that there are conflicting findings. Locus of control, has generally been found to be at best weakly associated with approaches to studying. The author contends that this could possibly be attributed to an inadequate measurement of **academic** locus of control construct. Most research studies utilise measurements of locus of control that tend to be of a more general nature (see 3.5, p. 65). This research project attempts to provide a tentative answer as to how we measure **academic** locus of control and whether improved measurement of academic locus of control provides a better understanding of the relationship between approaches to studying and academic locus of control. In the next chapter existing locus of control instruments will be analysed, to determine their adequacy for measuring specifically academic locus of control.

4.1 INTRODUCTION

In terms of the aims of the project, a number of instruments for determining students' locus of control were analysed and compared for their suitability in the context of academic achievement in higher education. It is important to keep in mind that this pilot study focuses specifically on **academic** locus of control, an aspect which will play a very important role in the analysis of existing locus of control scales.

The instruments analysed were the **Multidimensional-Multiattributional Causality Scale** (MMCS) (Lefcourt *et al.*, 1979), the **Multidimensional Measure of Children's Perceptions of Control** (MMCPC) (Connell, 1985), the **Academic Locus of Control Scale** (ALC) (Trice, 1985) and the **Internal Control Index** (ICI) (Duttweiler, 1984). See Appendix A to D for the original items of the different instruments.

These instruments were analysed according to specific criteria formulated in relation to the measurement of *academic* locus of control. These predetermined criteria are given in Table 2.2, p. 45.

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4.2   COMPARISON OF DIFFERENT LOCUS OF CONTROL INSTRUMENTS

In section 4.2.1 to 4.2.4 (see pp. 71-80) individual analysis of the MMCS, the MMCPC the ICI and the ALC are given. The following aspects are covered in each section: (i) a general description of the instrument, (ii) the theoretical and developmental process involved in the construction, (iii) an analysis of each instrument based on the predetermined criteria and (iv) a general evaluation (conceptually) of the instrument and its application in higher education. The similarities and differences between the four different instruments are then summarised in section 4.2.5, p. 80.

4.2.1   Analysis of the MMCS

The Multidimensional-Multiattributional Causality Scale was developed by Lefcourt *et al.* (1979) as a goal specific locus of control scale. The MMCS consists of two subscales, achievement and affiliation. Each of the two subscales includes items that measure attributions for success and failure experiences in relation to the four attributions of ability, effort, contextual characteristics and fortuitous events (luck), (see Table 4.1, p. 75). The MMCS consists of 48 items in total. Respondents score the items on a five point likert scale (0 = disagree to 4 = agree). The ability and effort subscales scores are combined to give an internal score. The context and luck subscales are combined to give an external score.

The MMCS is based on **attribution theory** (Kelley, 1972; Weiner, 1974) - discussed in chapter 2 - and focuses on the identification of those situation-specific variables which produce reliable differences in causal perceptions across subjects, and with relating these differences to specific

outcomes such as expectancy of, or affective responses to, success and failure (Butler & Orion, 1990:63).

In terms of the predetermined criteria the **achievement** subscale of the MMCS meets all the criteria. The **affiliation** subscale does not meet the first two criteria, because the items do not **specifically** address achievement or perceptions of the educational context. The following two examples of the affiliation subscale illustrate this:

- **It seems to me that getting along with people is a skill.**

- **If my marriage were to succeed, it would have to be because I worked at it.**

Hyman *et al.* (1991:409) has identified certain psychometric problems with the MMCS. The **Ability** and **Effort** scales, on the achievement subscale, appear (as was discussed in chapter two) to be "independent" dimensions of Internality, while the correlation between these scales on the achievement versus the affiliation subscales differs meaningfully. This indicates that the two subscales (achievement and affiliation) appear to measure different dimensions. Weiner (1986) and Hyman *et al.* (1991) ascribe these problems to an inadequate attributional model (on which the MMCS is based).

As was stated earlier, one of the aims of the current study is to determine if there is support for the extension of the two dimensional model of (academic) locus of control to a three dimensional model, as proposed by Weiner (1986) and Hyman *et al.* (1991).

It is therefore suggested that only the items of the achievement subscale should be used as a basis to determine academic locus of control. It should however be borne in mind that the achievement subscale would not deliver adequate results independent of other instruments or theoretical perspectives, therefore items from other instruments or theoretical perspectives should be investigated for possible inclusion.

4.2.2 Analysis of the MMCPC

Connell (1985) uses a conceptually unique approach, based to an extent on social learning perspectives. He does acknowledge the role of attributional theorists. Connell's model is based on the perceived control children attribute to their experience of educational success or failure, and to an extent on a partial merging or combination of attributional and social learning perspectives. The MMCPC corresponds largely, in terms of the subscale structure and terminology, to other measurement scales based on the social learning theory. The similarity does not extend to the unknown control dimension (see Levenson, 1981).

Social learning has been primarily concerned with the identification of individual or dispositional tendencies in perceptions of control and also with the studying of the relations between such tendencies and broad outcomes such as school achievement (Butler & Orion, 1990:63).

The MMCPC consists of four subscales: cognitive, social, physical and general. Each of the four subscales is divided into the different sources of control (internal, powerful others and unknown) in relation to success and failure experiences.

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The MMCPC consists of 48 items scored on a four-point Likert format from 1 to 4, where "**very true** is scored **4** and indicates high endorsement of the source of control presented in the statement" (Connell, 1985:1021).

The cognitive domain subscale of the MMCPC meets all the predetermined criteria, except the first one. The MMCPC was specifically designed to measure the perceived control of **children** or learners at pre-tertiary level. The MMCPC therefore aims at a specific population. The social, physical and general subscales do not meet the first two criteria (similar to the MMCS), because the *items do not specifically address achievement or perceptions of the educational context.* The following examples (one each of the social, physical and general subscales respectively) illustrate this:

- **A lot of times there doesn't seem to be any reason why somebody likes me.**
- **When I don't win at an outdoor game, most of the time I can't figure out why.**
- **I can pretty much control what will happen in my life.**

Similar to the MMCS, the social, physical and general subscales of the MMCPC do not meet the first two criteria and should therefore be excluded in an instrument which specifically aims at measuring *academic* locus of control. Although the MMCPC does not meet the criterion of being specific towards higher education, the cognitive domain of the MMCPC has apparent potential, because it seems to be founded on a three dimensional model. It is suggested that the wording of the items, in the cognitive domain of the MMCPC, could be changed to focus on higher education (in order to meet the first criterion). A motivation to support this contention will be discussed

further on in this chapter. The ICI and the ALC, because of their particular developmental methodology, do not have a clearly distinguishable subscale structure and approach locus of control in a more general way. In Table 4.1, p. 75 a comparison of the subscale structure of the MMCS and MMCPC is given.

Table 4.1	Comparison of subscale structure of the MMCS and the MMCPC		
MMCS		**MMCPC**	
I	**ACHIEVEMENT {24}**	**I**	**COGNITIVE {12}**
	Ability {6}		Internal control {4}
	Effort {6}		Powerful others control {4}
	Contextual characteristics {6}		Unknown control {4}
	Fortuitous events (luck) {6}		
		II	**SOCIAL {12}**
II	**AFFILIATION {24}**		Internal control {4}
	Ability {6}		Powerful others control {4}
	Effort {6}		Unknown control {4}
	Contextual characteristics {6}		
	Fortuitous events (luck) {6}	**III**	**PHYSICAL {12}**
	Total = [48]		Internal control {4}
			Powerful others control {4}
			Unknown control {4}
		IV	**GENERAL {12}**
			Internal control {4}
			Powerful others control {4}
			Unknown control {4}
			Total = [48]

Note: 1   Figures within the brackets, {}, indicate the number of items in the different subscales.

2   Figures within the brackets, [], indicate the total number of items in the instrument.

4.2.3   Analysis of the ICI

The Internal Control Index (Duttweiler, 1984) was largely developed from a social learning perspective to determine the internal locus of control of adults. The following variables were used as a basis for items that seemed most pertinent according to Lefcourt (1976) to locus of control: cognitive processing, autonomy, resistance to influence attempts, delay of gratification and self-confidence (Duttweiler, 1984:211).

A number of items were evaluated in a pretesting phase whereafter 28 items were chosen, based on item and factor analyses. Respondents complete each of the 28 statements by choosing a verbal five-point response on a wordscale which ranges from (A) "rarely" to (E) "usually". The blank spaces (indicated by _____) are completed by the respondent who has the choice of one of the following: "Rarely", "Occasionally", "Sometimes", "Frequently" or "Usually". The wording of the items is such that highly internally oriented respondents are expected to answer half at the "usually" end of the scale and answer the other half at the "rarely" end. The appropriate internal response scores 5 and the opposite response alternative 1.

Response (A) scored 5 for items = 1, 2, 6, 8, 11, 14, 17, 19, 22, 23, 24, 26 and 27. Response (E) scored 1 for items = 3, 5, 7, 9, 10, 12, 13, 15, 16, 18, 20, 21, 25, 28. The results could thus vary from a minimum of 28 (low internality) to a maximum of 140 (highly internal).

In assessing the suitability of the ICI against the predetermined criteria it does not fare well. Most items are of a general nature and cannot always be specifically related to achievement in higher

education and perceptions of the educational context. Few of the items specifically distinguish between success and failure items. The following examples illustrate this and are typical of most items:

- I _____ change my opinion when someone I admire disagrees with me.

- When I have a problem I _____ follow the advice of friends or relatives.

- I _____ have a hard time saying "no" when someone tries to sell me something I don't want.

Duttweiler (1984:218) cautions that care should be taken in the interpretation of the results of the ICI, until further research provides more evidence of construct validity. This caution is justified, as Underwood (in Duttweiler, 1984:218) correctly warns, "a test designed as the **operational definition** of a construct might not be measuring what the theoretical, 'literary' conception of the construct postulated".

The categorisation of the ICI as an operational definition deals with the methodology used in the construction and implies that the resulting instrument is largely the product of a statistical technique. Many researchers express reservation about the use of factor analysis for the purpose of scale construction, without a clear conceptual framework specified (see for example Meyer, 1991). Duttweiler (1984:218) in her conclusions, cautions against assuming an instrument is valid because it is based on theory. On the other hand predominantly statistically derived instruments without a strong theoretical base can create equally invalid interpretations.

The general nature of most items of the ICI, together with the methodological reservations stated in the previous paragraph, suggests that these items would not be useful or applicable to determine the *academic* locus of control of students.

4.2.4   Analysis of the ALC

The ALC (Trice, 1985:1044) was designed to predict a wide range of relevant behaviours of college students. His research, including the writing of 89 statements answered in a True-False format, related to academic success and control orientations such as chance, effort, ability and influence by powerful others. These 89 statements were given to a sample of students. The results of these statements were analysed according to the following criteria to determine which items should be retained.

28 items were retained as they:

- showed diversity of response, thus no more than 90 % of the answers were in the same True or False direction.

- showed temporal stability, thus no more than 5 % of the responses were different on two administrations.

- showed internal consistency, thus items answered in the internal direction by a majority of students obtaining over-all internal scores and items answered in the external direction by a majority of students obtaining over-all external scores.

Scores on the ALC are derived by summing the number of externally answered items (see Trice, 1985:1045), so scores could vary from 0 to 28. The higher the score of a student, the more external a student would be in terms of locus of control.

The ALC did not meet all the criteria for the purpose of this thesis research. Although more items of the ALC relate to perceptions of the educational context than was the case in the ICI, most items are too general in nature and cannot be specifically related to achievement in higher education and do not always clearly differentiate (or incorporate) academic success or failure experiences. The following examples illustrate this:

- **I feel I will someday make a real contribution to the world if I work hard at it.**

- **I sometimes feel that there is nothing I can do to improve my situation.**

- **I have largely determined my own career goals.**

Rotter (in Trice, 1985:1043) suggests that by using locus of control instruments developed from specific behavioural areas rather than generalised ones, more precise predictions could possibly be made. In contrast to this suggestion (initially supported by Trice) an instrument that was designed to predict a wide range of relevant behaviours of college students was developed.

The criteria used to determine which items to retain, are largely arbitrary and subjective. For instance, why choose a 90% limit on the first criterion ? The same holds true for the second criterion. A possible explanation is that the items retained reflect only the preference particular to a

certain subpopulation. Constructing an instrument on the basis of a statistical function using arbitrary criteria, creates problems similar to those found with the ICI. The resulting instrument thus becomes a statistical rather than a theoretical product (which can be verified by statistical analysis).

The ALC therefore appears to be a more general measurement of the locus of control construct, in contrast to the name which identifies it as an "academic" locus of control scale. (This emphasises the problem identified in chapter one, concerning the possible difference between *perceived* aims or definitions and what is *actually* taking place).

4.2.5 Summary of analysis

From a comparison with the other instruments (see Appendix A to D) the MMCS appears to have a stronger conceptual association ("overlap") with the MMCPC than with the ICI and the ALC. Both the MMCS and the MMCPC have clearly defined subscale structures which differentiates between success and failure experiences. This is not so clearly in evidence in the ICI and ALC.

As none of the existing instruments (in their original form) met all the criteria, the author developed a composite instrument, based on selected items derived from certain original instruments. The analysis of the instruments (using the predetermined criteria) supported the use of the achievement subscale of the MMCS and the cognitive subscale of the MMCPC as the main sources from which to develop the composite instrument.

From the discussions following the different instruments it can be concluded that the ICI and ALC represent more generalised instruments and therefore do not satisfy the criterion of a pure academic scale. A further limiting factor is that the ICI and ALC do not specifically distinguish between success and failure experiences. Both these instruments are predominantly statistical products which raises complex and fundamental problems (some of these are discussed in chapter 6).

One of the strong motivations for including the MMCPC in the composite academic locus of control instrument, was the desire to separate the single locus of control dimension (as discussed in chapter 2) together with the fact that the subscale of known control also addresses some important assumptions about higher education.

Connell (1985) thus includes a control dimension which reflects the unknown control children associate with educational success or failure. Although the MMCPC does not meet the first criteria (see fig. 4.1), it was decided to use the cognitive domain of the instrument (for the reasons identified in the previous paragraph), (see Table 4.1, p. 75). Connell's (1985) unknown control dimension therefore represents a measurement of the **controllability** dimension that could help to define academic locus of control more adequately - which is in line with the proposals of Hyman *et al.* (1991) and Weiner (1986) mentioned earlier.

As stated earlier a number of researchers have since proposed that locus of control should be seen as a multidimensional construct. This implies that there are unique qualities associated with the different domains within the global locus of control construct and that these domains should be studied separately. Lefcourt *et al.*, (1979) started to move in this direction with his goal-specific

rather than generalised measures, although his instrument incorporates both achievement and affiliation measures. For the purposes of this pilot study the author proposed that this could be refined further to focus only on the **academic domain**, thereby producing an **academic** or **achievement** scale, and that this academic (or achievement) locus of control should first be investigated as a substantive domain on its own.

4.3 SYNTHESIS TO DEVELOP A COMPOSITE ACADEMIC LOCUS OF CONTROL INSTRUMENT

The composite academic locus of control instrument combines two different theoretical perspectives (e.g. attribution and social learning theory - see Appendix A to D) in relation to the domain of academic locus of control (see Table 4.5, p. 88). This has a two-fold purpose: to test a three-dimensional model that draws on two different theoretical approaches and to determine the conceptual association between these two theoretical perspectives.

In the composite instrument the attributional perspective is represented by the **achievement domain** of the MMCS and the social learning perspective by the **cognitive domain** of the MMCPC. In Table 4.2, p. 83 the subscale structure of the composite academic locus of control instrument is given.

| | Table 4.2 | Subscale structure of the composite locus of control instrument. |

	SUBSCALES	
MMCS	Ability	Success [ABS]
		Failure [ABF]
	Effort	Success [EFS]
		Failure [EFF]
	Context	Success [COS]
		Failure [COF]
	Luck	Success [LUS]
		Failure [LUF]
MMCPC	Internal control	Success [ICS]
		Failure [ICF]
	Powerful others control	Success [POCS]
		Failure [POCF]
	Unknown control	Success [UCS]
		Failure [UCF]

The difference between Connell (1985) and the perspectives described so far is that he focuses mainly on the **perceived control of children** in relation to educational success or failure, whereas other instruments have focused on **perceived *locus* of control** in relation to educational success or failure of **higher education students**. This distinction is supported by the suggestions of Butler & Orion (1990) and Skinner & Chapman (1984) that researchers should distinguish between perceptions of causality (i.e. people's understanding of the relationships between causes and outcomes) and perceptions of control (i.e. the degree to which people feel that they can influence their outcomes).

Connell (1985) thus includes a control dimension which reflects the unknown control children associate with educational success or failure. Connell's (1985) unknown control dimension therefore represents a measurement of the **controllability** dimension that could help to define

academic locus of control more adequately - which is in line with the proposals of Hyman *et al.*, (1991) and Weiner (1986) mentioned earlier.

To make the MMCPC applicable to the context of *higher education items had to be reformulated.* The motivation for the reformulating of items from an instrument that focused on children's perceived control to similar items applicable to a higher education context lies in the perceived need to address a fundamental assumption on which higher education is based. It is generally assumed that students in higher education are aware of the factors which control their academic achievement. *Connell's (1985) three-dimensional model pioneered an assessment of not only what* children **know** about those attributes which control their success or failure ('internal' and 'powerful others' perceptions) but also how much they **don't know** about why they succeed and fail ('unknown' perspectives of control). The current investigation aimed to explore the author's contention that the above model applies not only to education on a pre-tertiary level but also to a large extent to higher education. *The specific academic locus of control instrument thus attempts* to provide a combined theoretical and conceptual formulation of the academic locus of control construct, by combining different theoretical approaches and through this formulation of a three-dimensional model to improve the previous two dimensional model, and thus our understanding of this construct (Hyman *et al.*, 1991; Weiner, 1986).

The original items of the achievement subscale of the MMCS, the changed items for the composite academic locus of control scale and the reasons for these changes are shown in Table 4.3, p. 85.

Table 4.3 Changes to the MMCS achievement items

MMCS (ORIGINAL ITEMS)	MMCS (CHANGED ITEMS)	MOTIVATION FOR CHANGES
ACHIEVEMENT	**ACHIEVEMENT**	
ABILITY	**ABILITY**	
The most important ingredient in getting **good grades** is my academic ability.	The most important ingredient in getting **high marks** is my academic ability.	1. The words **"mark"** or **"marks"** are used for the American words "grade" or "grades". 2. The words **"good"** and **"bad"** are changed to **"high"** and **"low"**, which are qualitatively better descriptions of academic outcome.
I feel that my **good grades** reflect directly on my academic ability.	I feel that my **high marks** reflect directly on my academic ability.	3. Same as in no. 1 and 2.
When I get **good grades**, it is because of my academic competence.	When I get **high marks** it is because of my academic competence.	4. Same as in no. 1 and 2.
If I were to receive low marks it would cause me to question my academic ability.	If I were to receive low marks it would cause me to question my academic ability.	
If I were to fail a **course** it would probably be because I lacked skill in that area.	If I were to fail a **subject** it would probably be because I lacked skill in that area.	5. **"Course"** usually indicate a combination of subjects.
If I were to get **poor grades** I would assume that I lacked ability to succeed in **those courses**.	If I were to get **low marks** I would assume that I lacked ability to succeed in **that subject or subjects**.	6. Same as in no. 1 and 2. 7. **"Courses"** indicate a number of sets of combined subjects.
EFFORT	**EFFORT**	
In my case, the **good grades** I receive are always the direct result of my efforts.	In my case the **high marks** I receive are always the direct result of my efforts.	8. Same as in no. 1 and 2.
Whenever I receive **good grades**, it is always because I studied hard for that **course**.	Whenever I receive **high marks**, it is always because I studied hard for that **subject**.	9. Same as in no. 1 and 2. 10. Same as no. 6.
I can overcome **all** obstacles in the path of academic success if I work hard enough.	I can overcome **most** obstacles in the path of academic success if I work hard enough.	11. **"All"** is indicative of an absolute situation, whereas **"most"** would be more likely in normal experience.
When I receive a **poor grade**, I usually feel that the main reason is that I haven't studied hard enough for that **course**.	When I receive a **low mark**, I usually feel that the main reason is that I haven't studied hard enough for that **subject**.	12. Same as in no. 1 and 2. 13. Same as in no. 6.
When I fail to do as well as expected in **school**, it is often due to lack of effort on my part.	When I fail to do as well as expected **academically**, it is often due to a lack of effort on my part.	14. The words **"in school"** are based on the assumption that the student has had such experiences in school **and** can remember them. Causal attributions in a historical context cannot be viewed with the same validity as those of the present.
Poor grades inform me that I haven't worked hard enough.	**Low marks indicate** to me that I haven't worked hard enough.	15. Same as in no. 1 and 2. 16. **"Indicate to"** is more applicable in this context.
CONTEXT	**CONTEXT**	
Some of the times that I have gotten	In general, when I have received a high mark	17. **"Some of the times"**, **"some"** and

a good grade in a course it was due to the teacher's easy grading scheme.	in a subject, it was due to the teacher's easy marking scheme.	"sometimes" tends towards an extreme (a small percent of the total time) which can make the variance of interpretation of such items too large. 18. The word "gotten" is used in an American context. 19. Same as in no. 1 and 2.
Some of my good grades may simply reflect that these were easier courses than most.	My high marks may simply reflect that these were easier subjects than others.	20. Same as in no. 17. 21. Same as in no. 1 and 2. 22. Same as in no. 8. 23. The word "others" is more accurate in this context.
Sometimes I get good grades only because the course material was easy to learn.	I get high marks only because the subject material was easy to learn.	24. Same as in no. 17. 25. Same as in no. 1 and 2. 26. Same as in no. 6.
In my experience, once a professor gets the idea you're a poor student, your work is more likely to receive poor grades than if someone else handed it in.	In my experience, once a teacher gets the idea you're a poor student, your work is more likely to receive low marks than if someone else handed it in.	27. "Professor" is associated with a university environment, whereas "teacher" can be applied to different educational levels. 28. Same as in no. 1 and 2.
Often my poorer grades are obtained in courses that the professor has failed to make interesting.	Often my lower marks are obtained in subjects that the teacher has failed to make interesting.	29. Same as in no.1 and 2. 30. Same as in no.27. 31. Same as in no. 8.
Some low grades I've received seem to me to reflect the fact that some teachers are just stingy with marks.	The low marks I've received seem to me to reflect the fact that some teachers are just stingy with marks.	32. Same as in no. 1 and 2. 33. Same as in no. 17.
LUCK	**CHANCE**	
Sometimes my success on exams depends on some luck.	My success on exams depends on some luck.	34. Same as in no. 17.
I feel that some of my good grades depend to a considerable extent on chance factors, such as having the right questions show up on an exam.	I feel that my high marks depend to a considerable extent on chance factors, such as having the right questions show up on an exam.	35. Same as in no. 17. 36. Same as in no. 1 and 2.
Sometimes I feel that I have to consider myself lucky for the good grades I get.	I feel that I have to consider myself lucky for the high marks I get.	37. Same as in no. 17. 38. Same as in no. 1 and 2.
Some of my lower grades have seemed to be partially due to bad breaks.	My lower marks have seemed to be partially due to unfortunate circumstances.	39. Same as in no. 17. 40. Same as in no. 1 and 2. 41. The precise meaning of the American phrase "bad breaks" will not clear to all students.
My academic low points sometimes make me think I was just unlucky.	My academic failures make me think I was just unlucky.	42. The phrase "low points" can be interpreted in different ways and the precise meaning of "points" is not clear. 43. Same as in no. 17.
Some of my bad grades may have been a function of bad luck, being in the wrong course at the wrong time.	My low marks may have been a function of bad luck, being in the wrong course at the wrong time.	44. Same as in no. 17. 45. Same as no. 1 and 2.

The original items of the cognitive domain of the MMCPC, the changed items for the composite academic locus of control scale and the reasons for these changes are shown in Table 4.4, p. 87.

Table 4.4	Changes to the MMCPC cognitive domain items	

MMCPC (ORIGINAL ITEMS)	MMCPC (CHANGED ITEMS)	MOTIVATION FOR CHANGES
COGNITIVE DOMAIN	**COGNITIVE DOMAIN**	
UNKNOWN CONTROL	**UNKNOWN CONTROL**	
When I get a good grade in school I usually don't know why I did so well.	When I get a high mark on a test or exam, I usually don't know why I did so well.	1. The word "grade" is used in an American context. 2. The original items were intended for a school environment, whereas the current research is focused on a tertiary setting.
When I do well in school, I usually can't figure out why.	When I do well academically, I usually can't figure out why.	3. Same as in no. 2.
When I don't do well in school, I usually can't figure out why.	When I don't do well on tests or exams, I usually can't figure out why.	4. Same as in no. 2.
If I get a bad grade in school, I usually don't understand why I got it.	If I get a low mark on a test or exam, I usually don't understand why I got it.	5. Same as in no. 1 and 2.
POWERFUL OTHERS CONTROL	**POWERFUL OTHERS CONTROL**	
When I do well in school, it's because the teacher likes me.	When I do well academically, it's because the teacher likes me.	6. Same as in no. 2.
The best way for me to get good grades is to get the teacher to like me.	The best way for me to get high marks in a test or exam is to get the teacher to like me.	7. Same as in no. 1 and 2.
If I have a bad teacher, I won't do well in school.	I won't do well in my subjects if I have a bad teacher.	8. Same as in no. 2. 9. The order of this item has been changed because there is a similar item and students might refer back to their previous answers.
If I don't have a good teacher, I won't do well in school.	If I don't have a good teacher, I won't do well in the exams.	10. Same as in no. 2.
INTERNAL CONTROL	**INTERNAL CONTROL**	
If I want to do well in school, it's up to me to do it.	If I want to do well academically, it's up to me to do it.	11. Same as in no. 2.
If I want to get good grades in school, it's up to me to do it.	It's up to me to get high marks in tests or exams.	12. Same as in no. 1 and 2. 13. Same as in no. 9.
If I get bad grades, it's my own fault.	If I get low marks in the exams, it's my own fault.	14. Same as in no 1.
If I don't do as well in school, it's my own fault.	It's my own fault if I don't do well academically.	15. Same as in no. 2. 16. Same as in no. 9.

TABLE 4.5	Composite academic locus of control instrument

ACHIEVEMENT (MMCS)

Ability
(Success)
- The most important ingredient in getting high marks is my academic ability.
- I feel that my high marks reflect directly on my academic ability.
- When I get high marks it is because of my academic competence.

(Failure)
- If I were to receive low marks it would cause me to question my academic ability.
- If I were to fail a subject it would probably be because I lacked skill in that area.
- If I were to get low marks I would assume that I lacked ability to succeed in that subject or subjects.

Effort
(Success)
- In my case the high marks I receive are always the direct result of my efforts.
- Whenever I receive high marks, it is always because I studied hard for that subject.
- I can overcome most obstacles in the path of academic success if I work hard enough.

(Failure)
- When I receive a low mark, I usually feel that the main reason is that I haven't studied hard enough for that subject.
- When I fail to do as well as expected academically, it is often due to a lack of effort on my part.
- Low marks indicate to me that I haven't worked hard enough.

Context
(Success)
- In general, when I have received a high mark in a subject, it was due to the teacher's easy marking scheme.
- My high marks may simply reflect that these were easier subjects than others.
- I get high marks only because the subject material was easy to learn.

(Failure)
- In my experience, once a teacher gets the idea you're a poor student, your work is more likely to receive low marks than if someone else handed it in.
- Often my lower marks are obtained in subjects that the teacher has failed to make interesting.
- The low marks I've received seem to me to reflect the fact that some teachers are just stingy with marks.

Luck
(Success)
- My success on exams depends on some luck.
- I feel that my high marks depend to a considerable extent on chance factors, such as having the right questions show up on an exam.
- I feel that I have to consider myself lucky for the high marks I get.

(Failure)
- My lower marks have seemed to be partially due to unfortunate circumstances.
- My academic failures make me think I was just unlucky.
- My low marks may have been a function of bad luck, being in the wrong course at the wrong time.

COGNITIVE DOMAIN (MMCPC)

Internal control
(Success)
- If I want to do well academically, it's up to me to do it.
- It's up to me to get high marks in tests or exams.

(Failure)
- If I get low marks in the exams, it's my own fault.
- It's my own fault if I don't do well academically.

Powerful others control
(Success)
- When I do well academically, it's because the teacher likes me.
- The best way for me to get high marks in a test or exam is to get the teacher to like me.

(Failure)
- I won't do well in my subjects if I have a bad teacher.
- If I don't have a good teacher, I won't do well in that subject.

Unknown control
(Success)
- When I get a high mark on a test or exam, I usually don't know why I did so well.
- When I do well academically, I usually can't figure out why.

(Failure)
- When I don't do well on tests or exams, I usually can't figure out why.
- If I get a low mark on a test or exam, I usually don't understand why I got it.

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4.4 THE METHODOLOGY OF THE PILOT INVESTIGATION AND ANALYTICAL TECHNIQUES

To administer the composite locus of control instrument the items (as they appear in Table 4.4, p. 87) had to be randomised to disguise the subscale structure, which could influence students' responses.

To determine the association between (academic) locus of control and the EASI, together with investigating the composite locus of control instrument, the randomised composite locus of control instrument was added to the EASI. In the combined instrument there was no indication of which items pertained to the different instruments. This ensured elimination of possible bias that could result if students knew there were two "different" instruments, which could imply that students could be led to answer one part of the combined instrument differently from the other.

The two instruments were combined (instead of administered separately) to provide a consistent framework for the investigation of the posited association between locus of control and approaches to studying. Had they been administered separately, variation could have been introduced, because students might have assumed the instruments had to be answered differently. Both instruments are scored in an uniform manner on a five point likert scale - A to E. Responses could vary from A (if you definitely agree) to E (if you definitely disagree). See Appendix G for instruction sheet used in the administration of the combined instruments. The full combined instrument is given in Appendix H.

The intention was to administer the combined instrument to different groups of students. The results would be processed to create a data file containing separate data for the analysis of the composite locus of control scale and a data file containing data for the analysis of association between the composite locus of control scale and the EASI. These databases would be analysed statistically by means of the Statistical Analysis System (SAS, 1979) computer program.

Cronbach alpha values for the different subscales of the composite locus of control scale would be determined to indicate the internal consistency of the instrument. The composite locus of control scale would then be analysed through factor analysis using an oblique (Promax) rotation to determine the conceptual structure of the composite instrument. This conceptual structure could then be compared to the conceptual structure of existing locus of control instruments to see whether they provided an extended, and more adequate, conceptualisation of the dimensions envisaged. It could further indicate if there was a conceptual overlap between the different theoretical approaches to locus of control, which would support a synthesis of these theories. This could also indicate the suitability of the composite locus of control scale for research in higher education. It is further expected that this analysis would provide evidence, from which conclusions could be drawn, about the extension of the current two dimensional model of locus of control to a three dimensional model, as Weiner (1986) and Hyman et al. (1991) have proposed.

Once this first stage had been completed, and depending on the outcome, the subscales of the composite locus of control scale and the EASI would be subjected to factor analysis using oblique (Promax) rotation to explore the association between students' academic locus of control and their approaches to studying.

5.1   INTRODUCTION

The combined questionnaire (the EASI together with the composite academic locus of control instrument) was administered to the following students in the faculty of Electrical Engineering at the Cape Technikon: a third year Afrikaans-speaking group (n=13), a third year English speaking group (n=32) and a first year Afrikaans-speaking group (n=86) in the subject Electronics. First and third year students were taught by different lecturers in the subjects Electronics I and III.

Afrikaans and English students completed the same (English) questionnaire (EASI and the composite locus of control instrument). No queries during the completion of the questionnaire arose (Afrikaans students were specifically instructed to ask for guidance in case of any uncertainty) in relation to the English nature of the items from Afrikaans speaking students, indicating that they generally understood the given items. In general the possible influence of language on approaches to studying and academic locus of control at this stage remains uncertain, and should be addressed through further research. The growing body of research evidence obtained from various international studies, (across different countries, cultures, languages, etc.) suggest that these instruments are measuring specific as well as universal factors in relation to learning at tertiary level (Richardson, 1995:511). Meyer & Parsons (1989a) investigated the approaches of English and Afrikaans speaking to studying and found that these two groups generally perceive the majority of

conceptual constructs in similar ways. Although minor differences were found, it was concluded that the majority of the theoretical constructs measured by the ASI are universally perceived to be students from different populations. Language generally tends to have a stronger influence in Arts courses or subject areas that focus more strongly on language-related skills (e.g. Business, Journalism, Tourism, Education, etc.) than in science courses (e.g. Engineering, Mathematics, etc.) which focus on logical thinking, problemsolving, mathematical abilities, etc. This clearly represents an important area for further research.

As was mentioned previously, extensive research on the approaches to studying of Electrical Engineering students has been undertaken at the Cape Technikon. This research has provided important and usable insights into student learning at tertiary level (see Meyer & Dunne, 1991; Meyer & Parsons, 1989a; 1989b; 1996; Meyer, Parsons & Dunne, 1990a; 1990b; Parsons & Meyer, 1990). This project builds on the research that has been undertaken and is currently being undertaken in the field of approaches to studying. As was mentioned earlier, approaches to studying should be viewed as a discipline specific measurement, rather than a generalised approach measuring across disciplines and subjects. This implies that the approaches to studying of students should be investigated within a particular discipline context. A student's approach to studying is therefore related to the particular discipline being studied. Due to the unique and specific characteristics of different disciplines of study, it follows that students from different disciplines would tend to approach their studying in relation to the particular discipline or subject(s) they are studying (Parsons, 1993; Meyer & Parsons, 1996; Biggs, 1993).

Year of study could possibly influence the results and should therefore be taken into account when analysing the data obtained. Is there a qualitative difference between First and Third year students,

in relation to their locus of control ? To determine the possible influence of the factor, the subscale means of first and third year students were investigated by means of a t-test and a single-factor Anova. In Table 5.1, p. 94 the means and the T-test scores for first and third year students is given. Significant differences in subscale means were found for Failure attributed to lack of Ability[ABF], Success attributed to high Effort[EFS], Failure attributed to bad Luck[LUF] and Success attributed to unknown factors.[UCS] These results could tentatively be explained by the fact that third year students have a significant higher level of experience of studying at tertiary level than first year students. Based on their experience, third year students appear to acknowledge that high effort[EFS] is necessary for success at tertiary level, while first year students appear initially to be unsure of their ability and could attribute initial failure to lack of ability,[ABF] bad luck[LUS] and appear to be uncertain as to which factors contributes to success[UCS] at tertiary level.

Table 5.1   Means and T-test scores for first and third year students

SUBSCALE	AVERAGE THIRD YEAR	AVERAGE FIRST YEAR	T-TEST
ABS	11.29	10.86	1.02
ABF	7.33	8.92	-3.20*
EFS	13.60	12.62	3.01*
EFF	13.00	12.47	1.28
COS	7.27	7.92	-1.40
COF	7.69	8.52	-1.75
LUS	6.98	7.57	-1.35
LUF	5.53	7.08	-4.40*
ICS	9.47	9.12	1.79
ICF	8.78	8.52	0.86
POCS	2.82	3.26	-1.66
POCF	5.47	6.07	-1.39
UCS	3.27	4.08	-2.94*
UCF	4.16	4.31	-0.53

* $P < 0.01$

Does the fact that four of the fourteen subscales produced significant differences between first and third year students, imply that there is a significant difference between first and third year students in terms of locus of control ? Table 5.2, p. 95 reports on a single-factor Anova analysis to answer this question.

Table 5.2   Variance analysis of first and third year data

SOURCE OF VARIATION	SUM OF SQUARES	d.f	VARIANCE	F	P-VALUE	CRITICAL F
Total	23607.93			0.8963	0.7882	1.2228 (.5)
Between groups	1511.78	130	11.63			
Within groups	22095.14	1703	12.97			

Note   df   =   Degrees of freedom

No significant effect in terms of year of study were found. It can therefore be concluded that first and third year students in general do not significantly differ in terms of the locus of control subscales. Although the means of four subscales differ significantly (see Table 5.1, p. 94), first and third year students in general, in terms of locus of control, do not differ significantly. These two groups of students could therefore be viewed as subgroups of the same population. These findings support similar results obtained by Watkins (1987) who found no evidence for a developmental trend in terms of locus of control at tertiary level. Based on these results it was decided to combine the data of the first and third year students for subsequent analysis.

5.2 ANALYSIS OF THE COMPOSITE ACADEMIC LOCUS OF CONTROL SCALE

The first aim of the investigation was to determine if the composite locus of control instrument could provide a more adequate conceptualisation (specifically of academic locus of control) than the existing instruments. For this purpose the results obtained from the administration of the instruments were analysed firstly by determining the internal consistency of the different subscales. All academic locus of control subscales were deemed to be satisfactory with Cronbach Alpha values between 0,80 and 0,81. The Cronbach Alpha values for the different locus of control subscales are given in Table 5.3, p. 96.

Table 5.3   Cronbach Alpha values for locus of control subscales

SUBSCALE	ALPHA
ABS	0.81
ABF	0.80
EFS	0.81
EFF	0.81
COS	0.80
COF	0.80
LUS	0.80
LUF	0.80
ICS	0.81
ICF	0.81
POCS	0.81
POCF	0.80
UCS	0.81
UCF	0.81

A factor analysis using oblique (Promax) rotation was conducted to determine the conceptual overlap between the different theoretical approaches to locus of control. In Table 5.4, p. 97 the eigenvalues for the locus of control data is given. A three factor solution appears to be indicated, although it was decided to keep the fourth factor because of the intriguing association between

ability and effort (this will be addressed again further in the chapter). It is realised that evidence for the existence of the fourth factor remains very tentative at this stage. The results of this analysis are given in Table 5.5, p. 98.

Table 5.4   **Eigenvalues of locus of control data**

EIGENVALUES	PROPORTION	CUMULATIVE
4.2833	0.6181	0.6181
1.8240	0.2632	0.8813
0.7111	0.9840	0.9840
0.4765	0.0688	1.0527

If the factor structure of Table 5.5, p. 98 is examined, it is apparent that factor 1 constitutes a theoretical **external dimension** which comprises external locus attributions of $context^{(COS+COF)}$, *powerful others control*$^{(POCS+POCF)}$ and $luck^{(LUF; LUS)}$ (for success and failure in all three cases), as well as *unknown control* $^{(UCS+UCF)}$ factors (for success and failure). Surprisingly, $ability^{(ABF)}$ (for failure) also loads on this factor, although in terms of the theoretical structure of the MMCS it constitutes part of the internal dimension.

Factor 2 constitutes a theoretical **internal dimension** comprising *internal locus*$^{(ICS+ICF)}$ and $effort^{(EFS+EFF)}$ (both for success and failure) as well as *perceived control* (evidenced by the absence of *unknown control*$^{(UCS+UCF)}$ for success and failure loading on this factor). Significantly $ability^{(ABS+ABF)}$ does not load on the internal dimension.

Factor 3 is a variation of factor 1 defined by the **control dimension of unknown control** and strongly correlates positively with factor 1 (external dimension). *Unknown control*$^{(UCS+UCF)}$ for success and failure is linked to $luck^{(LUS+LUF)}$, *powerful others control*$^{(POCS+POCF)}$ and $context^{(COS+COF)}$.

Factor 4 brings together the association between *ability*$^{(ABS/ABF)}$ and *effort*$^{(EFS-EFF)}$ which is not

apparent in the other three factors.

Table 5.5   Oblique factor pattern for locus of control subscales (n=131)

	F1	F2	F3	F4
COF	70	-27	38	.
COS	69	.	47	.
POCF	64	-37	35	.
LUF	64	.	41	37
ICF	.	85	-38	.
EFF	.	81	-35	31
ICS	-27	60	.	27
UCS	31	-28	69	.
UCF	48	-47	70	.
POCS	50	-33	67	.
LUS	67	-30	73	.
EFS	.	48	-46	60
ABS	.	.	.	55
ABF	45	.	38	30
F1		-28	57	9
F2			-42	18
F3				-4
F4				

Note 1.   The theoretical external dimension is printed in bold italics.
             The theoretical internal dimension is printed in bold.
             The theoretical control dimension is printed in italics.
Note 2.   Decimal point and loadings less than 0,25 have been omitted.

5.3   DISCUSSION OF THE ANALYSIS OF THE COMPOSITE LOCUS OF CONTROL INSTRUMENT

The results of the factor analyses of the academic locus of control subscales instrument are very

encouraging. Table 5.5, p. 98 appears to lend support to the theoretical division of locus into two

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dimensions of perceived control, namely internal and external, and for including subscales from both attributional and social learning theories to provide a more comprehensive representation of students' academic locus of control. The introduction of the concept of controllability and its empirical associations in the factor pattern are consistent with the posited theoretical relationships between perceived control and locus.

The results support the suggestion/contention that researchers should distinguish between perceptions of causality and perceptions of control (Butler & Orion,1990; Skinner & Chapman, 1984 and Connell, 1985). Educational research should thus not focus on locus of control as a single-dimensional concept, but rather on the multidimensional concepts of **perceived *locus*** and of **perceived *control*** (see Hyman *et al.*, 1991:409).

In Table 5.5, p. 98 there is tentative support for a three-dimensional model of academic locus of control which confirms the suggestions made by Hyman *et al.* (1991) and Weiner (1986). The support is tentative at this stage because of the exploratory nature of the current research project, together with the possible influence of contextual factors linked to the educational setting involved (Electrical Engineering at the Cape Technikon), the relatively small number of students involved and the predominance of male students in the sample.

The negative loading of unknown control on the internal dimension in Table 5.5, p. 98 supports Connell's (1985) contention that the unknown control dimension can be perceived as the uncontrollable part of Weiner's (1986) controllability dimension. Unknown control implies a lack of knowledge or insight regarding the locus (internal versus external) of the sufficient cause, and/or

how this controls academic outcome. It follows that students would perceive this lack as 'outside' their control and therefore inversely associated with an internal dimension.

From Table 5.5, p. 98 it is evident that acknowledgement of **unknown** control also implies an external locus dimension, while acknowledgement of (known) control implies an internal locus dimension. In other words, when students say they don't understand their academic outcomes, they imply the influence of external locus together with unknown control. This distinction is valuable because it could help our understanding of how these two concepts interact with each other to influence learning outcome. This could be of considerable importance for further research and intervention.

Butler & Orion (1990:74), supporting Connell's (1985) findings, conclude that unknown control could be of considerable value in characterising the control beliefs at different levels of school achievement. The results in Table 5.5, p. 98 support the author's contention that the concept of unknown control also applies to the tertiary level and constitutes an important aspect characterising students perceived control (or lack of control) in terms of their learning outcomes.

Connell (1985) and Butler & Orion (1990:64) suggest that when students do not know what controls their academic outcome, they will tend to ascribe it to luck (a concept used by attribution theory and a subscale of the MMCS). To support this contention, the luck and unknown control subscales in the composite instrument would have to be strongly associated with each other. Table 5.5, p. 98 interestingly indicates that students not only link unknown control to luck (as suggested by Connell, 1985 and Butler & Orion, 1990), but also to powerful others control and attributions related to the context. This finding tentatively supports the conceptual overlap between unknown

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control and luck subscales, but also indicates that this overlap could be extended to include the external dimension in general.

When students attribute success or failure to unknown control, they do not only indicate lack of internal control in terms of learning outcome but also link this to an external dimension. This implies that the acknowledgement of unknown control for achievement indicates an influence of external locus as well.

Unknown control is negatively associated with effort for success and failure. Effort (for success and failure) is therefore associated with control. Students in other words appear to acknowledge perceived **control** as a product of perceived **effort**, or lack of effort, exerted in terms of a learning task.

An interesting observation from Table 5.5, p. 98 is that ability for failure attribution, which in the theoretical structure of the MMCS should indicate internal control, is perceived as an external dimension. This finding supports similar findings by Hyman *et al.* (1991:409) who suggest that the constructs of effort and ability are relatively independent dimensions of internality on the achievement domain of the MMCS.

A tentative explanation might be that (tertiary) students find it easier to make causal attributions in terms of effort than ability. They perhaps are also less certain of their ability in a new context (see Table 5.1, p. 94). Ability as a concept, could be less familiar or more abstract to students than the concept of effort, which the student could relate to in a more practical way. Ability deals more with potential - something less "definite" than "observable/definable" effort put into a learning task.

Students would therefore tend to find it easier to make attributions in relation to "concrete" effort exerted than for "abstract" ability, in the engagement of learning tasks. Another aspect which could possibly play a role is ego-protective strategy. Without going into extended discussion (see Butler & Orion, 1990:73) it could be contended that many students would find it easier to attribute failure to lack of effort than to lack of ability. To acknowledge failure as a lack of effort would tend to indicate a temporary situation that could be addressed by subsequent improved effort, at least perceptually for the student. On the other hand if a student attributes failure to a lack of ability, it would indicate a more critical situation that could be less easily remedied. Most students (especially first year students who are still very new to higher education) would tend to shy away from acknowledging lack of ability due to the associated negative implications (in relation to their self-concept) implied. Acknowledging lack of effort could therefore be perceived as a conceptually more "acceptable" reason for failure than the potentially fatalistic acknowledgement of lack of ability.

In summary, it may be stated that the broad findings described above lend support to two conclusions: firstly, tertiary students do not necessarily know what factors control their academic outcome and secondly (as put forward by Weiner, 1986) that the two dimensional attributional perspectives of locus of control (stability and locus of control) should be extended to a three dimensional model (an internal dimension, an external dimension and a control dimension).

The factor structure in Table 5.5, p. 98 compares favourably to a similar structure found by Connell (1985). His analysis yielded three factors in the cognitive domain with each of the sources of control (unknown, powerful other, internal) defining a separate factor. Butler & Orion (1990) replicated the three dimensional structure reported by Connell (1985). The findings tentatively

support the use of the composite academic locus of control instrument in higher education as an instrument which could provide a more comprehensive measurement of academic control than existing instruments. Further research is needed, both in terms of the instrument and its practical application in teaching practice and intervention. Especially on an individual level, further research needs to be undertaken to increase the practical value of the academic locus of control assessment together with using the results to improve academic outcome.

5.4 EXPLORING THE ASSOCIATION BETWEEN LOCUS OF CONTROL AND APPROACHES TO STUDYING

The results of the EASI were used to produce individual profiles that gave an indication to students of the preferred approach they tend to adopt towards studying. These profiles were given to the students with feedback on their interpretation, meaning and general information relating to success and/or failure experiences. Two such profiles are reproduced as examples in Table 5.6, p. 104.

These profiles give an indication of the preferred approach a students will tend to adopt to studying. This is done by ranking the subscale means of the EASI. The level of intrusion by less theoretically desirable factors, which can be interpreted from these profiles, could be used to characterise a student's approach in terms that could conceptually range from theoretically desirable (e.g. "star") to theoretically less desirable (e.g. "at risk"). A student could vary, according to the level of intrusion of less desirable factors (e.g. ma, ff, sb, etc.), from being (conceptually) "star" to being "at risk" (Meyer & Parsons, 1993; Parsons & Meyer, 1990; Parsons, 1993).

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TABLE 5.6	EASI profiles: indication students' preferred conceptual studying approach		

"CONCEPTUALLY STAR APPROACH"		"CONCEPTUALLY AT RISK APPROACH"	
01		07	
4.00	UE RE	5.00	sb ds
3.75	DA	4.80	ma
3.60	AD	4.60	wl
3.50	Am Ol RI CL	4.50	ff
3.40	RD	4.25	Ol
3.33	LD	4.00	BD RI St DA gL fa ls RE
3.25	IM	3.75	UE eM
3.00	ls cs BD	3.67	cs
2.75	gL rs St	3.60	RD AD
2.50	ip	3.50	Am CL
2.40	ds ma	3.25	rs ip
2.33	sb	2.75	IM
2.20	fa	2.67	LD
1.80	wl		
1.75	eM		
1.25	ff		

Note: -   01/07 = The numbers in left hand corner are an identifying number.
-     The subscale abbreviations are explained in Appendix F.
-     Numbers in first column of each example are ranked subscale means.
-     Second column of each example contains abbreviations of the subscales.

In the first example the variables *use of evidence*[(UE)], *reflection*[(RE)], *deep approach*[(DA)], *deep perception of assessment*[(AD)], etc. have a higher preference than *workload*[(wl)], *syllabus-boundness*[(sb)], *fear of failure*[(ff)], etc. for student[01]. This student therefore tends to give preference to approaches which can be described as theoretically desirable. Conceptually this student would then appear to exhibit a theoretically more desirable approach to studying and could therefore be characterised as being a **"star"** in terms of his/her approaches to studying.

In the second example, which differs significantly from the first, it is clear that the student perceives *syllabus-boundness*[(sb)], *disorganised study methods*[(ds)], *memorising approach*[(ma)], *workload*[(wl)] and

fear of failure[(ff)] as characteristic of the approach he adopts in studying, while *relating ideas*[(RI)], *deep approach*[(DA)], *reflection*[(RE)], *comprehension learning*[(CL)] and *intrinsic motivation*[(IM)] are less characteristic of this student's preferred approach. In contrast to the previous example, this student tends to give preference to approaches which can be described as theoretically less desirable. Conceptually this student could therefore be characterised as being "at risk" in terms of his/her approach to studying.

The second part of the project sought to explore the association between students' approaches to studying and their academic locus of control. For this purpose the subscales of the two instruments (the EASI and the composite academic locus of control) were subjected to combined factor analysis using oblique (Promax) rotation. The results of this analysis are given in Table 5.8, p. 106.

The first five factors (12 factors had eigenvalues larger than 1) were retained for analysis. The explained variance of further factors do not contribute significantly and therefore were discarded from the analysis. The eigenvalues of the five retained factors are given in Table 5.7, p. 105.

Table 5.7   Eigenvalues of locus of control and EASI data

EIGENVALUES	PROPORTION	CUMULATIVE
7.5225	0.1929	0.1929
5.3132	0.1362	0.3291
3.0877	0.0792	0.4083
1.9122	0.0490	0.4573
1.8220	0.0467	0.5040

		F1	F2	F3	F4	F5

Table 5.8 — Factor pattern for EASI and academic locus of control (n=131)

	F1	F2	F3	F4	F5
BD	75	.	.	28	.
DA	64	.	.	.	.
RI	67	.	.	.	.
CS	64	.	.	.	.
LS	59	.	27	.	.
RD	63	.	.	30	.
IM	60	.	-32	.	.
ST	62	.	.	39	.
UE	62	.	-39	.	.
LD	47	.	.	.	.
AD	64	-39	.	37	-35
OL	53	.	35	.	-33
RE	46	.	.	33	.
DS	-44	42	50	.	44
LUF	.	77	.	.	.
LUS	.	73	.	.	39
COF	.	68	.	.	.
COS	.	68	34	.	27
POCF	.	61	.	.	.
POCS	-33	66	27	.	32
ABF	.	56	36	.	.
UCF	.	61	29	-46	.
EM	.	50	47	.	.
IP	.	26	73	.	.
MA	.	25	69	.	.
SB	.	.	68	.	.
FF	.	42	70	.	.
WL	.	32	61	.	.
FA	-43	36	61	.	.
RS	.	.	53	26	.
ICF	.	.	.	84	.
EFF	25	.	.	85	.
ICS	27	.	.	67	.
EFS	35	.	.	70	-49
AM	31	.	.	36	.
CL	.	.	.	.	70
GL	.	26	47	.	62
UCS	.	48	.	-42	49
ABS	27	.	.	42	-49

Interfactor correlation's	F1	F2	F3	F4	F5
F1	*	-16	-7	29	-14
F2		*	36	-19	22
F3			*	7	13
F4				*	-11
F5					*

Note 1. EASI subscales are printed in bold.
Academic locus of control subscales are printed in italics.

Note 2. Decimal point and loadings less than 0,25 have been omitted.

In Table 5.8, p. 106 there is a clear **meaning/deep dimension** which loads on factor 1 and which is weakly linked to attributions for failure in terms of lack of *effort* [EFF] and for success in terms of *internal control*[ICS], *effort*[EFS] and *ability* [ABS]. Factor 1 is characterised by the absence of *comprehension learning*[CL] which would theoretically be expected to be linked to a meaning/deep dimension.

Factor 2 represents an **external locus dimension** (*luck*[LCS/LCF], *context*[COS/COF], *powerful others*[POCS/POCF], *ability*[ABF] for failure and *unknown control*[UCS/UCF]) associated with a **reproducing dimension** which is characterised by the absence of the loading of *syllabus-boundness*[SB] on this factor.

Factor 2 correlates positively with factor 3, which represents a conceptually more clearly defined **reproducing dimension** (with the addition of *syllabus-boundness*[SB], *operation learning*[OL] and *surface relationships*[RS]). Locus subscales which load on factor 3 are external factors of *context*[COS] (for success), *powerful others control*[POCS] (for success), *ability*[ABF] (for failure) and *unknown factors*[UCF] (for failure). The loading of ability (for failure) as an externally perceived dimension is consistent with the factor pattern shown in Table 5.5, p. 98.

Factor 4 could be considered to be a **strategic dimension** (defined by *strategic approach*[ST] and *achievement motivation*[AM]) supported by attributions of *internal control*[ICS/ICF], *effort*[EFS/EFF] (for success and failure) and *ability*[ABS] (for success), which is a theoretically consistent association. *Unknown control*[UCS+UCF] (for success and failure) loads negatively on this factor - consistent with

findings in Table 5.5, p. 98 - which indicates association with control. However, the evidence for this association and the independence of this factor must be viewed as highly tentative at this stage.

The same is true of factor 5 which is an intriguing **association of comprehension learning and globetrotting**, *disorganised study methods*[DS] and attributions for success of *luck*[LLS], *powerful others control*[POCS], *context*[COS] and *unknown factors*[UCS]. In addition there are negative loadings for *ability*[ABS] and *effort*[EFS] (for success). It might be that this factor indicates the presence of a learning style which seeks global understanding unsupported by effective study methods, and which (possibly as a consequence) attributes success to external rather than internal factors.

5.5 CONCLUSIONS RELATING TO THE THEORETICALLY EXPECTED ASSOCIATIONS.

Table 5.8, p. 106, which examines the underlying dimensions of the EASI together with the locus instrument, provides potentially interesting results. This simultaneous analysis retained the three-dimensions of academic locus of control indicated in Table 5.5, p. 98. The factor structure of the EASI approximates well to the pattern found in previous studies (see, for example, Meyer & Parsons, 1989a; Meyer 1991). The exploration of the association between students' approaches to studying and perceived locus of control suggests that the specific academic locus of control instrument used in this study might result in a more conceptually comprehensive and supportive model. This might be ascribed to the fact that the three dimensional model significantly improves associated measurements and the conceptual descriptions of academic locus of control, but such a

conclusion must, at this stage, remain tentative. Further investigation and research to confirm (or modify) these findings in other educational settings is clearly needed.

The weak association between a deep/meaning approach and internal locus of control could be attributed to a variety of factors. This could be a particular variation applicable to the specific group, subject or institution. The current evidence does not give any clear indication as to which possible clarification could be supported, an aspect that will have to be addressed through further research.

There could be a variety of explanations for the absence of comprehension learning not loading on the meaning/deep dimension (as would be expected). This absence could be attributed to a particular style or approach characteristic to the subject Electronics or could be typical of the particular institution or group of students. At the moment sufficient evidence is not available to form significant conclusions. Further research could provide more clarity.

Disorganised study methods from the factor structure in Table 5.8, p. 106 appears to be an important feature/variable in students' approach to studying. Disorganised study methods loads on all the factors (negatively on factor one), except on factor four (strategic factor) which could indicate the conceptual importance students ascribe to this variable. This implies that reproducing students generally do not know how to study, while students with a meaning/deep approach tend to use more organised study methods (indicated by the negative loading of disorganised study methods on factor one).

The subscales of surface perceptions of course content[cs] and surface perception of learning space[ls] are part of both the meaning and reproducing dimensions, and as they do not discriminate they have since been dropped from the EASI.

The deep/meaning approach in factor 1 is characterised by the absence of comprehension learning[CL] with which in terms of the theoretical structure of the EASI it would be expected to be associated. Current evidence does not clearly indicate possible explanations for this. There is a possibility that this result is peculiar to the particular group, the subject Electronics or the institution offering the subject.

There are two tentative general conclusions which might have significant implications for educational practice and for the design of intervention. The first is that this study supports the contention that students in higher education do not necessarily know what constitutes a theoretically desirable approach to studying. The second conclusion is that students perceive the factors that they believe are influential in determining their academic achievement in terms which are fundamentally different over a number of dimensions. Qualitatively different approaches to studying are (logically) associated with different perceptions of the **locus** of control and the **degree of control** that they exert over both internal and external factors.

CHAPTER 6

GENERAL CONCLUSIONS AND RECOMMENDATIONS

6.1   INTRODUCTION

As was discussed in 5.3, p. 98 and 5.5, p. 108, this exploratory research project has provided some

interesting insights into student learning at tertiary level and also indicated various avenues for

further research. Some of these avenues will be discussed under the following headings: locus of

control, attributional retraining and approaches to studying. Although the discussion of attribution

retraining could have been placed under locus of control it was decided to discuss attributional

retraining separately. This was done firstly to provide an adequate framework and discussion of the

concept, secondly to emphasise the relative potential and value it proposes for teaching and

(especially) intervention and thirdly to focus on the interaction between personological and

contextual factors (Biggs, 1987), based on the tentative association found in this study between

locus of control and approaches to studying. Finally certain implications, in the context of this

research project, will then be applied to the areas of intervention, teaching practice and assessment

strategies in higher education.

6.2 AVENUES FOR FURTHER RESEARCH

6.2.1 Locus of control.

Based on the (tentative) support favouring a three-dimensional model in terms of academic locus of control and evidence that the composite academic locus of control instrument appears to measure academic locus of control in a more adequate way (see previous chapter), this instrument could be viewed as a suitable basis for further research and use in higher education. Further research to support (or modify) the instrument is clearly indicated by the exploratory nature of this pilot project. Fazey (personal E-mail communication, 1996) is currently involved in research which investigates the relationship of locus of control and autonomous behaviour. Fazey & Linford (1995) has used the composite locus of control instrument and is currently analysing the results (including factor-analysis).

The initial association of attributions based on ability and effort (Weiner, 1974), indicating internal locus of control, as has been discussed earlier, has been questioned by various researchers (Hyman *et al.*, 1991; Weiner, 1986). The findings of the current project, supporting similar findings by Hyman *et al.* (1991:409) who suggests that the constructs of effort and ability are relatively independent dimensions of internally on the achievement domain of the MMCS, imply that further research should focus on the possible conceptual improvement of these subscales. As was mentioned earlier, effort would require less cognitive restructuring than ability, which could require major changes to the self-concept of a student (Perry & Penner, 1990:269). The difference in perceptions between effort and ability could be attributed to students tending to find it easier to formulate attributions in relation to effort than would be the case for ability. It could be

hypothesised that students would find it easier to understand and describe effort in concrete terms (e.g. the amount of time spent studying or the amount of work covered at a given time), than could be the case for a more abstract concept like ability (e.g. potential, skills, strengths, etc.). Further research is necessary to test this contention and to improve our understanding of how students perceive these concepts and how the interaction between ability and effort could affect learning in higher education.

The results support Connell & Harter's (1984) suggestion that knowledge of the sources of control that operate (as well as how these operate) in the learning process constitutes a necessary condition for competent performance and an intrinsic motivational orientation. When students do not know or understand the reasons for their failure or success, it could inhibit performance and tend to increase the need to focus on extrinsic sources of information (and therefore control) and feedback (Connell, 1985:1020). This supports the previously mentioned statement that when students have a better understanding of the factors which could influence their learning they would tend to develop better control of their learning engagement and also accept more responsibility for their academic outcome (Ashton, 1995:414; Beaty & Hunt, 1995:419). Continued research, specifically in terms of how teachers can assist students to develop a better understanding of the factors which could influence their learning, is needed to determine practical ways in which teachers can incorporate this in their teaching strategies. Teachers therefore are not only responsible for the transfer of subject content, but should also focus on helping students understanding their own learning and helping them develop the necessary skills to learn effectively. This supports the earlier statement (chapter one) that students should also be taught how to learn (Cuthbert, 1995; Rogers, 1983, Toffler, 1970).

An important area for further research would be how the results obtained on the composite locus of control instrument could be used to categorise students locus of control related to the engagement of learning tasks. Of specific interest would be a categorisation at individual level (similar to the qualitative individual differences approach mentioned earlier). What qualitative individual variation can be observed in individual students engagement of learning tasks ? As in the case of qualitative individual differences in relation to approaches to studying, it can be hypothesised that students would exhibit qualitative individual differences related to their perceived locus and perceived degree of control (Parsons, 1994).

As in the case of approaches to studying, where students vary in terms of the conceptually disintegrated study orchestrations (Meyer, 1991), they could also experience similar varying patterns of disintegration in respect of locus and degree of control. This links with the suggestions by Biggs (1993:75) that all students exhibit a certain degree of disintegration in terms of their engagement of learning tasks. The question is what level of disintegration (either in terms of locus, degree of control or approaches to studying) would determine students who are "at risk" of failing academically them exhibiting theoretically undesirable approaches to studying and theoretically unfavourable perceptions of locus and degree of control.

The association between locus of control and academic outcome has been investigated through various studies and holds important insights for our understanding of students learning in higher education. This association was not investigated in this project for the following reasons:

(a)   This was not part of the initial aims of this exploratory research project (see 1.6, p. 30).

(b)   The nature of this project is exploratory and focused investigation in this regard would be premature. Further research to conceptually support or modify the composite locus of control instrument should be initiated before the relationship in question is addressed.

(c)   As was indicated in the previous section, further research in terms of how the results relating to the locus of control construct should be interpreted, specifically at individual level, is needed (see Parsons, 1994).

To date there is insufficient knowledge and research available to indicate reliable interpretations of results obtained on the composite locus of control instrument. It is therefore suggested that further research establish valid and reliable interpretations of academic locus of control results before an association with an important variable like academic outcome is attempted. The focus of this project is the conceptual elements that form academic locus of control. The fact that the relationship between these conceptual elements and outcomes are of importance when dealing with success and failure in higher education has however been taken into account. Central to this is the attempt to lay the foundation for subsequent research into the relationship between academic locus of control and academic outcome.

According to Lefcourt *et al.* (1979:294) the measurement of locus of control can be influenced to some extent by social desirability. Butler & Orion (1990:72-73) mention that some students appear to internalise the social norm that responsibility for outcomes should be accepted while others may suffer from learned helplessness, where they perceive success as outside of their control and failure as affirmation of them being "not okay" (Harris, 1969). An analysis of the items of the composite locus of control instrument and the EASI shows that it could be possible to respond in ways that could be characterised as socially desirable or preferred or related to learned helplessness. Further

research needs to be undertaken to determine the possible influence of social desirability or learned helplessness on the composite academic locus of control and EASI instruments.

The discipline-specific nature of approaches to studying (see Biggs, 1993; Meyer & Parsons, 1996; Parsons, 1993) has been mentioned earlier. In terms of this and the results obtained in the current project, it could be asked if this also applies to the construct of locus of control. Would students from different disciplines tend to perceive locus of control in unique ways which are characteristic of their particular field of study ? The association found in this study between approaches to studying and locus of control tentatively proposes this as a viable avenue for further research.

6.2.2   Attributional retraining.

According to Van Overwalle *et al.* (1989) many studies have shown that when students are given attributional feedback that their failure can be ascribed to lack of effort and their success to high ability or high effort, they persisted longer and performed better than students who merely received feedback on their outcome (e.g. right/wrong; pass/fail; etc.). Van Overwalle *et al.* (1989) proposes - as suggested by Wilson & Linville (1982) - that by providing students with novel antecedent information, causal attributions of tertiary students could be modified (specifically in terms of failure). Causal attributions of tertiary students have been established over a number of years, based on various failure and success experiences and have become stabilised. Merely stating desired causal attributions or confronting students with direct cause and effect attributions tends to be less effective, especially in the first year of study at tertiary level (Van Overwalle *et al.*, 1989:77). This does not imply that these types of attributions should be discarded, but rather that

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educationalists should start with antecedent information and then incorporate these other attributions to support the given antecedent information.

Van Overwalle *et al.* (1989) investigated the effectiveness of attributional techniques aimed at improving academic performance of students with learning difficulties. First year students (in the first experimental condition) that had failed a mid-term economics examination were shown two video's; the first (13 minutes) consisted of videotaped interviews of senior students relating their learning problems, the causes of these problems and how they improved their outcomes at the end of the year. In the second video a psychology professor described an actual training programme for physics students. He explained that the training programme had only been effective for those students that had implemented the taught study strategies into their own regular study methods, thereby making these strategies their own. Students (in a second experimental condition) followed an individual study skill training course in addition to the video manipulation. The control condition (i.e. the students that were successful) received no treatment.

Van Overwalle *et al.* (1989) found a significant effect between the control and experimental groups, where the video manipulation produced significant increases in the theory post-test scores, while the additional study skill training did not add any substantial gain. Students with unfavourable causal attributions would, according to Van Overwalle *et al.* (1989), benefit more from altering their causal beliefs than those who already think in terms of favourable causes.

Perry & Penner (1990) investigated attributional retraining as a "therapeutic method for reinstating psychological control that may be useful for improving students' achievement". Similar to Van Overwalle *et al.* (1989), Perry & Penner (1990) also used videotaped interviews to address the

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causal attributions of inductory psychology students. Volunteer students were randomly assigned to the experimental and control groups. After attributional training or no training, internal- and external-locus students observed a videotaped lecture presented by either a low-expressive or high-expressive instructor in a simulated classroom. The attributional retraining consisted of a videotaped interview (8 minutes) with a psychology professor describing his first year at university. In the video he attributed his failures to lack of effort, good achievement to ability and proper effort. He explained that persistence is a major part of successful effort and that the amount of effort is controllable. The low-expressive/high-expressive lecture (25 minutes) presented by another psychology professor varied in expressiveness, defined by physical movements, eye contact, voice inflection and humour. One week later the students wrote a test on the lecture and on a homework assignment.

Perry & Penner (1990) found that attributional retraining improved the performance of external, but not internal students on both the lecture and on the homework tests. Expressive instruction enhanced lecture and homework related achievement in external, but not in internal students. Attributional retraining has provided promising results in a number of studies and it is suggested that it should also be investigated in the South African context as a possible interventional strategy to address theoretically less favourable locus of control perceptions in (especially first year) students.

6.2.3 Approaches to studying.

Extensive research has been undertaken in the field of approaches to studying of students in higher education. As was mentioned in 2.1, many researchers have suggested that approaches to studying

appear to be mediated by personological factors (Meyer, 1991; Biggs, 1987). In this regard there are various questions to be asked, for example: What relationship exists between approaches to studying and personological factors ? Little research in the past has focused on this particular relationship. What relationship does there exist between approaches to studying and (personological) factors like self-concept, locus of control, metacognition (see Biggs, 1985), autonomy Fazey & Linford (1995), etc. ? One of the aims of this study was to investigate the relationship of locus of control and approaches to studying. Further research investigating a variety of personological factors and approaches to studying could provide better understanding of the relationship between these areas of educational research. This would support Biggs' (1987) suggestion that research should focus on the interaction between personological and contextual factors. A better understanding of this interaction could be beneficial in terms of improving student learning in higher education and for informing intervention.

As was mentioned in 5.5 comprehension learning (in terms of the posited theoretical structure of the EASI), would be expected to be associated with a deep/meaning approach but, surprisingly, this is not the case in this study. This could be a specific characteristic of the group or the subject, but without sufficient evidence at this stage to support this conclusion, it remains for further investigation to provide more clarity. It could tentatively concluded that this might indicate the presence of a learning style which seeks global understanding unsupported by effective study methods, and which (possibly as a consequence) attributes success to external rather than internal factors. This could imply a variation of comprehension learning which appears to be conceptually different to what would be associated to a deep/meaning approach. This implication is tentatively made and needs to be investigated further.

Further research is required to clarify the conceptual association between approaches to studying and locus of control. Conceptual improvement of associated instrumentation (the EASI and composite locus of control instrument), specifically within a discipline specific context, could yield a better understanding of the relationship between these constructs. This constitutes a particularly important avenue of further research for teachers. Further to this there is a need to translate the insights and results gained from research to the practical teaching situation.

Another aspect of the learning situation in higher education concerns the particular approach lecturers adopt towards teaching and studying teachers and the way they teach or act in the classroom, can have an important influence on students. Lecturers would also tend to exhibit qualitatively different approaches towards teaching and studying (Killen, 1994; Perry & Penner, 1990).

The effect that teacher assessment strategies can have on students have been mentioned in 1.4. Teachers should be aware of the way their approaches and acts influence students approaches to studying. Further research should focus on how teachers can be made aware of their students approaches to studying as well as their own and how to use this knowledge in the practical teaching-learning situation.

6.3 IMPLICATIONS FOR INTERVENTION, TEACHING AND ASSESSMENT STRATEGIES

6.3.1 Intervention.

From the attributional retraining studies (see 6.2.2, p. 116) it can be concluded that attributional training could be useful in addressing unfavourable causal attributions of first year students and therefore improving their academic achievement. The videotape format, short duration, suitability for group administrations could be of value as an instructional aid to students who are not inclined to seek assistance. The relatively short duration of the intervention and positive results obtained in these studies holds valuable promise for student learning at tertiary level in particular. In the past intervention generally tended to find the remediation of learning difficulties (that had been founded and stabilised over a number of years) time-consuming and (mostly) individual based. Further research in the use of attributional retraining is needed and could provide teachers on all educational levels with an additional tool to help students learn and study more effectively.

In the past intervention was mainly directed at changing students' approaches to studying, with limited success. In terms of informing intervention aimed at enhancing students' ability to employ theoretically desirable approaches to studying, the results suggest that the dimension of unknown control is significant in describing students' perceived academic locus of control since it is empirically associated with an external dimension and a reproducing approach. This could indicate additional relevant areas in which intervention could be focused. Perry & Penner (1990:264) propose that by increasing the perceived control (through, for example, attributional retraining - see Van Overwalle *et al.*, 1989) of students, their achievement could be improved. Other recent

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studies (Perry & Penner, 1990; Dart & Clarke, 1991; Butler & Orion, 1990) provide evidence to suggest that by concentrating rather on improving students' perceived locus of control, associated qualitative improvements in students' approaches to studying could be achieved.

The results described in this project tentatively suggest that intervention should not only focus on addressing the needs of students with theoretically undesirable approaches to studying (as has traditionally been the case), but that the qualitative performance of many apparently successful students' might be enhanced by addressing more explicitly some of the underlying assumptions regarding the factors that influence learning quality and learning outcome in the context of higher education.

One of the general aims of educational research measuring certain variables (e.g. locus of control; approaches to studying; etc.) is to improve the valid and reliable measurement of these aspects. Improved measurement would imply that improved risk identification could be possible. Intervention strategies could then focus more accurately on those students that need help and intervention. Although there appears to be some conflict between this paragraph and the statements in the previous paragraph, these statements should not necessarily be seen as opposing each other. Improved risk identification can be helpful in intervention and research into the determinants of failure constitute a vital area to understand and improve student learning. The results in this study tentatively suggest that the traditional approach in intervention that primarily focuses on students that fail or that exhibit theoretically less desirable approaches or control perception should be extended to include success and theoretically desirable perceptions. The fact that a student is successful at a particular moment does not guarantee that he will achieve success in the future. Under certain circumstances a reproducing or memorising approach could provide

success (passing a test), but a change in circumstances could create serious difficulties for the same student.

As was mentioned in 5.4, p. 103 students were given profiles of their preferred approach to studying. The objectives of these profiles are:

(a) to be able to classify individual students in terms of the disintegration of theoretical desirable and meaningful approaches through the intrusion of theoretically less desirable factors,

(b) to enable teachers to improve the identification of students that might be at risk and provide them remedial training,

(c) to provide teachers and students with a better understanding of how the student approaches studying and explain to an extent the academic outcomes the student achieves.

The results in this research project tentatively suggest that similar profiles could be compiled on the basis of students' locus of control. Such an investigation would largely focus on an individual perspective which falls outside of the immediate aim of this thesis, but should be addressed by (as was mentioned in 6.2.1, p. 112) subsequent research. Such profiles could possibly indicate students' perceived locus and level of control in their engagement of learning tasks. These profiles could indicate the level of disintegration of control through the intrusion of theoretically unfavourable factors related to the locus and level if control. The integration of locus of control and approaches to studying profiles, implied by the tentative association found in this research project, could provide teachers and students with (a) a better understanding of academic outcomes, (b) better indication of students that might be at risk academically owing to theoretically

undesirable approaches and inadequate locus of control and (c) possible areas where intervention could be focused to improve their academic outcome.

According to Perry & Penner (1990:269) loss of control can be a serious threat to the academic development of tertiary students because it causes helplessness-related cognitive, motivational and affective deficits. Attributional retraining could provide teachers with an important tool to address the causal attributions of students. As was mentioned in 6.2.2, p. 116 they found that external locus students benefited from attributional retraining, while for students that exhibited intact attributions the training to a large extent re-iterated what they already knew or were doing. The attributional retraining procedure can therefore be beneficial to students that suffer from lack of adequate control in the learning process and it could also re-reinforce theoretically desirable causal attributions within students that already apply these principles in their learning.

This validates the statements of Ashton (1995:414) and Beaty & Hunt (1995:419) that greater understanding of the factors that could determine success or failure can help students to develop desirable control in their learning. When students internalise a belief that they can control their learning and the resulting outcome, it would tend to promote autonomous, self-directing and positive approaches towards the engagement of learning tasks. Given the economy of the video technique, attributional retraining appears to provide intervention in higher education with promising possibilities for improvement of academic performance (Van Overwalle *et al.*, 1989). Many students tend to refrain from seeking help when faced with learning difficulties. According to Perry & Penner (1990) attribibutional retraining could be particularly useful as an instructional aid to reach students that would otherwise not seek help from teachers, peers or counselling services. In the video technique students are provided with antecedent information concerning causal

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attribution specifically related to failure without students being categorised as "at risk", "failures", etc.

Attributional retraining could be described as a pro-active intervention. Instead of waiting till students fail or experience learning difficulties, the potential for theoretically less desirable causal attributions can be addressed at an early stage and at risk students could be helped to develop theoretical salient causal attributions.

This project found that students associate **control** with success as a result of perceived effort or failure as a result of perceived lack of effort. This implies that when students acknowledge responsibility for the amount of effort they exert in terms of a learning task, they perceive and accept control for the outcome of that learning engagement. This could be of value for intervention and teaching strategies. Students that appear to be academically **"at risk"** as a result of a theoretically less desirable approach to studying, could be encouraged through intervention to qualitatively improve the effort they exert in terms of a learning task The amount of effort that students exert could be seen as a function of their level of motivation. The teacher therefore should focus on how students can be motivated to work harder when studying. Although teacher encouragement tends to be extrinsic motivation, teachers should attempt to promote intrinsic motivation within their students.

According to Tait, Speth & Entwistle (1955:324) the study skills required at tertiary level are not the same as those needed at school. It is therefore important that students are provided with help and support, especially for first year students that are busy adapting to the requirements of higher education. With an increasing number of students studying at tertiary level and the call for

accepting students from previously "disadvantaged" communities in South Africa (Nguru, 1995; Spier, 1995) implementing study skills courses as part of an intervention strategy could be beneficial in helping students develop the necessary skills required (Biggs, 1993:81; Entwistle, 1995:323-234 ; Tait, Speth).

6.3.2 Teaching strategies

Teachers should encourage students to reflect (see Appendix F) on their learning. This could provide students with new insights and understanding of their learning Reflection is an important ingredient in critical thinking (a necessary characteristic at tertiary level) and can enable students to learn from past learning experiences and place new knowledge into context. Teachers should encourage students to think about what they have learned and not just to accept everything at face value. This implies that teachers should encourage students to approach learning in a exploratory and meaningful way. Instead of merely disseminating facts to students, teaching in the classroom should encourage reflection and critical analysis on the part of the student.

All students could benefit from qualitatively improving the effort they exert. Here the teaching practice teachers adopt could be improved so that a climate is created where students are encouraged (irrespective of they being conceptually at risk or not) to develop a more efficient and effective (in terms of learning outcome) engagement of learning tasks. For example, when a student experiences learning difficulties, the teacher could encourage the student to do additional work related to the particular subject or aspect.

The results indicate that certain students may be successful academically, but that they may not really understand the factors involved or why they are succeeding. The objective would therefore be to help students develop a better understanding of their academic outcome. This would imply that students should be provided with valid and reliable feedback on why they are succeeding (or failing). Teachers should determine how they define learning, (as was discussed in 1.3) and provide feedback would the consisted with that definition. Teachers should be encouraged to investigate their definitions of learning and how they apply it in the learning situation. This could help teachers to qualitatively improve their teaching and assessment strategies and the feedback they provide to students.

Just as students need to understand the factors that could determine success or failure in higher education, teachers also need to understand how students approach and control their learning. This has important implications for teacher training (not only initially, but progressively as well). Teachers therefore have a responsibility (and should be encouraged by administrators) to keep their knowledge in terms of student learning up to date by reading, research, attending workshops, in-service training (e.g. INSET), etc. This again emphasises, as had been mentioned previously, that teachers are not just mere conveyers of knowledge specifically related to a particular subject area, but rather facilitators (Rogers, 1983:135) of learning as a holistic process. Teachers therefore are required not only to "know" a particular subject area, but also to have a basic understanding of the factors involved in academic outcome and how students incorporate these factors in their learning strategies. Even more importantly they should be able to use their "understanding of learning and the learner" to adapt their teaching and assessment strategies in order to maximise the potentially successful engagement of learning tasks. Sadly in many instances, teachers are mainly seen as being primarily knowledgeable in a particular subject field - e.g. they are "experts" in science,

mathematics, accounting, etc. rather been seen or acting as actually being "experts" in the art of facilitating learning (Rogers, 1983; Ullyatt, 1989).

The results of this project imply that teachers should incorporate insights gained from research into student learning at tertiary level, into their teaching as assessment strategies. Teachers should be encouraged (and trained) to use instruments like the EASI and the composite academic locus of control scale to determine how students approach and control their learning. Many teachers at tertiary level are not always aware of these instruments that can provide them with valuable insights into the learning of students. This implies that student counselling, academic development and teaching development services should become more involved to provide teachers with knowledge and training in terms of students approaches and locus of control.

The Cape Technikon has initiated a project called the Integrated First Year Experience (IFYE). This program aims to provide lecturers with material and support to help (especially) first year students in their learning. The program is based on a modular format, where the lecturer incorporates applicable topics and skills into the teaching of a particular subject. Through IFYE students are provided with the opportunity to develop the necessary skills required at tertiary level. The topics vary from study methods, communication, encouraging reflection, how to write assignments, setting goals and objectives, etc. This again emphasises that the traditional perception that teachers are primarily responsible for the transfer knowledge and (to a lesser extent) skills, should be extended. The teacher does not only teach students about a particular subject, but should also develop them as learners.

The results indicate that students use a variety of approaches, learning styles and methods when learning, where some tend to be theoretically desirable and others less desirable. The traditional approach which sought to determine the "best teaching method or strategy", have been rejected by many researchers (Biggs, 1993; Dunn *et al.*, 1995, Ullyatt, 1989). This implies that because learning is multi-dimentional and because students use different approaches, that students should be exposed to a variety of ideas and not just what is perceived by the teacher "to be right". This does not imply that teachers should not actively promote students developing theoretically desirable approaches and favourable control perceptions, but to reflect the multi-dimensional nature of learning in their teaching methods and strategies.

The following analogy serves to elucidate the teaching and learning process. Most cars tend to have (for example) four gears which, depending on conditions, provide different levels of power and speed to a motor vehicle. The first gear is specifically for setting the vehicle in motion, high power, but not designed for high speed. Once the vehicle has obtained sufficient motion (depending on the load and physical conditions) then the fourth gear provides greater speed and control with less emphasis on power. Although much more complex, this analogy can be applied to students when they study. Students also posses "learning gears" which constitute the different approaches they adopt. The first learning gear, envisaged as a surface or memorising gear, is used by the student to put the learning process in motion. The second learning gear, envisaged as reproducing, basically focuses on knowledge and the retention thereof. The fourth learning gear, envisaged as a deep or meaning gear, provides the student with understanding, manipulation, creativity and speed (metaphorically speaking) in the learning process.

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A motor vehicle has to adapt to changes in conditions (e.g. load and the state of the road). Gear selection is determined by the type and the variation in inclination of the road. Students face similar changes when they are studying. They have to adapt to changing circumstances, e.g. increasing difficulty in learning material, increasing workload, different teachers, etc. To become a "good" learner, students must be able to adapt to these changing conditions by selecting appropriate learning gears for particular learning tasks and to select the right gear required in a given situation (i.e. to try to understand very complex learning material, would firstly require knowledge of the basic facts and terminology). To start with the fourth gear in this example could end up in "stalling" the learning process, and lead to frustration and loss of control.

It can be hypothesised that students could be categorised according to their proficiency in dealing with changing circumstances, selecting appropriate learning gears and controlling the learning process. Being out of control of a motor vehicle can have drastic and frightening consequences. This also holds true for control of the learning process, although many students do not always realise (until too late ?) the full implications. "At risk" students would therefore tend use inappropriate learning gears and focus on the "memorising", "fear of failure", etc. gears. Whereas deep or meaning students can adapt to changing circumstances, surface or memorising students do not have adequate ability and are limited in their choices of learning gears.

This implies that students should be provided with ample opportunities to practise and develop their use of "learning gears" and that this should be supplemented by valid and reliable feedback from teachers. The more students are exposed to accepting control and responsibility for their own learning, with the teacher as facilitator of this process, the better they will understand their learning outcomes and be able to accept and control it.

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According to Ullyatt (1989:164) students will have to learn new ways to learn and will have to adjust to new approaches. Students in future will tend to find themselves actively involved in their own management of knowledge in learner-centred approaches. Instead of simply providing students with information, more time should be spent showing them where and how to acquire the information they need. . As Wittrock (1977:180) correctly states: "... methods of teaching should be designed to stimulate students actively to construct meaning from their own experience rather than stimulating them to reproduce the knowledge of others".

6.3.3   Assessment strategies.

The implications for assessment cannot be easily separated, in the practical situation, from the teaching strategies and therefore could have been discussed in the previous section (some implications are indirectly mentioned). It was decided to discuss assessment strategies as an aspect on its own (keeping relationships with other areas in mind), for reasons similar to the previous discussion of attributional retraining.

The assessment strategy teachers use can, as was previously mentioned, affect the approach students adopt towards their studying. Assessment constitutes very strong causal feedback to the student. This implies that teachers have an important responsibility to make sure that they provide valid and reliable feedback to the student.

The danger always exist that a situation could develop where the teacher states the desired or aim that students understand the learning material but the assessment strategy only focuses on facts and

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knowledge (knowing something does not necessarily imply understanding it). This can confuse students and be instrumental in them ignoring the desired approach (i.e. to understand) and adopting a surface approach. The type and quality of assessment feedback (in fact all feedback) can play an important role in determining the ways students would approach learning tasks. Assessment feedback should therefore also be more than merely giving students simplistic right/wrong, pass/fail, a mark or symbol results. Feedback should be seen as a vital part of the learning process where the students learn not only why they received particular results but are also provided with a learning opportunity: learning from mistakes; modifying incorrect understanding; re-reinforcing insights and internalising understanding (Biggs, 1993:80; McDowell & Mowl, 1995:144).

This implies that teachers should strive to make their assessment relevant (i.e. in harmony with stated objectives and teaching methods) and provide students with valid and reliable feedback on their learning progress. As in the case with teaching strategies, teachers should develop innovative ways to assess the learning of their students. This again re-iterates the need for teachers to adopt new and innovative approaches to teaching and learning. Assessment is therefore not an activity which take place in isolation, but within the framework of an overall teaching strategy. Qualitative improvement of the whole system (teaching, management, research, assessment, etc.) is needed, not merely focusing on one particular area to produce significant improvement. Teachers therefore have an important responsibility to determine, as a continuous process, how they can improve their teaching and assessment practises for the benefit of their students.

6.4   CONCLUSION.

In an insightful article Ullyatt (1989) argues that perhaps the time has come to undertake changes in

the system, a total reconceptualisation of the purpose and methods, the market and the future of

tertiary education in South Africa. South Africa is experiencing transformation as a new emerging

democracy. It is necessary for higher education to implement and manage this transformation in an

innovative and sustainable way (Nguru, 1995; Spier, 1995). The time has come for all the role-

players (students, teachers, administrators, parents, etc.) to become actively involved in this process

to provide South Africa with a quality in higher education that would not only meet the demands of

our changing situation, but also to adequately prepare them for the future. As Turner (1987:69)

formulates it:

> This is a call for a change in the fundamental paradigms of study, and in the nature and
> function of the academy itself - a change as great, perhaps, as that which marked the end of
> medieval scholasticism and the beginning of the Renaissance humanist university. We have
> in our time a project that requires a full mutual engagement of all fields of study, physics as
> well as poetry, and the hint of a warrant for its success. And if not now, when ? If not
> here, where ?

Students and teachers alike will be confronted by these changes and need to develop adequate ways

to control and approach learning in higher education that could lead to improved academic

outcomes. Academic locus of control and approaches to studying have been shown to play a

fundamental role in the learning process and will continue to do so in the future. The changes in

higher education provide an exciting challenge to teachers, students, researchers, and society.

In conclusion, the results reported in this project provide a clearer understanding as to the

conceptual basis of factors which might contribute to success or failure in higher education.

Further research needs to be undertaken to confirm the results and conclusions drawn and to explore their integration into the form of intervention and the practice of higher education. The relationship between these aspects and measures of academic performance also need to be investigated. It is hoped that the insights gained can be applied to improve the academic outcome of tertiary students through improved intervention and teaching practice.

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ACHIEVEMENT

Ability

(Success)

1   The most important ingredient in getting good grades is my academic ability.
2   I feel that my good grades reflect directly on my academic ability.
3   When I get good grades, it is because of my academic competence.

(Failure)

4   If I were to receive low marks it would cause me to question my academic ability.
5   If I were to get poor grades I would assume that I lacked ability to succeed in those courses.
6   If I were to get poor grades I would assume that I lacked ability to succeed in those courses.

Effort

(Success)

7   In my case, the good grades I receive are always the direct result of my efforts.
8   Whenever I receive good grades, it is always because I studied hard for that course.
9   I can overcome all obstacles in the path of academic success if I work hard enough.

(Failure)

10   When I receive a poor grade, I usually feel that the main reason is that I haven't studied hard enough for that course.
11   When I fail to do as well as expected in school, it is often due to lack of effort on my part.
12   Poor grades inform me that I haven't worked hard enough.

Context

(Success)

13   Some of the times that I have gotten a good grade in a course it was due to the teacher's easy marking scheme.
14   Some of my good grades may simply reflect that these were easier courses than most.
15   Sometimes I get good grades only because the course material was easy to learn.

16   In my experience, once a professor gets the idea you're poor student, your work is more likely to receive poor grades than if someone else handed it in.
17   Often my poorer grades are obtained in courses that the professor has failed to make interesting.
18   Some low grades I've received seem to me to reflect the fact that some teachers are just stingy with marks.

Luck

(Success)

19   Sometimes my success on exams depends on some luck.
20   I feel that some of my good grades depend to a considerable extent on chance factors, such as having the right questions show up on a exam.
21   Sometimes I feel that I have to consider myself lucky for the good grades I get.

(Failure)

22   Some of my lower grades have seemed to be partially due to bad breaks.
23   My academic low points sometimes make me think I was just unlucky.
24   Some of my bad grades may have been a function of bad luck, being in the wrong course at the wrong time.

AFFILIATION

Ability

(Success)

25   It seems to me that getting along with people is a skill.
26   Having good friends is simply a matter of one's social skill.
27   It is impossible for me to maintain close relations with people without my tact and patience.

(Failure)

28   It seems to me that failure to have people like me would show my ignorance in inter-personal relationships.
29   I feel that people who are often lonely are lacking in social competence.
30   In my experience, there is a direct connection between the absence of friendship and being socially inept.

Effort

(Success)

31   Maintaining friendships requires real effort to make them work.
32   In my case, success at making friends depends on how hard I work at it.
33   If my marriage were to succeed, it would have to be because I worked at it.

(Failure)

34   If I did not get along with others, it would tell me that I hadn't put much effort into the pursuit of social goals.

35   When I hear of a divorce, I suspect that the couple did not try enough to make their marriage work.

36   In my experience, loneliness comes from not trying to be friendly.

Context

(Success)

37   My enjoyment of a social occasion is almost entirely dependent on the personalities of the other people who are there.

38   Some people can make me have a good time even when I don't feel sociable.

39   To enjoy myself at a party I have to be surrounded by others who know how to have a good time.

(Failure)

40   No matter what I do, some people just don't like me.

41   Some people just seem predisposed to dislike me.

42   It is almost impossible to figure out how I have displeased some people.

Luck

(Success)

43   Making friends is a funny business, sometime I have to chalk up my successes to luck.

44   In my experience, making friends is largely a matter of having the right breaks.

45   If my marriage were a long, happy one, i'd say that I must be very lucky.

(Failure)

46   Often chance events can play a large part in causing rifts between friends.

47   I find that the absence of friendships is often a matter of not being lucky enough to meet the right people.

48   Difficulties with my friends often start with chance remarks.

(Lefcourt *et al*, 1979).

COGNITIVE DOMAIN

Unknown control

(Success)

1   When I get a good grade in school, I usually don't know why I did so well.
2   When I do well in school, I usually can't figure out why.

(Failure)

3   When I don't do well in school, I usually can't figure out why.
4   If I get a bad grade in school, I usually don't understand why I got it.

Powerful others control

(Success)

5   When I do well in school, it's because the teacher likes me.
6   The best way for me to get good grades is to get the teacher to like me.

(Failure)

7   If I have a bad teacher, I won't do well in school.
8   If I don't have a good teacher, I won't do well in school.

Internal control

9   If I want to do well in school, it's up to me to do it.
10   If I want to get good grades in school, it's up to me to do it.

(Failure)

11   If I get bad grades, it's my own fault.
12   If I don't do as well in school, it's my own fault.

SOCIAL DOMAIN

Unknown control

(Success)

13   A lot of times there doesn't seem to be any reason why somebody likes me.
14   A lot of times I don't know why people like me.

(Failure)

15   When another kid doesn't like me, I usually don't know why.
16   If somebody doesn't like me, I usually can't figure out why.

Powerful others control

(Success)

17   If I want my classmates to think that I am an important person,I have to be friends with the real popular kids.
18   If I want to be an important member of my class, I have to get the popular kids to like me.

(Failure)

19   If the teacher doesn't like me, I probably won't have many friends in that class.
20   If my teacher doesn't like me, I probably won't be very popular with my classmates.

Internal control

(Success)

21   If somebody is my friend, it is usually because of the way I treat him/her.
22   If somebody likes me, it is usually because of the way I treat them.

(Failure)

23   If somebody doesn't like me, it's usually because of something I did.
24   If somebody is mean to me, it's usually because of something I did.

PHYSICAL DOMAIN

Unknown control

(Success)

25   When I win at sport, a lot of times I can't figure out why I won.
26   When I win at an outdoor game, a lot of times I don't know why I won.

(Failure)

27   When I don't win at an outdoor game, most of the time I can't figure out why.
28   Most of the time when I lose a game in athletics, I can't figure out why I lost.

Powerful others control

(Success)

29   When I play an outdoor game against another kid, and I win, it's probably because the other kid didn't play well.
30   When I win at a sport, it's usually because the person I was playing against played badly.

(Failure)

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31   When I lose at an outdoor game, it is usually because the kid I played against was much better at the game to begin with.

32   When I don't win at an outdoor game, the person I was playing against was probably a lot better than I was.

Internal control

(Success)

33   I can be good at any sport if I try hard enough.
34   I can be good at any sport if I work on it hard enough.

(Failure)

35   If I try to catch a ball and I don't, it's usually because I didn't try hard enough.
36   If I try to catch a ball and I miss it, it's usually because I didn't try hard enough.

GENERAL DOMAIN

Unknown control

(Success)

37   When good things happen to me, many times there doesn't seem to be any reason why.
38   Many times I can't figure out why good things happen to me.

(Failure)

39   A lot of times I don't why something goes wrong for me.
40   When something goes wrong for me, I usually can't figure out why it happened.

Powerful others control

41   To get what I want, I have to please the people in charge.
42   If there is something that I want to get, I usually have to please the people in charge to get it.

(Failure)

43   If an adult doesn't want me to do something I want to do, I probably won't be able to do it.
44   I don't have much chance of doing what I want if adults don't want me to do it.

Internal control

(Success)

45   I can pretty much control what will happen in my life.
46   I can pretty much decide what will happen in my life.

(Failure)

47   When I am unsuccessful, it's usually my own fault.
48   When I don't do well at something, it is usually my own fault.

(Connell, 1985).

GENERAL SCALE

1   If I want something I _____ work hard to get it.
2   I _____ enjoy trying to do difficult tasks more than I enjoy trying to do easy tasks.
3   When I'm involved in something I _____ try to find out all I can about what is going on even when someone else is in charge.
4   I _____ get discouraged when doing something that takes a long time to achieve results.
5   I _____ need frequent encouragement from others for me to keep working at a difficult task.
6   I _____ change my opinion when someone I admire disagrees with me.
7   I _____ prefer to learn the facts about something from someone else rather than have to dig them out for myself.
8   What other people think _____ has a great influence on my behaviour.
9   I _____ need someone else to praise my work before I am satisfied with what I've done.
10 For me, knowing I've done something well is _____ more important than being praised by someone else.
11 I _____ let other peoples' demands keep me from doing things I want to.
12 When part of a group I _____ prefer to let other people make all the decisions.
13 When I have a problem I _____ follow the advice of friends or relatives.
14 I _____ prefer situations where I can depend on someone else's ability rather than just my own.
15 Having someone important tell me I did a good job is _____ more important to me than feeling I've done a good job.
16 When I'm involved in something I _____ try to find out all I can about what is going on even when someone else is in charge.
17 When faced with a problem I _____ try to forget it.
18 I _____ like jobs where I can make decisions and be responsible for my own work.
19 I will _____ accept jobs that require me to supervise others.
20 I _____ have a hard time saying "no" when someone tries to sell me something I don't want.
21 I _____ like to have a say in any decisions made by any group I'm in.
22 I _____ consider the different sides of an issue before making any decisions.
23 I _____ enjoy being in position of leadership.
24 I am _____ sure enough of my opinions to try and influence others.
25 When something is going to affect me I _____ learn as much about it as I can.
26 I _____ decide to do things on the spur of the moment.
27 I _____ stick to my opinions when someone disagrees with   me.
28 I _____ get discouraged when doing something that takes a   long time to achieve results.

(Duttweiler, 1994).

GENERAL SCALE

1   Some people have a knack for writing, while others will never write well no matter how hard they try.

2   I am a good writer.

3   There are some subjects in which I could never do well.

4   College grades most often reflect the effort you put into classes.

5   Studying every day is important.

6   I feel I will someday make a real contribution to the world if I work hard at it.

7   What I learn is more determined by college and course requirements than by what I want to learn.

8   I am easily distracted.

9   I can be easily talked out of studying.

10   I have taken a course because it was an easy good grade at least once.

11   Professors sometimes make an early impression of you and then no matter what you do, you cannot change that impression.

12   Some students, such as student leaders and athletes, get free rides in college classes.

13   I sometimes feel that there is nothing I can do to improve my situation.

14   I never feel really hopeless, there is always something I can do to improve my situation.

15   I would never allow social activities to affect my studies.

16   There are many more important things for me than getting good grades.

17   For some courses it is not important to go to class.

18   I consider myself highly motivated to achieve success in life.

19   Doing work on time is always important to me.

20   I have been known to spend a lot of time making decisions which others do not take seriously.

21   I get depressed sometimes and then there is no way I can accomplish what I know I should be doing.

22   Things will probably go wrong for me some time in the future.

23   I keep changing my mind about my career goals.

24   There has been at least one instance in school where social activity impaired my academic performance.

25   I would like to graduate from college, but there are more important things in my life.

26   I came to college because it was expected of me.

27   I have largely determined my own career goals.

28   I plan well and stick to my plans.

(Trice, 1985).

Activists

Activists involve themselves fully and without bias in new experiences. They enjoy the here and now and are happy to be dominated by immediate experiences. They are open-minded, not sceptical, and this tends to make them enthusiastic about anything new. Their philosophy is: 'I'll try anything once'. They tend to act first and consider the consequences afterwards. Their days are filled with activity. They tackle problems by brainstorming. As soon as the excitement from one activity has died down they are busy looking for the next. They tend to thrive on the challenge of new experiences but are bored with implementation and longer term consolidation. They are gregarious people constantly involving themselves with others but, in doing so, they seek to centre all activities around themselves.

Reflectors

Reflectors like to stand back to ponder experieces and observe them from many different perspectives. They collect data, both first hand and from others, and prefer to think about it thoroughy before coming to any conclusion. The thorough collection and analysis of data about experiences and events is what counts so they tend to postpone reaching definitive conclusions for long as possible. Their philosophy is to be cautious. They are thoughtful people who like to consider all possible angles and implications before making a move. They prefer to take a back seat in meetings and discussions. They enjoy observing other people in action. They listen to others and get the drift of the discussion before making their own points. They tend to adopt a low profile and have a slighly distant, tolerant unruffled air about them. When they act it is part of a wide picture which includes the past as well as the present and others' observations as well as their own.

Theorists

Theorists adapt and integrate observations into complex but logically sound theories. They think problems through in a vertical, step by step way. They assimilate disparate facts into coherent theories. They tend to be perfectionists who won't rest easy until things are tidy and fit into a rational scheme. They like to analyse and synthesise. They are keen on basic assumptions, principles, theories, models and systems thinking. Their philosophy prizes rationality and logic. 'If it's logical it's good. Questions they frequently ask are: "Does it make sense?" "How does this fit with that?" "What are the basic assumptions?" They tend to be detached, analytical and dedicated to rational objectivity rather than anything surjective or ambiguous. Their approach to problems is consistently logical. This is their 'mental set' and they rigidly reject anything that doesn't fit with it. They prefer to maximise certainly and feel uncomfortable with subjective judgements, lateral thinking and anyhting flippant.

Pragmatists

Pragmatists are keen on trying out ideas, theories and techniques to see if they work in practice. They positively search out ideas and take the first opportunity to experiment with applications. They are the sort of people who return from management courses brimming with new ideas that they want to try out in practice. They like to get on with things and act quickly and confidently on ideas that attract them. They tend to be impatient with ruminating and open-ended discussions. They are essentialy practical, down to earth people who like making practical decisions and solving problems. They respond to problems and opportunities 'as a challenge'. Their philosophy is: 'There is always a better way' and 'If it works it's good'.

(Packwood & Sinclair-Taylor, 1995).

MOTIVATION

Intrinsic[IM] : A strong interest in, and even excitement about the subject being studied that extends beyond the demands made in class. *My main reson for being here is so I can learn more about the subjects which really interest me.*

Extrinsic[em]: Studying and subject choice is seen as specifically career-related and as a means to obtaining a good job. *My main reason for being here is that it will help me get a better job.*

Achievement[Am]: A motivation to succeed, especially in competition with others. *It is important to me to do things better than other people, if I possibly can.*

Fear of failure[ff]: A general concern with failing, but linked to exam tension, speaking in class, and pressure of work. *I am scared that I might fail this course this year.*

INTENTION

Deep approach[DA]: A consious intention to understand new material even if this requires considerable effort. *I usually set out to understand thoroughly the meaning of what I am required to learn.*

Memorising approach[ma]: A rote learning approach to studying in which important information to be "learned" (such as facts and definitions) is committed to memory by way of repeated rehearsal. *I learn things by writing them over and over or by saying them to myself.*

Strategic approach[St]: A strategic manipulation of resources to meet perceived academic requirements. *When I am doing a piece of work, I try to bear in mind exactly what that particular teacher seems to want.*

LEARNING STYLE

Comprehension[CL]: Divergent thinking or 'mapping out' a subject as part of the comprehension of new ideas. *I like to play around with ideas of my own even if they don't get me very far.*

Operation[oL]: An engagement of problem solving that is reliant on factual detail and logical analysis. *I generally prefer to tackle each part of a topic or problem in order, working out one step at a time.*

Globetrotting (Comp)[gt]: An inability to back up a general picture with the necessary detail, leading to unsubstantiated conclusions and the use of irrelevant material. *Although I have a fairly good general idea of things, my knowledge of details is fairly weak.*

Improvidence[ip]: A failure to integrate detail into an overall picture and an over cautious reliance on detail and procedure. *Although I generally remember facts and details, I find it difficult to fit them together into an overall picture.*

PROCESSES

Relating ideas[RI]: Relating ideas between, as well as within, subjects, as well as a conscious attempt to relate material to real life situations and integrate it within a personal framework. *I try to relate ideas in this course to ideas in other subjects whenever possible.*

Fragmentation[fa]: An inability to see the relationships between ideas or concepts. The "learning" of material that is perceived to be fragmented and poorly understood. *Much of what I am studying seems to consist of unrelated bits and pieces.*

Use of evidence[UE]: The critical use of evidence in order to draw conclusions and an examination of evidence where this is used to support an argument. *When I'm reading an article or research report, I generally examine the evidence carefully to decide whether the conclusion is justified.*

Reflection[RE]: The process of reflecting on past learning experiences or real life experiences and deriving fresh insights from them. *I sometimes think about things I have previously learned and change my mind about their meaning.*

STUDY METHODS

Syllabus-boundness[sb]: A narrow focus on the requirements of the task and a preference for clear guidelines and structure. *I like to be told exactly what to do in essays, assignments or projects.*

Disorganised study methods[ds]: A general disorganisation reflected in poor time management (including putting off work), distractions and a backlog of important work. *I find it difficult to organise my study time effectively.*

CONTEXT

Workload[wl]: A feeling that too much work is covered and expected, reflected in too many topics and too much written work, giving rise to feeling of pressure. *There seems to be too much work to get through in the course here.*

Books (deep)[BD]: An awareness of the organisational attributes of books. Books are selected on this basis and used in relation to the value of the information they contain. *When selecing books for study purposes, I often examine their 'search apparatus' (such as the index, list of contents, chapter headings, cross references).*

Assessment (deep)[AA]: An awareness of the content, purpose, types and benefits of tests and exams, as well as the value of written feedback from teachers. *The educational purpose of tests is usually clear to me.*

Relationships (deep)[RD]: An appreciation that one can be helped and guided by others and that human interaction is affected by one's own attitudes. *I am consious of the way that my attitudes towards teaching and learning affect my relationships with others.*

Relationships (surface)[rs]: An uncritical reliance on the words of the teacher or textbook while ignoring other aspects of the teaching/learning relationship. *In class I usually write down what the teacher says or writes on the board.*

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Experiences of Teaching and Learning

INSTRUCTION SHEET

The following comments have been made by students about their experiences of teaching and learning. We would like to know to what extent you agree or disagree with what they have said. The comments are necessarily rather general but each of them covers a particular aspect of teaching and learning to which we would like your personal reaction.

It is possible that your feelings may vary from one subject to another. Where the questions are specific we are interested in your experience of studying the particular subject indicated.

Please go through all the comments quickly indicating your immediate reaction by marking the appropriate response on the card provided. This is not a test and there are no "right" or "wrong" answers. We are simply interested in your own experiences and feelings about teaching and learning.

DO NOT BEND OR FOLD THE CARD.
Mark the card in the following way.

A   if you definitely agree
B   if you agree, but with reservation
C   if you are not sure or that it doesn't apply
D   if you tend to disagree
E   if you definitely disagree

Please print your name and initials clearly in the space provided on the card.

IF YOU DON'T UNDERSTAND THE WORDING OF A SENTENCE, PLEASE ASK FOR HELP.

1. I find it difficult to organise my study time effectively.

2. I try to relate ideas in one subject to ideas in other subjects whenever possible.

3. Although I have a fairly good general idea of things, my knowledge of the details is fairly weak.

4. I enjoy competition: I find it exciting.

5. I usually set out to understand thoroughly the meaning of what I am required to learn.

6. Ideas in books often set me off on many thoughts of my own, which are not always related to what I was reading.

7. I chose my present course of study mainly to give me a chance of a really good job afterwards.

8. Much of what I am studying seems to consist of unrelated bits and pieces.

9. I like to be told exactly what to do in essays, assignments or projects.

10. I often find myself questioning things that I hear in class or read in books.

11. I generally prefer to tackle each part of a topic or problem in order, working out one step at a time.

12. The continual pressure of work - assignments, deadlines and competition - often makes me tense and depressed.

13. I find it difficult to consider different ways of approaching a problem: I prefer to follow each line of thought as far as it will go.

14. My habit of putting off work leaves me with far too much to do before tests or exams.

15. It is important to me to do really well in my studies here.

16. Teachers seem to present things in such complicated ways.

17. Distractions make it difficult for me to do much effective work in my study time.

18. When I am doing a piece of work, I try to bear in mind exactly what that particular teacher seems to want.

19. I don't usually think about the things I have learned.

20. I look out for hints about what is likely to come up in tests or exams.

21. In trying to understand a puzzling idea, I let my imagination wander freely to begin with, even if I don't seem to be much nearer a solution.

22. My main reason for being here is that it will help me to get a better job.

23. I often have to learn some things several times in order to understand them.

24. I generally put a lot of effort into trying to understand things which at first seem difficult.

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25. I prefer learning experiences to be clearly structured and highly organised.

26. A poor first answer in an exam makes me panic.

27. I prefer to follow usual or common approaches to solving problems rather than anything too adventurous.

28. I am rather slow at starting work that has to be done.

29. In trying to understand new ideas I often try to relate them to real life situations to which they might apply.

30. When I am learning I try to memorise important facts.

31. I like to play around with ideas of my own even if they don't get me very far.

32. I generally choose courses more from the way they fit in with career plans than from my own interests.

33. I am usually cautious in drawing conclusions unless they are well supported by evidence.

34. When starting on a new topic, I often ask myself questions about it which the new information should answer.

35. I suppose I am more interested in the qualifications I get than in the subjects I am studying.

36. I often find I have to learn things that I don't really understand.

37. If conditions aren't right for me to study, I can generally make a plan to change them so that work is still possible.

38. In reporting practical work I like to try to work out several different ways of interpreting the results.

39. My main reason for being here is so that I can learn more about the subjects which really interest me.

40. In trying to understand new topics, I often explain them to myself in ways that other people wouldn't understand.

41. I find I have to concentrate on memorising a lot of what I have to learn.

42. It is important to me to do things better than other people, if I possibly can.

43. I find it better to start straight away with the details of a new topic or problem and build up a complete picture in that way.

44. Often when I'm reading books, the ideas produce pictures in my mind which sometimes take on a life of their own.

45. One way or another I manage to get hold of the books I need for studying.

46. I often get criticised for introducing irrelevant material into my answers.

47. I find that studying subjects here can often be really exciting.

48. The best way for me to understand difficult concepts is to memorize their definitions.

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49. Much of what I have to learn seems to be unrelated.

50. I need to read a lot about a subject before I'm ready to put my ideas down on paper.

51. Although I generally remember facts and details, I find it difficult to fit them together into an overall picture.

52. I tend to read very little beyond what's required for completing assignments.

53. I do not enjoy speaking in class in front of other people.

54. Puzzles or problems fascinate me, particularly where I have to work through the material to reach a logical conclusion.

55. I spend a good deal of my spare time in finding out more about interesting topics that we have been told about in class.

56. When I am presented with a new topic, I find it helpful to see in my own mind how all the ideas fit together.

57. I seem to be a bit too ready to jump to conclusion without thinking about all the evidence.

58. I hate admitting defeat, even in small matters.

59. I think it is important to look at problems rationally and logically without jumping to conclusions.

60. I find I tend to remember things better if I concentrate on the order in which they were taught or given to us.

61. When I'm reading an article or research report, I generally examine the evidence carefully to decide whether the conclusion is justified.

62. Some people think I should be more adventurous in making use of my own ideas.

63. I learn things by writing them over and over or by saying them to myself.

64. I find academic topics so interesting, I should like to continue with them in the future.

65. I am conscious of the way that my attitudes towards teaching and learning affect my relationships with others.

66. When I sit in a classroom or laboratory, I usually notice the fittings and equipment in it.

67. When selecting books for study purposes I try to find those that contain important information for understanding a topic.

68. Sometimes I don't really pay much attention to what is being said in class.

69. I sometimes think about things I have previously learned and change my mind about their meaning.

70. The educational purpose of tests is usually clear to me.

71. In class I usually write down what the teacher says or writes on the board.

72. There seems to be too much work to get through in the courses here.

73. I enjoy some learning experiences, such as those involving learning things from other people, more than others.

74. The subject matter that tests actually cover is usually clear to me.

75. I enjoy finding things out for myself.

76. I usually notice the noise level in classrooms.

77. I don't usually have any trouble finding information in books.

78. I think that the workload here is too heavy.

79. I usually try to guess or anticipate the questions that will be asked in tests or examinations.

80. When I think back to some things that I did not enjoy learning at the time. I realize that they were worth learning after all.

81. I often copy notes out of a textbook.

82. The structure of the content in the subjects I am studying is usually clear to me.

83. I usually notice how the teacher uses the blackboards.

84. I appreciated guidance given to me by others.

85. I think there is a lot of pressure on me as a student here.

86. When using books for study purposes. I usually notice the manner in which subject matter is organised in them.

87. I usually question the relevance of the content of the subject I am studying.

88. I usually notice the legibility of what is written on the blackboard or on an overhead transparency.

89. When using books for study purposes. I usually notice the manner in which they are illustrated.

90. I am conscious of the amount of subject content I have to study.

91. I often think about certain real life experiences I have had and how they have altered my view of life.

92. There is so much written work to be done. that I find it very difficult to get down to private studying.

93. I try to participate in discussions whenever possible.

94. I am aware that being tested can sometimes help me to learn.

95. When selecting books for study purposes. I often examine their 'search apparatus' (such as the index. list of contents. chapter headings. cross references).

96. I usually notice the different uses of teaching aids (such as the blackboard. overhead projector. television and so on).

97. I am aware of the different ways in which we can be tested (for example by writing essays. answering multiple choice questions. solving problems. giving orals and so on).

98. I usually notice the individual characteristics of the students who make up my classes.

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99. I am conscious of where I sit in the classroom.

100. It sometimes seems to me that the syllabus tries to cover too many topics.

101. I usually think very carefully about the comments the teacher made about my answers to test or exam questions.

102. When faced with real life problems I often think about experiences I may have had, or which my friends may have had, that might help me to find a solution.

103. I am scared that I might fail some of my courses this year.

104. I never seem to have enough time to catch up on my homework.

105. If I get a low mark on a test or exam, I usually don't understand why I got it.

106. I can overcome most obstacles in the path of academic success if I work hard enough.

107. I feel that my high marks reflect directly on my academic ability.

108. When I get a high mark on a test or exam, I usually don't know why I did so well.

109. In my case the high marks I receive are always the direct result of my efforts.

110. The low marks I've received seem to me to reflect the fact that some teachers are just stingy with marks.

111. The best way for me to get high marks in a test or exam is to get the teacher to like me.

112. If I were to fail a subject it would probably be because I lacked skill in that area.

113. Often my lower marks are obtained in subjects that the teacher has failed to make interesting.

114. I won't do well in my subjects if I have a bad teacher.

115. It's up to me to get high marks in tests or exams.

116. The most important ingredient in getting high marks is my academic ability.

117. My low marks may have been a function of bad luck, being in the wrong course at the wrong time.

118. Low marks indicate to me that I haven't worked hard enough.

119. When I don't do well on tests or exams, I usually can't figure out why.

120. My success on exams depends on some luck.

121. In general, when I have received a high mark in a subject, it was due to the teacher's easy marking scheme.

122. If I were to get low marks I would assume that I lacked ability to succeed in that subject or subjects.

123. In my experience, once a teacher gets the idea you're a poor student, your work is more likely to receive low marks than if someone else handed it in.

124. My academic failures make me think I was just unlucky.

125. If I don't have a good teacher, I won't do well in that subject.

126. If I were to receive low marks it would cause me to question my academic ability.

127. My high marks may simply reflect that these were easier subjects than others.

128. When I do well academically, I usually can't figure out why.

129. When I do well academically, it's because the teacher likes me.

130. When I fail to do as well as expected academically, it is often due to a lack of effort on my part.

131. If I want to do well academically, it's up to me to do it.

132. It's my own fault if I don't do well academically.

133. I feel that I have to consider myself lucky for the high marks I get.

134. My lower marks have seemed to be partially due to unfortunate circumstances.

135. I get high marks only because the subject material was easy to learn.

136. When I receive a low mark. I usually feel that the main reason is that I haven't studied hard enough for that subject.

137. If I get low marks in the exams, it's my own fault.

138. Whenever I receive high marks, it is always because I studied hard for that subject.

139. I feel that my high marks depend to a considerable extent on chance factors. such as having the right questions show up on an exam.

140. When I get high marks it is because of my academic competence.

Thank you for your responses to the comments. Please check that you have not left any out.