TRANSFORMATIVE LEARNING: AN EXPLORATORY ANALYSIS OF THEORY AND PRACTICE IN A STUDY AND THINKING SKILLS PROGRAMME

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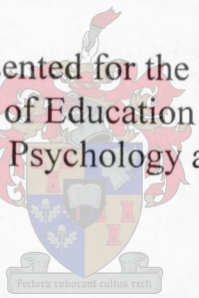

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DECLARATION

I, the undersigned, hereby declare that the work contained in this thesis is my own original work and that I have not previously in its entirety or in part submitted it at any university for a degree.

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ABSTRACT

Many students that embark on higher education do not have study and thinking skills that are sufficiently well developed in order for them to become autonomous, self-directed learners. This is partly due to the fact that the historically authoritarian and rigid approaches to teaching in some schools have discouraged independent thought. Other contributory factors such as negative beliefs, attitudes and dispositions, and distorted concepts of the self and of learning, also prevent effective learning from taking place.

The focus of this research is a study and thinking skills programme. This programme is part of a four week bridging course for freshmen at the University of Stellenbosch. It is based on a comprehensive rationale derived from cognitive education theory, comprising a number of well known theorists such as Piaget, Vygotsky, Feuerstein and Lozanov. This is further supplemented by instruments from authors in the field of thinking skills (de Bono, Buzan).

The purpose of this research was to identify elements of the programme which might be responsible for aspects of transformative learning, as defined by Mezirow in his Transformative Learning Theory. These aspects initially became apparent from students' responses in post-programme evaluations. The responses represented an unexpected outcome, as Mezirow's theory was *not* represented in the programme's rationale.

Eight criteria were developed from Mezirow's theory, operationalised as questions, and then utilized to assess transformative learning in the context of the programme. In a conceptual analysis, four categories of the programme (the *rationale*, the *objectives*, the *course material* and *implementation procedures*) were compared and contrasted with criteria from Transformative Learning Theory.

From this analysis it was apparent that several criteria of Transformative Learning Theory were present in the programme: it facilitated learning in both instrumental and communicative domains; it provided opportunities to explore meaning structures and to

investigate distorted meaning perspectives; and it instigated disorientating or conflicting experiences with regard to these.

Some criteria were absent from the programme in that it failed to promote *rational discourse* according Mezirow's definition, it did not adequately promote *reflection on premises*, and it did not intentionally address the *transformation of meaning perspectives*. These three omissions may be traced to the lack of an "adult learning" focus in the programme's theoretical structure.

Despite this, a number of parallels were identified which may explain the representation of Mezirow's criteria in the programme, and hence the students' responses. Conclusions are drawn regarding a theoretically justified view of transformative learning in the context of the Study and Thinking Skills (S&TS) programme, and practical implications for educators are explained.

Finally, recommendations are made for enhancing transformative learning within the Study and Thinking Skills (S&TS) programme, and for the design of similar programmes. Recommendations are also proposed for further research in this area which, in the contemporary South African educational context, clearly deserves more attention in adult education and related settings.

OPSOMMING

Talle studente wat tot hoër onderwys toetree se studie en denkvaardighede is nie voldoende ontwikkeld om as outonome, selfgerigte leerders sukses te kan behaal nie. Dit is deels toe te skryf aan die outoritêre en rigiede benaderings tot onderwys in sommige skole, wat selfstandige denke ontmoedig. Daar is egter ook ander belemmerende faktore soos studente se negatiewe houdings en verkeerde opvattings van leer en van hulself wat verhinder dat effektiewe leer plaasvind.

Die fokus van hierdie navorsing is 'n Studie- en Denkvaardigheidprogram (S&TS). Hierdie program vorm deel van 'n vier week lange oorbruggingsprogram vir eerstejaarstudente aan die Universiteit van Stellenbosch. Die program is gebaseer op 'n omvattende rasionaal vanuit die kognitiewe opvoedkunde perspektief wat die werk van 'n aantal bekende teoretici (Piaget, Vygotsky, Feuerstein en Lozanov) insluit en word aangevul met oefeninge deur outeurs in die veld van denkvaardighede (De Bono en Buzan).

Die doel van die navorsing was om elemente van die program te identifiseer wat verantwoordelik kon wees vir aanduidings van transformatiewe leer, soos gedefinieer deur Mezirow in sy Transformatiewe Leerteorie. Hierdie aanduidings spruit uit studente se response tydens evalueringsessies na afloop van die program. Transformatiewe leeruitkomste was onverwags, omdat Mezirow se teorie nie verteenwoordig was in die rasionaal waarvolgens die program ontwerp is nie.

Agt kriteria wat uit Mezirow se teorie ontwikkel kon word, is geoperasionaliseer en in vraagvorm gebruik om die inhoud van die program te analiseer. Die kriteria is as verteenwoordigend van transformatiewe leer in die konteks van 'n studie en denkvaardigheidsprogram beskou. In die analise van die inhoud is vier kategorieë van die program (die rasionaal, die doelstellings, die kursusmateriaal en die implementerings-prosedures) vergelyk en gekontrasteer met die kriteria vanuit die Transformatiewe Leerteorie.

Uit hierdie analise het geblyk dat die program aan sekere kriteria voldoen, naamlik dat dit leer in beide die kommunikatiewe en intrumentele domeine fasiliteer; geleenthede skep om betekenisstrukture te verken en versteurde betekenisperspektiewe te ondersoek; en dat dit disoriënterende of konflikterende ervarings veroorsaak met betrekking tot bestaande betekenisstrukture en –perspektiewe.

Sommige kriteria was glad nie verteenwoordig in die program nie. Die program het nie daarin geslaag om rasionele diskoers, volgens Mezirow se definisie daarvan, te ontlok nie.; dit het nie voldoende reflektering met betrekking tot onderliggende aannames aangemoedig nie en dit het nie doelbewus die transformasie van betekenisprespektiewe bevorder nie. Hierdie drie weglatings uit die program mag verband hou met die feit dat die teoretiese onderbou van die program nie op volwassene leer fokus nie. Ten spyte hiervan is daar egter steeds 'n aantal ooreenkomste tussen die kognitiewe ontwikkelingsteorieë en Mezirow se transformatiewe leerteorie geïdentifiseer wat die verteenwoordiging van Mezirow se teorie in die program en dus die studente se response moontlik kan verklaar.

Gevolgtrekkings met betrekking tot 'n teoreties geregverdigde beskouing van transformatiewe leer in die konteks van die Studie- en Denkvaardigheidprogram en die praktiese implikasies hiervan vir opvoeders, word beskryf. Ten slotte word aanbevelings gemaak om transformatiewe leer in die program te bevorder en vir die ontwerp van soortgelyke progamme.

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CHAPTER ONE

Orientation and statement of the problem

1.1 INTRODUCTION

The researcher is a qualified mathematics and guidance teacher who, during the past six years, has participated as co-designer, -presenter and -researcher in the development of a study and thinking skills programme. The programme forms an integral part of a four week bridging programme for freshmen. This runs prior to the inception of the academic year and as such it is also part of the bigger umbrella of academic development programmes (ADP's) presented at the University of Stellenbosch.

Through her involvement with this programme the researcher has come to recognise not only how the course material and implementation procedures of the programme have been enhanced and adapted to suit the stakeholders (in particular the students) but also how the presenters/ researchers themselves, through the process of action research and independently of any specific theory, developed new insights which appear to fall in the domain of "transformational learning".

There has been relatively little empirical research encompassing the concept of transformational learning (Taylor, 1997:34). Furthermore, as no reference to the concept of "transformational learning" was found in literature searches relating to educational bridging programmes in South Africa, the researcher found no platform from which to embark on empirical investigations within an *action research* framework (see 1.2.1.5). This challenged the researcher to seek more clarity on *transformational learning* within study and thinking skills programmes which, in turn, prompted the current research.

1.2 MOTIVATION AND RELEVANCE OF THE RESEARCH

The motivation and relevance of this study is explained in terms of the course of events that led the author to the research question, the lack of empirical research in the domain of

transformational learning, and the need for clarity on *transformational learning* within a study and thinking skills programme.

1.2.1 COURSE OF EVENTS THAT LED THE RESEARCHER TO THE RESEARCH QUESTION

1.2.1.1 The origin of the Study and Thinking Skills (S&TS) programme

In 1994, when the idea of running a bridging programme with the objective of assisting and empowering freshmen from academically disadvantaged backgrounds was first conceived at the University of Stellenbosch, the researcher was completing her Bachelor of Education degree. It was due to her experience in mathematics and psychology and her capacity as both teacher and mature student, that the researcher was invited to work together with an educational psychologist on the project of designing a suitable study and thinking skills programme. Due to rapid changes in the post-apartheid educational environment and the abrupt integration of former structures of education, the need for this bridging programme was critical; it also had to be designed on a very short lead time.

1.2.1.2 An investigation into problems experienced by freshmen at Stellenbosch University

In order to get a more comprehensive understanding of difficulties which freshmen experience with university studies, the researcher as a first step conducted a survey consisting of questionnaires and interviews with first year students and lecturers at Stellenbosch University. The findings of this survey are included in two separate journal articles published in 1997 (Cilliers and Kilpin,1997a,1997b).

1.2.1.3 An investigation into established programmes in this field

In pursuit of suitable course material, international and national literature searches were conducted. A questionnaire was also sent to tertiary institutions in South Africa. As a result of these searches and surveys, the researchers perceived a shortcoming in university Academic Development Programmes. Although there were intervention programmes which focused on study skills and some on thinking skills, there were no courses which integrated

the two in such a way that study skills were complemented and reinforced by thinking skills and other psychological subskills.

1.2.1.4 The design of course material and a course book

Taking into consideration the needs expressed by students and lecturers (Cilliers and Kilpin, 1997a), contemporary research on study and thinking skills, as well as their own teaching experiences (influenced by theories of Piaget, Vygotsky and Feuerstein as well as their affiliation to the International Association of Cognitive Education), the researchers compiled the Study and Thinking Skills (S&TS) programme. This programme is described in Chapter Three.

It should be noted that at this stage neither the objectives nor the conceptual framework of the S&TS course explicitly aimed at fostering transformational learning.

1.2.1.5 An action research process

In order to be flexible and responsive to new research as well as the needs of the different stakeholders (students and lecturers at Stellenbosch University), the programme developers/researchers considered the Study and Thinking Skills (S&TS) programme as an evolving process within an action-research framework. This idea is substantiated by McNiff (1995:27) who states that education programmes should not be seen as final products but should evolve through a systematic, cyclic process of planning, acting, observing and reflecting. In this way, researchers combine action with theorising in a continuous process.

During the initial implementation of the programme (1994-1996), the need for (and significance of) *reflection skills* became apparent. Consequently, the objectives, structure and content of the programme were adjusted, changing its focus from facilitating "learning about learning" to facilitating "conscious reflection on learning about learning". This entails conscious reflection on *basic assumptions of learning* as well as on the *higher order thinking skills of successful study*.

During the past 4 years (1997-2000) the programme has been implemented successfully with relatively minor changes. However, regular formative and summative assessments have brought new insights which made the researchers aware of the significance of transformative learning.

1.2.1.6 Students' feedback on transformational experiences

In 1997, as part of the action research, both qualitative and quantitative data from the programme were analysed. This included data from tasks performed during the programme as well as informal interviews with students at the end of the programme. In this evaluation, students were asked to use de Bono's "PMI" instrument (De Bono, 1998:20) to evaluate the course. In several of the evaluation reports reference was made to a transformative experience. For example the following comments were recorded:

- "after you have attended this course you are no longer the same as before and neither is anybody else"
- "I see myself as a totally different person and I now believe in myself"
- "I feel that I can cope with university - my confidence is increased"

It is the scope of the reported changes, clearly evident in the above quotes, that pointed the researchers in the direction of transformational learning - the subjective experience of being "a totally different person" is not readily obtained from brief educational programmes and certainly was not anticipated as an outcome from this programme.

To the developers/researchers it was a significant, if unexpected, outcome that students who had attended the programme, were able to describe their transformative experience as a positive attribute of the course. The following question, however, arose: What elements in the programme might have triggered (or evoked, or made possible) this apparent transformation in self-perceptions and in perceptions of "learning" ?

1.2.2 THE RELEVANCE OF THE RESEARCH

Existing studies indicate that research which addresses the above question is of particular relevance because dysfunctional beliefs and perceptions about learning are frequently

considered to be at the root of study and learning problems (Cilliers and Kilpin, 1997b:27; Mc Leod, 1990:16). The need for change (transformation) in students' beliefs, attitudes and dispositions is illustrated by the following observations:

- the difficulties which freshmen experience at tertiary institutions are not solely caused by under preparedness in subject knowledge, but frequently by beliefs which they hold about themselves as well as on aspects of learning (Mc Leod, 1990:16)
- many beliefs and basic assumptions held by students in South Africa originate from the highly authoritarian, disciplinarian nature of education, and actually curtail students' learning skills. For instance, students who perceive "rote learning" as central to study success, and "formulas" as central to solving science and maths problems, will often disregard the role of reflection in learning and problem solving (Cilliers and Kilpin, 1997b:27; Craig and Winter, 1990:66)
- the importance of bringing students' perceptions of learning in line with beliefs about lifelong learning in order to cope with the demands of a rapidly changing technological age, is increasingly being recognised (Jarvis, 1998:1)
- it is important to develop students as "independent critical thinkers" who understand the value of "reflection" amongst other self-directed learning skills (Boud, 1981:41)
- the new "education documents" in South Africa place great importance on the design of a curriculum which will transform students' rote based attitudes towards learning and foster students' self-responsibility for learning, (Department of Education, 1997:14).

1.2.3 THE LACK OF EMPIRICAL RESEARCH IN THE DOMAIN OF TRANSFORMATIONAL LEARNING

Curiosity regarding the phenomenon of the transformational process led the researcher to conduct a literature search (see 1.2.1.6). From this literature search the author discovered that a comprehensive model of transformational learning in the field of adult education had been developed during the last three decades. Jack Mezirow's model, is referred to as "Transformative Learning Theory" (Mezirow, 1989:170).

At first the researcher thought that existing research (based on Transformative Learning Theory) could be used to clarify (and assist in identifying) elements that cause transformation in intervention programmes. This however, proved a problem, as even though there has been extensive theoretical conceptualisation of tranformational learning (Clark, 1993:49), very few empirical studies in this field have been published (Taylor, 1997:34).

In a critical review on transformational learning literature, Taylor (1997:34) reviewed a total of 39 empirical studies conducted over the last 17 years that involved transformative learning theory. The fact that none of these provided criteria suitable for analysing the Study and Thinking Skills (S&TS) programme led the researcher to realise that firstly, there is a need to identify and operationalise criteria, a research task in itself. Secondly, there is a need to analyse the Study and Thinking Skills (S&TS) programme in terms of these operationalised criteria in order to identify the elements that could have given rise to the students experiencing transformation.

1.3 STATEMENT OF THE RESEARCH PROBLEM

Initially it could not be established which elements in the Study and Thinking Skills (S&TS) programme promoted aspects of transformative learning. Without identifying these elements it would be problematic to improve this aspect of programme. It would also prove problematic to evaluate the programme from the perspective of transformative learning. In addition, although an adult education theory of transformational learning exists, it does not provide criteria (in a format) suitable for analysing the Study and Thinking Skills (S&TS) programme .

1.4 RESEARCH OBJECTIVES:

- To identify and operationalise criteria from the Transformative Learning Theory, suitable for analysing a study and thinking skills programme
- To identify and clarify elements of the Study and Thinking Skills (S&TS) programme that might be responsible for fostering transformative learning

- To give general recommendations as to how the Study and Thinking (Skills) programme can be improved in terms of promoting Transformative Learning.
- To give recommendations for future research with regard to evaluating the Study and Thinking Skills (S&TS) programme.

1.5 RESEARCH DESIGN

The research reported here is *exploratory, conceptual* and can be considered as a part of programme evaluation. Included in the focus of the present research is a *systematic content analysis*. Chapter Four explains the research design and methods used in detail. *Primary data* for this purpose comprise defining texts of the Study and Thinking Skills (S&TS) programme: its rationale, objectives, course material and implementation procedures. This information is set out in Chapter Three.

1.5.1 Literature Study

The literature study comprises the following :

- Transformative Learning
- Description of the Study and Thinking Skills (S&TS) programme

1.5.2 Empirical investigation

- the identification and operationalisation of criteria derived from Mezirow's Transformative Learning Theory.
- an analysis where the Study and Thinking Skills (S&TS) programme (see definition 1.6.4) is compared and contrasted with the above criteria in order to identify elements which may be considered responsible for fostering transformative learning.

1.6 DEFINITION OF RELEVANT TERMS

1.6.1 TRANSFORMATIVE LEARNING

Transformative learning is a concept which Mezirow has formulated and it alludes in particular to learning which *changes beliefs* deemed to constrain and delimit adult development (Mezirow,1989:170). According to Mezirow, transformative learning can be

defined as: "The process of learning through critical self-reflection which results in the reformulation of a meaning perspective to allow a more inclusive, discriminating and integrative understanding of one's experience" (Mezirow,1991: xvi).

Whilst some literature refers in general to "transformational learning" (as a specifically cognitive aspect of adult development), Mezirow's more specific terminology is preferred in this study for the sake of clarity. Chapter Two presents a literature study on Transformative Learning and presents the background to Mezirow's work in this field.

1.6.2 TRANSFORMATIVE LEARNING THEORY

Transformative Learning Theory is a theory which has been developed over the last three decades. Its purpose is to assist adult educators to understand particular forms of change which can form part of the learning process in adults (see detail discussion in Chapter Two).

1.6.3 A STUDY AND THINKING SKILLS PROGRAMME

A "study and thinking skills programme" refers to an independent, free-standing educational intervention programme. Its usual purpose is to assist students to improve their study and thinking processes prior to embarking on tertiary education or some other challenging situation.

1.6.4 THE STUDY AND THINKING SKILLS (S&TS) PROGRAMME

The "Study and Thinking Skills (S&TS) programme" refers to a specific intervention programme developed at the Faculty of Education at University of Stellenbosch. The programme has been implemented yearly from 1994 to the present date and takes place before the first term begins. The purpose of the programme is to assist students in investigating their study and thinking habits and to develop study and thinking skills appropriate for successful study at university.

1.6.5 PROGRAMME

Programme in the context of this study refers to a comprehensive intervention package and encompasses the course presenters, the rationale underlying the programme, the objectives of the programme, the course material, and implementation procedures.

1.7 STRUCTURE OF PRESENTATION

The research report is set out as follows:

- Chapter Two presents a study of Mezirow's Transformative Learning Theory, with reference to supporting literature
- Chapter Three provides a full and detailed description of the Study and Thinking Skills (S&TS) programme. It therefore extends the literature study of Chapter Two but also serves the function of presenting material which comprises the primary data for analysis in the present research
- Chapter Four explains the research design and methodology
- Chapter Five presents a systematic conceptual analysis of the Study and Thinking Skills (S&TS) programme in terms of criteria developed from Mezirow's Transformative Learning Theory
- Chapter Six reports and discusses conclusions, implications and recommendations from the analysis

CHAPTER TWO

Transformative Learning

2.1 INTRODUCTION

The purpose of this literature study is twofold, firstly, to provide a background to Transformative Learning Theory and secondly, to identify and present generic criteria which can be operationalised and implemented in order to analyse the Study and Thinking Skills (S&TS) programme. The motivating reason for electing to make use of Jack Mezirow's theory of Transformative Learning for this study, is explained in 2.2.1.

In accordance with the purpose of this literature study, this chapter gives a broad background to Transformative Learning theory describing the structures and processes (the dynamics) of the theory which identifies criteria for the purpose of assessing a *study and thinking skills* programme.

2.2 BACKGROUND TO TRANSFORMATIVE LEARNING THEORY

This section provides a background to Transformational Learning theory in terms of the following aspects:

- the suitability of Transformative Learning Theory (2.2.1)
- key concepts within Transformative Learning Theory (2.2.2)
- the inception of Transformative Learning Theory (2.2.3)
- the placement of the theory in terms of an existing framework of educational theories (2.2.4)
- aspects of theories from Habermas, Freire, Bateson and Cell, which contributed to the development of the Transformative Learning theory (2.2.5)
- assumptions underlying knowledge construction within Transformative Learning Theory (2.2.6)

2.2.1 THE SUITABILITY OF TRANSFORMATIVE LEARNING THEORY

The reason for selecting Mezirow's Transformative Learning Theory as a perspective on transformational learning and as a basis for selecting criteria for the analysis (see Chapter Five) are threefold.

- Mezirow's theory is a comprehensive theory on transformational learning, which is directed toward personal development (Clark, 1993:48). His numerous publications from 1978 - 2000 have stimulated robust discussion in the field of adult education (Taylor, 1997: 1). Although the theory itself is grounded in a constructivist approach to knowledge (and as such remains in ongoing development or evolution), it is established and acclaimed in contemporary literature as having contributed to the theoretical knowledge of adult learning (Jarvis, 1998:83; see 2.2.3). Furthermore, Mezirow's work is considered to be of particular importance to the category of learning which Merriam and Caffarella (1991) describe as "evoking changes to the consciousness within learners".
- Secondly, the theory, in terms of its stated aim, lends itself well to the selection of criteria for the purpose of assessing programmes. The aim of Transformative Learning Theory is to provide generic information which will enable adult educators to understand how adults learn in various cultural settings. It is therefore, not set in any particular culture, nor does it undertake to critique any culture (Mezirow, 1996:167). In this aspect Mezirow considers the theory to provide a model which explains constructs, language categories and dynamics of adult learning to adult educators (Mezirow, 1996:167). The theory could therefore also assist in the choice of course material and intervention procedures.
- A third reason why Mezirow's theory might be considered as a suitable body of knowledge from which to extract criteria for this study, is the fact that the core concepts, in terms of structures and processes, are well defined. Furthermore, it is substantiated in the work of researchers, philosophers and theorists across various disciplines who have an interest in adult learning and development (see 2.2.5) .

2.2.2 KEY CONCEPTS WITHIN TRANSFORMATIVE LEARNING THEORY

This section aims at explaining the relationship between the terms: transformational process; transformational learning; transformative learning, and defining the difference between formative and transformative learning. In addition, the following terms will be clarified: frames of reference; adult learning; adult development; rational discourse; reflection; critical reflection; reflective learning; reflective discourse; reflective action; memory; perspective transformation; and the adult educator.

2.2.2.1 Transformational process, transformational learning and transformative learning

Although the terms transformational process, transformational learning and transformative learning refer to the same concept and are therefore, to a certain extent, interchangeable - there are subtle differences in their usage in literature.

The term "transformational process", is used primarily by psychologists and developmental theorists who are interested in changes that occur both in individuals and societies as a whole (Clark, 1993:48).

The term "transformational learning", which focuses specifically on the type of learning that creates far reaching changes in individual learners, is more specific to the field of adult education. According to Clark (1993:47) transformational learning can broadly be defined as the type of learning that "shapes people and changes them so that they are different afterward, in a way both they and others can realise".

Jack Mezirow (1991b:190) formulated the term "transformative learning", and it can be considered a refinement of the concept of transformational learning. Mezirow's "transformative learning" encompasses several concepts fundamental to his learning theory. Transformative learning can thus be defined as an operation or an activity which

incorporates processes such as *rational discourse* and *critical reflection.* Its aim is the development of the individual with regard to his/her communicative competence, critical reflective skills, awareness of socio-cultural influences and construction of new meaning structures (see 1.6.1). It can thus be said that it is by means of transformative learning that an individual improves the characteristics of his/her culturally impregnated frames of reference, which will determine his/her thoughts and actions in the future (Mezirow, 1996:162 & 1991:12).

2.2.2.2 Formative and transformative learning

The term "transformative learning", as formulated by Mezirow, can be contrasted against the existing concept of "formative learning". Cranton (1994:4) explains the difference between these two terms by referring to their outcomes: the outcome of formative learning relates to the process of acquiring culture and skills, whilst the outcome of transformative learning relates specifically to the process of *revising* a set of basic assumptions or beliefs previously held. Mezirow (1991:11) explains the difference as follows: namely that normal or formative learning can be described as the process whereby a learner attributes meaning to a new experience, whilst transformative learning concerns the process during which the learner comes to realise and understand that some of her/his previously held assumptions or beliefs are questionable. As a result, he/she can, through intentional learning (which involves a reinterpretation process), change his/her meaning structures so that they serve as a more functional base for future learning (see 2.3.3).

2.2.2.3 Frames of reference (meaning structures)

Mezirow refers to the term "frames-of-reference" as *meaning structures* (Mezirow, 1991:42). He defines them as "assumptions or beliefs which are set up from prior learning experiences, which act as filters and interpreters in the process of making meaning of new information and new experiences" (see 2.3.3).

2.2.2.4 Adult learning

Mezirow (1991:15) distinguishes between learning as the *function of language* and learning as a *pre-reflective process* which occurs in experiences prior to the use of language.

Although transformative learning theory recognises the influence which pre-reflective learning has on the individual's frame of reference, from the point of view of fostering adult learning, Mezirow considers transformative learning an *intentional cognitive process* (1991:64).

Thus (taking into consideration that cultural frames-of-reference (2.2.2.3) determine the way a learner selects and integrates new information), adult learning, in broad terms, can be defined as the process whereby the individual, through intentional learning, obtains a better understanding of the nature of his/her culturally defined meaning structures, as well as acquiring new meaning structures which guide future action (Mezirow, 1991:12 and 1996:162).

2.2.2.5 Adult development

Adult development, according to Mezirow, should be understood in terms of a learning process whereby adults obtain the capability of validating their beliefs through rational discourse and critical reflection, and develop the disposition to act upon the resulting insights (Mezirow, 1991:7 and 1996:164).

2.2.2.6 Rational discourse

"Rational discourse" is defined as a function of dialogue whereby validity of underlying reasons are put forward and assessed through a process of critical examination. In the process of critical examination the range of evidence taken into account should be as comprehensive as possible (Mezirow, 1991b:189). Rational discourse thus differs from "straight" dialogue in that there is an intentional effort made by those involved to set aside preconceptions and biases, in favour of objective analysis as far as possible (Mezirow, 1991b:189). Rational discourse is the type of dialogue used in courtroom proceedings, responsible journalism, scientific inquiries, university seminars and psychotherapy (Mezirow, 1991:77).

2.2.2.7 Reflection

Mezirow (1991:104) defines reflection as "...the process of critically assessing content, process, or premise of our efforts to interpret and give meaning to experience". However, as explained in 2.3.5 even though the reflection process differs depending on whether we are reflecting on content, process or premise - the common purpose of reflection is to intentionally reassess prior learning in order that its validity can be established (Mezirow, 1991:15).

2.2.2.8 Critical reflection (or premise reflection)

In contrast to reflection as described above in 2.2.2.7, Mezirow defines "critical reflection" (or premise reflection) as the process by which an individual brings assumptions and premises, upon which habits of expectation are based, into his/her consciousness and vigorously critiques them (Mezirow, 1985: 25).

2.2.2.9 Reflective learning

"Reflective learning" is a component of the transformative learning process, involving assessment and reassessment of assumptions. Reflective learning does not necessarily result in transformative learning, it becomes transformative when assumptions or premises are found to be distorted, inauthentic or otherwise invalid (Mezirow, 1991:6).

2.2.2.10 Reflective action

When reflection, and in particular critical reflection, leads to action, it results in making a decision. This does not imply a visible behaviour change but rather revised interpretations which guide future action (Mezirow, 1994:226). Mezirow maintains that insights resulting from reflective discourse (critical reflection plus rational discourse) do not in themselves produce transformative learning, but that in order to act upon these emancipatory insights, a "praxis" is also necessary. This requires a conative dimension, i.e. that the individual must have the will to act upon his/her insight in order to complete the transformative learning process (Mezirow, 1994:226).

2.2.2.11 Memory

Transformative learning theory regards "memory" as: "...an inherent function of perception and cognition, an active process of recognising again and reinterpreting a previously learned experience in a new context" (Mezirow, 1991:6). Furthermore, Mezirow considers "remembering" to be a central aspect of learning, as it is through recognising an event or object and viewing it together with a new or revised interpretation, that learning occurs (Mezirow, 1991:6).

2.2.2.12 Perspective transformation

Mezirow (1994:224) considers "perspective transformation" to be an *emancipatory process*, which becomes activated in stages. The main stages can be explained as follows: the individual first of all becomes critically aware of constraining, personally adopted psycho-cultural assumptions, secondly he/she reconstitutes the structures in order to permit a more inclusive and discriminating integration of experience and thirdly he/she acts upon these new understandings which, in a sense, have liberated him/her (Mezirow, 1981:6; 1991:167).

2.2.2.13 The adult educator

Underlying Mezirow's Transformative Learning Theory are core beliefs subscribed to by adult educators who endeavour to foster transformative learning. Clark, who analysed the views of three role players in the field of adult education (Freire, Daloz and Mezirow) describes these common core belief as follows:

- A *humanistic outlook* and *belief that human beings are capable of change and free to act on the world*
- A *constructivistic understanding of knowledge*
- A *democratic vision of society in which individuals are responsible for their collective futures*

Furthermore, it is important to note that the above mentioned role players are also perceived to reflect similar views with respect to aspects of learning such as : *making meaning*, *changes in consciousness* (emancipation & empowerment), *reflection* and *discourse* (Clark, 1993: 53-54). It is in their focus and goals that adult educators such as Freire, Mezirow

and Daloz differ (Clark, 1993:48). Of fundamental interest to Mezirow is *personal change,* concerning both adult educator and educand, and it is this perpective that makes his theory suitable to this study.

2.2.3 THE INCEPTION OF TRANSFORMATIVE LEARNING THEORY

This section presents a brief overview of Jack Mezirow's background, with special attention to his own experience of transformative learning and his research work, which led him to develop the theory of transformative learning..

Mezirow's interest in how people understand their world and the possibilities for them to effect a degree of social change, dates back to his youth and community development work in the late 1940s and early 1950s (Collard and Law, 1989: 99). In the preface of his book *Transformative Dimensions of Adult Learning (1991)*, Mezirow states how, in his earlier career, he had been professionally engaged in fostering democratic social action through community development and literacy programmes both in the USA and in Third World countries.

Furthermore, Mezirow states how, in the early 1970's, a spate of events (including a career crisis, encountering the writings of Illich and Freire, his wife's experiences as an adult student and a sabbatical spent with the psychiatrist Gould), caused him to radically change the viewpoints he had previously held on his profession (Mezirow, 1991: preface xvii).

Mezirow (1991: xvii) suggests that his career as social action educator would have taken an entirely different form, had he, at an earlier stage, comprehended the importance of "conscientization" (the concept central to Freire's theories, see 2.2.5.2). In addition, he explains how a sabbatical spent with Roger Gould allowed him personally to experience how psychotherapeutic approaches could be put to use in an educational format and how using workbooks within a workshop setting could assist adult learners overcome childhood impediments. This allowed Mezirow to experience a demonstration of transformational learning as an outcome of an intervention programme.

Whilst investigating the field of adult education from various perspectives, Mezirow came to realise that there was a tendency amongst practitioners (instructors, counsellors, trainers, tutors, and social workers) to replicate teaching approaches which they themselves had experienced in universities or public schools. It appeared to him that even though the prevailing consensus amongst writers in the field of adult education regarded such practices as dysfunctional, they were frequently upheld as a part of bureaucratic establishments (Mezirow, 1991: preface xi). This discrepancy led him to realise that a need existed to develop "a research based body of theory indigenous to adult education", into which he could also incorporate his own findings relating to characteristics of adults as learners (Collard and Law, 1989:99).

Mezirow has continued to work on his goal, which is to assist professional educators of adults who wish to facilitate significant learning in adults, for over three decades (Mezirow, 1991:7). He has also published extensively, in the area of research and theory pertaining to transformative learning. In 1990, a book in which he wrote the introductory and closing chapters and which presents programmes implemented by seventeen adult learning experts, was published. Following this, in 1991, his book *Transformative Dimensions of Adult Learning*, a comprehensive study on transformative learning, was published.

2.2.4 THE PLACEMENT OF THE THEORY IN AN EXISTING FRAMEWORK OF EDUCATIONAL PARADIGMS AND THEORIES

Mezirow places Transformative Learning Theory in an *emancipatory paradigm*, a paradigm which he considers to be a dialectical synthesis of two contemporary paradigms of learning namely, the *objectivist paradigm* and the *interpretist paradigm* (Mezirow, 1996:158). The emancipatory paradigm, which is also fundamental to understanding Habermas's work, [is a view which] goes beyond the objectivist paradigm (i.e. western rational tradition) and the interpretist paradigm (i.e. cognitive revolution) by grounding understanding and learning in the structure of human communication (Mezirow, 1996:165). According to this paradigm the way we make sense of knowledge is through structures of "intersubjective communication competence" (Mezirow, 1996:165).

Transformative Learning Theory, which centres around processes of "construing meaning and transforming understanding" (Cranton, 1994:9), clearly falls into the category of *constructivism*, which emphasizes that knowledge is constructed by the individual who perceives the world, and that there is thus no objective reality that can be "known".

With regard to contemporary trends in psychology, Cranton (1994:8) considers Transformative Learning Theory as belonging to the category of *cognitive theory* where learning is described as changes in memory, attitudes and skills produced by individual information processing mechanisms .

In order to study an activity such as "learning", the structures and processes which relate to the origins, the development and the consequences of the activity need to be analysed (Mezirow, 1991:12). Mezirow describes the aim of Transformative Learning Theory as seeking "... to elucidate universal conditions and rules that are implicit in linguistic competence or human development - specifically it seeks to explain the way adult learning is structured and to determine by what processes the frames of reference through which we view and interpret our experience (meaning perspectives) are changed or transformed." (Mezirow, 1991: pxii). It is this aim which places Transformative Learning Theory into the category known as *reconstructive theories*, where similar to Chomsky, Piaget and Kohlberg's theories, the focus is on explaining apparently universal conditions and rules implicit in human development through communication (Mezirow, 1996: 166) .

Transformative Learning Theory is considered to differ from other contemporary learning theories such as Association Bond Theory and the Information Processing Theory as unlike the latter, Transformative Learning Theory has its focus on the structures and processes which are involved when adults make meaning of their experience (Mezirow, 1991:8). It is from the departure point that : "making meaning is central to what learning is about" that Mezirow views all structures and processes of adult learning (Mezirow, 1991:11).

2.2.5 ASPECTS OF THEORIES FROM HABERMAS, FREIRE, BATES AND CELL WHICH CONTRIBUTED TO THE DEVELOPMENT OF TRANSFORMATIVE LEARNING THEORY

Transformative Learning Theory incorporates a wide range of ideas from writers in the fields of philosophy, psychology (developmental, cognitive, counselling, and psychoanalytic), sociology, neurobiology, linguistics, religion and education (Mezirow, 1991: xiv).

However, Mezirow clearly states that Transformative Learning Theory does not build on or expand existing theories but that it incorporates ideas from various theorists into a framework which centres on giving adult educators a better understanding of the phenomenon of learning (1991, xiv). Mezirow's purpose of linking ideas from various disciplines, theories and intellectual traditions is primarily to clarify concepts and processes within Transformative Learning Theory.

In accordance with the above, sections 2.2.5.1 - 2.2.5.4 cover a selection of themes from theorists such as Habermas, Freire, Bateson and Cell which contributed to Transformative Learning Theory.

2.2.5.1 Habermas's influence on Transformative Learning Theory

Habermas is a contemporary critical social theorist and philosopher, who has published widely and has had a great influence on current opinions, also within the context of education (Cranton, 1994:45). Mezirow gives particular credit to Habermas's Theory of Communicative Action, suggesting that it gives "a new foundation for understanding adult learning and the function and goals of adult education" and that it provides a "sociolinguistic theoretical context for Transformative Learning Theory" (Mezirow, 1991:64-65).

Mezirow originally grounded Transformative Learning Theory in Habermas's theory of knowledge (Habermas, 1984) which focuses on three broad areas where human interest

generates knowledge, namely: the *technical*, the *practical* and the *emancipatory* (Cranton, 1994:24).

Habermas's theory of knowledge maintains that an interest which is orientated towards natural sciences is different from an interest in understanding subjective knowledge. The first type of interest is linked to controlling and manipulating the external environment and therefore necessitates knowledge about causal relationships in this area (this type of knowledge is referred to as technical knowledge). The second type of interest is linked to understanding the internal dynamics of people and therefore necessitates knowledge about social norms and cultural values within society (this type of knowledge is referred to as practical knowledge). A third type of interest which revolves around understanding ourselves and our relational autonomy and leads to self-knowledge, is referred to as emancipatory knowledge (Cranton, 1994:46).

Based on the above three types of knowledge, Mezirow linked the following three domains of learning (Cranton, 1994:22-24).

- *instrumental learning domain,* dealing primarily with learning of technical knowledge
- *communicative learning domain,* dealing primarily with learning of practical knowledge
- *emancipatory learning domain,* dealing primarily with the learning of self knowledge

This original classification has, however, been revised. Mezirow in his explication of intentional learning, differentiates between merely two major domains namely: *intrumental* and *communicative*. The *emancipatory* domain has shifted to the position of a "process", pertaining to both domains. In this way, emphasis is placed on the emancipatory process, within both the *instrumental* and the *communicative* domains of learning.

Based on this division of *instrumental* and *communicative learning,* Mezirow furthermore differentiates between two types of logic which guide learning, namely: hypotheses and empirical tests which guide *instrumental learning* and metaphors which play a central role in the logic involved in *communicative learning* (Mezirow, 1991:63).

Habermas's view on concepts such as discourse, validity testing and rationality (part of communicative action theory) also play a cardinal role in Transformative Learning Theory (Mezirow, 1991:64-68).

2.2.5.2 Paulo Freire

In addition to investigating the *forms, levels, contexts* and *limiting factors* in adult learning, Mezirow takes an interest in the aspect of *empowerment*. For this, he draws on a central concept from Paulo Freire: *conscientization.* By means of conscientization, learners become aware of influences in the larger world (i.e. societally or culturally determined) that shape their lives and more especially their thinking. For Freire, a conscientized individual is also aware of his/her capacity to act upon social realities and thereby to change them (Freire, 1996).

Freire's work developed from experiences of social and political action in the Third World, an interest shared by Mezirow. People in many formerly colonized or oppressed societies appeared to move (individually and collectively) from an *"intransitive"* level of consciousness, where the focus was on day to day survival, to a consciousness mediated by fatalism or magical ideas in which social realities were taken for granted but at least thought about. A further level of conscientization involved a growing process of questioning those realities and recognising the human actions that produced them. Lastly, Freire observed that a level of conscientization can be reached in which basic assumptions are questioned, social reality is subject to fierce critique, and "praxis" emerges (Mezirow, 1991:135).

Mezirow sees this concept of *praxis* as crucial; for him, it is a "union of reflection and action" (1991:136). Like Freire, Mezirow does not separate reflection from action, and treats *critical reflection,* as itself, a form of action. Reflection without action - even if that action is only a potential - was, for Freire, a pointless intellectual game (Mezirow, 1991:135) .

From Freire's work, it became clear that transformative learning at any level - epistemic, psychological or sociolinguistic - has immense potential for *impact on social structures*, in

particular those that oppress, disempower or limit people. Thus, education and especially adult education must consciously enhance this potential.

2.2.5.3 Gregory Bateson's Learning Theory

Bateson sees learning as primarily the *changing of contexts*, not the mere acquisition of data (Mezirow, 1991:90-91). These "contexts" are highly individual, being made up of presuppositions, premises and expectations. People are often unaware of them, and/or learned them early in life. Because of pre-existing contexts, people are open to some interpretations of reality, while blocking out others (Mezirow, 1991:90-91).

Bateson's interest in communication, the relationships in which communication takes place, and the forms or patterns that it follows, led him to formulate a key concept: *news of differences*. He found that unless a stimulus is "different" from what is already present in consciousness, it is not generally perceived at all. Thus the ability to shift contexts depends heavily on "news of a difference" (Mezirow, 1991:90-91).

Bateson divided learning into four categories, which represent a progression. *"Zero"* learning is said to take place when a pre-existing meaning scheme or habitual response is stretched to include additional facts or experiences. *Learning I* is similar, but draws on an element of self-awareness, as in a thoughtful (yet not reflective) assimilation. *Learning II* involves awareness or perception of new alternatives. People who are engaging in a level II process have the capacity to "learn how to learn" in different ways - so there is an implication of metacognition in Learning II. Mezirow found that this could be compared to *content or process reflection*, and that it results in changes to meaning schemes (Mezirow, 1991: 91).

Bateson's final level, *Learning III*, implies a form of perspective transformation that is capable of influencing an individual's entire way of perceiving his or her world; an example of this is religious conversion. When this type of learning has taken place, the whole framework of assumptions change and because of that, habits of expectation are formed differently (Bateson, 1972).

From Bateson, Mezirow discovered the importance of learning contexts, the centrality of communication and how it is perceived, and saw how reflection and "news of differences" can make possible entirely new perceptual sets .

2.2.5.4 Edward Cell's Learning Theory

Edward Cell, in a similar way to Bateson, described four levels of change in a learning process. Whereas Bateson draws on systems theory and cybernetics, Cell revised concepts from learning theory and the cognitive revolution in psychology (Cell, 1984).

Response learning, the lowest level, usually proceeds by trial and error; the learner adds a new response to an existing repertoire or substitutes a new response for a previous, less effective one. Classical conditioning and rote learning are both examples of Response learning.

Situation learning involves modification of responses, but brings in an element of choice, judgement and interpretation, by which a situation or elements of a situation are assessed. Situation learning is a way of organising and reorganising experience to make it more rewarding or more meaningful.

Trans-situational learning is the means by which people learn to interpret their own acts of interpretation, or to reflect on their own powers of reflection. Similar to Bateson's Level II, it therefore involves metacognitive processes (Mezirow,1991:92).

Transcendent learning is the type of learning that breaks new ground, evolving or striking upon entirely new concepts which in turn enable new interpretations of reality (Mezirow,1991:92).

Mezirow, however, maintains that interpretation is *always* involved in human learning (a view shared by Piaget, amongst others). This is true even in apparently simple stimulus/response association. Such learning may be "pre-reflective" but nonetheless,

interpretation is going on if a human subject is present. For Mezirow, meaning-making remains a central focus in adult education.

2.2.6 ASSUMPTIONS UNDERLYING KNOWLEDGE CONSTRUCTION WITHIN THE THEORY

Mezirow (1994:222) emphasises that "Transformative Learning Theory is intended to be a comprehensive, idealised and universal model, consisting of the generic structures, elements and processes of adult learning". However, even a model which aims to reflect on universal aspects of learning, rests initially on assumptions and premises which have their origin in a specific frame of reference. In addition to the core beliefs in 2.2.2.13 cognisance should be taken of the following assumptions underlying knowledge construction.

Concerning the construction of *knowledge in childhood,* Mezirow states that:

- much of our knowledge is shaped through socialisation at a young age (Mezirow, 1991:2)
- culturally determined perspectives are often lodged in our frame of reference as pre-rational or inarticulated presuppositions (Mezirow, 1994: 222-223)
- that unconsciously constructed (or assimilated) presuppositions might set limits to future learning in adulthood (Mezirow, 1991:34-35)

Concerning the construction of *knowledge in adulthood,* Mezirow states that:

- one of our basic human attributes is the need to understand and to make meaning of what we experience (Mezirow, 1991: 7)
- learning can be considered the activity through which each individual constructs his/her own meaning about different aspects of their world. (Mezirow, 1991:11)
- it is through the process of making meaning that individuals are able to change their belief systems and meaning structures (Mezirow, 1991:11)
- learning which results in transformed "habits of expectation" also has an emancipatory dimension (Mezirow, 1998:5).

2.3 THE DYNAMICS OF TRANSFORMATIVE LEARNING

In line with the objectives of this literature study as set out in 2.1, the aim of this section is to give background to the criteria which are extracted for analysis of the programme in Chapter 5. To enhance clarity, the researcher has elected to group structures, processes and propositions of the theory into themes (descriptors) which will be used as subheadings for this section.

2.3.1 INSTRUMENTAL AND COMMUNICATIVE LEARNING DOMAINS

As mentioned earlier in the section on Habermas's influence (2.2.5.1), Transformative Learning Theory is based on the assumption that intentional learning comprises two distinctive learning domains: instrumental and communicative, and that emancipatory learning is an important component of both domains (Mezirow, 1991:64). Although the domains are classified as distinctive and different with regard to their purpose, their method, logic of inquiry and their way of validating beliefs - within problem-solving situations the domains are said to be complementary and to work interactively (Mezirow, 1996:162).

The following two sections describe the instrumental and communicative learning domains as well as the different types of intervention that each require. Even though these two domains are different, it should be noted that in most learning tasks both domains are involved and also that transformative learning may occur in both domains (Mezirow, 1994:226).

2.3.1.1 Instrumental learning domain

The concept "instrumental learning" is derived from Habermas's "instrumental knowledge", which was described in (2.2.5.1). This type of learning is concerned with task oriented problem solving and cause-effect relationships (Mezirow, 1991:73). It involves forming hypotheses about observations, predictions from these hypotheses and evaluation of the outcomes. In this way, truth is acquired through what is known as empirical inquiry, and is limited to events/items which can be objectively measured (Cranton, 1994:46; Mezirow, 1994:225).

Meaning in the case of instrumental learning is obtained through deductive and inductive reasoning. It involves a prediction about an observable event that can be proved correct or incorrect. As learning through *making meaning* (Mezirow, 1991:11) in such cases implies an understanding of cause-effect relationships, the knowledge acquired can be regarded as prescriptive. Problem solving in this domain is achieved through analysing aspects or parts that make up the problem and action is taken with regard to how the situation is controlled. This type of learning concerns making meaning of "how" and not of "why" something is done (Mezirow, 1985:18).

2.3.1.2 Communicative learning domain

The concept "communicative learning", derived from Habermas's concept of "practical knowledge", involves learning to understand what others mean and to make ourselves understood as we attempt to share ideas through speech, written word, plays, moving pictures, television and art (Mezirow, 1985:19; 1991:75).

The communicative learning domain focuses on important issues such as: "understanding, describing and explaining intentions; values; ideals; moral issues; social, political, philosophical or educational concepts; feelings and reasons" which are central to human relationships as well as learning (Mezirow, 1991:75). Mezirow considers this domain to be under-utilised in comparison with instrumental learning, with the latter in general, being taken as the model for all learning.

Problem solving in the communicative learning domain centres around verbal and non-verbal communication. It is about understanding what is meant by taking into consideration "values, intentions, feelings, moral decisions, ideals and normative concepts defined by their contexts, like freedom, love, beauty, and justice" (Mezirow, 1994:225). The purpose of communicative learning is thus not to establish cause-effect relationships but to improve insight and understanding of meaning, through symbolic dialogical interaction.

Mezirow (1991:79) explains that the form of inquiry in communicative learning can be regarded as designative, as through discourse the participants learn to understand what is designated rather than to control or manipulate. Within the domain of communicative learning Mezirow (1990:20) emphasises that learning is not concerned with the testing of hypotheses but with analysing a phenomenon and also with drawing up metaphors which can be used in a parallel way to get meaning across. Just as hypotheses are reasoning tools for instrumental learning, metaphors are tools of communicative learning (Mezirow, 1991:81).

What is inferred in communicative learning is thus considered to be abductive as opposed to deductive in instrumental learning. In abduction, each step suggests the next one. It implies understanding parts in terms of an initial impression of the whole (top-down as well as bottom-up learning). Mezirow (1991:84-85) explains it as follows: "Movement is towards an interpretation of the whole in which our detailed knowledge of the parts can be integrated without conflict (the hermeneutic circle)".

It is mainly processes involved in the communicative learning domain, such as critical reflection on assumptions, discourse to validate beliefs, and reflective action putting into practice the new transformed meaning structures, that lead to transformative learning.

Unlike instrumental learning, which centres around truth being acquired through empirical tests, communicative learning centres around establishing validity or justification for a belief. Mezirow states three ways in which this is achieved. Firstly, by turning to an authoritarian figure and secondly by turning to force (e.g. politics, courts etc.). The third option he suggests is to validate the "problematic belief" through rational discourse (Mezirow, 1994:225).

2.3.1.3 Instrumental and Communicative competence

Instrumental competence in coping with the external world involves attainment of task oriented performance skills that may involve reflective problem solving and some problem posing. In contrast, communicative competence refers to the ability of the learner to

negotiate his/her own purposes, values and meanings rather than accepting passively those of others. A learner may acquire communicative competence by becoming more able to participate freely and fully in discourse, and by understanding and reflecting on how his culturally assimilated frame of reference might be constraining his/her actions.

Education for communicative competence involves cultivating the learners' ability to negotiate meanings and purposes instead of passively accepting the social realities of others (Mezirow, 1994:226). In this way, transformative learning can also be regarded as learner empowerment, in that the empowered learner is able to partake fully as an equal in discourse (Cranton, 1993:73).

2.3.2 RATIONAL DISCOURSE

Rational discourse differs from ordinary dialogue in that it surmises that an intentional effort is made by the participant to responsibly weigh up evidence and critically examine arguments and assumptions behind statements (Mezirow, 1991b:189). It is through discourse with informed, objective and rational participants that consensus is reached in the form of collective judgement, lasting until further new evidence, arguments and viewpoints are encountered (Mezirow, 1991b:189). To illustrate an example of cultural distortion with respect to discourse, Mezirow (1996:169) cites Tannen's (1994) characterisation of a "culture of critique" where she indicates how genuine discourse is frequently replaced with "confrontational discourse", implying also that the culture we live in prefers to replace consensual type discussions with a win-lose orientation, in which, for one party to be right, the other needs to be proven wrong.

As mentioned in the section on Habermas (2.2.5.1), Mezirow incorporates Habermas's view relating to validity testing. Discourse is the process where validity of beliefs can be tested and as such it can be considered as the central process in communicative learning (Mezirow, 1996:169). Mezirow explains validity with regard to "rational discourse" as the outcome of assertions of others whereby credence for the validity of one's own ideas is gained through consensus judgements of informed, projective rational discussion (Mezirow, 1985:19). However, in order for consensual judgements to be valid he suggests that criteria

such as those of McCarthy's (1979) as well as Habermas's criteria for "discourse" should be taken into account. This means that what is discussed must firstly be considered : " comprehensible, true, the speaker must be truthful or sincere and the context must be taken into consideration" (McCarthy, 1979, in Mezirow, 1985:18).

Building on Habermas's criteria for discourse, Mezirow furthermore maintains that participants of rational discourse must be fully enlightened about the issue; that they must have understanding and be capable of reasoning argumentatively; that they must be able to reflect critically about premises and that they must have self-knowledge, so as to look at issues objectively. "Self knowledge" implies that the participant has freedom from self-deception and coercion as well as an understanding of the historical, cultural and biographical reasons for his/her needs, wants and interests, especially when they are derived from ideologies or distortions (Mezirow, 1991:78).

Furthermore, Mezirow adds that an essential precondition for effective discourse is the establishment of a *sense of solidarity* amongst participants and that participants must feel that they are given equal opportunity to participate, that they must have the ability to analyse and make inference from evidence, must be open to others' ideas and paradigms and be able to accept an informed, objective and rational consensus as a test of validity (Mezirow, 1996:170).

Mezirow maintains that because discourse is central to human communication and learning, the above idealised criteria are implied in the nature of communication and can be considered as criteria for judging conditions of both discourse and learning (Mezirow, 1994:225).

2.3.3 MEANING STRUCTURES

Making meaning implies that we are interpreting an encounter, a situation or an experience by referring back to established expectations. If we do not understand an aspect of the situation/experience, our expectations from prior learning will act as a filter for how we interpret the new experience. Thus the way our previous experiences are organised, together

with the relevance which we attach to previous experiences, plays a cardinal role in how we interpret and understand new situations. In many instances they may also delimit what we understand (Mezirow, 1994:223). Mezirow maintains that educators should be conscious of two dimensions of meaning structures, namely meaning perspectives and meaning schemes (Mezirow, 1994:222-223).

2.3.3.1 Meaning perspectives

Meaning perspectives are based on broad sets of pre-dispositions which originate in psycho-cultural assumptions and influence the scope of our expectations (Mezirow, 1994:223). These psycho-cultural assumptions are shaped unconsciously in childhood through socialisation and remain subconscious in adulthood (see 2.2.2.3).

Meaning perspectives originating in this way are, in general, not perceived as a problem in a society where authority is unchallenged and the focus is primarily on preserving the security and on keeping well established rituals and customs in place. However, as explained by Mezirow (1991:34), living in the modern world marked by accelerated changes and the weakening of traditional authority structures, requires that adults be able to solve a wider range of problems relying on their own resources. This frequently means that culturally presented values and belief systems which were adequate previously, no longer suit the demands made by the society in which they find themselves .

Meaning perspectives are made up of what is often referred to in linguistics as "networks of arguments", i.e. theories, propositions, beliefs. These involve criteria for making value judgements. Mezirow defines meaning perspectives as structures of assumptions within which new experience is assimilated and transformed by one's past experience during the process of interpretation (1990:2). These are mainly uncritically acquired through cultural assimilation but they can also be intentionally learned. Emotionally charged situations and repetitive exposure influence the "fixedness" of these habits of expectation. Mezirow (1991:51) explains that although there may be exceptions, the generalised rule frequently tends to become a self-fulfilling prophecy.

Mezirow maintains that meaning perspectives can be compared to similar terms such as *horizons of expectation* (Popper), *perceptual filters* (Roth), *paradigms* (Kuhn), *frames* (Goffman, Bateson), ideologies, *schemas* (Goleman) and *personal constructs* (Kelly) (1991,61). Meaning perspectives can, however, best be explained as "systems of habitual expectation" (Mezirow, 1991:4). They can be viewed as structures in which our past experiences are assimilated.

A developmentally advanced meaning perspective is, according to Mezirow, "more inclusive, discriminating and integrative of experience; based upon full information; free from both internal and external coercion; open to other perspectives and points of view; accepting of others as equal participants in discourse; objective and rational in assessing contending arguments and consequences, and able to accept an informed and rational consensus as the authority for judging validity claims" (1991:28).

Mezirow distinguishes between the following three types of structures, which are linked to the type of experience which they represent.

2.3.3.1.1 Epistemic meaning perspectives

These are structures which are concerned with knowledge and how we put knowledge to use. Epistemic meaning structures are influenced by learning styles and preferences, for example whether a person thinks concretely or abstractly or in terms of overview or detail. How a person learns is therefore also related to their epistemic meaning perspectives (Cranton, 1994:28). Mezirow maintains that the following factors shape epistemic meaning perspectives, "developmental stage perspectives; cognitive/learning/ intelligence styles; sensory learning preferences; frequency of events to identify patterns; scope of awareness; external/internal evaluation criteria; global/detail focus; concrete/abstract thinking; reification and reflectivity" (1991:43).

2.3.3.1.2 Sociolinguistic meaning perspectives

These structures are based on social norms and cultural expectations of a society. They therefore include language codes, religious beliefs and behaviour codes in terms of

upbringing and interaction with others. Socio-linguistic perspectives thus evoke habits of expectation that produce a code of behaviour which is consistent with expectations of the specific culture. According to Mezirow the following factors can be considered to shape socio-linguistic meaning perspectives: social norms/role; cultural/ language codes; language/truth games; common sense as cultural system; secondary socialisation; ethnocentrism; prototypes/scripts; and philosophies/theories (1991:43) .

2.3.3.1.3 Psychological meaning perspectives

These structures relate to people's self-concept, needs, inhibitions, anxieties, personal preferences. These perspectives frequently have their origins in childhood experiences and are situated at subconscious levels. According to Mezirow, factors such as: self-concept; locus of control; tolerance of ambiguity; psychological defence mechanisms, can be considered to shape psychological perspectives (1991:43).

2.3.3.2 Meaning Schemes

Whereas meaning perspectives can be explained as *habits of mind* which have their origin in culture and consist of "broad orienting dispositions and paradigms", meaning schemes can be explained as "clusters of beliefs, feelings, attitudes and value judgements that accompany and shape an interpretation" (Mezirow, 1996:162). As such, they are specific to an individual and have come into creation because of the network of meaning perspectives which are already in position (Cranton, 1993:42).

Meaning schemes can also be regarded as "habitual implicit rules for interpreting" (Mezirow, 1992:2). Meaning schemes can thus be considered as "more concrete manifestations of our habitual expectations" and become articulated in an interpretation.

2.3.4 DISTORTED MEANING PERSPECTIVES

Mezirow defines a distorted assumption as one "that leads the learner to view reality in a way that arbitrarily limits what is included, impedes differentiation, lacks permeability or openness to other ways of seeing, or does not facilitate an integration of experience" (Mezirow, 1991:118-119). From the characteristics considered essential for a "well-

developed" frame of reference, it is obvious that meaning perspectives which are distorted will directly influence the effectiveness individuals' growth and development in both the instrumental and communicative learning domains.

In instrumental learning, distorted assumptions include misconceptions about the reasoning process which then results in logical and methodical errors in problem-solving situations. In communicative learning, premise distortion occurs in all three types of meaning perspectives: epistemic, sociolinguistic and psychological (Mezirow, 1991:119).

As meaning perspectives and meaning schemes are primarily shaped without critical questioning or reflection, distorted assumptions and premises are easily assimilated into the existing framework. In order to alter distorted assumptions Mezirow considers the processes of critical reflection and critical discourse to be essential in the validation of the embedded, distorted assumptions/premises (Mezirow, 1991:118). Furthermore, it is important that adult educators learn to recognise the types of distorted meaning perspectives that may limit openness to change, growth and personal development (Cranton, 1993:30).

2.3.4.1 Distorted epistemic meaning perspectives

Mezirow (1991, 144) refers to the developmental theorists such as Perry (1970) and Kitchener (1983), who have set up frameworks which include stages that individuals move through as their understanding of knowledge develops. From research in the field of reflection (Kitchener and King, 1990, in Mezirow, 1991:144) it is apparent that "reflective judgement" increases with both age and education. Mezirow (1991:144) links epistemic distortions to incomplete development of the first 4 stages in Kitchener's taxonomy. Knowledge at the first 4 levels is viewed as a transferable commodity, whereas knowledge at stages 6 and 7 is viewed as being constructed by each person and dependent on the quality of evidence and argument that supports it.

2.3.4.2 Distorted sociolinguistic meaning perspectives

No individual is free from distorted sociolinguistic meaning perspectives (Cranton, 1993: 34). The culture and language which form part of the environment in which individuals

grow up, inevitably shape and limit the way the individual sees the world and interprets his/her experiences. As certain distorted sociolinguistic assumptions are embedded in society, the individual, in general, is not even aware of the "social norms and cultural codes which distribute power and privilege" (Cranton, 1993: 35). While no one is free of the influences of society and culture, education can help to foster learners' awareness and understanding of specific meaning perspectives which are embedded because of a particular cultural environment.

Mezirow discusses four types of socio-linguistic distortions. These are briefly described below.

2.3.4.2.1 Language based distorted assumptions

Language builds people into a dialogical community where they have common meaning perspectives concerning the contexts and meanings of words (Mezirow, 1991:63). Furthermore, Mezirow expresses the notion that much of our reality is prestructured by our linguistic symbol systems (Mezirow, 1991:58). Language based distortions in our assumptions are exposed when examining labels and metaphors used in descriptions.

2.3.4.2.2 Distortion through selective perception

This pertains to the distortion that occurs when individuals are able to filter out anything that does not apply to them personally. In such instances the individual has a narrow perspective of the world and sees only that which affects him/her directly.

2.3.4.2.3 Level of consciousness

With the term, *levels of consciousness,* Mezirow refers to Freire's levels of consciousness dealing with consciousness of survival needs; consciousness of values of oppressors; consciousness of questioning in terms of views of popular leaders; and the highest level in which learners "engage in action to bring about social change".

2.3.4.2.4 Constrained or unconstrained visions

This type of distorted meaning perspective is best described through example. For example, people who believe that nothing can be done in a situation (no action can make the world a better place) have constrained visions whilst people who have beliefs that social change is possible have unconstrained visions of humanity.

2.3.4.3 Distorted psychological meaning perspectives

Distorted psychological meaning perspectives might originate from childhood trauma. For example, an adult learner may have assumptions about his/her ability to succeed which is based on failures in childhood learning situations. Working through a psychological premise distortion that is causing pain is a process which demands reflection on factors that might have caused them and as such it is important that the educator "perceive not only the range and depth and complexity of the nature of the psychologically distorted assumptions", but also the influence which such beliefs have over learners' behaviour and their approach to learning (Cranton, 1993: 40).

2.3.5 REFLECTION

In Transformative Learning Theory the concept *reflection* is considered to be the central dynamic of key processes such as intentional learning, problem solving, and validity testing through rational discourse (Mezirow, 1991: 99).

In Chapter 4 of his book (1991) Mezirow contrasts views about "reflection" from Dewey, Kolbe, Cell and Jarvis, with his own view. It is apparent from this analysis that the type of reflection that leads to perspective transformation involves a form of meta-reflection, sometimes also referred to as "critical reflection". However, it is also clear that "reflection" has, more generally, been used as a term to describe what Mezirow views as "reflection on assumptions pertaining to the content or process of problem solving", a process very different from the type of premise reflection which Mezirow considers to be the dynamic by which our belief systems - meaning perspectives - become transformed (Mezirow, 1991:111).

Reflection as the central process in reflective learning can be either confirmative or transformative. It becomes transformative when an individual finds that assumptions which he has held are distorting, inauthentic or unjustified. We resort to reflection on unexamined assumptions of beliefs when the beliefs or old ways of thinking are no longer functional. Frequently it is a *disorientating dilemma* which triggers reflection. Reflection then involves a critique of assumptions to determine whether a belief acquired through cultural assimilation in childhood is still functional. This is done critically by examining origins, nature and consequences.

Most reflections take place within the context of problem solving. In this domain reflection may take place on content, process or the premise of the problem. Reflecting on the content and process of problems is the way we change our minds and/or transform our meaning schemes. This happens frequently. Reflecting on the premise of a problem can transform meaning perspectives and is less common (and can thus also be considered a more significant learning experience).

The following five propositions further explicate Mezirow's view on the function and nature of reflection (1991:116):

- Transformative learning pertains to transformation with respect to either meaning schemes or meaning perspectives (or both).
- Thoughtful action may or may not involve reflection: i.e. methods or reasons are not necessarily analysed when a situation is thoughtfully analysed and acted on.
- The function of "reflection" in transformative learning is twofold, firstly to validate prior learning which is represented in meaning structures and secondly to seek justification for the beliefs which prior learning has constructed.
- It is important to resolve doubts concerning truth, validity or authenticity of assertions made about our physical environment, our social interactions and our personal world of feelings - through reflection and discourse.
- Fostering reflective and transformative learning should be considered a goal of adult education.

2.3.6 FOUR KINDS OF LEARNING

Linked to the type of reflection which the situation or problem might demand, Mezirow classifies four kinds of learning. In order to optimally assist students, the adult educator should consciously be aware of, and nurture learning in, all four of these categories. The four types of learning described by Mezirow (1994:224) are briefly explained below.

2.3.6.1 Learning by refining or elaborating our meaning schemes.

In this type of learning the meaning schemes which pre-exist are extended and further differentiated. New responses are learned but the assumptions which pre-exist need not be modified in any way.

2.3.6.2 Learning by the inclusion of new meaning schemes

In this form of learning the meaning perspectives, although fundamentally unchanged, may be extended. However, meaning schemes, as certain clusters of beliefs, are often changed both consciously and unconsciously through socialisation (Mezirow, 1991:94).

2.3.6.3 Learning by transforming meaning schemes

This form of learning occurs when the individual finds that his/her belief or meaning scheme has become dysfunctional. In order to accommodate a new experience, a cluster of beliefs needs to change which may also result in meaning perspectives changing in the process (Mezirow, 1991:94).

2.3.6.4 Learning by transforming meaning perspectives

In this form of learning the individual becomes aware, through critical reflection, of presuppositions underlying a meaning perspective which is distorted and incomplete. As a result, the individual actively and intentionally has to reorganise and transform meaning perspectives.

2.3.7 PERSPECTIVE TRANSFORMATION

The concept of *perspective transformation,* which is central to Transformative Learning Theory, originated from empirical research; namely, a national study of women who were

returning to college after a hiatus, who participated in specialised programmes. From fieldwork in this study, Mezirow and his research team inductively delineated the concept (Mezirow, 1991:168).

Perspective transformation revolves around acquiring and transforming meaning schemes and perspectives. It is in itself a process and can be considered either as a constituent or as an outcome of transformative learning. Mezirow refers to perspective transformation as "the engine of adult development" (Mezirow, 1994:228).

In this metaphor, perspective transformation is regarded as an active, conscious process during which an individual intentionally and cognitively drives the changes to his/her beliefs because he/she has become critically aware how diverse presuppositions which were embedded in his/her subconscious, constrain the way the world is perceived, thereby possibly also debilitating his/her potential to develop as a life long learner.

Perspective transformation may occur suddenly when an existing meaning perspective cannot deal with a given situation. In this instance Cranton (1993) interprets it as "...the culminating result of a major event in the life of an individual". In the event of perspective transformation occurring gradually, by a series of small uneven transitions, it is more likely to be the accumulative result of related transformations within meaning schemes (Mezirow, 1994:224). Mezirow considers perspective transformation as both a necessary and sufficient condition of emancipation. From the studies that were published (Mezirow, 1990) it is evident that the task of the adult educator can frequently be considered as one of setting this engine of adult development into motion and thereby helping learners move towards more authentic meaning perspectives.

With regard to assisting learners transform distorted perspectives, it is of importance that adult educators understand how adult learners make sense or meaning of their experiences and how they modify meanings when they find them to be dysfunctional (Mezirow, 1991:6). However, as noted by Clark (1993:50), the fundamental assumptions and beliefs which educators themselves hold with respect to the adult learner as a rational, autonomous,

responsible adult - along with a natural tendency to move towards a more complete development ("the actualising tendency" - Rogers in Mezirow, 1991:134) - must also be considered as a contributing factor.

2.3.8 STAGES OF TRANSFORMATIVE LEARNING

Mezirow (1991:168-169), in his research on women returning to college, delineated ten phases which he considered the subjects to pass through in the process of perspective transformation. Joyce Morgan (1987, in Mezirow, 1991:169), in a subsequent study, has confirmed these phases. Similar phases have also been recorded by other researchers, such as Keane (1985, cited in Mezirow 1991) and Taylor (1989 cited in Mezirow, 1991). For the purpose of this study the process of personal transformation in terms of the ten phases suggested in Mezirow's 1975 research, are described below.

The process of perspective transformation is triggered by a *disorienting dilemma,* which causes students to *examine themselves,* frequently with feeling of guilt and shame attached to the process. This is followed by *critical assessment* of epistemic, sociocultural, or psychic assumptions and feelings of alienation from normal social context. However, as the individual shares and relates to others' experiences there is *recognition of the discontent felt* and a recognition that the process of transformation is *similar to that of others*. This leads to *further exploration of options* for new roles, relationships and actions, which requires *planning a course of action.* As part of this action plan, the learner *acquires knowledge and skills to implement the plan.* In order to find the best solution, *new roles are provisionally examined.* Thereafter, *building of competence and self-confidence in the new roles and relationships,* is essential before the individual is *reintegrated in his/her life* where he/she could now view her/his situation from a totally new perspective. (Mezirow, 1991:168-169).

2.4 CRITERIA FOR THE ASSESSMENT OF THE STUDY AND THINKING SKILLS (S&TS) PROGRAMME

Based on the themes presented in section 2.3 and on the concepts that form a fundamental part of the transformative learning activity, eight criteria have been selected for the purpose of assessing programmes which intend to foster transformative learning;

- it should facilitate learning in both instrumental and communicative domains as described in (2.3.1)
- it should promote rational discourse (see 2.3.2)
- it should give learners an opportunity to explore their meaning structures (see 2.3.3)
- it should have a means by which to investigate distorted meaning perspectives which learners might have and instigate conflicting or disorienting experiences with regard to these (see 2.3.4)
- it should facilitate reflection with regard to content, process and premise (see 2.3.5)
- it should address the four types of learning as described in 2.3.6
- it should focus on setting into motion the emancipatory aspect of perspective transformation (see 2.3.7)
- it should take account of the *phases of transformative learning* (see 2.3.8)

CHAPTER THREE

Description of the Study and Thinking Skills Programme

3.1 INTRODUCTION

The aim of this chapter is to give a comprehensive description of the Study and Thinking Skills (S&TS) programme. This is based on two published articles (Cilliers and Kilpin 1997a, 1997b), poster-presentations at two international conferences (International Association of Cognitive Education - IACE, 1995,1997) and unpublished information from the researchers involved in the development and the presentation of the Study and Thinking Skills (S&TS) programme at the University of Stellenbosch from 1995-2000. This programme generates essential data for the analysis which follows, and in turn forms the central focus of this research. The Study and Thinking Skills (S&TS) programme will subsequently be analysed according to the eight criteria previously identified (see 2.4)

To realise the above aims, the Study and Thinking Skills (S&TS) programme is discussed under the following headings: background ; theoretical framework and rationale; nature and needs of target group; learning in terms of brain functioning; programme material; and implementation procedures.

3.2 BACKGROUND

The conception of the Study and Thinking Skills (S&TS) programme took place in 1994, at the time the University of Stellenbosch formally began introducing several support programmes to assist academically disadvantaged first year students with bridging the gap from school to university. The task of designing the Study and Thinking Skills (S&TS) programme was allocated to the Department of Educational Psychology and Specialised Education, which at the time was involved with research in the field of cognitive education and thinking skills.

Although the programme was developed as a domain independent module, cognizance was taken of the fact that it would be implemented as part of a four week bridging programme,

to be run prior to the start of the academic year and that the students attending the programme would have had mathematics as a matriculation subject.

3.3 THEORETICAL FRAMEWORK AND RATIONALE

The aim of this section is to give an overview of the theoretical framework applied during the design of the Study and Thinking Skills (S&TS) programme and to briefly state the theories on which the rationale of the course is based.

3.3.1 GENERAL OVERVIEW

The Study and Thinking Skills (S&TS) Programme was developed independently of Mezirow's theory of Transformative Learning. The rationale underlying the initial design of the programme is broadly based on the cognitive theory of learning. Within this theory, the focus is on *social constructivist principles* of learning and cognitive development, with special reference to Vygotsky's principles of learning and cognitive development as a social activity (Luria, 1994:44), as well as Feuerstein's emphasis on mediation and cognitive modifiability (Feuerstein, Rand, Hoffman, and Miller, 1980). As such, the approach used could be referred to as a *mediated social constructivist approach*, implying that, although learning is largely dependent on the learner (constructivism), it is enhanced by group inputs (Vygotsky), as well as mediation (Feuerstein).

As explained by Cilliers and Kilpin (1997b), the positive effects of the approach described above are supported by literature: mediated constructivism as a teaching approach assists students to become autonomous learners and thinkers, with the instructor acting mainly as facilitator. This has been successfully implemented in academic development programs in South Africa, especially for the teaching of physics (Buffler and Allie, 1993). Likewise, co-operative learning and peer group teaching, extended through problem solving in collaboration with more capable peers or facilitators (Slavin,1994:331) are also employed as didactic approaches.

It should be noted that the theoretical framework described above, forms an integral part of the course developers' own belief system and that (prior to designing the course) the course

developers' already had practical experience in applying the theories in a classroom situation. For the purpose of this study the theories and concepts of four prominent educators which influenced the rationale of the Study and Thinking Skills (S&TS) programme are described below.

3.3.2 THEORISTS WHO INFLUENCED THE PROGRAMME

There are a number of key theorists in the field whose work influenced the Study and Thinking Skills (S&TS) programme. These include Piaget, Vygotsky, Feuerstein and Lozanov.

3.3.2.1 PIAGET'S THEORIES

Piaget explains learning in terms of assimilation and accommodation, which are modifications to cognitive structures called schemes. New experiences are either *assimilated* (i.e. when they are interpreted in relation to existing schemes) or else *accommodated* (i.e. when they cause existing cognitive structures to be modified and new ones to be created). Piaget argues that individuals seek "equilibrium" between their experiences of reality and their cognitive schemes. When schemes are inadequate for making sense of experience, "disequilibrium" occurs and this in turn provokes efforts to compensate through either assimilation or accommodation (Slavin,1994:32-34).

Piaget also presents a theory of knowledge construction which states that there are three types of knowledge (McCown, Driscoll and Roop,1996:34) that people construct about their environments: *physical knowledge* (i.e. knowledge gained through experiencing perceptual properties); *logico-mathematical* knowledge (i.e. knowledge that is constructed upon inventing or reorganising patterns); and *social-arbitrary* knowledge (i.e. knowledge that is gained solely by one's interactions with other people within one's cultural group). The Study and Thinking Skills (S&TS) programme deliberately attempts to provoke disequilibrium in learners. It also mediates all three types of knowledge.

3.3.2.2 VYGOTSKY'S THEORIES

Vygotsky presents a theory of cognitive development which places emphasis on the socio-cultural nature of learning. In this theory Vygotsky states that higher mental functioning usually exists in conversation and collaboration among individuals before it exists in the individual (Slavin,1994:49). This collaboration is, therefore, essential for development of knowledge. Based on Vygotsky's work, Bruner further developed the concept of *scaffolding* (Wood, Bruner and Ross, 1976; McCown, Driscoll and Roop, 1995:45). In the process of scaffolding, a facilitator provides support for learning, reducing gradually as proficiency develops. One way in which the Study and Thinking Skills (S&TS) programme provides scaffolding for learners is by use of judicious metaphors, for example the metaphor of the brain as a powerful computer.

3.3.2.3 FEUERSTEIN'S THEORY OF COGNITIVE MODIFIABILITY

In his theory of cognitive modifiability, Feuerstein emphasises the role of culture as well as the significant role of a mediator. Feuerstein bases his theory on the fact that human intellect (except for severe organic or genetic impairment), can be modified at all ages and stages of development (Feuerstein *et al.*, 1980:9). Building on this premise, he places emphasis on the teacher as mediator, stipulating that there are three main criteria needed for mediated learning to take place (Feuerstein et al 1988:61; Presseissen and Kozulin, 1993:4). These are: the *mediation of meaning*; *intentionality and reciprocity*; and *transcendence*. Mediation of meaning is one of the key features which sets apart a mediated learning experience from other learning experiences and can be interpreted as "the emotional and energetic principle that requires mediators to ensure that the stimulus they are presenting is getting through to the learner" (Howard,1996:43-44). The principle of cognitive modifiability is a basic premise of the Study and Thinking Skills (S&TS) programme, and presenters are aware of their task as mediators.

3.3.2.4 LOZANOV'S APPROACH

Suggestopedia is an innovative holistic approach to teaching which was developed in the seventies by the Bulgarian neuropsychiatrist and psychotherapist, Georgi Lozanov. This approach is based on two premises:

- that each learner has relatively unlimited brain potential
- that the brain is largely under-utilised (Lozanov,1978:11)

In addition to these premises, Lozanov believes that most learning takes place subconsciously. This has two basic implications for adult learning. Firstly, much subconscious learning has already taken place around "negative suggestions". This forms barriers to further learning ("anti-suggestive barriers") which teachers must purposefully counter. Secondly, due to the fact that much learning takes place sub-consciously, extensive use should be made of peripheral learning materials such as pictures, posters, slogans, metaphors and mindmaps, all of which impact on the subconscious mind. Further principles of suggestopedia which build on Lozanov's premises are:

- learning can be enjoyable if techniques are used to relieve stress
- there is a need to involve the whole brain in learning e.g. verbal stimulation, music, visuals, and action.

During the implementation of the Study and Thinking Skills (S&TS) programme, the teacher/facilitator recognises brain potential by the use of a variety of techniques derived from "Suggestopedia", which serve to counter anti-suggestive barriers and fears.

3.4 NATURE AND NEEDS OF THE TARGET GROUP

From a needs survey conducted on a sample group of "high risk" students and their lecturers at Stellenbosch University (1994), findings indicated that whereas many students attributed their learning difficulties to the volume and pace of work, lecturers in general identified learning difficulties in terms of problems regarding: attitude, poor time management, and lack of cognitive skills. Furthermore, from unpublished surveys conducted at other South African tertiary institutions it was apparent that many students find bridging to university difficult, due to the following dysfunctional learning habits and attitudes which frequently exist at school: a formula centered approach to science and mathematics; a belief that learning is equivalent to memorising; an assumption that it is better and more effective to work on your own rather than with others; and a belief that the lecturer is the ultimate source of all knowledge and has control over the individual's learning. It has also been expressed, *inter alia*, by Graysen (1994:3), that many of these

beliefs and assumptions stem from the highly authoritarian nature of schooling in South Africa and therefore similar problems (differing only in magnitude) are likely to be experienced by both white and black students. To break these habits and change attitudes which have been compounded over 12 years of schooling, students need to understand the shortcomings in their learning culture and be willing to operationalise new cognitive, motivational, and behavioral strategies (Cilliers and Kilpin 1997b:27).

3.5 LEARNING IN TERMS OF BRAIN FUNCTIONING.

Advances in the field of neuroscience have created a revolution in education, in terms of understanding the process of learning (Caine and Caine, 1991; Vos and Dryden, 1991; De Porter, 1992). An understanding of scientific theories, models and empirical findings with respect to the brain can have significant implications for both educators and students. Not only can it make learning more meaningful but it can render new perspectives on aspects of : self-concept; self- motivation; overview of learning matter; organisational skills; stress management; reading speed; memorising; optimising brain power; and active learning (Dryden and Vos, 1994:111 - 135).

For this reason "brain based" learning and teaching plays a cardinal role in the Study and Thinking Skills (S&TS) programme. Amongst the models, theories and parts of the brain referred to in the programme are: the triune brain model of MacLean; the left /right hemispheric specialisation; functions of the various brain lobes and the reticular formation; brain cells as pattern makers; and different rhythms of the brain (Dryden and Vos, 1994:108).

3.6 PROGRAMME MATERIAL

The development of the programme took place in two main phases: the initial design phase took place in 1994 and a second, development phase, which was prompted by action research, took place in 1996 -1997. In the following sections the programme material is described in terms of these phases.

3.6.1 PHASE ONE - INITIAL DESIGN OF PROGRAMME

This section describes the programme material developed and designed in Phase One.

3.6.1.1 Design of programme material

The programme material designed in 1994 was based on the following factors:

- the theoretical framework of Study and Thinking Skills (S&TS) programme (see 3.3)
- the nature and needs of the target group (see 3.4)
- contemporary learning research, in particular research which connects neuroscience with learning (3.5)
- the programme-developers' previous teaching experience, in the subject areas of educational psychology, mathematics and thinking skills programmes (in particular De Bono's CoRT programme).

3.6.1.2 Broad objectives of programme

On the basis of the above factors it was decided that the 1995 Study and Thinking Skills (S&TS) programme material should focus on fostering self-skills as well as organisational and metacognitive skills within a constructivist approach to learning, so as to ensure generative learning. This implies gaining insight into one's own learning process, with regard to thinking and studying, in order to monitor progress and knowledge about how to learn and improve continuously .

3.6.1.3 The course contents

In order to assist students in constructing their own knowledge, a "student-friendly" workbook, in which students could perform written exercises, (individually and in group activities) was created (Cilliers and Kilpin 1997b). A brief summary of the course, in terms of the seven modules in the course workbook, is presented below.

MODULE 1 - Self skills. In this module the emphasis is on psychological sub-skills that are pivotal in learning, bridging and thinking. These skills include developing a positive self-concept, gaining an educational psychological perspective (with special attention to the implications thereof for learning, studying and thinking), following practical steps to self motivation; and acquiring a basic knowledge of the human brain.

By using the analogy of the brain as being more powerful than any computer in the world, yet without an instruction manual, emphasis is put on the potential of the brain as well as on metacognition: how to control and monitor learning in terms of study and thinking skills.

Scientifically researched connections from neuroscience to education are presented. The programme developers also provide students with opportunities to experience and internalise metacognitive processes, in both academic and personal problem-solving scenarios. By means of these, students are further encouraged to transfer these skills and to control and manipulate learning in their specific areas of study.

MODULE 2 - *Thinking skills.* In this module thinking skills are explicitly taught. Included in the module are: a rationale for the teaching of thinking skills; the historical context and relevance of teaching thinking skills; basic terminology, and specific thinking tools and strategies specially selected to complement and reinforce the study skills covered in separate modules.

MODULES 3 & 4 - Organisation and problem-solving skills. These two modules were designed to offer students the opportunity of integrating the thinking skills (and instruments) learnt in Module 2, with organisation and problem-solving skills, particularly within the context of mathematics. Mathematics was selected as the majority of the students participating in the programme, would be embarking on a course in calculus as part of their studies.

MODULE 5 - Other study skills. Although many study skills and sub-skills are dealt with in modules *1 - 4,* in this module (and module 6) emphasis is specifically on basic study and test/exam-writing skills (once again reinforced with appropriate thinking skills taught earlier). The module begins with a base-line questionnaire used to promote inner realisation of the personal need to improve study skills. Students are then reminded of the implications of Module I in order to reinforce the concept that the successful student does not depend only on effective methods. An overview of important study principles is then presented on

the overhead projector.

The study principles and study methods are then given more detailed substance and additional attention is focused on techniques which utilise whole brain integration skills, memory skills, listening skills, reading skills, notemaking, and summary skills - with special emphasis on mindmapping (Buzan,1995:76). Practical applications are then devised and monitored, and study support groups formed.

MODULE 6 - Test and examination skills. Due to the fact that many students who study correctly still encounter problems preparing for and writing tests and examinations, this module teaches practical skills in this regard. (Cilliers and Kilpin, 1997a:29).

3.6.2 PHASE TWO - MODIFIED DESIGN OF PROGRAMME

This section describes the programme material developed and designed in Phase Two, with special reference to:

- information on how findings from action research in 1995 and 1996 changed the programme developers' approach
- objectives of the programme
- adjustments to course contents

3.6.2.1 Findings from the action research during 1995-1996 implementation

As part of the action research conducted, the developers/presenters investigated the pre and post data of the 1995 and 1996 programme implementation (Cilliers and Kilpin 1997a,b). From findings of this research, as well as from informal discussions with students and "observing students as they worked on tasks", it seemed to the programme developers/presenters that students as a rule reflected on the *content* of the problem but not on the process of solving problems. Furthermore, it seemed that students found it difficult to develop their own metacognitive strategies, preferring instead to make use of fixed rules when solving problems.

In looking for ways to improve the programme, the developers/presenters searched for

methods in which they could encourage students to reflect on their formula driven perception of problem-solving, as it seemed that this pre-supposition was impeding their conceptual grasp of "metacognition". The need for students to analyse their own assumptions about learning and for a deeper reflection on *beliefs underlying problem-solving* became apparent.

Although this finding resulted in the inclusion of new tasks into the programme material, the most significant outcome was in terms of the shift it elicited in the developers/presenters didactic approach .

3.6.2.2 A shift in the developers/presenters approach

As a result of the above findings the developers/presenters' views on how to facilitate metacognition to students changed, and with that the focal point of the course changed from facilitating "learning about learning" to facilitating "*conscious reflection* in learning about learning" (see 1.2.1.5.) This shift, which incorporates an insightful understanding of "empowerment through reflection" is also reflected in the objectives outlined in 3.6.2.5 as well as the title of the poster presented at the 1997 International Conference of Cognitive Education: "Empowering through reflection, a facet of a programme integrating study and thinking skills for disadvantaged freshmen at a South African University" (Cilliers and Kilpin, unpublished poster presentation, 1997).

3.6.2.3 Adjustments to the rationale underlying the course

The new focal point of the course led the developer/presenters to investigate literature on the subject of "reflection in learning" . Reflection was understood as "a generic term for those intellectual and affective activities in which individuals engage to explore their experiences in order to lead to new understandings and appreciations" (Boud, Keogh and Walkers 1995:3). Boyd and Fales (1983:100) further defined reflective learning as "the process of internally examining and exploring an issue of concern, triggered by an experience, which creates and clarifies meaning in terms of self, and which results in a changed conceptual perspective". Both definitions substantiate the need for deliberate conscious reflection in order to bring ideas to our consciousness so that we can evaluate

them and consequently make active and aware choices about learning (Boud,1995). Furthermore, practical advice on "making thinking visible" was taken from Barell (1995:249).

3.6.2.4 Adjustments to the course contents

Influenced by research into the "test-teach-test" approach implemented at Natal University (Bradbury, unpublished, 1997), the Study and Thinking Skills (S&TS) programme tasks were adjusted to include pre, mid and post exercises, interspersed with teaching which focuses on stimulating students' awareness of the conscious reflection skills being tested. Testing thus forms an integral part of the intervention process.

By introducing exercises which require students to verbalise (in writing and vocally), emphasis is placed on "making thinking visible" thus also increasing their awareness of the "processes associated with reflection" (Barell,1995:249). According to Bruer (1993:83), "one problem with metacognitive skills is that they are usually covert and implicit in expert performance". However, after analysing and evaluating the tasks submitted by students, the instructor is able to provide feedback - making metacognition overt and explicit by paying special attention to the "four metacognitive processes" that are important contributors to problem-solving performance across a wide range of domains. These processes are: (1) identifying and defining the problem, (2) mentally representing the problem, (3) planning how to proceed, and (4) evaluating what you know about your performance" (Sternberg et al., 1994:208).

Due to time constraints and the fact that mathematics was a subject which the students attending the course had in common - the test tasks were designed to incorporate relatively easy mathematical word problems from Whimby (1986: 221-309).

3.6.2.5 Aims and objectives of the programme.

The broad aim of the Study and Thinking Skills (S&TS) programme is to present study and thinking skills in an integrated way, so that the study skills taught are complemented and reinforced by thinking skills and psychological sub-skills. This assists in the development

of "mental fitness" for university studies, as opposed to focusing only on the teaching of heuristics for study and thinking skills. A "mentally fit" student is an autonomous learner and an active participant in a positive learning culture. Mental fitness is developed by encouraging learners to:

- value themselves and their "powerful" brain
- realise their potential for change and their own control over that change
- gain knowledge of their own cognitive processes
- use newly acquired vocabulary in order to describe their cognition and metacognition
- reflect on the course material with respect to the above issues

The objectives of the Study and Thinking Skills (S&TS) programme as outlined in the Student Workbook are as follows:

- to integrate and reinforce study skills with thinking skills and other psychological sub-skills
- to boost personal empowerment by assisting with the development of a positive self-concept
- to mediate to students that beliefs which they hold about themselves and about studying may cause learning problems
- to help students 'learn about learning' by first of all learning about themselves, about motivation and about the human brain
- to mediate that "valuing yourself" and "recognising that you can change" are two important principles which underlie the proposition that the rate, amount and type of learning which a person is capable of, can be altered through the acquisition of cognitive skills
- to teach thinking skills explicitly and implicitly, which will assist students in broadening their perception, being more creative, controlling their emotion, getting overview whilst studying - anticipating that these will develop into the natural dispositions of "successful students"
- to expose students to co-operative and communicative skills

- to help students understand and experience metacognition through exercises in journal writing and mindmapping and through self-talk and reflecting in groups
- to remediate deficient cognitive processes, dispositions and beliefs which may hamper learning through creating cognitive conflicting situations between new and stored knowledge

3.7 PROGRAMME IMPLEMENTATION

The content of the Study and Thinking Skills (S&TS) programme was carefully structured to comprise ten 2-hour lessons, spread over a period of four weeks. Table 3.1 provides an overview of how the lessons are structured. In section 3.7.1 the elements (in bold print) of Table 3.1 are expanded and explained with respect to how they are implemented in the Study and Thinking Skills (S&TS) programme.

3.7.1 Explanation of the lessons and course material

This section focuses in particular on the implementation of the course material. As the *course material* and the *implementation procedures* are closely related categories of the Study and Thinking Skills (S&TS) programme, this section complements section 3.6.1.3, which focuses more broadly on the course material.

3.7.1.1 Introduction exercise (lesson one)

Lesson 1 starts with an introduction exercise, where students work in pairs and introduce each other to the rest of the class. The introduction includes the following details: first names, home town, anticipated course at university and "something special" about the person. The presenter participates in the same introduction process (also first name) and includes informal background about himself/herself. The introduction exercise is captured on video by a student assistant.

3.7.1.2 Overview and ambience of course established (lesson one)

Physical elements which contribute to the ambience (warm and relaxed atmosphere) of the course are: a "comfortable" lecture venue, audio and video equipment, and dressing casually .

Table 3.1 Description of lessons

LESSON	Lesson description
1	♦ **Introduction exercise**, recorded on video ♦ **Overview and ambience** of course established ♦ Basic **listening skills** for problem-solving in partners established
2	♦ Verbal reasoning problems followed by **test (pre): tasks 1 to 3** ♦ Introduction to lesson 3 - developing a positive self-concept
3 - 4	♦ **Self-skills** - psychological sub-skills that are central to learning, bridging and thinking, **base-line questionnaire** ♦ Basic knowledge of human brain and why brain power is not optimised, followed by practical steps for self-motivation
4 - 5	♦ **Thinking skills** - rationale for teaching thinking skills, basic terminology, and specific thinking tools and strategies selected to complement and reinforce the study skills taught
6	♦ Maths word problems followed by **test (mid): tasks 1 to 3** ♦ Introduction to lesson 7 : " o-r-g-a-n-i-s-a-t-i-o-n spells relief"
7	♦ **Organisation skills** - feedback on problems, with emphasis on organising information (tables, mindmaps, sketches), **baseline questionnaire** ♦ Time management skills ♦ Organisation for overview/big picture /concept mapping
8	♦ **Problem-solving skills** - emphasis on increasing awareness of mental activities/processes used in problem-solving, **baseline questionnaire**
9	♦ **Study and Examination skills** - explained in detail ♦ Focus on techniques which use whole brain integration skills; memory skills; listening skills; reading skills; notemaking and summary skills (mindmapping-Buzan), **baseline questionnaire** ♦ Selfskills from lesson 2-3 remediated, emphasising importance of beliefs about the self, learning and studying
10	♦ Practical application of material taught in lesson 9 ♦ Maths word problem followed by **test (post)** : **tasks 1 to 3** ♦ PMI-exercise on evaluating the course (De Bono)

Psychological aspects which contribute to creating a supportive and friendly atmosphere are located primarily in the educators' approach. Examples of such aspects are the use of humour, analogies and metaphors (which are presented verbally and visually) when giving an introductory overview of the course, the implementation of suggestopedic principles as discussed earlier (see 3.3.2.4) and the educator using his/her first name.

3.7.1.3 Basic listening skills when working in partners (lesson one)

Emphasis is placed on good listening skills by means of a comedy video which illustrates the opposite - bad listening skills! This is followed up by a brainstorming session on the topic.

3.7.1.4 Pre-test (lesson two)

Testing forms an integral part of the course material. Three tests are administered during the four weeks. The tests comprise tasks which stimulate students to reflect on their thinking processes during and after problem-solving a relatively simple mathematical word problem (3.6.2.4).

In task-1 students solve problems individually and then reflect in writing on their thinking processes; in task-2 students problem-solve "thinking-aloud" with a partner and in task-3 students answer an inventory type questionnaire. Task 1 is assessed according to twelve criteria which were identified from current literature on reflection in problem solving (Barell 1995, Fisher 1990, Pressley and Woloshyn 1995, Sternberg et al 1994, Whimby and Lockhead 1996).

These criteria comprise both cognitive and metacognitive processes which contribute to problem-solving performance . General trends identified when evaluating this task are discussed with the students in the following lesson.

3.7.1.5 Self-skills (lesson three)

Emphasis is on developing a positive self-concept (see 3.6.1.3 - module 1), and on understanding the "unlimited" potential of the human brain. This is promoted through

analogies , storytelling and metaphors as well as by presenting students with scientific neurological information about the brain.

Furthermore, the importance of understanding intelligence in terms of the quality of cognitive functioning, rather than the quantity of brain cells is mediated. To illustrate this, the educator refers to a quote in the form of an analogy: "intelligence is like the horsepower of a car. It is only potential. Thinking skill is like driving skill. We have to learn how to drive and we have to learn how to think constructively. There are powerful cars that are badly driven and intelligent minds that are used inefficiently" (De Bono, 1992:6).

As a part of the theme on cognitive modifiability, the course presents a picture of Feuerstein and the slogan, "Change is the most stable characteristic of human beings" .

3.7.1.6 Baseline questionnaire (lessons three, seven, eight and nine)

At the beginning of each of the lessons: self-skills; organisation skills; problem solving skills; and study and exam skills, the student complete "self-report" questionnaires in which they answer questions regarding their own beliefs and habits concerning these topics.

3.7.1.7 Thinking skills (lessons four and five)

In order to stimulate students' awareness of their cognitive processes, so as to enable them to practice metacogntive skills whilst solving problems related to their studies, students are explicitly taught several of De Bono's thinking instruments (CoRT programme and Six Hats programme). Furthermore, these instruments (especially the Six Hats) give a new perspective on the monitoring of group work.

3.7.1.8 Mid-test (lesson six)

The mid-test structure is similar to the pre-test. However, as (during lessons Two, Three and Four) meaning has been mediated on practical aspects of the concept "metacognition", students are now better prepared to answer the tasks.

3.7.1.9 Organisation skills (lesson seven)

Lesson Seven focuses on various time and work management techniques. The students are taught the rules of mindmapping and are given the opportunity of producing individual mindmaps.

The advantages and disadvantages of using mindmaps are also discussed in class. Furthermore emphasis is placed on practical examples of tables and sketches which can be used to organise material.

3.7.1.10 Problem-solving skills (lesson eight)

The importance of reflecting on the process of solving problems is mediated to the students. Several different examples of problem solving strategies are discussed and students are given time to design a practical (personal) checklist of cognitive processes (and thinking instruments) which might assist them in solving different type of problems.

3.7.1.11 Study and examination skills (lesson nine)

In this lesson students are given the opportunity to reflect on their study habits. New ideas and improved study habits are discussed (explained by metaphors and analogies) and supported by scientific findings.

3.7.1.12 Post-test (lesson ten)

In addition to tasks one, two and three as described earlier (see 3.7.1.4), the students are asked to evaluate the course using De Bono's PMI instrument (1998:20).

3.8 Summary

This chapter has focused on the Study and Thinking Skills (S&TS) programme in some detail, as the background to the programme, its theoretical framework, rationale, target group, learning material as well as its practical implication, comprises essential data for understanding transformational learning events and opportunities in this specific context.

CHAPTER FOUR

Research design and methodology

4.1 INTRODUCTION

A *research design* can be described as a "strategic framework for action that serves as a bridge between the research questions and the execution or implementation of the research" (Durrheim, 1999:29). However, as explicated by Lincoln and Guba (1985:225), qualitative *research design* "cannot be given in advance; it must develop and unfold". As yet, similar programmes have not been evaluated from a transformative learning perspective - let alone in a South African context. Therefore, this is a relatively unexplored area of research which requires the "open, flexible and inductive approach of *exploratory research*" (Durrheim,1999:39).

As the research design in this study is both qualitative and exploratory, the research (see section 4.2) will be described in terms of a process that is a flexible guide, rather than in terms of a design (or blueprint) that is formally developed prior to the commencement of the study (Durrheim 1999:31).

According to Terreblanche & Durrheim (1999:1-5) *methodology* "specifies how the researcher may go about practically studying whatever he or she believes can be known". It is clear therefore that the paradigm will, in the first place, determine the methodology. The researcher considers this research to fall into the *interpretive* paradigm. Within this paradigm the *nature of reality* is considered to be the "internal reality of subjective experience" and the *methodology*, (i.e. how the researcher goes about practically studying whatever he/she believes can be known), can be explicated as interpretive and qualitative (Terreblanche & Durrheim 1999:1). In section 4.3 the qualitative research methodology devised for this research is explained in detail.

4.2 THE RESEARCH PROCESS

Mouton (2000:55) suggests that it is considered good practice to reflect and get clarity on the research problem; what kind of result the research aims at and what kind of evidence is required to address the research problem prior to choosing a research design. In this chapter the researcher will thus briefly introduce the research problem, the research aims and the evidence available for addressing the research problem, prior to explicating the design and placing it in the context of an schematic overview of the research for further clarity.

4.2.1 THE RESEARCH PROBLEM AS POINT OF DEPARTURE

The research problem is summarised in section 1.3.

The research problem deals with transformative aspects of learning i.e. with key aspects of theory, in this case the adult learning theory of Mezirow. The focus is on transformative learning *within the context* of an existing study and thinking skills programme. The programme represents an *application and synthesis* of theory, in this case theory of cognitive education (e.g. Piaget, Vygotsky, Lozanov, Feuerstein).

The conceptualisation of the problem developed out of prior research in which the researcher participated not only as researcher but also as co-developer and co-presenter. This prior research involved the design and development of a university based study and thinking skills programme (Cilliers and Kilpin: 1997a,1997b).

It should be kept in mind that the Study and Thinking Skills (S&TS) programme was developed within a specific conceptual framework (cognitive education). As such, its rationale encompasses a group of well established theories (see Chapter Three) with additional material from leading authors in the field, e.g. de Bono, Buzan and others. The programme design did not take account of the transformative dimension of learning as explicated by Mezirow; moreover, its theoretical underpinning is largely derived from work with children and adolescents, not adults. It was not, therefore, guided by insights from Transformative Learning Theory.

Nonetheless, the programme appeared capable of instigating transformative learning. It was due to the responses of participants, that the researcher became aware that the programme appeared to foster elements of transformative learning, even though this was not included in its formal aims and objectives or its rationale. Yet a conceptual framework to identify relevant aspects of the programme that could have led to this outcome, was lacking.

Without such a framework, it is not possible a) empirically to evaluate the Study and Thinking Skills (S&TS) programme from a transformative learning perspective, or b) to improve the programme in respect of transformative learning. A programme evaluation has to start somewhere, and requires a sound and comprehensive theoretical framework for understanding and predicting programme outcomes. This perceived lack of a framework gave rise to the present qualitative, exploratory study.

In order to develop understanding of transformative learning in the context of the Study and Thinking Skills (S&TS) programme and to identify theoretically justified aspects of the programme that could elicit transformative learning, *external criteria* were needed.

The problem experienced in finding suitable objective criteria led the researcher to investigate means of *developing criteria* for this purpose. One option in this relatively unexplored domain (Taylor, 1997:34) was to make use of an *adult learning theory* developed by Mezirow (see Chapter Two). However, this theory, which focuses on explaining the dynamics of transformative learning to adult educators, raised a further problem. Although the theory is explicated in terms of generic theoretical propositions, these are too generalised to use as criteria for research purposes. There is therefore, a need (firstly) to identify and operationalise criteria from Transformative Learning Theory; and (secondly) to apply these criteria in analysing the Study and Thinking Skills (S&TS) programme.

The research problem highlights the need to identify criteria suitable for analysing transformative elements in a study and thinking skills programme, as well as the need to apply these criteria in an analysis of *the* Study and Thinking Skills (S&TS) programme.

Therefore the research problem needs a research design which incorporates the *identification and operationalisation* of criteria from Transformative Learning Theory and the *analysis* of the Study and Thinking Skills (S&TS) programme (including its theoretical rationale) according to these criteria.

4.2.2 WHAT KIND OF RESULT DOES THE RESEARCH AIM AT

The research aims at the following results :

- the identification of relevant criteria from Transformative Learning Theory
- the operationalisation of these criteria for the purpose of analysing a study and thinking skills programme
- the identification of elements from the Study and Thinking Skills (S&TS) programme that match up with the criteria from Transformative Learning Theory
- the identification of criteria that may be missing from the Study and Thinking Skills (S&TS) programme (i.e. the identification of omissions)
- general recommendations for improving the Study and Thinking Skills (S&TS) programme as well as recommendations for the design of other programmes to foster transformative learning.

It can thus be concluded that the *result the research aims at*, is the establishment of *theoretically justified* factors that may be responsible for making the existing programme an instrument of transformative learning. This is seen as an essential preliminary step before attempting to determine "whether a particular programme is effective" (Huysamen, 1994:35). The findings of this study will not enable conclusions regarding the effectiveness of the programme but will enable a future empirical study to proceed in a theoretically sound and coherent manner.

4.2.3 WHAT KIND OF EVIDENCE IS REQUIRED

- A suitable (recognised) source from which to develop criteria
- Data which indicate that the criteria from the Transformative Learning Theory match up with selected categories of the Study and Thinking Skills (S&TS) programme

- Evidence of omissions in the Study and Thinking Skills (S&TS) programme which might indicate areas where the programme could be redesigned or improved with respect to transformative learning
- The validity of the findings from the analysis can be tested and interpreted in terms of the appropriateness of the criteria derived from Transformative Learning Theory. In principle therefore, the study could be replicated by a different researcher who should reach similar conclusions

It can thus be concluded that *the evidence required* would be: a) criteria from Mezirow's Transformative Learning Theory and b) elements identified as either present or absent, based on an analysis of the Study and Thinking Skills (S&TS) programme in terms of these criteria. The criteria are operationalised by the researcher, but are objective, and external to the Study and Thinking Skills (S&TS) programme. In principle therefore, the research meets the criterion of replicability (Durrheim, 1999:327).

4.2.4 RESEARCH DESIGN

Taking into consideration the research problem, the research objectives and the evidence required as described in (4.2.1 - 4.2.3), the research design that suits this type of study may be described as follows:

- The unit of analysis is the Study and Thinking Skills (S&TS) programme as an instrument for transformative learning (this would imply a case study)
- As the study is used to make a preliminary investigation into a relatively unknown area of research, this would imply exploratory research (Durrheim,1999:39)
- Furthermore the study can also be described as a *conceptual analysis* of qualitative data; this data comprises the rationale and theoretical underpinning of the programme as well as its stated objectives, course material and implementation procedures

The main concepts of the research design are explicated in terms of contemporary literature on research:

a) Conceptual analysis

This type of analysis pertains to the clarification of concepts in specific contexts (Mouton, 1996:109; 2001:175). In this study conceptual analysis is used in the context of programme evaluation. According to Rossi and Freeman (1985:39) there are three major classes of evaluation research in the field of programme evaluation, (namely)

- *analysis* related to the *conceptualisation* and *design* of interventions
- monitoring of programme implementation
- assessment of programme utility

This study can be placed into the first category as it focuses on analysing the programme design in terms of its goals, as well as the coherence of its rationale (Ross and Freeman, 1985:39).

b) Exploratory Research

Mouton (1996:102-108) proposes that in cases where little previous research has been conducted, there is a call for exploratory research which focuses on determining new, interesting patterns in data. In such research studies, unlike confirmatory or validational inquiries, the research demands a semi-structured and open-ended design (as implemented in this study).

c) A qualitative case study

According to Denscombe (1998:32) case studies can be said to provide an in-depth account of events within a particular phenomenon. Furthermore, he explains that the benefits of studying *processes* by means of a case study is that they are dealt with holistically, in a natural setting. In addition case studies have the advantage that they can use multiple sources and multiple methods (Denscombe,1998:31). By means of an exploratory qualitative analysis of the Study and Thinking Skills (S&TS) programme (as a case study), this research thus investigates the aspects (events) of the Study and Thinking Skills (S&TS) programme that could be responsible for promoting transformative learning as defined by Mezirow's Transformative Learning Theory.

4.2.5 SCHEMATIC ILLUSTRATION OF THE RESEARCH DESIGN

In order to provide additional clarity, the research design is schematically illustrated in Figure 4.1, and is explained in detail in 4.2.4.1.

4.2.4.1 BACKGROUND AND EXPLANATION OF RESEARCH

In order to understand the research design, it is important to stand back and gain an overview of the present research in context of its origins, as well as its potential for shaping future research. Figure 4.1 depicts three stages: earlier empirical research, current research and possible future research.

a) Earlier empirical research

As indicated on the schematic overview, *earlier empirical research* on the Study and Thinking Skills (S&TS) programme followed a cyclic pattern from the initial design of the course in 1994. The programme is implemented at the beginning of the academic year and runs over a period of four weeks. At the end of the four weeks, student responses to the programme are analysed via formal and informal questionnaires, with the aim of improving the programme.

Findings from the first two years led the researchers to elements that were easily identified and attended to, in order to enhance the programme. However, after the 1997 implementation of the programme, when responses from several students indicated that they had experienced what could be interpreted as an (unexpected) change in their belief system, (implying that transformative learning may have occurred), it appeared necessary to investigate what elements of the programme might have instigated this. These elements could then be further developed, if possible. This investigation proved problematic due to the lack of suitable criteria (see 1.2.3 and 4.2.1).

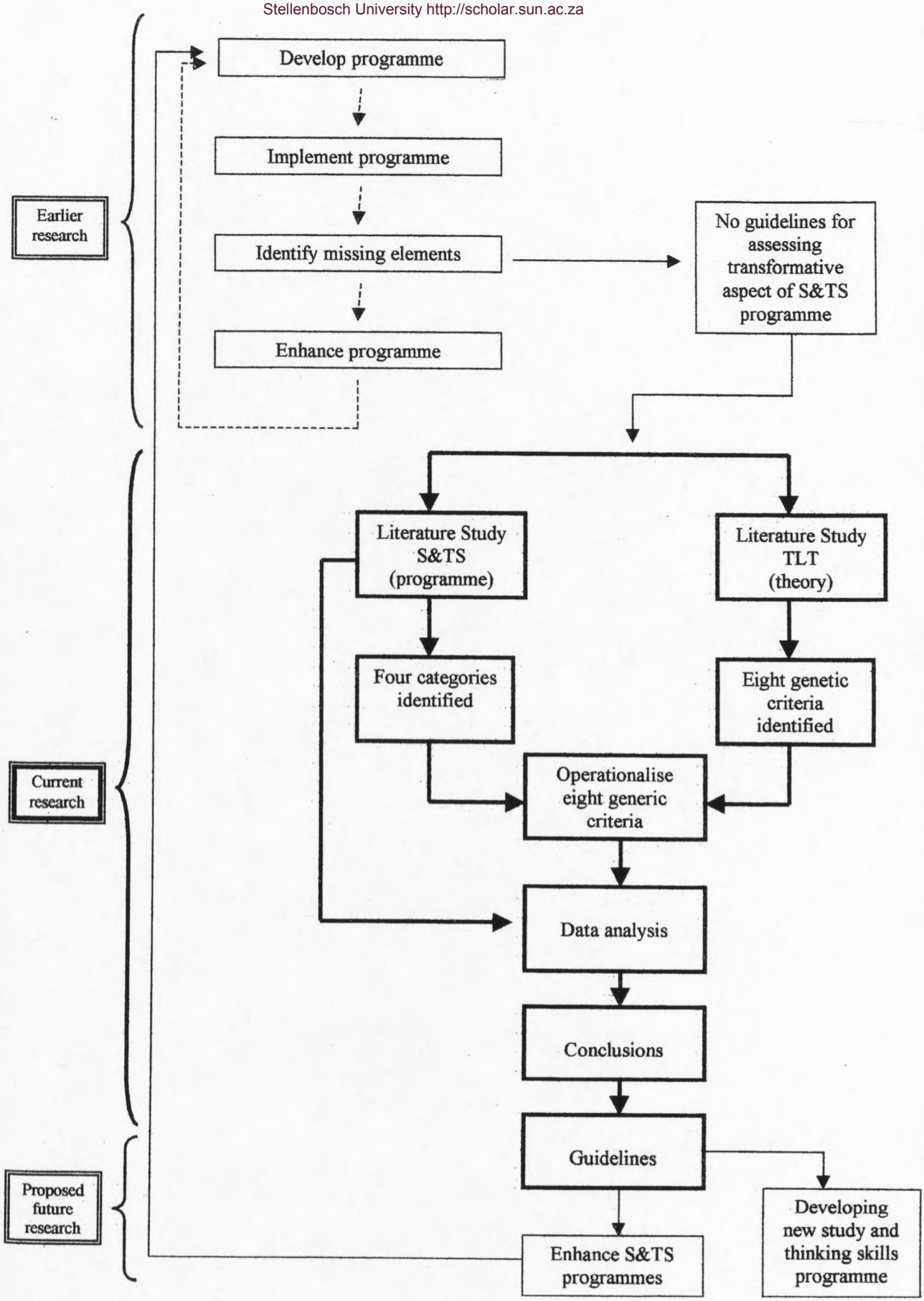

Figure 4.1 The Research Design

b) Current Research

As indicated on the schematic overview, the *research problem,* as described in (4.2.1), guided the researcher to embark on a literature study of *transformative learning.* Transformative learning is a relatively new domain of research. Since most of the published articles on the subject relate or refer to Mezirow's comprehensive theory on transformative learning education (Taylor, 1997: 34-35), the researcher decided to focus exclusively on this theory as a source for selecting the necessary criteria .

As further indicated in Figure 4.1, the literature study led the researcher to identify eight generic criteria which represent the essence of Transformative Learning Theory and which could be operationalised into *criteria suitable for assessing* the Study and Thinking Skills (S&TS) programme. These eight criteria were *adapted as questions* and applied to *four categories* of the Study and Thinking Skills (S&TS) programme, namely: the rationale, objectives, course material and implementation procedures.

Figure 4.1 depicts the description of the Study and Thinking Skills (S&TS) programme as a second chapter of the *literature study.* The programme had been presented in two published articles, at two international conferences and also in an (unpublished) university course-book. In terms of development and early design, the programme is part of the background of the present study. In terms of its rationale, objectives, course material and implementation procedures, it forms essential *data* for the study.

The *conceptual analysis* takes place according to the methodology explained in section 4.3 The Study and Thinking Skills (S&TS) programme is the *primary unit of analysis.* The programme design synthesises theory that is relevant to cognitive education and the learning process generally. It is postulated that results were produced in the terrain of transformative learning despite the programme not being conceptualised in terms of Transformative Learning Theory.

The Study and Thinking Skills (S&TS) programme, including its theoretical underpinning and rationale, is then subsequently *compared* against criteria from a relevant comprehensive

model of adult learning. This is Mezirow's model (see Chapter Two), which synthesizes theory from various related disciplines and which was specifically designed to assist adult educators to understand the activity of transformative learning (see section 2.1).

From the ensuing analysis, *conclusions are drawn* as to which aspects of the Study and Thinking Skills (S&TS) programme are likely to assist in fostering transformative learning, according to relevant theory, and in which respect the programme falls short against the selected criteria.

An attempt to further synthesise the theoretical framework, to take account of new insights from Transformative Learning Theory, will also be made in the concluding chapter of this study. These conclusions will then inform recommendations for future revision of the programme, evaluation of the programme, and other avenues of research in this area. These will be noted as suggestions for future revision and research.

c) Future research

As indicated in Figure 4, it is envisaged that *future research* will make use of the recommendations and conceptual framework established in the present study, in order to carry out an empirical programme evaluation to assess effectiveness in terms of transformative learning. The recommendations may also serve in the development of new study and thinking skills programmes.

4.3 RESEARCH METHOD

The research method consists of the following:

- The identification and operationalisation of criteria derived from Transformative Learning Theory
- An analysis of the Study and Thinking Skills (S&TS) programme categories (the rationale, the objectives, the course material and the implementation methods), in terms of the above criteria

4.3.1 OPERATIONALISATION OF CRITERIA AND PLAN FOR ANALYSIS OF PROGRAMME

The Study and Thinking Skills (S&TS) programme, as described in Chapter Three, will be analysed according to a matrix comprising eight criteria from Transformative Learning Theory (see 2.4) and four categories from the Study and Thinking Skills (S&TS) programme as indicated in the Table 4.1, below.

In sections 4.3.1.1 - 4.3.1.8 each of the eight criteria are used to formulate questions which relate directly to the four categories (as per definition, see 1.6.5) of the Study and Thinking Skills programme (namely the rationale, objectives, course material and implementation procedures).

It should be noted that the *implementation procedure* in the case of this study refers in particular to the *didactic methods* employed. Furthermore, it should be noted that as the course material and the didactic methods are frequently influenced by the presenter of the course, reference will be made to the role of the presenter in the analysis (Chapter Five).

Table 4.1 Categories from the S&TS programme

Criteria from Transformative Learning Theory	rationale	objectives	course material	imple-mention
1. instrumental & communicative				
2. rational discourse				
3. meaning schemes				
4. distorted meaning perspectives				
5. reflection				
6. four types of learning				
7. perspective transformation				
8. phases of transformation				

4.3.1.1 INSTRUMENTAL AND COMMUNICATIVE LEARNING DOMAINS

This section focuses on operationalising the criterion (which relates to *instrumental and communicative learning* - see 2.3.1) The criterion is briefly explained, thereafter the questions are formulated which probe each of the four categories of the Study and Thinking Skills (S&TS) programme.

a) Criterion: Instrumental and Communicative learning domains

Intentional learning, which is fundamental to transformative learning, can be described as consisting of two domains which differ with regard to their purpose, their method of inquiry and their ways of validating beliefs. However, they are complementary and work interactively within problem solving situations (2.3.1). As learning in the communicative domain is frequently neglected (2.3.1.2) it is important to focus attention on factors which contribute to learning in this domain. Two such factors are *the use of metaphors* and *rational discourse* (see 2.3.1.2).

b) Rationale: Instrumental and Communicative Domains

Question: Does the rationale underlying the Study and Thinking Skills (S&TS) programme imply that intentional learning should be promoted in two domains similar to the *instrumental and communicative domains* in Transformative Learning Theory?

c) Objectives: Instrumental and Communicative Domains

Question: Can it be deduced from the objectives of the Study and Thinking Skills (S&TS) programme (see 3.6.2.5) that learning should be promoted in two domains similar to the *instrumental and communicative domains* in Transformative Learning Theory?

d) Course Material: Instrumental and Communicative Domains

Question:

i) Does the course material promote learning in the *communicative domain* ?

ii) Does the course material promote learning in the *instrumental domain* ?

e) Implementation Procedures: Instrumental and Communicative Domains

Question: Does the programme make use of specific didactic methods to assist with learning in both the *communicative and the instrumental domains*?

4.3.1.2 RATIONAL DISCOURSE

This section focuses on operationalising criterion 2 (which relates to *rational discourse* - see 2.3.2). The procedure is similar to 4.3.1.1 for criterion 1.

a) Criterion 2: Rational Discourse

Rational discourse is a type of dialogue in which a concerted effort is made by participants to arrive at consensus through sincerity, objectivity, broad-mindedness and critical thought. Competence in rational discourse is considered a criterion for transformative learning (see 2.3.2) and consequently it must be stimulated in programmes which intend to foster transformative learning. The following questions refer to this criterion.

b) Rationale: Rational Discourse

Question: Does the rationale underlying the Study and Thinking Skills (S&TS) programme infer the need for, or advantage of, *rational discourse* as defined by Transformative Learning Theory?

c) Objectives: Rational Discourse

Question: Can it be deduced from the objectives of the Study and Thinking Skills (S&TS) programme (see 3.6.2.5) that the course aims at fostering competence in *rational discourse*?

d) Course Material: Rational Discourse

Question: Does the course material promote *rational discourse*?

e) Implementation Procedures: Rational Discourse

Question: Does the Study and Thinking Skills (S&TS) programme make use of specific didactic methods to stimulate *rational discourse*?

4.3.1.3 MEANING STRUCTURES

This section focuses on operationalising the criterion (relating to *meaning structures*) which was identified in the literature study on Transformative Learning Theory (see 2.3.3).

a) Criterion 3: Meaning Structures

Meaning structures consist of two dimensions: *meaning perspectives* (also known as "habits of mind") which have their origins in culture, and *meaning schemes* which are personal clusters of beliefs (or values) that guide interpretations of individuals (see 2.3.3). As

transformative learning is all about changing these structures it means that learners must be given the opportunity to explore their meaning structures, in particular those which pertain to learning, studying and thinking.

b) Rationale: Meaning Structures

Question: Does the rationale underlying the Study and Thinking Skills (S&TS) programme imply that learners need to explore their *meaning structures*, as defined by Transformative Learning Theory?

c) Objectives: Meaning Structures

Question: Can it be deduced from the objectives of the Study and Thinking Skills (S&TS) programme (see 3.6.2.5) that the course aims at motivating learners to explore their *meaning structures* ?

d) Course Material: Meaning Structures

Question: Does the Study and Thinking Skills (S&TS) course material focus on stimulating students to explore their *meaning structures* (meaning schemes and meaning perspectives)?

e) Implementation Procedures: Meaning Structures

Question: Does the Study and Thinking Skills (S&TS) programme make use of specific didactic methods to stimulate and assist students in exploring their *meaning structures* (in particular, structures which relate to learning)?

4.3.1.4 DISTORTED MEANING PERSPECTIVES

This section focuses on operationalising the criterion (relating to *distorted meaning structures*) which was identified in the literature study on Transformative Learning Theory (see 2.3.4).

a) Criterion 4: Distorted Meaning Perspectives

Distorted meaning perspectives are assumptions which have frequently been established in childhood. In context of learning, studying and thinking, *distorted meaning perspectives*

might include: equating learning with pleasing the teacher, believing that the teacher is the main source of knowledge on a subject and the need to fear the teacher. Distorted meaning perspectives that commonly cause trouble at tertiary level include: a view of learning as rote memorization, a belief that problems are mainly solved by applying formulae, a belief that it is better to work on your own than with others, a view of the teacher/lecturer as the main authority on the course material, and a belief that most problems have only one correct solution. Transformative Learning Theory emphasizes the importance of learners becoming aware of their *distorted meaning perspectives*.

b) Rationale: Distorted Meaning Perspectives

Question: Does the rationale underlying the programme intimate that *distorted meaning perspectives* need to be exposed ?

c) Objectives: Distorted Meaning Perspectives

Question: Can it be deduced from the objectives of the Study and Thinking Skills (S&TS) programme (see 3.6.2.5) that *distorted* (or dysfunctional) *meaning perspectives* should be examined by the students?

d) Course Material: Distorted Meaning Perspectives

Question: Does the course material (and implementation methods) assist with emancipating students from distorted (or dysfunctional) meaning schemes and meaning perspectives ?

e) Implementation Procedures: Distorted Meaning Perspectives

Question: Does the Study and Thinking Skills (S&TS) programme make use of specific didactic methods to expose *distorted* (or dysfunctional) *meaning perspectives* ?

4.3.1.5 REFLECTION

This section focuses on operationalising the criterion (relating to *reflection*) which was identified in the literature study on Transformative Learning Theory (see 2.3.5).

a) Criterion 5: Reflection

Transformative learning theory emphasises the importance of understanding that reflection can take place on the *content*, the *process* or the *premise* of problem solving (see 2.3.5). In terms of learning, studying and thinking it is thus meaningful to encourage learners to experience all three types of reflection (2.3.5) .

b) Rationale: Reflection

Question: Does the rationale underlying the Study and Thinking Skills (S&TS) programme intimate the need to present learners with tasks by means of which they can experience *content, process* and *premise reflection*?

c) Objectives: Reflection

Question: Can it be deduced from the objectives of the Study and Thinking Skills (S&TS) programme that the course promotes an understanding of all three types of reflection, namely *content, process* and *premise* ?

d) Course Material: Reflection

Question: Does the Study and Thinking Skills (S&TS) course material focus on stimulating students to *reflect* on the *content* of a problem, on the *processes* involved in solving problems and on the *premise* underlying these processes.

e) Implementation Procedures: Reflection

Question: Does the Study and Thinking Skills (S&TS) programme make use of specific didactic methods to evoke three different types of *reflection*?

4.3.1.6 FOUR TYPES OF LEARNING

This section focuses on operationalising the criterion (relating to *four types of learning*) which was identified in the literature study on Transformative Learning Theory (see 2.3.6).

a) Criterion 6: Four Types of Learning

According to Mezirow there are four types of learning :

- learning by extending existing meaning schemes - where the existing schemes are refined or extended but basically remain unaltered
- learning by including new meaning schemes - where additional meaning schemes are added
- learning by transforming meaning schemes - where existing meaning schemes are altered or rejected and replaced
- learning by transforming meaning perspectives - where an existing belief system is rejected and replaced thus causing changes in dispositions, attitudes and behaviour

As the four types of learning can be only be analysed in terms of the programme as a whole, this criterion is operationalised in one question referring to the programme.

b) Programme: Four Types of Learning

Question: Does the programme facilitate all *four types of learning* ?

4.3.1.7 PERSPECTIVE TRANSFORMATION

This section focuses on operationalising the criterion (relating to *perspective transformation*) which was identified in the literature study on Transformative Learning Theory (see 2.3.7).

a) Criterion 7: Perspective Transformation

For learners to experience *perspective transformation* in terms of learning and studying, it would mean that learners (students) are liberated (emancipated) from beliefs which impede them in optimising their learning potential. In a *brief intervention programme* it is doubtful whether praxis (as described in 2.2.2.10) can be achieved. However based on the fact that transformations within meaning schemes can also lead to perspective transformation (see 2.3.7), the criteria derived from this theme relate to transformations in both meaning schemes and meaning perspectives .

b) Rationale: Perspective Transformation

Question: Does the rationale underlying the programme support the concept that there is a need to emancipate (liberate) learners from dysfunctional beliefs (distorted meaning schemes and distorted meaning perspectives) which might limit their learning potential?

c) Objectives: Perspective Transformation

Question: Can it be deduced from the objectives of the Study and Thinking Skills (S&TS) programme (see 3.6.2.5) that the course aims at emancipating students from distorted (or dysfunctional) meaning schemes and meaning perspectives ?

d) Course Material And Implementation Methods: Perspective Transformation

Question: Does course material pertaining to the Study and Thinking Skills (S&TS) programme, and the implementation methods used, assist with emancipating students from distorted (or dysfunctional) meaning schemes and meaning perspectives ?

4.3.1.8 PHASES OF TRANSFORMATIVE LEARNING

This section focuses on operationalising the criterion (relating *to phases of transformative learning*) which was identified in the literature study on Transformative Learning Theory. Once again, this is best analysed in terms of the programme as a whole, and therefore is operationalised in one question (see 2.4).

a) Criterion 8: Phases of Transformative Learning

Mezirow defines ten phases in which *perspective transformation* takes place. In a brief intervention programme (10 x 2 hours), the full ten phases are unlikely to take place. However, aspects of the programme might conceivably contribute explicitly to individual phases, and this should therefore be investigated as it could be important.

b) Rationale and goals: Phases of Transformative Learning

Question: Does the Study and Thinking Skills (S&TS) programme contribute specifically to any of the ten phases of perspective transformation, as explicated by Mezirow (see 2.3.8).

CHAPTER FIVE

Analysis of the study and thinking skills (S&TS) programme and interpretation of the results

5.1 INTRODUCTION

In this chapter the rationale, objectives, course material and implementation methods of the Study and Thinking Skills (S&TS) programme (as published and presented at two conferences) are compared (analysed and contrasted) with eight criteria developed from Transformative Learning Theory. The comparison is schematically represented in a matrix format consisting of the four categories and eight criteria (see table 4.1).

A significant factor which needs to be considered in this comparison is that the Study and Thinking Skills (S&TS) programme was designed by educators experienced in the field of educational psychology and cognitive education, and in adolescent learning. The rationale underlying the Study and Thinking Skills (S&TS) programme was accordingly based primarily on the learning theories of Piaget, Vygotsky, and Feuerstein and not intentionally on learning theories in the field of adult education (see 3.3). However it should be noted that the analysis in this study is done according to Transformative Learning Theory, which is primarily an adult oriented learning theory.

5.2 PROGRAMME ANALYSIS: TOOLS

This section summarises the tools of analysis (categories and criteria) developed through preceding chapters of this study.

a) In section 2.3, the dynamics of Transformative Learning Theory are described in terms of eight themes (2.3.1 - 2.3.8). Each theme draws attention to an essential element of the theory, relating to the process of transformative learning.

b) In section 2.4, eight generic criteria (suitable for analysing an intervention programme) are identified from these eight themes.

c) In Chapter 3, the Study and Thinking Skills (S&TS) programme is described in terms of four categories, namely: the *rationale* underlying the programme, the *objectives* of the programme, *programme material* (specifically course material) and *implementation procedures* (specifically didactic methods). The theoretical foundations for the Rationale are also explained in Chapter 3. These are crucial to the analysis; concepts and criteria from Transformative Learning Theory are compared and contrasted with concepts from these foundational learning theories as well as with aspects of programme implementation.

d) In section 4.3.1.1 - 4.3.1.8 the eight generic criteria (identified in section 2.4) are expanded and operationalised as questions suitable for analysing a *study and thinking skills* programme. As explained in the matrix (Table 4.1), each of the eight criteria relating to Transformative Learning Theory are applied to each of the four categories of the Study and Thinking Skills (S&TS) programme.

In the following eight sections (5.2.1 - 5.2.8) the Study and Thinking Skills (S&TS) programme is analysed in terms of the eight criteria, operationalised as questions. At the end of each section, a conclusion or conclusions are presented. These conclusions will be revisited in greater detail, in the following chapter.

5.2.1 INSTRUMENTAL AND COMMUNICATIVE LEARNING DOMAINS

Criterion 1 deals with learning domains (see 2.3.1). From this criterion, four questions were operationalised.

5.2.1.1 RATIONALE

Does the rationale underlying the Study and Thinking Skills (S&TS) programme imply that intentional learning should be promoted in two domains, similar to the instrumental and communicative domains in Transformative Learning Theory?

In the rationale underlying the Study and Thinking Skills (S&TS) programme there is no explicit mention of the two learning domains. However, both Piaget's theory of *knowledge*

construction and Feuerstein's theory of *mediated learning*, suggest that different types of knowledge fall into different learning domains. The rationale of the Study and Thinking Skills (S&TS) programme is strongly based on these two theorists. This rationale in turn determined the choice of objectives, course material and implementation procedures of the Study and Thinking Skills (S&TS) programme.

Piaget's theory distinguishes between three types of knowledge that people construct: *physical* knowledge, *logico-mathematical* knowledge and *social-arbitrary* knowledge. The implication for teaching is that knowledge is socially constructed (similar to communicative learning domain) as well as "physically and logically" constructed (similar to instrumental learning domain).

Hence, Mezirow's division of learning (into the instrumental and communicative domains) has implications for *learning* that are similar to the implications of Piaget's divisions for *teaching*. Learning in the instrumental domain (see 2.3.1.1) tends to be based on "scientifically" verifiable truths (similar to Piaget's physical and logico-mathematical knowledge construction) whilst learning in the communicative domain (see 2.3.1.2) is based on consensual, agreed truths (similar to Piaget's social-arbitrary knowledge construction). Both Transformative Learning Theory and Piagetian theory imply a need to promote teaching/learning in what Mezirow terms the communicative domain, as well as the instrumental domain.

Feuerstein's theory on mediated learning distinguishes between mediated and non-mediated or direct learning. In mediated learning the mediator employs a wide variety of techniques (including metaphors) to ensure that the meaning of the material is understood. A mediated learning experience (MLE) requires mediator and learner to be in a special relationship i.e. one where there is "intentionality and reciprocity".

Mezirow's division into instrumental and communicative domains was influenced by Habermas' concepts of technical and practical knowledge, which are seen as fundamentally different (2.2.5.1.). However, mediated learning, according to Feuerstein, applies to both

domains. The process of mediation - no matter what the subject matter - involves elements of "practical knowledge", as Habermas defined it. This is due to mediation being an essential *socio-cultural* process by which *values and attitudes* are transferred, in addition to knowledge and information. The prominence of Feuerstein's approach within the Study and Thinking Skills (S&TS) programme ensures, therefore, that learning in the communicative domain takes place no matter what the focus of a given lesson might be.

Conclusion: In practice, both domains feature in the Study and Thinking Skills (S&TS) programme, even though Mezirow's domains are not intentionally incorporated in the rationale. This is due to the presence of Piagetian theory in the Rationale and the commitment to providing students with mediated learning experiences (MLE).

5.2.1.2 OBJECTIVES

Can it be deduced from the objectives of the Study and Thinking Skills (S&TS) programme that learning should be promoted in two domains, similar to the instrumental and communicative domains in Transformative Learning Theory?

If it is acknowledged that the rationale underlying mediated learning implies that learning takes place in both domains (see 5.2.1.1), it can be deduced that the objectives specified earlier (3.6.2.5) will promote learning in two domains similar to those described as instrumental and communicative. Two examples are provided to illustrate this:

> **Example 1 - Communicative Domain**
>
> The aim of the Study and Thinking Skills (S&TS) programme is to mediate to students that their beliefs about themselves and studying, may cause learning problems.

> **Example 2 - Instrumental Domain**
>
> The aim of the Study and Thinking Skills (S&TS) programme course is to help students *learn about learning,* by first of all learning about themselves (in

terms of "unlimited" potential), as well as learning about motivation and about the human brain.

Conclusion : Objectives which state explicitly that the aim of mediation is about changing belief systems, attitudes and values, *can be interpreted* as attempting to promote learning in the communicative domain. Objectives which refer to teaching (or mediating an understanding) of a specific content area, primarily falls into the instrumental domain of learning.

5.2.1.3 COURSE MATERIAL

This section investigates whether the course material of the Study and Thinking Skills (S&TS) programme promotes (a) the communicative domain and (b) the instrumental domain.

a) Does the Study and Thinking Skills (S&TS) course material promote learning in the communicative domain ?

The fact that the course material intentionally incorporates a wide range of metaphors, analogies, mindmaps and models for the purpose of explaining *practical knowledge,* is an indication that the course material is likely to promote learning in the communicative domain (for information regarding *practical knowledge* see Habermas, 2.2.5.1). Examples are given below:

- to boost personal empowerment and to encourage learners to value themselves as unique individuals, the Study and Thinking Skills (S&TS) programme includes metaphors, analogies and stories which explain the unlimited potential and vast capacity of the brain (See 3.6.1.3 and 3.7.1.5)
- to emphasise the principle that an individual is capable of change, the slogan "Change is the most stable characteristic of human beings" (see 3.7.1.5) is used as a departure point for the course
- to raise consciousness of good listening skills a comedy video portraying two friends with really hopeless listening skills, is viewed and commented on by students

Although metaphors (which add a different dimension to understanding), are considered as tools for communicative learning (see 2.3.1.2) it should be noted that according to Mezirow, metaphors by themselves are not sufficient for learning in the communicative domain. It is the use of metaphors *within* the context of *rational discourse* which fosters learning in the communicative domain (see 2.3.1.2). In a sense, metaphors presented in the programme are already located in this context, because it was in the process of *reflecting* on their own teaching practices and on cognitive theory, that the designers of the course material were inspired to use metaphors, analogies, mindmaps and models which could assist them in achieving the objectives of the Study and Thinking Skills (S&TS) programme (see 3.3.1 & 3.7.1).

Furthermore, many of these tools are not elected beforehand but are selected spontaneously to suit the occasion, based on a thorough understanding of, and commitment to, the course objectives. For this reason, the potential impact of "course material" on learners cannot be evaluated independently of the course presenter. There is an integral link between the experiences, reflections, and views of a presenter, his/her ability to mediate course material in a way that is responsive to occasion, and his/her ability to form a warm, supportive relationship with students, that in turn fosters spontaneity.

b) Does the Study and Thinking Skills (S&TS) course material promote learning in the instrumental domain ?

In the Study and Thinking Skills programme, the course material which promotes learning in the instrumental domain consists mainly of scientific findings. These explain and promote new ideas about studying, thinking and learning. The following quotation from the description of the course contents (3.6.1.3) illustrates this:

"It is the belief of the programme developers that by presenting challenging, scientifically researched connections from neuroscience to education...students would be able to transfer these skills and control and manipulate learning in their specific areas of study".

Examples of such material include: research into the left and right hemisphere processing of the brain; McLean's triune brain model; Gardener's research into nine intelligences; the function of the reticular formation; music, brain waves and learning; diet and brain functioning; learning styles; and mindmapping.

Conclusion: The course material does indeed promote learning in the communicative domain, but the extent to which this happens is fundamentally dependent on the presenter, as much successful teaching/learning in this domain takes place spontaneously. If presenters have a sound theoretical and practical understanding of mediation and knowledge construction (based on Piaget 3.3.2.1, Feuerstein 3.3.2.3), they are more likely to teach according to those principles. This will, in turn, enable learning in both domains to take place optimally. Conversely, a presenter who has not integrated the rationale and objectives into their own perspective through a process of reflection, is unlikely to present the course material to the same effect.

5.2.1.4 IMPLEMENTATION PROCEDURES

Does the programme make use of specific didactic methods to assist with learning in both the instrumental and the communicative domains?

Learning in the *instrumental domain* involves learning information which can be obtained (or substantiated) through deductive reasoning (2.3.1.1) . This type of information can be learnt either through direct interaction with the material, or it can be learnt through didactic methods which involve mediated learning. In the Study and Thinking Skills (S&TS) programme the inclusion of a coursebook can be considered a *didactic method* used for *direct learning in the instrumental domain.* Where more technically difficult information (e.g. scientific neurological information) is taught by means of scaffolding, this can be considered *mediated learning in the instrumental domain.*

Learning in the *communicative domain* concerns the understanding of existing social knowledge (i.e. knowledge which has already been *socially constructed*) as well as the understanding of knowledge that develops *through constructing it*, in co-operation with others. Implementation procedures in this domain should therefore include didactic

methods where the meaning of *social knowledge* is mediated, as well as methods where knowledge can be constructed or reconstructed in a group.

The following didactic methods used in the Study and Thinking Skills programme, can all be interpreted as assisting with *mediating meaning*:

- vignettes in the form of short video snippets and overhead transparencies
- metaphors in the form of meaningful brief stories
- visual material and poster-type slogans.
- checklists and journals

The first three methods are mediating *existing social knowledge*, whilst the fourth involves the *construction of knowledge in a group context.*

The point made above regarding metaphor (see 5.2.1.3), also applies here. Although the use of *informal discussions in groups* may assist with communicative learning, it is unlikely that mediated learning and informal discussion groups *on their own,* will be sufficient to foster transformative learning, since *rational discourse* is a crucial element. Discussions will be valuable in terms of transformative learning if, and only if, they meet the criteria of rational discourse (see below).

Conclusion: Implementation procedures and didactic methods in use on the programme do assist with learning in both domains. Provision is made for both direct and mediated learning experiences (Feuerstein). There is an understanding of knowledge construction (Piaget) and also of didactic methods that enable effective learning in the instrumental domain (Vygotsky, Feuerstein).

5.2.2 RATIONAL DISCOURSE

In this section the Study and Thinking Skills (S&TS) programme (*rationale*, *objectives*, *course material* and *implementation procedure*) is analysed in terms of four questions developed from criterion 2, which deals with rational discourse (see 2.3.2).

5.2.2.1 RATIONALE

Does the rationale underlying the Study and Thinking Skills (S&TS) programme infer the need for, or advantage of, rational discourse as defined by Transformative Learning Theory ?

In the rationale underlying the Study and Thinking Skills (S&TS) programme there is no mention of rational discourse as defined by Mezirow in Transformative Learning Theory. The rationale instead draws on Vygotsky's concept of "dialogue". In order for dialogue to qualify as rational discourse, it must fulfill specific criteria based on: *sincerity, objectivity, broad-mindedness* and *critical thought* (see 2.2.2 and 4.3.2). These criteria are *not* specified in the type of dialogue (collaboration and conversation) found in Vygotsky's theory, which is one of the approaches underpinning the programme rationale.

It is important to note that Vygotsky's theory, which states that *collaboration and conversation* is required for higher mental functioning in children, may be mistaken as similar to the idea that Mezirow expresses in his theory, namely that rational discourse is required for transformative learning to take place in adults. However, there is a significant difference between these concepts. *Social learning* (which Vygotsky describes) can be interpreted as informal social learning that leads to formative learning in children. *Communicative learning,* described by Mezirow, is social learning which leads to transformative learning in adults, but it is *not* informal (see 2.3.2). It involves very deliberate processes that require active management.

There is, however, a similarity between Vygotsky's notion of *dialogue* with children, and Mezirow's *rational discourse* amongst adults. This is found in their common emphasis on the creation of an environment free of fear and conducive to open communication. This is both a *component* of rational discourse as well as a *precondition* for it to occur.

Conclusion: Although the rationale underpinning the Study and Thinking Skills (S&TS) programme provides an essential precondition of rational discourse by creating a favourable atmosphere, it does not provide specific opportunities or structures that promote rational

discourse. Consequently, rational discourse as defined by Mezirow might well take place in the case of the programme (it is not *prevented* by the rationale) but if it does so, this is purely co-incidental.

5.2.2.2 OBJECTIVES

Can it be deduced from the objectives of the Study and Thinking Skills (S&TS) programme that the course aims at fostering competence in rational discourse?

Competence in rational discourse as defined in Transformative Learning Theory is *not* described in the objectives of the Study and Thinking Skills (S&TS) course (see 3.6.2.5). However, the following example may seem to contain elements of *rational discourse* and is therefore analysed:

> **Example 1** (from 3.6.2.5) :
> "The short term goal of the Study and Thinking Skills (S&TS) programme is to stimulate students to use newly acquired vocabulary in order to describe cognition and metacognition processes".

Hence, the programme aims to equip students with new vocabulary (instrumental domain) but it also provides opportunities to practise this vocabulary in group discussions, in order to obtain a deeper understanding of new concepts. This could potentially foster elements of competence in rational discourse. Sincerity, objectivity, broad mindedness and a willingness to exercise critical faculties might well be brought into play by this experience, to varying degrees. However, it is not a foregone conclusion that *competent* rational discourse as such, will necessarily be fostered from this experience.

> **Example 2** (from 3.6.2.5) :
> "The aim of the Study and Thinking Skills (S&TS) programme is to expose students to co-operative and communicative skills and peer learning".

Co-operative learning and peer teaching/learning are both primarily about students working and communicating together in order to achieve a common goal. Although co-operative learning (as a type of instructional strategy) develops communication skills (including sincerity and objectivity), encourages open-minded listening, and invites critical analysis, this exposure *on its own* is not likely to foster the skill of rational discourse as described by Mezirow (see 2.2.2).

> **Example 3** (from 3.6.2.5)
> "The aim of the Study and Thinking Skills (S&TS) programme is to help students understand and experience metacognition through reflecting in groups".

This aim implies that by giving students the opportunity to reflect in groups, they will obtain greater clarity on concepts such as metacognition. It should be noted that, if the concept of metacognition is only partially understood (and if in addition there is some dissonance as to what it might entail), reflecting on the concept in a group scenario could elicit rational discourse as students attempt to sort out confusions and clarify questions. Once again, however, this experience does not necessarily imply that students will become proficient in rational discourse.

Conclusion: Although the objectives of the Study and Thinking Skills (S&TS) programme provide for discourse in the form of dialogue and discussion, this does *not* imply that the course aims at fostering *competence in rational discourse* - in fact, it does not. While certain elements (such as a conducive learning environment and elements of rationality in various discussions) may in fact bring about rational discourse among some groups, this outcome would be purely incidental. Competence in rational discourse is unlikely to develop in this random manner.

5.2.2.3 COURSE MATERIAL

Does the Study and Thinking Skills (S&TS) programme course material promote rational discourse?

There is no *deliberate* inclusion of course material for the purpose of rational discourse, but topics and subjects which are used for group discussion could equally well serve as a basis for rational discourse. Examples of topics which have been used in class discussions include:

- the role played by emotions in the problem solving process
- good and poor study habits
- the role of music while studying

One cannot, however, conclude that these serve to promote rational discourse merely being present, because the elements of rationality specified by Mezirow are left open in such topics and are not included in the programme's rationale or objectives. Much therefore depends on the presenter's/facilitator's own belief system (and competence in rational discourse), which is likely to influence *use* of the course material.

Conclusion: The course material, as it stands, contains the potential to promote rational discourse. However, whether or not it does so, depends heavily on the skills and assumptions of the presenter/facilitator. If rational discourse were specified in the objectives, its emergence in discussions or debates would no longer be left to chance.

5.2.2.4 IMPLEMENTATION PROCEDURES

Does the Study and Thinking Skills (S&TS) programme make use of specific didactic methods to stimulate rational discourse?

It has been established that the Study and Thinking Skills (S&TS) programme does not overtly focus on rational discourse. Nonetheless, it has adopted various didactic procedures and methods which create an atmosphere in which students feel motivated to share opinions

(i.e. sincerity and broad mindedness are being encouraged along with critical thinking). Examples include:

- the Study and Thinking Skills (S&TS) programme, as a subject independent course (3.2) allows learners to distance themselves from pre-conceived ideas which might be linked to certain problems in specific subject areas
- the informal introduction procedure in the first session allows both students and presenters to interact as equals, sharing some interesting or humorous information about themselves. This reduces the authoritarian status of the course presenter from the inception. A presenter who was seen as the absolute source of knowledge and responsibility would remove any possibility of rational discourse as defined by Mezirow
- there are many further opportunities for presenters to disclose information that builds trust and personalises his/her role. For example the researcher, as presenter of the course, was able to share her own experiences with language problems, as her mother tongue is Swedish. This helps students to feel that they are not alone in their struggles with second or third languages, and that experiencing such problems is nothing to be ashamed of
- the playing of suitable music at the start of the course sessions and at intervals to create a relaxed and caring atmosphere
- the application of techniques from suggestopedia to break down subconscious barriers with respect to fear and stereotyping
- didactic methods which encourage co-operation and peer-group learning, for example reflecting on thinking processes in pairs, sharing experiences in a small groups, and brain storming exercises on topics related to study and learning

Conclusion: The Study and Thinking Skills (S&TS) programme contains many didactic methods that stimulate or promote rational discourse, but only in the sense that they either create *opportunities* for discourse, or promote an *environment conducive of solidarity,* which Mezirow considers as an essential precondition for effective rational discourse (see 2.1.7.2). Such an environment is a necessary but not sufficient condition, therefore it cannot

be presumed that even the most effective use of these didactic methods and opportunities will elicit rational discourse.

5.2.3 MEANING STRUCTURES

In this section the Study and Thinking Skills (S&TS) programme (*rationale*, *objectives*, *course material* and *implementation procedure*) is analysed in terms of four questions which were developed from criterion 3, and deals with meaning structures (see 2.4).

5.2.3.1 RATIONALE

Does the rationale underlying the Study and Thinking Skills (S&TS) programme imply that learners need to explore their meaning structures, as defined by Transformative Learning Theory?

The rationale underlying the Study and Thinking Skills (S&TS) programme does intimate that learners need to explore their meaning structures. Although the theories of Vygotsky and Piaget (which primarily describe formative learning in children) do not focus specifically on this need, it is evident that Feuerstein's theory of *cognitive modifiability* (which is based on research involving both children and adults from disadvantaged backgrounds) explicitly pays attention to this aspect.

The rationale underlying the Study and Thinking Skills (S&TS) programme builds on Feuerstein's concept of "cognitive modifiability". The implication is that course developers and presenters *expect cognitive change* and work actively towards it. *Change* in this context refers to "frames of mind" and "thinking patterns" (described by Mezirow as meaning structures). The rationale underlying the Study and Thinking Skills (S&TS) programme (see 3.3) also emphasizes the fact that *change* must be constructed by the learner herself/himself, assisted by group inputs, with the facilitator acting as mediator. This implies that the learner and the facilitator need to examine learners' "thinking patterns", together.

Conclusion: From this perspective it appears that the rationale underlying the programme not only substantiates the need for learners to explore their meaning structures but also the need for facilitators to assist learners in exploring their meaning structures.

5.2.3.2 OBJECTIVES

Can it be deduced from the objectives of the Study and Thinking Skills (S&TS) programme that the course aims at motivating learners to explore their meaning structures ?

Taking into account the rationale (as explained in 5.2.3.1), it can be deduced from the objectives of the Study and Thinking Skills (S&TS) programme that there is a need for students to examine their meaning structures. This is illustrated by an example:

> "The short term goal of the Study and Thinking Skills (S&TS) programme is to stimulate students to gain knowledge of their own cognitive processes".

Conclusion: "Cognitive processes" is a broad term that embraces aspects of interpretation and how a learner makes sense of his/her experiences. To the extent that metacognition develops in terms of this objective, students are being assisted to examine their meaning structures as described in 2.3.3.

5.2.3.3 COURSE MATERIAL

Does the Study and Thinking Skills (S&TS) course material focus on stimulating students to explore their meaning structures (meaning schemes and meaning perspectives) ?

Although the course material does not explicitly emphasise the existence of the two dimensions of meaning structures as explained in 2.3.3, the following examples of course material indicate that the course is likely to promote an awareness and understanding of "meaning structures" as a concept:

- critical analysis of a vignette from a video, in which Tony Buzan illustrates how a "habit of mind" can be represented in terms of a concrete neurological pattern and how this physical pattern can be manipulated by the learner himself/herself in order to change a pattern
- slogans on posters such as *Change Is The Most Stable Characteristic Of Man* and *Make Thinking Visible*
- self-questionnaires which deal with topics such as, the learners' view of themselves as students, learners' views on problem-solving, organising, study methods and exam writing
- tasks (see addendum 1) which focus on self-talk, reflective journal writing and checklists, in order to *make thinking visible* whilst problem solving

The examples given above focus on *making thinking visible,* in order for *thinking patterns* to be examined. This interpretation of meaning structures as thinking patterns which need to be investigated, and the concept of "habit of mind" to which students are introduced via the Buzan video, seems analogous to Mezirow's concept of meaning structures as "habits of expectation" in which our past experiences are assimilated (see 2.3.3).

Conclusion: The course material does stimulate students to explore their meaning structures, defined in terms of "habits of mind" and of "thinking processes".

5.2.3.4 IMPLEMENTATION PROCEDURES

Does the Study and Thinking Skills (S&TS) programme make use of specific didactic methods to stimulate and assist students in exploring their meaning structures (in particular structures which relate to learning)?

It is evident that a number of didactic methods are employed which encourage students to explore their cognitive processing and meaning structures. These include:

- the critical evaluation of a video
- slogans as posters on an overhead projector
- the completing of questionnaires and checklists

- problem-solving scenarios
- tasks requiring self-talk

As all teaching strategies within the programme are based on Feuerstein's concept of mediation, the role of the *presenter as mediator* is central to each of these didactic methods. Ideally, the three criteria of mediation (mediating meaning, intentionality/reciprocity and transcendence) are constantly being integrated in the application of these didactic processes. The result should be that students' meaning structures and cognitive processes are more frequently made explicit, than would be the case with "traditional" didactic methods - but this will depend on the presenter's skill and experience as a mediator.

Conclusion: Although the didactic methods presented above may stimulate students to explore meaning structures, the methods cannot be separated from the presenter and therefore it is inconclusive that the didactic methods *on their own*, will foster exploration of meaning structures.

5.2.4 DISTORTED MEANING PERSPECTIVES

In this section the Study and Thinking Skills (Study and Thinking Skills (S&TS) programme (*rationale*, *objectives*, *course material* and *implementation procedure*) is analysed in terms of four questions which were developed from criterion 4, which deals with distortion in meaning perspectives (see 2.4).

5.2.4.1 RATIONALE

Does the rationale underlying the programme suggest that "distorted (or dysfunctional) meaning perspectives", as defined by Transformative Learning Theory, need to be exposed ?

"Distorted and dysfunctional meaning perspectives" relate to assumptions which have been learnt (consciously or sub-consciously) and which need to be revised for effective learning to take place (see 2.3.4). For example, many students have a general perspective of learning which is based on rote memorisation. Such meaning perspectives were either

assimilated into the learners' meaning structures without critical awareness (distorted) or they were functional when they were originally acquired but are now inadequate (dysfunctional), in that they impede the learner from optimising his/her learning potential.

Piaget's concept of accommodation emphasises that in order to accommodate new information, learners need to experience *disequilibrium*. Disequilibrium is experienced when a person becomes aware that one or another *scheme* (cognitive or behavioural) is distorted or inadequate to address present requirements. The new information, that is accommodated, restores equilibrium. Interventions in the programme which set out to provoke disequilibrium in schemes (based on Piagetian theory), therefore also serve the purpose of exposing distorted or dysfunctional meaning perspectives, at least to some extent.

Conclusion: The rationale underlying the programme recognises that schemes can be either *distorted* or *dysfunctional* (Piaget) and that this needs to be exposed (see 2.3.4). Schemes and *meaning perspectives* (Mezirow) are broadly analogous to one another. However, in Mezirow's hierarchy, perspectives are more general than schemes. This implies that schemes may change, while perspectives survive intact. Therefore, it may be that the disequilibrium provoked during the programme is not sufficient to produce change in the wider meaning perspectives. (For example, students may experience knowledge construction without changing their fundamental opinion that rote learning is the norm).

5.2.4.2 OBJECTIVES

Can it be deduced from the objectives of the Study and Thinking Skills (S&TS) programme that distorted (or dysfunctional) meaning perspectives should be examined by the students?

There are two objectives which indicate that it is the aim of the programme to examine dysfunctional meaning perspectives:

Example 1: (from 3.6.2.5)

"The programme aims to mediate to students that beliefs about themselves and studying may cause learning problems".

Example 2: (from 3.6.2.5)

"The programme aims to remediate deficient cognitive processes, dispositions and beliefs which may hamper learning: through creating conflicting situations between new and stored knowledge and through peer learning".

Example 1 implies that, in the course of mediating this information, the facilitator and students will examine some examples of problematic beliefs (due to Feuerstein's criterion of meaningfulness in mediation). In Example 2, the rationale from Piaget's theory of accommodation (i.e. the need to create disequilibrium) is evident.

Conclusion: It is apparent that the objectives substantiate the need for students to examine distorted (or dysfunctional) meaning perspectives. This step follows logically from the rationale.

5.2.4.3 COURSE MATERIAL

Does the course material (and implementation methods) assist with emancipating students from distorted (or dysfunctional)meaning schemes and meaning perspectives?

The following types of meaning perspective may be interpreted as dysfunctional at tertiary level (see 1.2.2):

- learning mathematics means learning how to apply a formula
- it is better and more correct to work on your own than with others
- the teacher is the main authority on the course material
- most problems only have one correct solution

As explained above (5.2.4.1), in order for individuals to realise that they harbour meaning perspectives which might prevent them from optimising their potential as learners, students need to be exposed to tasks which introduce them to new perspectives regarding themselves and their understanding of learning. Such tasks should, preferably, produce cognitive dissonance or disequilibrium, which in many cases stimulate students into analysing and thereby exposing limiting perspectives.

One of the tasks which disorients students is included in a formal test (on the first day of the programme). Here students are given a mathematical word problem to solve; the correct answer is awarded only one mark, whereas their ability to *describe their thinking processes* whilst solving the problem, counts twenty marks. This disorients students, who firstly find it difficult to understand that the focus of the question is not on applying a formula to get the correct answer; and secondly, lack the vocabulary to describe their thinking processes (for example, "habits of mind"). In other words, the task exposes both distortion and dysfunctionality. In the mid-test and post-test of the programme, when students are exposed to new vocabulary/concepts that enable them to reflect on the thinking processes involved in problem-solving, they find the task easier and are no longer disconcerted by it. Accommodation has taken place (Piaget); or alternatively, change has occurred in a meaning perspective (Mezirow).

Conclusion: The inclusion of tasks which intentionally disorientate students and cause them to reflect or analyse (e.g.reflect on their *habits of mind*) illustrates that the course material was intentionally designed to assist students in exposing dysfunctional or distorted meaning perspectives. This is due to the approaches of Piaget and Mezirow being very similar in this respect.

5.2.4.4 IMPLEMENTATION PROCEDURES

Does the Study and Thinking Skills (S&TS) programme make use of specific didactic methods to expose *distorted* (or dysfunctional) *meaning perspectives* ?

In order to expose dysfunctional beliefs about learning, students need to analyse their meaning perspectives (5.2.3.1). The fact that this most frequently happens as a result of a disorienting experience (2.3.8) makes it necessary to use didactic methods which evoke disequilibrium.

Relevant didactic methods include:

- the use of controversial video material and transparencies
- tests which include tasks that deliberately attempt to evoke a shift in thinking

Furthermore (although not a didactic method per se), the fact that the course is subject independent and is presented at the time when the learner has left school and is embarking on a new venture in life, can be viewed as conducive to evoking sufficient disequilibrium and disorientation for students to start questioning their meaning perspectives with regard to learning.

Conclusion: It is clear that specific efforts have been made to design and present the course material in such a manner that it evokes disequilibrium, which in turn may stimulate students to question their beliefs and meaning perspectives, particularly in the field of learning and problem solving, but not necessarily restricted to that.

5.2.5 REFLECTION

In this section the Study and Thinking Skills programme (*rationale*, *objectives*, *course material* and *implementation procedure*) is analysed in terms of four questions which were developed from criterion 5, which deals with reflection (see 2.4).

5.2.5.1 RATIONALE

Does the rationale underlying the Study and Thinking Skills (S&TS) programme intimate the need to present learners with tasks by means of which they can experience reflection on content, process and premise?

During the implementation of the programme in its first two years, the emphasis on reflection was increased. It had been observed that, while students were able to reflect on content, reflection on process and on assumptions tended not to take place, which in turn inhibited the development of metacognitive skills. As a result of action research (see 3.6.2.1) the rationale underlying the programme was adjusted to take more account of deliberate, conscious reflection during learning (Boyd and Fales, 1983:100). Students are encouraged to reflect on the content presented, the process of problem-solving, as well as basic assumptions (see 3.6.2.3). This process is described as 'making thinking visible'.

Conclusion: The need to take account of reflection as an integral part of learning and to present students with activities which encourage them to reflect on their learning experiences, is supported in the rationale. This facet was further enhanced as a result of action research. However, the fact that the rationale underlying the Study and Thinking Skills (S&TS) programme omits any reference to *premise reflection* (or critical reflection) is significant - as this is a core requisite of perspective transformation (see 2.3.5).

5.2.5.2 OBJECTIVES

Can it be deduced from the objectives of the Study and Thinking Skills (S&TS) programme that the course promotes an understanding of all three types of reflection - content, process and premise ?

It can be concluded from the following objectives that the Study and Thinking Skills (S&TS) programme promotes both content and process reflection.

Example 1:

"In developing a basis for "mental fitness", students are encouraged to *reflect on the course material* with respect to: self valuation, own potential for change/control over change, knowledge of own cognitive processes, and use of new vocabulary" (see 3.6.2.5).

Example 2:

Objectives outlined in the student workbook (1997) include the following: "to help students *understand and experience metacognition* through exercises in journal writing, mind-mapping, self talk and *reflecting in groups*". The desired outcome here is that students will learn to monitor and self-correct their own study methods and will develop new problem solving strategies.

Example One clearly indicates *content reflection*; there may also be some *process reflection* (reflecting on own cognitive processes), and it is possible that *basic assumptions* relating to self concept as a learner - such as a realisation of unlimited brain power - may also become a focus for reflection. Example Two indicates *process reflection,* as metacognition, *per definition*, implies reflecting on cognitive processes. It might be assumed, therefore, that all three forms of reflection specified by Mezirow are present.

However, this assumption could be misleading. Whilst programme objectives include the challenging of basic beliefs - especially negative assumptions about learning potential - and whilst reflection is encouraged in a general sense, this stops short of the vigorous and active critique and bringing into awareness of assumptions that Mezirow regards as essential to transformative learning (see 2.3.5).

Conclusion: The course objectives address content and process reflection but premise reflection or critical reflection is not specifically addressed. Some fundamental assumptions are challenged but this does not fulfil Mezirow's requirements for critical reflection.

5.2.5.3 COURSE MATERIAL

Does the Study and Thinking Skills (S&TS) course material focus on stimulating students to reflect on the content of a problem, on the processes involved in solving problems and on the premises underlying problems?

The tasks (see 3.7.1.4) which form part of the pre- mid- and post tests, provide students with specific opportunities to reflect on the content and on the process of problem-solving.

> **Task 1:** Students are given a problem to solve individually, followed by the task of describing in writing, "what went on in their minds" whilst attempting the problem.
>
> **Task 2:** A similar task but this time students are requested to think aloud in the presence of a partner whilst tackling the problem.
>
> **Task 3:** Students are requested to complete a checklist with twenty-two suggestions on the type of thoughts that might have occurred to them whilst solving a problem.

Although these tasks are specifically designed to foster *process reflection*, the problems, which consist of relatively easy mathematical word problems (3.6.2.4), may be criticised for not being challenging enough to arouse the need for (content) reflection. On the other hand, a simple task can be advantageous, as it does not distract students from focusing on their *processes (habits of mind)* whilst problem solving.

Other aspects of the course material, for instance material relating to learner potential and the human brain, might encourage some students to reflect on basic premises or assumptions, developed through years of exposure to an educational system. Many students are politically aware, and sensitised to this type of questioning of past experience. However, this is unlikely to happen, at least in the sense intended by Mezirow, unless such reflection is purposefully structured into the programme.

As explained earlier (5.2.1.3, 5.2.2.3, 5.2.3.4) the *course material* and *implementation procedures* cannot be evaluated independently of the course presenter. If the presenter is conscious of fostering premise reflection, he/she can introduce discussions at suitable moments during the lesson. For instance, *premise reflection* might well be achieved when students are encouraged to reflect back on the reason for their surprised reaction in the example illustrating disorientation. Premise reflection may also be evoked by the timely presentation of *meaningful analogies*, *cartoons* and *video vignettes*. This requires the course presenter to select the right moment in which to introduce suitable metaphors or to instigate discourse about relevant subjects.

Conclusion: Although the pre-designed course material is likely to promote *content* and *process reflection*, it will not necessarily promote *premise reflection* as this is primarily dependent on the course presenter's experience and intuitive understanding of the learning situation. The programme offers a wide range of opportunities for premise or critical reflection however and it may well be that students who are already self-aware are acting upon these opportunities. It is probable that this aspect of transformative learning is being left to factors other than the programme design, including chance.

5.2.5.4 IMPLEMENTATION PROCEDURES

Does the Study and Thinking Skills (S&TS) programme make use of specific didactic methods to evoke three different types of reflection?

All problem-solving involves a certain amount of *content reflection* (2.3.5), however in the Study and Thinking Skills (S&TS) programme special attention is given to designing problem-solving tasks which also challenge students to reflect on the *process* of problem solving.

Content reflection generally takes place when the facts of a problem or material to be studied, is presented to a learner as a task. Typically, students who reflect on content, reread the question/problem several times in the hope that they may recall similar problems.

In order to promote *process reflection*, tasks which encourage students to become aware that they can reflect on process, are important. These include journal writing, self-talk and checklists. Process reflection can also be stimulated by giving students exercises which allow them to visualise and to discuss alternative processes and consequences. In this aspect group inputs are valuable and may even lead to students to reflecting on their premises.

Conclusion: The didactic methods used in the Study and Thinking Skills (S&TS) programme are closely linked to the course material (see 5.2.5.3.). From the analysis of course material it is clear that didactic methods which focus on promoting *content and process reflection* form part of the programme. However, it seems that *procedures* which promote premise reflection have not been identified. This does not mean that such reflection is not taking place on the programme, only that it is not specified and therefore is both difficult to evaluate and probably also to reproduce at other times or in other contexts. In any case, it is clear that such procedures, whatever they may be, fall short of Mezirow's ideal for critical reflection on premises.

5.2.6 FOUR TYPES OF LEARNING

In this section the Study and Thinking Skills programme is analysed in terms of a single question which was developed from criterion 6 - which deals with four types of learning (see 2.4). The analysis therefore addresses the programme as a whole, rather than its four separate categories as with the other criteria presented above.

5.2.6.1 PROGRAMME

Does the programme facilitate all four types of learning?

The Study and Thinking Skills (S&TS) programme can be interpreted as deliberately facilitating three of the four types of learning. The four types of learning are: learning by refining or elaborating meaning schemes (2.3.6.1), learning by the inclusion of new meaning schemes (2.3.6.2), learning by transforming meaning schemes (2.3.6.3) and learning by transforming meaning perspectives (2.3.6.4).

The *rationale* and *course material* based on De Bono's "thinking tools" is particularly suitable for illustrating the first three types of learning.

Example Type-1 learning :

When students learn that the CoRT programme has specific vocabulary for different thinking processes (e.g. CAF: consider all factors) - they are exposed to the type of learning which simply *extends their meaning schemes*.

Example Type-2 learning :

During an exercise the students learn to use De Bono's "Red Hat" symbolically, to control emotions in a group learning environment. In this case, students are learning *by the inclusion of new meaning schemes*.

Example Type-3 learning:

Students learn (through theory and practice) that intelligence is not fixed (as has often been suggested by IQ testing) but that it is linked to the *quality* of thinking processes. They also discover that 'intelligence' can be improved by deliberately employing specific "thinking tools". As a result, many students reject existing meaning schemes and replace them with new meaning schemes.

Although it is possible for different types of learning to occur "accidentally", it should be noted that it is the course presenters' awareness of the three different types of learning that is important. This is primarily what guides the choice of course material and implementation procedure, and therefore also determines the type of learning that occurs.

The fourth type of learning, (where existing belief systems are rejected and replaced, causing permanent changes in dispositions, attitudes and behaviour), may be set into motion by the programme, but it is not intentionally addressed in the programme. As mentioned (3.1.1) the Study and Thinking Skills programme (S&TS) was developed with no emphasis on the transformative dimension of learning. It is also difficult to envisage that this type of

fundamental change can be achieved by the programme in its current format, given its relatively short duration.

Conclusion: One can thus conclude that the first three types of learning are present in the programme, but not necessarily the fourth.

5.2.7 PERSPECTIVE TRANSFORMATION

In this section the Study and Thinking Skills programme (*rationale*, *objectives*, *course material* and *implementation procedure*) is analysed in terms of three questions which were developed from criterion 7, which deals with perspective transformation (see 2.4).

5.2.7.1 RATIONALE

Does the rationale underlying the programme support the concept that there is a need to emancipate (liberate) learners from dysfunctional beliefs (distorted meaning schemes and distorted meaning perspectives) which might limit their learning potential?

The rationale of the programme supports this concept of emancipation; in fact, the principle of emancipation guides the whole introduction of a bridging programme of this type, in this particular social context. In the South African context, issues of social justice and emancipation in education are impossible to ignore, just as Freire found them impossible to ignore in his South American context. In South Africa we did not have a "level playing field" and we still do not; unless this is addressed, our society cannot hope to progress. This view is commonly postulated in higher education today and is a primary reason why the bridging programme and the Study and Thinking Skills (S&TS) programme was motivated in the first place.

Emancipation also occurs in terms of challenging limiting assumptions about the nature of the learner, whether made by teachers or by learners themselves. The programme rationale builds on two basic premises of suggestopedia. Firstly, that each learner has unlimited brain potential; and secondly, that in order to optimise the *use* of the unlimited brain potential,

students need to be liberated from dysfunctional beliefs (in particular concerning distorted psychological meaning perspectives) which may be active in their subconscious.

Within the instrumental learning domain, Transformative Learning Theory states that dysfunctional beliefs consist of distorted assumptions relating to reasoning powers, whilst within the communicative learning domain dysfunctional beliefs consist of three main types: *distorted epistemic meaning perspectives* (2.3.4.1), *distorted sociolinguistic meaning perspectives* (2.3.4.2), and *distorted psychological meaning perspectives* (2.3.4.3). It should be noted that the Study and Thinking Skills (S&TS) programme focuses intentionally only on distorted psychological meaning perspectives (and possibly indirectly on distorted sociolinguistic meaning perspectives). This is due to the influence of Lozanov and the principles of suggestopedia.

Mezirow's concept of "constrained and unconstrained visions", which is part of socio-linguistic meaning perspectives, relates to aspects of the programme which address constraining beliefs, e.g. related to intelligence. At a more elementary level, De Bono's "thinking tools" also address sociolinguistic meaning perspectives. Lateral thinking is a shift away from habitual patterns of thought which are culturally determined. An exercise such as PMI forces an individual to break from his/her habitual positive/negative analysis in order to consider the alternative category "interesting".

The fact that the Study and Thinking Skills (S&TS) programme primarily addresses the problem of liberating students from distorted *psychological* meaning perspectives and does *not* address distorted *epistemic* meaning perspectives may be considered an important omission. However, it should be borne in mind that epistemic meaning perspectives refer to changes in understanding of knowledge, which are unlikely to be achieved in a short programme of this nature. Due to the nature of the programme, as well as time constraints, epistemic perspectives are not directly addressed. However, change is a process and the programme may well play a part in starting that process or facilitating its development.

Conclusion: Emancipation is a basic principle of the Study and Thinking Skills (S&TS) programme. Emancipation from distorted or dysfunctional perspectives occurs in both domains, instrumental and communicative. However, in the communicative domain the focus has mainly been on distorted psychological meaning perspectives, and - to a lesser extent - sociolinguistic perspectives. The programme appears to offer limited opportunities for altering epistemic meaning perspectives but might be able to contribute to a longer term process in this regard.

5.2.7.2 OBJECTIVES

Can it be deduced from the objectives of the Study and Thinking Skills (S&TS) programme that the course aims at emancipating students from distorted (or dysfunctional) meaning schemes and meaning perspectives ?

It can be deduced from the following objectives that the Study and Thinking Skills (S&TS) programme (3.6.2.5) aims at emancipating the students with regard to dysfunctional meaning perspectives (in particular distorted psychological meaning perspectives).

Example 1:

The long term goal (see 3.6.2.5) of the programme is to set into motion a 'mental fitness' process which will empower students to have greater control over themselves as autonomous learners (i.e. fostering the development of a new learning culture).

Example 2:

The objectives of the programme as presented in the student workbook 1997, (see 3.6.2.5) state that the aim of the Study and Thinking Skills (S&TS) programme is to empower students, in particular personal empowerment, i.e. developing a positive self-concept.

Example 3:

Objectives include the use of newly acquired vocabulary in order to describe cognition and metacognition. Metacognition is experienced and understood through journal writing, mind mapping and through self-talk and reflection in groups.

Conclusion: The first two examples indicate that the programme specifically recognises the significance of empowering students by liberating them from distorted psychological meaning perspectives. The third example illustrates objectives that relate to socio-linguistic meaning perspectives. It must, however, be emphasised that the programme does not give *specific* attention to liberating students from distorted epistemic meaning perspectives.

5.2.7.3 COURSE MATERIAL AND IMPLEMENTATION PROCEDURES

Does the course material (and implementation methods) assist with emancipating students from distorted (or dysfunctional) meaning schemes and meaning perspectives?

As indicated in the objectives described above (5.2.7.2) , the primary aim of the course is to assist with emancipating students from beliefs which may impede their learning. The course material and implementation methods concur with this primary aim. Furthermore, as has been mentioned previously, the attitude and beliefs of the presenter are central to this category of the programme. When presenters are committed to the emancipation of students from distorted and dysfunctional perspectives in any learning domain or at any level, this emancipation is more likely to occur.

5.2.8 STAGES OF TRANSFORMATIVE LEARNING

In this section the Study and Thinking Skills (S&TS) programme (*rationale*, *objectives*, *course material* and *implementation procedure*) is analysed in terms of a question developed from criterion 8, which deals with ten phases of transformation (see 2.4).

5.2.8.1 PROGRAMME

Does the Study and Thinking Skills (S&TS) programme contribute specifically to any of the ten phases of perspective transformation, as explicated by Mezirow?

The following aspects of the programme might be interpreted as contributing to the first six phases of perspective transformation. In the following paragraphs five aspects from the Study and Thinking Skills (S&TS) programme are matched up with the phases of perspective transformation (see 2.3.8).

- The fact that the Study and Thinking Skills (S&TS) programme is placed at a time when students are likely to feel *disorientated,* relates to phase 1. This states that perspective transformation is triggered by a *disorientating dilemma* which causes students to *examine themselves* (see 2.3.8).
- The fact that the Study and Thinking Skills (S&TS) programme intentionally arouses disequilibrium within a "safe environment", also relates to phase 1 (disorienting dilemma). Furthermore, the fact that students find themselves in a "safe environment" implies that they can *examine themselves* (phase 2 see 2.3.8) without necessarily experiencing feelings of guilt or fear. This might even accelerate progress from phase 2 to phase 3 (*critical assessment of sociocultural and psychic assumptions see 2.3.8).*
- The fact that the Study and Thinking Skills (S&TS) programme provides students with exercises/tasks which motivate them to *examine themselves*, relates to phase 2 (*examining themselves;* see 2.3.8). However, this phase might also be accelerated due to the inclusion of the exercises/tasks.
- The fact that the Study and Thinking skills (S&TS) programme encourages students to discuss new concepts which they have learnt or experienced during the programme, relates to phase 4 (*recognition of feelings similar to that of others*).
- The fact that the Study and Thinking Skills (S&TS) programme motivates students to plan a new course of action with regard to their study and thinking habits, relates to phase 5 (*exploring of options*) and 6 (*planning a course of action*).

From this brief investigation into aspects of the Study and Thinking Skills (S&TS) programme which contribute to phases of perspective transformation, it seems that the programme contributes specifically to the first six phases of perspective transformation. (It should however, be noted that *perspective transformation* refers in particular to *perspectives* dealing with learning and studying, and not universal perspectives).

5.3 CONCLUSION

Chapter Five has presented a systematic analysis of the Study and Thinking Skills (S&TS) programme in terms of criteria selected from Mezirow's Theory of Transformative Learning. The programme was analysed according to its rationale, objectives, course material, and implementation procedures. The theoretical framework underpinning the programme, as well as its implementation, provided a basis for assessing whether the programme (as it stands) is capable of producing transformative learning. Where this had proved to be the case, it could only be by default, since the programme was not conceptualised or designed with Mezirow's theory in mind. To the contrary, the theoretical framework was heavily dependent on theorists who described learning process in children and adolescents.

Nonetheless, it has been shown that, to a considerable degree, the preconditions for transformative learning (and some of the interventions that, according to Mezirow elicit it), are already present in the programme. Other aspects of Transformative Learning Theory can be incorporated into the programme without difficulty. The following Chapter will examine the implications of this analysis and offer some recommendations for (a) further ongoing programme evaluation and improvement and (b) further research in this field, both case-specific and non case-specific.

CHAPTER SIX

Conclusions implications and recommendations

6.1 INTRODUCTION

In South Africa there is an urgent need to assist students entering tertiary institutions bridge the gap from school to university. In order to address this issue various types of bridging programmes have been designed at South African universities. These include programmes which address specific subject content, as well as programmes which address study methods and skills.

Furthermore, research indicates that difficulties experienced by freshmen at tertiary institutions are not necessarily caused only by *under preparedness in subject knowledge,* but frequently by *beliefs* which they hold about themselves and learning (McLeod,1990:16). This has emphasised the need to empower students with psychological skills which are to be integrated with study skills and thinking skills.

This study involves a programme whereby study *and* thinking skills are taught independently of a specific subject domain. The developers of this programme, who come from a background in Mathematics and Educational Psychology (cognitive), constructed the Study and Thinking Skills programme on a theoretical framework (based on Piaget, Vygotsky, Feuerstein and Lozanov) which underpinned their own teaching practices at the time.

From informal course evaluations during the implementation of the programme (1995 - 1997), the course developers were led to believe that the Study and Thinking Skills (S&TS) programme, in addition to its original objective of improving study and thinking skills, was fostering (what seemed to be) *elements of transformative learning* as described by Mezirow in his Transformative Learning Theory.

The question of delineating theoretically justified aspects (categories) of the Study and Thinking Skills (S&TS) programme which could be considered responsible for promoting *elements of transformative learning*, became the focus of this research. This was considered essential in order to develop an understanding of transformative learning *in the context of* the Study and Thinking Skills (S&TS) programme. Such understanding is regarded as a necessary springboard for any conclusions about the course in this respect.

In order to identify the *essential elements of transformative learning* from Mezirow's Transformative Learning Theory, a literature study was performed (Chapter 2), in which eight generic criteria (crucial for transformative learning) were identified. These eight criteria were employed to analyse the Study and Thinking Skills (S&TS) programme in terms of the following categories: *rationale*, *objectives*, *course material* and *implementation procedures*.

The *educator* was not included as a category. This was due to the fact that the programme developers were involved as programme presenters and that the educators' belief system was therefore already represented in the rationale underlying the programme. If this had not been the case, it would have been crucial to assess the educators' theoretical framework, as in this type of programme the premises underlying the educators' belief system are likely to play a significant role .

It should however be noted that the theoretical framework (Piaget, Vygotsky, Feuerstein, Lozanov) which underlies the programme, as well as the programme developers' own belief system, corresponds closely with the core beliefs which Clark suggests are common to the three role players in the field of transformational learning - Mezirow, Freire, and Daloz (Clark, 1993:52). These beliefs relate to the *individual as a learner*, *knowledge construction* and a *democratic society* (see 2.2.2.13).

6.2 RESULTS OF ANALYSIS AND DISCUSSION

In the analysis (Chapter 5), the rationale, objectives, course material and implementation procedures were compared with eight criteria derived from Transformative Learning

Theory. It was evident that the most significant category in terms of the programme analysis relates to the *rationale* on which the programme is based, because it is reflected in the other three categories. The rationale underlying the Study and Thinking Skills (S&TS) programme formed a close match with criteria selected from Mezirow's Transformational Learning Theory.

This can be explained in terms of parallels which were established between the theories of Piaget, Vygotsky, Feuerstein and Lozanov, and the generic criteria elicited from Transformative Learning Theory.

The researcher considers it entirely possible that this factor could explain the apparently fortuitous transformational learning that occurred on the programme, despite the lack of an explicit intervention in this respect. It should be noted that for the purpose of this study (i.e., an exploratory study that aims to promote understanding in context and provide a springboard for further research), emphasis is placed on matching (shared) *implications* for *practical* teaching/learning situations.

Of the eight criteria identified from Mezirow's theory, four were found to be present to at least some degree in the Study and Thinking Skills (S&TS) programme. Three were found to be omitted. Criterion 8 (phases of perspective transformation) was present only in the sense that certain aspects of the programme could be considered as contributing factors to six of the ten phases (see 5.2.8.1.).

6.2.1 CRITERIA IDENTIFIED AS PRESENT IN THE PROGRAMME.

The following sections present criteria (and elements of criteria) from Transformative Learning Theory which were found to be present, either fully or partially, in the programme as it is currently conceptualised and presented. The criteria found to be present comprise: facilitation of learning in both instrumental and communicative domains; giving learners an opportunity to explore their meaning structures; and providing means by which to investigate distorted meaning perspectives that learners might have, as well as to instigate disorientating or conflicting experiences with regard to these.

The following paragraphs describe some parallels which are considered significant in the promotion of transformational learning in the programme. Where criteria from Transformative Learning Theory were found to be represented in the existing programme, this is due to a parallel between the theoretical rationale used by Mezirow, and the rationale of the Study and Thinking Skills (S&TS) programme. Such parallels are interesting in their own right, as theorists are arriving at similar conclusions from differing standpoints. They also imply that - contrary to what is sometimes believed - learning theories based on children and adolescents do have relevance for adult learning too.

6.2.1.1 Criterion: Domains

Transformative Learning Theory emphasises that there are two domains in which learning takes place (namely the communicative and the instrumental) and that learning material (relating to values and attitudes) which influences transformational learning falls primarily in the communicative domain.

Piaget's theory of knowledge construction claims that there are three types of knowledge that people construct (namely physical knowledge, logico-mathematical knowledge and social arbitrary knowledge).

6.2.1.2 Criterion: Meaning structures

Transformational Learning Theory states that in order for transformative learning to take place the learner needs to *make meaning* by means of the type of learning which falls in the communicative domain. In order to achieve this kind of learning it emphasises the need for metaphors and rational discourse.

Similarly *Feuerstein* stresses the importance of mediating meaning to learners (by using various strategies, including metaphors) and that there is a qualitative difference in the forms of knowledge acquired through mediation, as opposed to direct learning.

6.2.1.3 Criterion: Distorted Meaning Structures

Transformative Learning Theory contends that those belief systems which are based on assumptions which were unconsciously shaped in childhood, frequently hamper optimal cognitive development. Furthermore Mezirow maintains *reflecting on these meaning structures* to be a crucial element of transformative learning (Mezirow, 1994:223).

Feuerstein bases his theory of *cognitive* modifiability, on the fact that human intellect can be modified at all ages and stages of development (open modifiability). He acknowledges the role of culture as well as the role of the mediator in the shaping of cognitive structures and emphasises the important role which the mediator plays in assisting learners to examine and adapt these cognitive structures.

6.2.1.4 Criterion: Disorienting experiences

Transformative Learning Theory suggests that in order for transformative learning to take place, learners need to go through a disorienting experience during which they are challenged to explore distorted or dysfunctional meaning structures.

Piaget's theories on *accommodation*, *assimilation* and *disequilibrium* state that for existing cognitive schemes to be modified, or for new ones to be created, the learner needs to experience disequilibrium. For example, in the Study and Thinking Skills (S&TS) programme disequilibrium or disorientation is promoted by loss of formulae in problem solving tasks (see 5.2.4.3).

6.2.1.5 Criterion: Emancipation from Limiting Beliefs

Transformative Learning Theory maintains that transformative learning involves an emancipatory process whereby the learner is liberated from distorted beliefs; these beliefs are frequently held over, unconsciously, from childhood.

Lozanov in his approach (suggestopedia) works from the premise that the learner has unlimited brain potential and that in order to optimise this potential it is important to

liberate learners from dysfunctional beliefs which they contain in their subconscious. This approach informs many interventions in the Study and Thinking Skills (S&TS) programme.

6.2.1.6 Criterion: Solidarity

Transformative Learning Theory maintains that *rational discourse* is crucial to transformative learning (see 2.3.2.)

The theories underlying the Study and Thinking Skills (S&TS) programme do not acknowledge the value of rational discourse (as defined by Mezirow; see 6.2.2, below). However Vygotsky's theory of cognitive development does emphasise the sociocultural nature of learning which, similarly to Transformative Learning Theory, demands a certain degree of solidarity amongst participants as a precondition for learning. Mezirow considers "solidarity among participants" (Mezirow, 1996:170) as a precondition for rational discourse. Solidarity among participants in the programme is promoted through a variety of interventions.

6.2.1.7 Criterion: Reflection

In *Transformative Learning Theory,* Mezirow maintains that *content, process and premise reflection* are required for transformative learning (see 2.3.5).

The rationale underlying the Study and Thinking Skills (S&TS) programme emphasises the importance of content and process reflection. Students were however - in practice - given opportunities to reflect on their perceptions of themselves and of learning. However, the rationale of the programme does not focus on the precise functions of reflection as defined by Mezirow, who sees it as an active, conscious and vigorous process (see 6.2.2, below).

6.2.1.8 Criterion: Four Types of Learning

Transformative Learning Theory maintains that in order to foster transformative learning, adult educators should consciously nurture four types of learning (see 2.3.6).

The rationale and course material based on De Bono's "thinking tools" confirms that the course developers were conscious of three of these four type of learning. However the fourth type of learning (which is linked to *premise reflection*) is not supported by the rationale underlying the Study and Thinking Skills (S&TS) programme (see 6.2.2, below).

6.2.1.9 Criterion: Phases of Perspective Transformation

Regarding the criterion which pertains to the "ten phases of perspective transformation": whilst this criterion as a whole was not considered to be met by the programme as it stands, aspects were nonetheless noted which could be considered as contributing factors to each of the ten phases. Five factors (which feasibly contribute to the first six phases of transformative learning) were identified (see 5.2.8.1).

6.2.2 CRITERIA IDENTIFIED AS ABSENT OR OMITTED FROM THE PROGRAMME: DISCUSSION

In the analysis the following criteria from Transformative Learning Theory did *not* appear to line up with the theoretical underpinning of the Study and Thinking Skills (S&TS) programme, nor with its rationale as stated.

It is clear that the rationale underlying the Study and Thinking Skills (S&TS) programme does not allude to three elements deemed to be essential (in terms of Mezirow's theory) for transformative learning to take place. These three elements which relate to *rational discourse* (and its defining criteria), to *premise reflection*, and to learning by transforming *meaning perspectives*, have particular relevance for adult education.

This is significant, because each of these omissions points to a central weakness of the programme's rationale: it is based on theories concerned mainly with adolescent learning (Lozanov is an exception here). However the target group of the programme are adult learners. This would appear to be a serious limitation, though the extent of its impact on learners remains unclear.

Taking these omissions from the programme into consideration, it seems that the Study and Thinking Skills (S&TS) programme, as it stands, is unlikely to achieve "perspective transformation" as described by Mezirow. Yet, the possibility of such transformation occurring cannot be ruled out on purely theoretical grounds. Presenters who work beyond the parameters of the existing rationale may further enhance this aspect of transformative learning, without necessarily being conscious of this particular outcome.

In overview, it seems that the programme may be regarded (theoretically speaking) as an instrument which fosters transformational learning with regard to *meaning schemes*; and that, as suggested by Mezirow (1994:224), when a sufficiency of these transformed meaning schemes is accumulated, transformational learning with regard to meaning perspectives (i.e. *perspective transformation*) remains a possible outcome.

This suggests that further efforts to enhance perspective transformation are both needed and desirable within the programme's implementation. Furthermore, there is a logical link to the deficiency in rational discourse mentioned above. Opportunities for perspective transformation might be substantially improved if students on the programme were given more time to engage in rational discourse.

If essential criteria are omitted, the following question arises. How is it that transformative learning occurred in students as reflected in their feedback? It is important to note that, based on the available feedback/student evaluations of the programme, *only a few students* reported elements of what might be interpreted as perspective transformation, in terms of significant changes in their belief systems. In other words, the process of transformative learning, if it is in fact occurring at all on the Study and Thinking Skills (S&TS) programme, is erratic and is being left to chance and other, unspecified or variable factors.

When seeking to understand the impact of the Study and Thinking Skills (S&TS) programme with respect to transformative learning, three additional factors need to be taken into consideration.

Firstly, Mezirow states that transformative learning can occur through a series of small uneven transitions i.e. "the accumulative result of related transformations in meaning schemes" (Mezirow, 1994:224). The implication here is that transformative learning, even at the highest level, can be considered a process (one that might begin with small steps).

Secondly, the Study and Thinking Skills (S&TS) programme is implemented over a period of four weeks, a period which is unlikely to be sufficient for students to put into practice the emancipatory insights which they might have experienced whilst attending the course (see 2.2.2.12). This does not, however, necessarily mean that such insights could not develop as time goes on, based on changes elicited by the programme amongst other factors

Thirdly, the Study and Thinking Skills (S&TS) programme focuses on a *particular kind* of perspective transformation, where the relevant perspective encompasses dispositions, attitudes, and beliefs specifically about "learning". Again, it is possible to conceptualise the programme as setting in motion a *process* of transformative learning which may or may not continue as students further their university careers.

6.3 IMPLICATIONS OF THE ABOVE FOR EDUCATORS

In this section, implications for educators drawn from the "shared" features of the criteria and the Study and Thinking (S&TS) programme (and its underpinning theories), are briefly explicated.

- For transformative learning to take place special emphasis needs be placed on course material and didactic methods which encourage learning in the communicative domain.
- Teachers need to understand and plan lessons so that learners are given the opportunity of constructing all three types of knowledge described by Piaget (physical, logico-mathematical, social-arbitrary).
- Teachers need to consider how the learning material is to be constructed. (i.e. if the learning material involves values or morals it needs to be understood and constructed as "social knowledge" in a way that is clear to learners).

- It is important for educators to understand that "social" knowledge is best constructed through group consensus (communicative learning domain) whilst "technical" knowledge can be logically constructed in both domains.
- There is a need to understand that a different type (and quality) of knowledge is acquired by course material and didactic methods which focus on mediating meaning through the use of strategies such as metaphors.
- There is a need to assist learners in exploring their own meaning structures by providing them with opportunities where they are challenged to reflect on meaning perspectives relating to learning.
- Educators need to create tasks and exercises which cause a certain amount of disequilibrium, so that learners are challenged to accommodate new ideas and views about learning.
- Educators need to focus on didactic approaches and strategies which emancipate learners from distorted psychological meaning structures.
- Adult Educators, in particular, must pay special attention to understanding and designing course material and didactic methods that explain and stimulate rational discourse at an adult level. They should strive to mediate rational discourse to learners and ensure preconditions are in place, e.g. "ground rules" for discussions.
- Premise reflection and methods of promoting it, should be specified. Educators should be aware of the significance of the role which premise reflection plays in achieving perspective transformation.
- Educators need to understand the difference between content and process reflection, so that they can develop course material and didactic methods which stimulate both types of reflection.
- Educators need to understand and to be able to differentiate between the four types of learning as specified by Mezirow. They should select course material and didactic methods which will foster each type, in particular the "transformation of meaning perspectives" (see 2.3.6).

6.4 RECOMMENDATIONS

Recommendations can be made on the basis of the above conclusions and implications. These concern, firstly, the ongoing development and evaluation of the Study and Thinking Skills (S&TS) programme; and, secondly, other types of research that might usefully be conducted in the area of transformative learning in adult education (or training and development) in South Africa.

6.4.1 Value of theoretical diversity

The discovery of unexpected parallels between the theories involved in this analysis, suggests that theoretical narrowness or dogmatism could be a limiting factor in programme effectiveness. The theories used for the Study and Thinking Skills (S&TS) programme were not specifically adult learning theories, yet they take account of many of the same factors that concern Mezirow in his model of adult learning. While eclecticism should not be pursued for its own sake, an integration and synthesis of different theoretical perspectives is likely to produce a better programme, especially within an educationally diverse setting.

6.4.2 Importance of communicative domain

It is clear that learning in the *communicative domain* is a crucial part of an transformative process. This learning brings values and attitudes into focus. Course material, teaching methods, knowledge construction (including "social knowledge"), and groupwork must all take account of this essential learning domain which renders all learning on the programme more personally meaningful to participants.

6.4.3 Importance of addressing dysfunctional beliefs explicitly

Based on the approach of Lozanov, dysfunctional beliefs or "anti suggestive barriers" were addressed on the programme. Clearly, this is an essential element. However, it may not be sufficient to rely on "subconscious" methods of combating these distorted or dysfunctional beliefs. Mezirow's model recommends explicit disputation and debate that raises conscious awareness as well, in the form of *premise reflection*. Opportunities for this should not be passed up, including opportunities to provoke disequilibrium among participants. Clearly,

the scope of "reflection" and especially "critical reflection", needs to be extended on the Study and Thinking Skills (S&TS) programme.

6.4.4 Emancipatory philosophy

Programme designers and presenters need to be aware of the social context of their work and its liberating or emancipatory potential for participants. The distorted beliefs held by students are not only "psychological" in the sense of being particular to an individual and possibly his/her family - they are also socio-cultural, as the cognitive potential of students can be limited by widely-held beliefs in society. The focus on "unlimited potential" in the Study and Thinking Skills (S&TS) programme appears to have been especially useful in this regard.

6.4.5 Rational Discourse is crucial

The preconditions for rational discourse include a sense of solidarity, and of safety in the group. These have to be facilitated, as it is unlikely to occur by default. If disequilibrium is to be provoked, and an unsettling process of reflection enabled, participants must feel safe and secure with the presenter and with each other. However, rational discourse itself needs to be mediated and facilitated. Participants need to learn the skills which are involved that. It is recommended that the programme focuses more on communication skills that support objectivity and broad-minded listening, as described by Mezirow, and furthermore that more opportunities for rational discourse are included at each stage. This includes but is not restricted to, group discussions. Practice in rational discourse might also be a useful focus for follow up sessions (if these are offered), to consolidate skills.

6.4.6 Follow-up evaluation and reinforcement sessions

If it is accepted that aspects of transformative learning may be initiated but not developed fully on the programme, it seems likely that follow up evaluation of participants would be useful at points later in the year. Alternatively, reinforcement sessions could be conducted in an attempt to further this process of perspective change over time. Such an outcome might be particularly significant for educationally disadvantaged students in the South African educational context.

6.4.7 Specifying transformative learning in rationale and objectives

Those aspects of the Study and Thinking Skills (S&TS) programme which appear to be theoretically supported as instruments of transformative learning, should be specified. Accordingly, changes or extensions should be made to the rationale, the objectives, the course material and the procedures recommended for implementation, including mediation to students. Whilst it is encouraging that at least some students apparently experience transformative learning on the Study and Thinking Skills (S&TS) programme, this outcome is too important to be left to chance.

6.4.8 Recommendations for further research

6.4.8.1 Ongoing Programme Evaluation

It has been made clear that the present study forms part of an ongoing programme evaluation in which the focus is the Study and Thinking Skills (S&TS) programme. The next step is therefore, to embark on empirical research to investigate the impact of the programme on transformational learning. This research could be qualitative or quantitative, or include elements of both.

6.4.8.2 Development of instruments

It might further be useful to attempt to *validate a research instrument* which would allow researchers to measure transformative learning, according to criteria from Transformative Learning Theory (and/or other relevant criteria). This is another possible line of enquiry that would enhance knowledge in a field which seems to have been, thus far, neglected.

6.4.8.3 Extension to other settings

Mezirow's theory, being an adult learning theory, clearly has applications beyond the traditional sphere of education and educational institutions. Whilst the Study and Thinking Skills (S&TS) programme is designed specifically as a bridging programme for university students, elements such as thinking skills and transformative learning are in demand elsewhere - for example, in business and in non-governmental organisations.

The South African workforce lacks skills which promote autonomy and many South Africans, across all social groups have been restricted by authoritarian upbringing or perspectives. If transformative learning and emancipation can be specified and enhanced, these are likely to be usefully transferred to areas other than formal education. Given that very few South Africans ever get the chance to go to university, this extension is both logical, morally justified and economically justifiable.

6.5 LIMITATIONS OF THE RESEARCH

This research has also evidenced certain limitations. As a case study of the Study and Thinking Skills (S&TS) programme, its scope is confined to a limited sphere and it is not predictable whether the same programme could be implemented elsewhere, with different presenters, and achieve the same results. While the programme is extensively documented, there are many aspects of its practical implementation which are not controlled and would be difficult to specify, for example the use of spontaneity and the effect of a presenter's personality or style on the students in the group.

The presenter plays a central role in the programme, but the analysis did not include "the presenter" as one of its categories, along with rationale, objectives, course material and implementation procedures. To some extent, this last category does touch on the role of the presenter but in a very limited way. If the programme is to be extended to other settings and other presenters, as has been recommended, the actual impact of the presenter might be difficult to assess.

6.6 CONCLUSION

This study has presented a conceptual analysis of a particular study and thinking skills programme, in an attempt to understand and to further enhance "transformative" learning. This process has special relevance for adult education. It is clear that the programme, despite not being constructed with this specific outcome in mind, has considerable potential to evoke transformative learning in participants, and the analysis presented here indicates why this might be. It further indicates areas where the programme is found lacking, with

respect to transformative learning and therefore could be rendered more effective, according to Transformative Learning Theory.

It appears that a core strength of the Study and Thinking Skills (S&TS) programme is its strong theoretical underpinning that integrates diverse theories in creative ways. There appears sufficient grounds for Mezirow's work to be effectively integrated into this framework. To a significant degree, his concepts already 'fit in'. More encouraging still, to do this would not require any major changes to the structure of the programme and would not make it either more costly to run or more difficult for participants to attend. It appears that relatively minor changes, if correctly understood and consistently implemented, would be sufficient to produce a significant improvement.

The desirable outcome of a revised programme would be that *each and every participant* and not just a few, will be able, at the end of the course (and possibly at later evaluations) to report personally significant features of transformative learning.

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