FINAL REPORT

“Investigation into Teaching Styles and Cognitive Processes in Language Learning”

National Language Project

“Investigation
into
Teaching Styles and Cognitive Processes
in Language Learning”

Funded by a grant from the Presidential Education Initiative

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EXECUTIVE SUMMARY

l. Background

The National Language Project (NLP) is grateful to the Presidential Education Initiative (PEI) for funding the classroom-based research into "Teaching Styles and Cognitive Process in language learning" documented here. We are happy to place on record our appreciation to the principals, teachers and governing bodies of the respective schools who kindly agreed to take part in the Project. The research initiative was conceptualised within the National Language Project's broad commitment to practicalised theory. The study is one of the research initiatives under NLP's Multilingual Primary School Transformation Project (MPSTP). The MPSTP is committed to addressing real language problems in theoretically and practically innovative ways.

2. Purpose And Research Questions

The purpose of the study was to investigate ways in which learners' Learning Styles matched the different teaching modes or Teaching Styles used in seven selected primary schools in Cape Town. The schools were selected to represent the broad spectrum of educational institutions in Cape Town. By focussing on language Learning Styles and learning strategies the Project was also able to analyse the various ways in which learners, as individuals, responded to the challenges of learning in a multilingual environment.

The study examined the pedagogical strategies used in multilingual classes on the premise that, for teachers to create an optimal learning environment, the teaching strategies should be congruent with the Learning Styles of individual learners. Therefore, the study hypothesises that:

HI: Optimal learning took place when instruction and learning matched
HO The null hypothesis: No learning took place when there was a mismatch between instruction and cognitive language Learning Styles.

3. Research Objectives

- ✍ To identify ways in which teachers tried to create an optimum learning environment and the ways learners responded to the environment;
- ✍ To examine the extent to which the construct of cognitive styles could account for differences in language learning outcomes by learners from identical sociolinguistic backgrounds through a comparison of the performance of learners with the same learning style from identical backgrounds on two different tests;
- ✍ To compare the performance of language learners with identical language Learning Styles from different sociolinguistic background on the same language tests;
- ✍ To identify problems and difficulties that prevent effective teaching and learning in multilingual/multicultural classes;
- ✍ To document successful language learning strategies which minimise the adverse effects on language learning arising from a mismatch between teaching modes and learning orientations;
- ✍ To describe Teaching Styles by observing lessons in a number of selected classrooms in the Western Cape;
- ✍ To describe the Learning Styles used by individual learners using computerised Cognitive Styles Analysis Tests (CSA) developed by Riding

and adapted to the South African context under the general auspices of the NLP.

4. Methodology

The most important sources of data for the study were:

- Lesson observations of thirteen teachers teaching using an observation schedule, and audio and video recordings;
- Testing 202 Grade 3/7 learners' Cognitive Styles (Riding 1998) using CSA, computer-based methods; and
- Linguistic tests (Michigan Language Tests on Grammar and Vocabulary).

5. Research Sites And Target Population

Seven schools provided sites for the study. The schools were selected because . they represented a broad spectrum of South African schools from ex-DET to former `Model C' schools. The schools differed in terms of the range of languages spoken and used and in the extent to which they were multicultural. Thirteen teachers were involved in the lesson observations. All the teachers were female.

An overall sample of 202 subjects took the CSA test. Originally, the intention was to restrict the learner population to Grade 3 learners only, and the research was to be conducted in Grade 3 classes at selected primary schools around Cape Town. However, pilot tests revealed that some of the Grade 3 learners were experiencing acute problems in carrying out the experimental tasks. It was decided to use Grade 7 learners from two schools as some of the test items were beyond the linguistic competence of Grade 3 at the schools. The inclusion of Grade 7 learners at some schools eventually led us to ask the awkward question: Are the previously disadvantaged schools worse off under an integrated system than under separate systems, and is the integration of different departments masking painfully disorienting differences between schools?

6. Research Design

Between 3rd and 25 May 1998, a total of 119 lessons/periods were observed focusing on the Teaching Styles of the thirteen Grade 3/7 teachers involved. Data were collected through a mixture of audio and video recordings, and an observation schedule (see Appendix 5). This was complemented with detailed fieldwork notes including descriptions of the classroom environment.

A number of constructs have been used to describe orientation towards language learning. We eventually decided to use the constructs of Analytics and Wholistics to capture the dimension of cognitive processing and the constructs of Verbalisers and Imagers to capture learners' representation of information.

Riding (1998) makes the following distinction between Analytics and Wholistics. Wholists are individuals who are able to see the entire picture of a situation and are therefore, capable of developing an overall perspective, and to appreciate the total context. The disadvantage of the global perspective of

- ✍ CSA system of data analysis was done automatically, with the Cognitive Styles displayed at the end of the assessment. The results could be saved and merged using a word processor as a system of analysis.

Riding has been researching Cognitive Styles among English first Language speakers, while Skehan (1998) has restricted his research project to English second language speakers. The research being reported here was the first in the world to combine both English first language and second language speakers as experimental subjects.

The CSA was used to identify learners' preferred cognitive modes of information representation and processing. Learners' cognitive styles could then be linked with instructors' Teaching Styles. This was the first time research into Cognitive Styles and teachers' Instructional Styles had been carved out in South Africa, or indeed in a non-Western context.

Learners' cognitive stylistic preferences were also compared with the performance of learners on the linguistic proficiency tests. The study investigated the extent to which the performance of learners with different Cognitive Orientations differed on the linguistic tests. The results from the CSA were related to the performance of the learners on one grammar and two vocabulary tests. The tests were a partial local adaptation of the internationally validated Michigan Language Test. The advantage of using the Michigan Language Test was that it was a test already validated internationally. Learners were tested in two sittings, one for the linguistic proficiency tests and one for the CSA The linguistic proficiency tests were administered in June, and the CSA in August 1998.

7. Research Findings

7.1 Teaching Styles

The main objective of the classroom observation was to characterise the different Teaching Styles. In Teaching Styles the main aim was to explore the manner in which the lesson material is presented. The analysis of the Teaching Styles reflected that there was a broad range of teaching orientations that were adopted in the different schools. The following are the findings on the mode of presentation and task type.

Mode of presentation

In spite of the differences in Teaching Styles, the predominant mode of presentation was Textual, with very few instances in which the dominant mode of presentation was Visual. There was also a tendency to present the information both Textually and Visually. The presentation of the material has implications for language learning. For example, Imagers learn better from pictorial presentation and Verbalisers from textually inclined presentations (Ridings - CSA manual).

Task types

The teachers also used a wide range of different tasks. The tasks differed in terms of their complexity and on a number of dimensions. Experientially Real

Wholists is that they have difficulty seeing the smaller parts and their relationships. The main strength of Analytics is their ability to divide a situation into smaller components. They are adept at identifying similarities and differences between parts. Their main weakness is that they tend to focus on just one aspect of the whole situation at a time. This may have the effect of distorting or exaggerating the picture, or making some parts more prominent, relative to the rest. Analytics find it difficult to develop a global perspective on issues.

A second dimension of Verbalisers and Imagers was used as a separate dimension to capture learners' representation of information. Imagers represent information visually or pictorially while Verbalisers represent information textually or in word form. Imagers prefer highly descriptive familiar material. They prefer that which they are not familiar with to be limited.Verbalisers are superior on comprehending information with unfamiliar technical material typical of technical subjects. Imagers are superior to Verbalisers on spatial, time and abstractions.

The main claim that Riding makes is that there are social attributes associated with different Cognitive Styles. The various Cognitive Styles are associated with different social attributes that have an effect on the way learners respond to different Instructional Styles.

- CSA had been used in a number of different countries. It was being developed and used for France, the Netherlands, Arabic countries, etc. It was therefore, rapidly acquiring international status as a measurement of cognitive preferences and processing;
- CSA was non-threatening. The only personal questions it asked related to gender and age. Indeed learners found it great fun to carry out the test and much more exciting than their ordinary lessons;
- Although the CSA was a computerised test, learners did not have to be familiar with computers to participate. The test required them to do two things: When the answer was "WRONG" they pressed the "BLUE" key, and when they felt that the answer was "CORRECT', they pressed the "RED' key;

tasks are tasks that relate to learners' own experience of everyday life. Reflective tasks are tasks where the learner is asked to comment on the task itself and where the teacher encourages learners to think about and talk about the task. Interestingly enough, a relatively large number of the tasks were both Reflective and Experientially Real to the learners.

Although most of the tasks were Teacher-initiated relatively low numbers were both Teacher-initiated and Controlled. 55% of the tasks were Learnercentred. Learner-centredness refers to those tasks that were administered and controlled by learners themselves. This means that the teachers although generally determining the nature of the tasks, also gave learners latitude to control the individual tasks once they had initiated them. That nearly all of the tasks were Teacher-initiated is not surprising given the fact the learners were at primary school level.

7.2 Learners' Cognitive Styles

The main thrust of the argument in this report is that in language teaching, best practices were those that matched the language learners' Learning Styles. The group results on a CSA test of three schools that are representative of the broad spectrum of schools selected for the research project (i.e. ex-Model C, ex-DET and ex-HOR) revealed that the smallest percentage of learners overall was Analytics. This was as opposed to 64% of the overall group who were classified as Wholists. Analytics benefit more from decontextualised teaching than Wholists who prefer learner-controlled contextualised tasks.

Wholists -Imagers was the most frequently occurring language learning style not only for the separate schools but for the entire group of 202 learners. This is an important finding given the diversity and range of proficiencies within and between groups. The different Cognitive Styles have an implication for the most suitable Instructional Style that could be most beneficial to the group as a whole. For example, learners who are Wholistic-Imagers or WholistVerbalisers would obviously benefit most from instruction that presented a global picture of the area either in pictures or textually.

The findings also demonstrated that there were comparable ways of language learning adopted by L1 and L2 learners who came from radically different schools. This is a significant finding because it means that the learners were adopting similar ways of language processing in spite of coming from diverse cultural backgrounds. This finding runs contrary to other studies that have demonstrated that cultural factors have an effect on how language learners select their language learning processing approaches. The implication is that in South Africa similarity cuts across cultural differences, implying that Learning Styles are not necessarily a cultural artefact.

7.3 Performance in the linguistic tests

Although learners from different sociolinguistic backgrounds had comparable modes of processing, the performance in the linguistic tests of the subjects with the same Cognitive Style from different backgrounds was dissimilar. On the basis of statistical analysis the results demonstrated that the difference between the schools was statistically significant.

Statistical tests showed that the cognitive type to which individual learners belonged and gender (separately and combined) made no significant difference on learner performance in any of the three linguistic tests. Age, however, had an effect on grammar and collocation scores but not on synonymity scores.

8. Conclusions And Recommendations

What this research managed to demonstrate was that there were comparable ways of language learning which Ll and L2 learners adopted in radically different environments. In other words, there were common ways of orienting towards tasks, in spite of differences in the nature of the school environments. The research has also shown that similar language Learning Styles do not necessarily yield identical results in language proficiency tests. Thus the differences in learning outcomes in situations of identical Learning Styles cannot be attributed to differences in cognitive styles. Some learners may be more cognitively strategic than others. The research suggests that learners should be taught to develop strategies which would enable them to reduce the degree of mismatch which might exist between the teachers instructional styles and their own preferred modes of learning. In as much as teachers have to be taught to develop a regime of strategies in teaching, learners are also expected to develop a repertoire of Learning Styles. Future research has to explore ways in which learners can be assisted to develop into more cognitively strategic learners.

Clearly the study has pedagogical implications. The study claims that when teachers know more about their own preferred modes of teaching, and, indeed, how their own Learning Styles and their learners' Learning Styles affect their Teaching Styles, they will be in a better position to relate their pedagogy to their learners' Learning Styles. Teacher awareness of the findings of this study would place them in a stronger position to anticipate teaching learning style mismatches. We are, therefore, making an extremely powerful claim that requires further investigation. The claim is that individual Teaching Styles are influenced by the teacher's own Learning Style irrespective of whether they are teaching a first or second language

There is a need to investigate the teachers' Learning Styles. This investigation is also necessary because there may be a gender factor as all the teachers involved in the study were women. Future research needs to set up experimental classes that would enable us to test the extent to which the gap between teaching and learning is reduced. Moreover, it is necessary to explore the extent to which mismatches between teaching and learning have effects in different subject areas and not only language If recommendations are to be made about the development of Learning Styles and strategies and their role in language pedagogy future research has to demonstrate the stability of the constructs. The ideal way of demonstrating the stability of the construct is to explore the extent to which learners retain the same style at different stages of language acquisition.

Finally, we propose that one way of achieving educational outcomes is through developing a curriculum that is task-based. The construct of a task

that underpins our understanding is the one used by Skehan (1994, 1998) where tasks differ along parameters of increasing complexity. The tasks should take into account learner predispositions as well as the preferred modes of teaching of teachers.

CONTENTS.

l. Introduction

The National Language Project (NLP) is grateful to the Presidential Education Initiative (PEI) for funding the classroom-based research into "Teaching Styles and Cognitive Processes in Language Learning" reported here. We are happy to place on record our appreciation to the principals, teachers and governing bodies of the respective schools who kindly agreed to take part in the Project and who tolerated our repeated requests to which most schools conceded with admirable grace.

The NLP has been in existence since 1986 and has been actively involved in language research since its inception. The Project implements three programmes The Democratic Language Policy Programme (DLPP), the Community Health Interpreter Training and Employment Programme (CHITEP) and the Multilingual Primary School Transformation (MPSTP). The PEI funded "Investigation into Teaching Styles and Cognitive Processes" research initiative was conceptualised within the NLP's broad commitment to practicalised theory. The initiative was one of the research initiatives under the MPSTP. The MPSTP is committed to addressing real language problems in a theoretically innovative way.

The timing of the research is important in the trajectory of language studies in South Africa. Most research on multilingualism in South Africa in the past and indeed to date, with the exception of the early work in the 80's by Carol Macdonald into the Threshold Project, has been sociolinguistic in nature. On the one hand, the Teaching and Learning Styles Project can be said to be a continuation of the research tradition initiated by Carol Macdonald because of its emphasis on cognitive processes in language learning. On the other hand, the Project breaks with the Carol Macdonald initiated tradition by seeking to establish an explicit connection between cognitive processes and teaching styles.

The Project sought to investigate the nature of teaching practices that best facilitate learning. The study investigated the dimensions along which cognitive processes differed, and how these cognitive processes relate to styles of teaching used by instructors. The research began from the philosophical educational conviction that best instructional practices were those which reduced mismatches between Instructional Styles and Cognitive approaches. The Project analysed the teaching modes adopted by instructors and sought to demonstrate that maximum learning took place when the learners' cognitive styles matched the teaching styles of the instructors. The Project also demonstrated the pedagogical relevance of research into cognitive processing.

The purpose was to investigate ways in which learners' learning strategies and learning styles matched the different teaching modes or teaching styles used in seven selected primary schools in Cape Town. The schools were selected to represent the broad spectrum of educational institutions in Cape Town. By focussing on language learning styles and learning strategies the Project was also able to analyse the various ways in which learners as individuals responded to the challenges of learning in a multilingual environment.

The approach to identifying best teaching practices was, therefore, very much learner driven. The Project report also highlights the impact and implications of all these factors on policy formulation and implementation.

2. Research Design

2.1 Purpose of study and the research questions

The study examined the pedagogical strategies used in multilingual classes on the premise that, for teachers to create an optimal learning environment, the teaching strategies should be congruent with the learning styles of individual learners. Therefore, the study hypothesises that.

HI: Optimal learning took place when instruction and learning matched HO The null hypothesis: No learning took place when there was a mismatch between instruction and cognitive language learning styles

2.2 Research objectives

- To identify ways in which Grade 3 teachers tried to create an optimum learning environment and the ways learners responded to the environment;
- To examine the extent to which the construct of cognitive styles could account for differences in language learning outcomes by learners from identical sociolinguistic backgrounds through a comparison of the performance of learners with the same learning style from identical backgrounds on two different tests;
- To compare the performance of language learners with identical language learning styles from different sociolinguistic background on the same language tests;
- To identify problems and difficulties that prevent effective teaching and learning in multilingual/multicultural classes;
- To document successful language learning strategies which minimise the adverse effects on language learning arising from a mismatch between teaching modes and learning orientations;
- To describe teaching styles by observing lessons in a number of selected classrooms at Grade 3 level;
- To describe the learning styles used by individual learners using computerised Cognitive Styles Analysis Tests (CSA) developed by Riding and adapted to the South African context under the general auspices of the NLP.

2.3 Research Team

The research team consisted of six members who were hired by the National Language Project (NLP) specifically to participate in the research project. Administrative support for the project was provided by NLP's Administration Section. Professor Sinfree B. Makoni, Department of English and the Centre for Applied Language Studies in Southern Africa (CALSSA) at UCT, was the chief researcher. The field workers were:

- Pinky Makoe, Department of English at UCT - fluent in seTswana and English.
- Gary Crawford - a former employee of the NLP, fluent in English and Afrikaans.
- Nomvula Mbathani and Nceba Madubela - both experienced primary school teachers fluent in Xhosa and English.
- Fusi Mosaase, Centre for Applied Language Studies (CALSSA), UCT - an experienced teacher fluent in both English and seSotho.

2.6 Action Plan

The four phases of the research are summarised in the table below:

Table 2: Research phases

PHASE	ACTIVITY	RESULTS
Pre-Pilot	Field Team Training - research objectives, theoretical rationale, teaching/learning styles, data collection procedures	Team members trained.
Pilot Phase	Adaptation, validation and piloting of research instruments - • Teacher/Lesson observation schedule, • Cognitive Styles Analysis (CSA) • Michigan Language Test - grammar and vocabulary tests	Research instruments developed - • Teacher/Lesson observation schedule, • local versions of the CSA and Michigan Language Test - grammar and vocabulary tests.
Main Study	Data collection and analysis: • Lesson observations • Conduct CSA tests • Conduct grammar and vocabulary tests	Research data collected and analysed
Research report	• Determine research findings and recommendations • Write and submit final research report	Final project report submitted to PEI/JET.

3. Research methodology

The assumption underpinning the study was that different learners engage different modes when learning, and that language learners were more successful if there was a match between the instructor's teaching style and a learner's language learning orientation.

3.1 Data sources for the study

The most important sources of data for the study were:

- Lesson observations of thirteen teachers teaching using an observation schedule, and audio and video recordings;
- Testing 202 Grade 3 and Grade 7 learners' Cognitive Styles (Riding 1998) using Cognitive Styles Analysis (CSA), computer-based methods; and
- Linguistic tests (Michigan Language Tests on Grammar and Vocabulary).

3.2 Target population and research sites

Originally, the intention was to restrict the learner population to Grade 3 learners only, and the research was to be conducted in Grade 3 classes at selected primary schools around Cape Town. However, pilot tests revealed that some of the Grade 3 learners were experiencing acute problems in carrying out the experimental tasks. This compelled the research team to expand the number and types of learners taking part in the research study. In particular, the research team realised that some of the test items were beyond the linguistic competence of Grade 3 learners at two of the schools taking part in the project. It was decided to include Grade 7 learners from these schools as well as the original (Grade 3) learner population in the linguistic tests. An overall sample of 202 subjects took the CSA test. This sample was comprised of Grade 3 learners from five schools and Grade 7 learners from two schools. A discrepancy exists between the number of (Grade 3 and Grade 7) learners who took part in the grammar and vocabulary tests and the number who participated in the CSA test. This is because there were a number of learners from one school who took part in the grammar and vocabulary test but did not do the CSA test as access to the school had become increasingly difficult.

Seven schools provided sites for the study. The schools were selected because they represented a broad spectrum of South African schools from ex-DET to former `Model C' schools. The schools differed in terms of the range of languages spoken and used. Some schools were largely English monolingual while others were multilingual with a large range of languages spoken including Xhosa, seSotho, Afrikaans, English, Tswana, etc. The schools also differed in the extent to which they were multicultural. Multilingual classes tended to be multicultural, and this created the challenge of teachers having to address a multilingual as well as multicultural class. The composition of the classes had an impact on how the Medium of Instruction (MOI) was realised. In some schools the MOI was realised as Languages of Learning and Teaching (LOLT). The concept of MOI has been replaced in current discourse about language in Education with Languages of Learning and Teaching (LOLT) (see Pludderman in press). MOI assumes that teaching takes place through a single language and that learning takes place through a single language. LOLT assumes that teaching takes place in a number of languages and that learning takes place through a number of languages. The distinction between the two concepts and the debate about the sociolinguistic status of MOI and LOLT is addressed more

fully in section 4 of this report. (For a fuller argument see Makoni 1998). At this point it suffices to say that the concept of MOI, although used quite frequently, is reductionist and extremely minimalist while LOLT is expansionist (Pennycook manuscript undated).

(a) School A

School A is an ex-House of Representatives (HOR) school (previously for Coloured only). It is ethnically comprised mainly of Afrikaans speaking Coloured learners. The MOI is English. The school has a small but steadily increasing number of Xhosa speaking African learners seeking intellectual refuge from the severely under-resourced ex-DET schools. Such learners are attracted by the prospects that English might confer in terms of imagined `possible upward mobility'. The learner migration is unrelentingly one directional away from ex-DET schools to better-resourced schools. English in such contexts is seen not as a language but as a metaphor for a particular life style (Makoni, 1998).

(b) School B

This is an ex-DET school (previously for Africans only) situated in a predominantly Xhosa speaking community in an African township. The learner population consists of speakers of African languages only. The MOI is seSotho from Grade 1 until Grade 3. English is taught as a subject until Grade 4 when it nominally becomes the MOI. (c) School C

School C is an ex-House of Representatives school. It is multicultural with a mixture of learners drawn from different religious backgrounds - Muslim, Christian, Animists, etc. The majority of the learners are African. Whites and Coloureds form a minority. Although African learners form a majority, the MOI is English.

(d) School D

School D is an ex-House of Representatives school. It was previously a Catholic school admitting Coloured learners only. It is presently comprised of learners from different ethnic groups and from different religious backgrounds. Coloured learners are a majority with White and Black learners in the minority. The MOI is English

(e) School E

School E is an ex-House of Representative school. It was previously a White Catholic school. Current learners are drawn from different religious backgrounds. It is multicultural with a Coloured majority and a minority of White and Black learners. The MOI is English.

(f) School F

School F is an ex-Model C school (previously for Whites only). The majority of learners are White monolingual speakers. Coloured learners are in a minority. The MOI is English.

(g) School G

School G is an ex-Model C school. The majority of learners are White English speakers. A minority of learners are Coloured. The MOI is English.

Thirteen teachers were involved in the lesson observations. All the teachers were female.

3.3 Instruments used for characterising teachers' teaching styles

The main objective of the classroom observations was to characterise the different teaching styles. Data was collected through the use of a classroom observation schedule (see Appendix 5).

3.3.1 Data collection

Between 3rd and 25 May 1998, a total of 119 lessons/periods were observed focusing on the teaching styles of the thirteen Grade 3/7 teachers involved. Two hundred and forty nine learners attended these lessons. Data were collected through a mixture of audio and video recordings, and an observation schedule (see Appendix 5). This was complemented with detailed fieldwork notes including descriptions of the classroom environment. Table 3 below provides the number of teachers, the number of lesson observations, the languages used in the lessons and the number of learners involved for each school.

Table 3 : Lessons observed

School	Teachers	Pupils	Lessons	Days	Languages				
					Eng	Xhosa	Afrik	Sotho	Other
A	1	35	17	3	n	n	y	n	n
B	2	36	21	3	y	y	n	y	n
C	3	32	21	3	y	y	y	n	n
D	1	28	14	3	y	y	y	n	n
E	1	42	11	3	y	y	y	n	n
F	3	38	19	3	y	n	y	n	n
G	2	38	16	3	y	n	y	n	y
Total	**13**	**249**	**119**	**21**					

n = nil
y = yes

3.4 Instruments used for measuring learners' Cognitive Styles

3.4.1 Definition of terms

A number of constructs have been used to describe orientation towards language learning such as norm-oriented vs. communicative-oriented, planners vs. correctors, etc. The distinction that has won the most wide spread appeal is that off field dependent (FD) and field -independent (Fl) learners. FI learners can abstract an item away from its background, separate the essential from the inessential, and be usefully analytic. FD learners, on the other hand, are person oriented, more resourceful and have greater conversational abilities. Field (in)dependence is expected to correlate with other criterion scores such as cloze tests, tests of oral proficiency, vocabulary development, etc. FI learners were expected to do well when matched against instruction that was form focused while FD dependent learners were expected to benefit more from meaning or functionally focused learning.

Cognitive Styles were interpreted here to refer to the ways in which learners processed and represented information. A Cognitive style is a habituated form of

behaviour which is expected to remain constant, and is conceptually distinguished from learning strategies which a learner may master to enhance his cognitive style or mitigate its effects on learning outcomes. For example, a learner who prefers to process information visually may have to learn `new' strategies that would enable her to convert information presented textually into her preferred mode of visual representation. Intelligence is unlike Cognitive Styles because, while intelligence is expected to result in a learner generally being able to perform better than other individuals, a cognitive style means that the learner is good on some tasks and finds others more difficult.

Initially we planned to use the constructs of FD and FI as measures of Cognitive Styles for the study. However, current research into FD/FI revealed a number of problems with operationalising FD/FI (Skehan 1998, Riding and Rayner 1998). The FD/FI constructs conflated cognitive processing with cognitive representation whereas these needed to be treated as two separate dimensions. Instead of using the constructs of FIND, we eventually decided to use the constructs of Analytics and Wholistics to capture the dimension of cognitive processing. The constructs Analytics and Wholistics loosely correspond with the constructs FI and FD respectively. The constructs of Verbalisers and Imagers was used to capture learners' representation of information

Riding (1998) makes the following distinction between Analytics and Wholistics. Wholists are individuals who are able to see the entire picture of a situation and are therefore, capable of developing an overall perspective, and to appreciate the total context. The disadvantage of the global perspective of Wholists is that they have difficulty seeing the smaller parts and their relationships. The main strength of Analyics is their ability to divide a situation into smaller components. They are adept at identifying similarities and differences between parts. Their main weakness is that they tend to focus on just one aspect of the whole situation at a time. This may have the effect of distorting or exaggerating the picture, or making some parts more prominent, relative to the rest. Analytics find it difficult to develop a global perspective on issues.

Table 4 (below) provides the related terms subsumed under Analytics and Wholists.

Table 4: Related concepts

WHOLISTS.	ANALYTICS
Field -dependent	Field-independent
Holist	Serialist
Levellers Impulsive	Reflective
Surface	Sharpeners
Divergers	Deep
Lumpers	Convergers
Verbaliser	Imager
Extrovert	Introvert
Verbalist	Visualiser

An additional dimension of Verbalisers and Imagers was used as a separate dimension to capture learners' representation of information. Imagers represent information visually or pictorially while Verbalisers represent information textua lly

or in word form. Imagers prefer highly descriptive familiar material. They prefer that which they are not familiar with to be limited. Verbalisers are superior on comprehending information with unfamiliar technical material typical of technical subjects. Imagers are superior to Verbalisers on spatial, time and abstractions.

The main claim that Riding makes is that there are social attributes associated with different Cognitive Styles. The various Cognitive Styles are associated with different social attributes that have an effect on the way learners respond to different Instructional Styles as illustrated in Tables 5 (a) and (b) below. The radical claim we are making is that the construct of Cognitive Styles could be used to explain in part some of the truancy problem currently sweeping through some of the SA schools.

Table 5 (a): Social attributes of Wholists - Analytics

POSSIBLE WHOLIST – ANALYTIC SOCIAL ATTRIBUTES				
SOCIAL ACTIVITY	WHOLIST		ANALYTIC	
	POSITIVE	NEGATIVE	POSITIVE	NEGATIVE
SOCIAL APPROACH	Social Open Aware	Dependent Pushing Jealous	Self-reliant Sharing Dependable	Isolationist Scheming Resentful
RELATING TO OTHERS	Realistic Not extreme Flexible	Changeable Vague Inconsistent	Idealistic Organised Consistent	Inactive Rigid Inflexible
RESPONSE TO OTHERS	Spontaneous Generous Caring	Shallow Rash Superficial	Attributes causes Accountable Pitying	Inactive Detached Sentimental

Table 5 (b): Verbal-Imagery Attributes

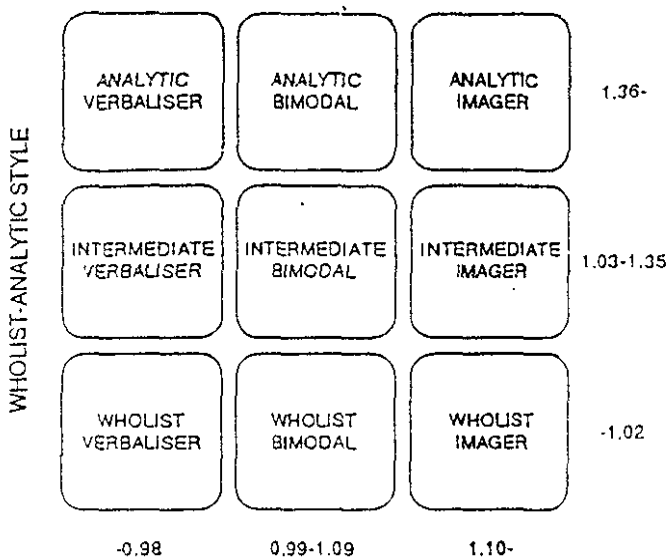
POSSIBLE VERBAL - IMAGERY ATTRIBUTES				
SOCIAL ACTIVITY	VERBALISERS		IMAGERS	
	POSITIVE	NEGATIVE	POSITIVE	NEGATIVE
SOCIAL APPROACH	Outgoing	Overwhelming	Polite	Withdrawn
SOCIAL ACTIVITY	Lively	Over-active	Restrained	Inhibited

3.4.2 Locating an objective measurement of learners' Cognitive Styles

Our overall aim was to measure each learner's Cognitive Styles `objectively'. `Objectively' is construed here not in a positivistic sense, but is intended to mean using consistent measurements not influenced by attempts by the subject to second guess the researchers' interests. This is one of the major flaws of most research instruments particularly instrument that attempt to measure Cognitive Styles using questionnaires. Group Embedded Field rests (LEFT) could be used to measure Fl since they assessed how learners extract information from a background. The problem was that GEFT measured FD through the absence of Fl. That is, GEFT provided no direct measurement of FD. Furthermore, GEFT conflated cognitive processing with cognitive representation instead of treating them as two separate dimensions. If the two Cognitive Styles were independent, then it was logical that a separate way of measuring the styles had to be established.

Over the last six years Riding and others have been developing computer-based methods of measuring Cognitive Styles (Riding 1998). We decided to employ Riding's Cognitive Styles Analysis (CSA) which used the Analytics/Wholistics as

well as the Verbalisers/Imagers dimensions. That is, CSA treated cognitive processing and cognitive representation as separate dimensions. CSA assessed the position of people on each of these dimensions and then plotted the individual learner's cognitive orientation on a style map that combined the two stylistic dimensions. Thus an individual's cognitive style could be located on the following matrix:



- ✍ The CSA is a measurement of Cognitive Styles not intelligence. Unfortunately there is a tendency to misconstrue CSA as an intelligence test. Our rationale for using the CSA computerised test was based on the following:
- ✍ CSA was an objective test. It was consistently scored because its method of assessment is not obvious to those being evaluated. Learners, therefore, would not be able to contrive the results;CSA assessed both stylistic continuums, that is Wholistics/Analytics and Verbalisers/Imagers, separately;
- ✍ CSA had been used in a number of different countries. It was being developed and used for France, the Netherlands, Arabic countries, etc. It was therefore, rapidly acquiring international status as a measurement of cognitive preferences and processing;
- ✍ CSA was non-threatening. The only personal questions it asked related to gender and age. Indeed learners found it great fun to carry out the test and much more exciting than their ordinary lessons;
- ✍ Although the CSA was a computerised test, learners did not have to be familiar with computers to participate. The test required them to do two things: When the answer was "WRONG" they pressed the "BLUE' key, and when they felt that the answer was "CORRECT', they pressed the "RED" key;

CSA system of data analysis was done automatically, with the Cognitive Styles displayed at the end of the assessment. The results could be saved and merged using a word processor as a system of analysis.

Riding has been researching Cognitive Styles among English first Language speakers, while Skehan (1998) has restricted his research project to English second language speakers. The research being reported here was the first in the world to combine both English first language and second language speakers as experimental subjects. It was

also the first time research into Cognitive Styles and Instructional Methods had been carried out in South Africa, or indeed in a non-Western context.

3.4.3 Instrument Validation

For any instrument to be valid it has to measure what it claims to measure. One of the objectives of the research was to investigate learners' cognitive processes. One of the key pre-conditions of the assessment of cognitive processes was to try and control for the effects of linguistic knowledge on cognitive processing and representation. Controlling for the effects of linguistic knowledge on cognitive processing was necessary if the research instrument (the CSA measures) was to measure what it is supposed to measure (Cognitive Styles) and nothing else. The assumptions in the study were that the subjects were able to read and that there would be no linguistic issues that affected the way the learners took the test.

In order to validate the items, words in the original Riding test that were considered to be too linguistically sophisticated for the level of learners were replaced with simpler ones. That is, some of the words that fell outside what we felt was the normal vocabulary range of Grade 3 learners were replaced with more familiar ones. For example words like "CELERY", "FLAKE'; "CHIMNEY", "FLY-FISHING" were replaced.

Thus, in the revised CSA version for SA, lexical changes were introduced. Table 6 (below) exemplifies some of the changes that were introduced. The table provides the old words that were replaced and the new words introduced when the CSA test was beine adapted to suit the SA contexts.

Table 6: CSA Test Items

NEW TEST ITEMS	
1. **Ball** and **tennis** are the same type	
2. **Onion** and **potato** are the same colour	
3. **Car** and **van** are the same type	
ORIGINAL LIST CHANGED	**VALIDATED NEW LIST**
1. **Cod** and **Herring** are the same type	**snoek** and **hake** are the same type
2. Bear and Rose are the same colour	**panda** and **rose** are the same colour
3. **skiing** and **soccer** are the same type	**basketball** and **swimming** are the same type

Difficult words were deleted after discussions with the members of the research team and after consultation with the teachers. The pre-final decision as to whether to retain or replace particular words depended on the research team. Two processes were followed to investigate whether words fell within the vocabulary range of Grade 3 learners. The first was based on the intuitions of one of the researchers who has extensive experience in teaching at primary school level. The intuitions were corroborated with empirical evidence from the corpus of data compiled by the NLP's current Language Audit exercise for Grade 3 learners.

To determine the degree of linguistic sophistication of the items, the original test was administered to learners who subsequently did not take part in the main study. There were two Grade 3 classes at schools A, F and G. Piloting was carried out at these schools in the Grade 3 classes that did not take part in the study. The piloting was a partial exercise because it was mainly aimed at investigating the extent to which the

learners were knowledgeable about the vocabulary items to be used in the test. Further, the piloting was a partial exercise because it was not conducted using computers as was the case in the main study. The learners taking part in the piloting were invited to raise their hands or underline the words that they found difficult.

In addition to the above lexical changes, the font was changed to lower case because the learners found the upper case distracting during the piloting phase. CSA instructions were rewritten to make them simpler and more accessible for local use. Four practice examples were used to familiarise the testees with the test requirements. The changes were included in the Project after being independently validated by Richard Riding, the creator of the CSA package. The revised test items were faxed to Riding at the Centre for Assessment at the University of Birmingham in the U.K for validation. He subsequently produced a computer based test (on diskette) suitable for South African conditions (for local English speakers and for translation into Afrikaans, Xhosa, Sotho) and comparable to the CSA test items used in a number of countries including the Netherlands and Belgium (see Appendix 1,2, 1).

The validation by Riding meant that the changes did not compromise the original objective of the research instrument. The second advantage of the validation was that it made the instrument comparable with adapted versions of the CSA research instrument used in other countries, Netherlands, France and Belgium, thus creating potential for a comparison of results obtained in this Project with those of different countries, thus internationalising the results. The comparison was a meaningful one because it was not restricted to the results only but began at the methodological level. It was important to stress that this was the first time research into Cognitive Styles and Instructional Methods had been carried out in South Africa, indeed in a non-Western context. This raised fascinating questions addressed later on in this report such as the extent to which comparable Cognitive Styles were found in different cultural environments. For example: To what extent are the Cognitive Styles used in ex-DET schools comparable with those used in ex Model C given the differences in culture and language background?

3.4.4 Which language to use?

Members of the research team translated the local English version of the CSA into Afrikaans, Xhosa and seSotho. Xhosa, seSotho. Afrikaans speakers who were not familiar with the objectives of the research provided them with assistance. The purpose of using translators who were not taking part in the research was to ensure that the research perspectives of the translators did not influence the translations. The availability of CSA in four different local languages meant we could select the language preferred by learners for the CSA test. Because of the overall objective of the research project, it was initially thought desirable to administer some of the test items in seSotho for subjects at Primary School B, an ex-DET school where seSotho is the MOI from Grade 1-3. seSotho was the language attributed as the mother tongue of learners at the school. However, when we piloted the seSotho version of the CSA test, it became apparent that some of the learners could not read in seSotho. Furthermore, items in seSotho such as 'moro' and 'agente' had to be translated into English (gravy, lawyer) or Xhosa ('mhluri', 'igwetha) for learners to comprehend their meaning.

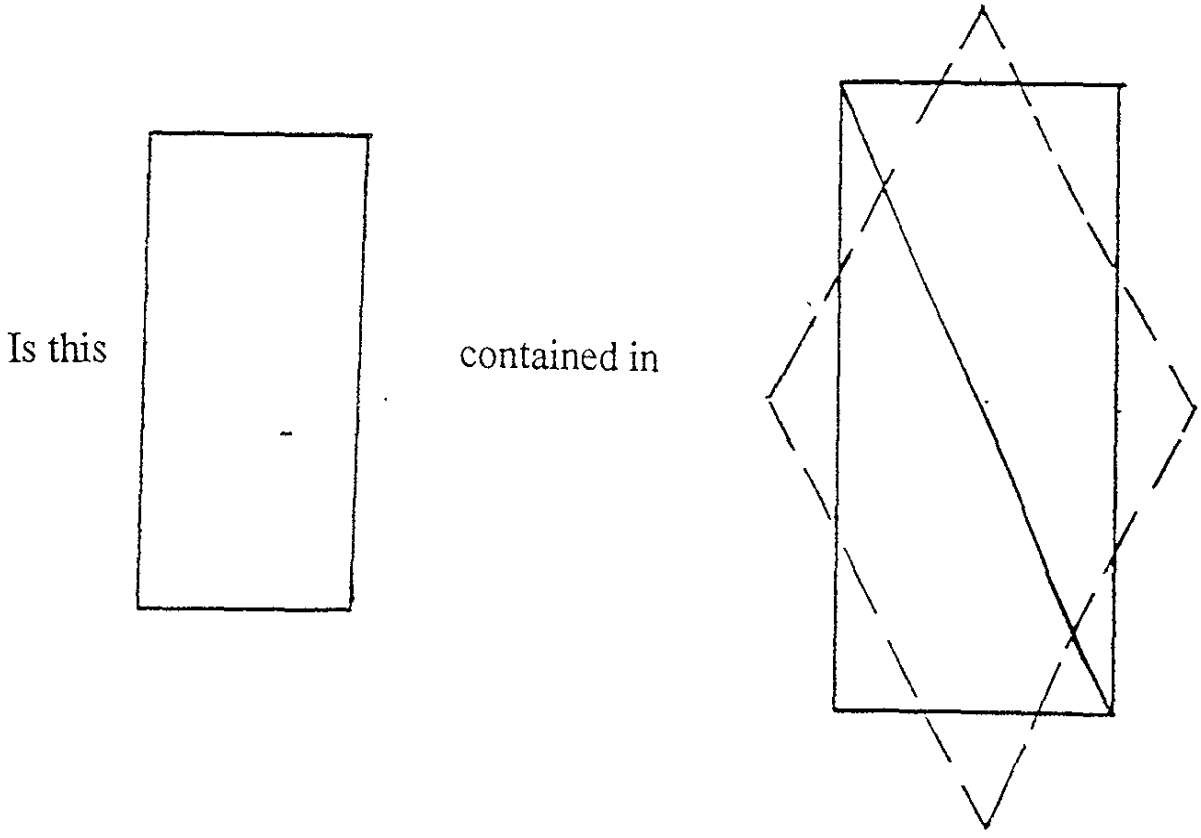
The problem arose from the mistaken assumption that the mother tongue attributed to the learners was always the one in which they were most proficient. The fact that learners at a seSotho school could understand some of the test items when translated into English and/or Xhosa raises fundamental problems about the construct of mother tongue proficiency (see Davies, Paikeday, Brian Street and Herbert 1992 and Calteaux 1997 for a detailed local account). If seSotho is the mother tongue of the learners as claimed by the school administration, it was intriguing to say the least, that the learners needed to resort to Xhosa and English to understand the meanings of terms in their first language. Moreover, although they had spoken proficiency in seSotho, learners had no reading proficiency in it. For this reason, the test was administered in English at all the schools.

3.4.5 Analytic Stylistic Processing

The diagrams used in CSA to measure analytic processing (Field Independence) were comparable to the shapes used in the GEFT test. In the CSA test the pictures were displayed on the computer screen and the subjects were asked about the relationships between the diagrams. See diagrams (a) and (b) below.

As pointed out earlier learners do not have to be familiar with computers to take the test. The learners were only expected to use two colour-coded keys. For example, in responding to the question "Is this .... contained in ..... ? (see Diagram A below) the subject pressed the key colour coded RED when they think the answer is positive. When the answer was negative the subject pressed a BLUE key. The procedure was run twenty times using different shapes.

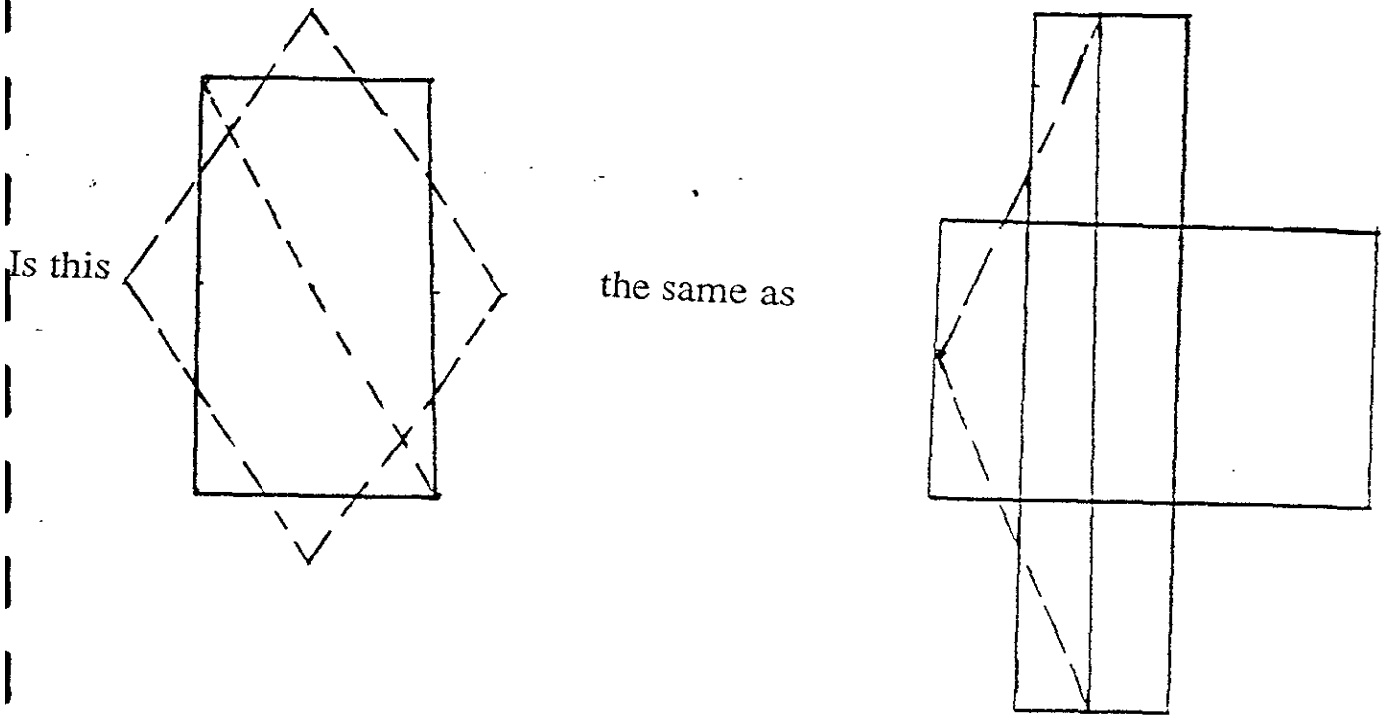
Diagram A



3.4.6 Wholistic Stylistic Processing

CSA has a specific way of measuring Wholistic Stylistic processing (Field Dependence) through a series of diagrams. In order to measure Wholstic processing two images were presented side by side, and the following question was asked: "Is this ....the same as .... ?" (see Diagram B below). The procedure was repeated 20 times. The instructions were identical to those used when assessing `Analytic processing'. The subject pressed the RED key when the answer was correct or the BLUE key when she/he thought the first shape was not identical to the second.

Diagram B



3.4.7 Scoring and interpretation

CSA is made up of three computer-based sub-tests. The first sub-test assesses the Verbal-Imager dimension through the presentation of 48 statements to be judged "TRUE" or "FALSE" one at a time. Half of the statements contain information about conceptual categories, while the rest described the appearance of items. Half of the statements of each type were true. It was assumed that Imagers would respond more quickly to the appearance items, because the objects could easily be presented as mental pictures. In the case of Verbalisers, they were expected to respond quickly when presented with categories that could be verbally presented.

The Wholists-Analytics were measured through the other two sub-tests. The first of these items contained pairs of complex geometrical figures which the individual had to judge either the "SAME" or "DIFFERENT'. A fast response time would indicate Wholists. The second task required the subjects to isolate a pattern from a background in a way comparable to Fl in the old GEFT measurement.

The computer automatically recorded the response time to each statement and calculated the Verbal-Imager (VI) ratio. A low ratio indicated a Verbaliser and a high ratio an Imager. Bimodals occupied an intermediate position. For the Wholists-Analytics, the computer calculated the latency of the responses and the Wholist-Analytic ratio. This means that the categorisation was based on the ratios of the speed of the responses not on actual scores.

Each sub-test gave a value of the position of the individual on each cognitive style dimension by measuring the reaction times in the form of a ratio:

X =Reaction Time on Analytic Test
Y = Reaction Time on Wholistic Test

When the subject processed information analytically $X < 1$. When the subject processed information wholistically $Y < 1$. A Wholist was a subject with a Wholist - Analytic ratio of 0.99 or less. An Analytic subject had a ration of 1.00 or above. The lower the ratio, the more extreme the cognitive style, so that a score of 0.70 would indicate a quite extreme Wholist. A score of 2.5 indicated a fairly extreme Analytic on the Verbal-Imagery Style ratio. A three-way distinction was found to be suitable. For the Verbal-Imagery distinction, a third category of intermediate status was also included. " A Verbaliser will be some one with a ratio of 0.94 or less. A score of between 0.95 and 1.05 represented an intermediate position, while 1.06 above indicated that the person was an Imager.

Thus the key aspect to remember about the measurement is that the computer recorded the reaction times and calculated them in terms of a ratio, and the result was automatically presented in terms of a combination of the different Cognitive Styles e.g. Wholist-Verbaliser, Analytic-Verbaliser. Different combinations were possible because people were placed on the two continuums of Wholist-Analytics and VerbalImagery independently. In other words, the positioning of a person on one (the Wholist-Analytic) continuum did not influence their positioning on the other (Verbal-Imagery) continuum.

3.5 Measuring learners' linguistic proficiency

The CSA was used to identify learners' preferred cognitive modes of information representation and processing. Learners' cognitive styles could then be linked with instructors' teaching styles. Learners' cognitive stylistic preferences were also compared with the performance of learners on linguistic proficiency tests. The study investigated the extent to which the performance of learners with different Cognitive Orientations differed on the linguistic tests. The results from the CSA were related to the performance of the learners on one grammar and two vocabulary tests.

3.5.1 The Michigan Language Tests on Grammar and Vocabulary

In addition to the CSA test, two language-based tests were administered. One was a grammar test and another was a vocabulary test. Both tests were a partial local adaptation of the internationally validated Michigan Language Test. The advantage of using the Michigan Language Test was that it was a test whose validity had already been validated internationally. The characteristics of each of the two components of The Michigan Test (grammatical and vocabulary tests) are described below.

3.5.2 Grammar Test

The objective of the grammar test was to examine how well learners could use and recognise English grammatical structures in context. Each question in the test was, therefore, designed such that it was embedded in a context - a conversational segment in this instance. In each conversation a word or group of words was omitted. After the conversation four choices of words were provided which might be used to complete the conversation. Learners were invited to select a word or group of words that might be used by a speaker of English to best fit/complete the conversation.

The test began with an example to familiarise the learners with the test format:

Example A

What is that thing? That spider
(a)to call (b)for calling (c)be called (d)is called
The correct English sentence is: 'That is called a spider'.

Example B.

' Why didn't Henry, Peter and Jane go to the movies?----.of them had any money.
(a) None (b) Some (c) Any (d)All
The correct English sentence is: `None of them had any money'.

Example C.

What do you want your son to become ? I hope he becomes ----
(a) doctor (b) a doctor (c)the doctor (d) one doctor
The correct English sentence is. "I hope he becomes a doctor.

The rest of the grammatical items included constructions such as modal auxiliaries, past tense word forms, comparative word forms, etc. The test was made up of a total of forty (40) items (see Appendix 4).

3.5.3 Vocabulary Test

Twenty-two (22) vocabulary items were selected. The vocabulary items included items that were validated on the basis of the Language Audit exercise conducted by the NLP. The vocabulary items were divided into two tests (Vocabulary Test A [10 items], Vocabulary Test B [12 items]). The test questions followed this format: "Circle the word that best completes the sentence "(see Appendix 4).

Example A: [Collocation]

"Mary was out of hospital quickly because she had only a ----- operation".
(a) hearty (b) monstrous….(c) minor….(d) neutral

Example B: [Synonyms]

"He lives alone because he is a -------"
(a)biscuit (b) bachelor (c) buffalo (d) founder

3.6 Data collection

Learners were tested in two sittings, one for the CSA, and one for the linguistic proficiency tests. The CSA test was administered after the grammar and vocabulary tests. The linguistic proficiency tests were administered between 15-19 June 1998. The CSA was administered between 14-31 August.

3.7 Problems Encountered during Data Collection

Problems encountered during data collection were conceptual and practical in nature. The conceptual problems involved constructing research instruments that would be a valid measure of cognitive processing. These have already been discussed. The second layer of problems were practical.

3.7.1 Access to schools

Access to schools was delayed while we waited for permission from the Western Cape Department of Education. The late granting of permission meant that we could not stick to our original time schedules.

3.7.2 Reading Problems

Some of the learners were not able to read in either their first or second language. However, it is not inevitable that pupils at primary school level necessarily suffer from reading problems. For example, unlike learners from the rest of the schools, learners from Schools F and G had no reading problems even though the two schools had a number of pupils who were ethnically affiliated to African languages and had spoken proficiency in an African language.

3.7.3 Logistical problems

One of the drawbacks of using the computer-based CSA tests was the non-availability of computers at some of the schools, and learners' lack of experience and confidence in using computers. The problem was resolved by bringing along our own computers to the schools concerned. During test administration a field worker stood by every computer to assist those learners unfamiliar with computers.

3.7.4 Extending the research population

For reasons already explained, it was decided to include Grade 7 learners at School A and School B because CSA was found to be too difficult for Grade 3 learners. Increasing the number of learners had some advantages. It meant that we were able to compare the performance of Grade 7 learners from the ex-DET school with those of Grade 3 learners from former HOR schools. It was our belief that such comparisons would be of extreme importance, particularly as the previous segregated departments are now integrated. Preliminary analysis of the performance of learners from Grade 7 at School B and Grade 3 learners at School G showed that the Grade 7 learners at School B did not do significantly better than the Grade 3 learners at School G, an ex-Model C school. Thus the inclusion of Grade 7 learners led us to ask the awkward question: Are the previously disadvantaged schools worse off under an integrated system than under separate systems, and is the integration of different departments masking painfully disorienting differences between schools?

4. Findings

Sections 4.1 - 4.4 provides the information that was collected through classroom observations.

4.1 Teacher profiles

The teacher observation schedule (see Appendix 5) was used to collect information such as teacher's name, gender, qualifications, teaching experience, languages. Table 8 details findings on the profile of each of the teachers observed at all the schools.

Table 8: Teacher Profiles

SCHOOL	GENDER	QUALIFICATIONS	EXPERIENCE	L1	L2	OTHER
A	F	SPTD	4Years	Afr	Eng	
B	F	JPTD	1Year	Xho	Eng,Afr	Ses,Tsw
	F	SPTD	1Year	Tsw	Eng,Afr	Ses
C	F	*Diploma in Edu.*	5Years	Eng	Afr	
	F	SPTD	1Year	Xho	Eng,Afr	Ses
	F					
D	F	JPTD	23Years	Xho	*Eng,Afr*	
E	F	HDE	4Years	Eng	Afr	
F	F	JPTD	5Years	Eng	Afr	
	F	Diploma in Edu	7Years	Eng	Afr	Fre
	F	JPTD	3Years	Eng	Afr	
G	F	Diploma in Edu	8Years	Eng	Afr	
	F	Diploma in Edu	2Years	Eng	Afr	

Afr = Afrikaans
Eng = English
Fre = French
Ses = Sesotho
Tsw = Tswana
Xho = Xhosa

4.2 Teaching Styles

The main objective of the classroom observation was to characterise the different teaching styles. As pointed out earlier in the report one of the main objectives of the study was to investigate the extent to which the teaching styles and language learning styles matched. Teaching styles were distinguished from teaching methodology. There has been a lot of interest over the years on the effectiveness of different teaching methodologies, communicative teaching, audio-lingual, etc. The concept of teaching style was conceptualised differently from teaching methodology. In Teaching Styles the main aim was to explore the manner in which the material is presented. The two main models of presentation were Visual and Textual or a combination of both. The presentation of the material has implications for language

learning. For example, Imagers learn better from pictorial presentation and Verbalisers from textually inclined presentations (Ridings - CSA manual). The main thrust of the argument in this report is that in language teaching, best practices were those that matched the language learners' learning styles.

Difficulties arise when there is mismatch between the way the material is presented and the cognitive styles of the learners. The so-called rote learning said to be typical of most ex-DET African schools may, in actual fact, be a reflection of the mismatch between the preferred modes of cognitive processing of learners and the teaching styles (Riding). Best practices are therefore understood to be ones that take into account the cognitive style of learners. The assumption was that learners who found that their learning styles matched those of the teacher would be expected to outperform those who found themselves in a situation in which there was a mismatch between the manner of teaching and their own way of learning. The construct of teaching styles was analysed on the basis of three notions: the mode of presentation, type of content, and task type. The notion of task is construed here in a manner analogous to the notion of activity in mathematics education,

4.2.1 Characterising Teaching Styles

The following section describes the teaching styles using the following criteria:

- Are these meaning-making activities encouraging reflection?
- Are the activities teacher controlled, teacher-initiated, teacher controlled and initiated?
- Are the activities learner-centred?
- Is the material presented largely visually, or textually, or both?
- Are the tasks experientially real to the learners?

4.2,2 Aggregated teacher styles

This section paints an overall picture of the teaching styles when the observations from the different schools are aggregated. The general picture provides a scope against which the teaching styles of individual schools can be compared. Table 9(a) and (b) provides raw figures. Table 9(b) provides percentages.

Table 9(a): Teaching Styles

SCHOOL	PRESENTATION		TASK TYPES				
	Visual	Textual	T.Initiated	T.Controlled	L.Centred	Reflective	Experiential
A	6	11	11	4	7	9	5
B	6	8	9	6	3	3	5
C	5	13	13	6	6	13	4
D	4	10	10	6	3	7	4
E	3	10	10	3	6	10	5
F	12	15	15	4	11	14	11
G	5	9	8	0	6	9	9
SUM	41	76	76	29	42	65	43

T.Initiated = Teacher-initiated, T.Controlled = Teacher Controlled, L.C = Learner-centred

Table 7(b): Teaching Styles

SCHOOLS	PRESENTATION	TASK TYPES	TASK TYPES	
	Visual & Textual	T.Initiated & T.Controlled	Reflective & Experiential	L.Centred
A	55%	36%	45%	64%
B	56%	67%	22%	33%
C	38%	46%	31%	46%
D	40%	60%	40%	30%
E	20%	20%	50%	60%
F	80%	27%	73%	73%
G	56%	0%	100%	67%
AVERAGE	49%	37%	52%	53%

T.I = Teacher-initiated, T.C = Teacher Controlled, L.C = Learner-centred

4.2.3 Presentation mode

Overall 52 % of the lessons were visually presented, while 99% were textual. 34% were presented both visually and textually. The general tendency in the teaching was to present information textually. There was also a tendency to present the information both textually and visually.

4.2.4 Task types

Nearly all of the tasks were teacher-initiated. 17 % were teacher controlled. 35% of the tasks were both teacher-initiated and teacher controlled. That nearly all of the tasks were teacher-initiated is not surprising given the fact the learners were at primary school level. Although most of the tasks were teacher-initiated relatively low number were both teacher-initiated and controlled. This means that the teachers although generally determining the nature of the tasks, also gave learners latitude to control the individual tasks once they had initiated them. 55% of the tasks were learner-centred, while 84% were reflective. Learner-centredness refers to those tasks that were administered and controlled by learners themselves. 57% of the tasks were experientially real to the learners. 51% of the tasks were both reflective and experientially real. Experientially real tasks are tasks that relate to learners' own experience of everyday life. Reflective tasks are tasks where the learner is asked to comment on the task itself and where the teacher encourages learners to think about and talk about the task. The picture that begins to emerge is that overall just about half of the tasks were both reflective and experientially real.

4.2.5 Teaching styles at each school

(a) School A (ex-HO% MOI English)

Table 10: Theme, Presentation mode and Task Type

LESSON THEME	SUBJECT	PRESENTATION			TASK TYPES			
		Visual	Textual	T.I	T.C	L.C	Reflective	Experiential
Forms of water and Different kinds of liquids	Environment Studies.	1	1	1	0	1	1	1
Phonics (Sound words)	English	0	1	1	0	1	1	0
Story Reading	English	1	1	1	1	0	1	0
Comparatives, Antonyms	English	0	1	1	0	1	1	0
Phonics (Sound words)	English	0	1	1	0	1	1	1
Operations: Subtraction, Division	Mathematics	1	1	1	0	1	1	1
Degree of Comparison	English	0	1	1	1	0	1	0
Different Operations	Mathematics	0	1	1	1	0	0	0
Units of Capacity (eg.ml,l)	Environment Stud.	1	1	1	0	1	1	1
Writing Skills	English	1	1	1	1	0	0	0
Changes in Water	Environment Stud.	1	1	1	0	1	1	1
	SUM	6	11	11	4	7	9	5
	AVERAGE	55%	100%	100%	36%	64%	82%	45%

1=yes

0=no

T.I= Teacher-initiated, T.C= Teacher Controlled, L.C= Learner-centred

All the lessons used a textual mode of presentation, while about half (55%) used visual presentation All the tasks were teacher-initiated, but about a third were teacher controlled. 64 % of the tasks were learner-centred, while a relatively large number (84%) were reflective, just about half were experientially real to the learners. The picture for School A is not radically different from the general picture for all the schools in which the favourite mode of presentation in teaching is textual, with few lessons being either visual only or a combination of the visual and textual. The school also follows a pattern which has generally been observed in which although most of the tasks were teacher-initiated the learners had room for actively controlling some of the tasks and were allowed to reflect on their learning experiences.

(b) School B (ex-DET, MOI seSotho/English)

Table 11: Theme, Presentation mode and Task Type

LESSON THEME	SUBJECT	PRESENTATION			TASK TYPES			
		Visual	Textual	T.I	T.C	L. C	Reflective	Experiential
Story Reading	English	1	1	1	1	0	0	1
Operation:Subtraction	Maths	1	1	1	1	0	0	0
Hair Cleanliness	Health Ed.	1	1	1	1	0	1	0
Uses of water	Environmental Sc.	0	1	1	1	0	1	1
Naming Body Parts	Health Ed	1	0	1	1	1	0	1
Operation:Multiplication	Maths	0	1	1	0	0	0	0
Operation:Addition	Maths	0	1	1	1	0	0	0
Story Reading/Telling	English	1	1	1	0	1	1	1
Clothing(vocabulary)	Afrikaans	1	1	1	0	1	0	1
	SUM	6	8	9	6	3	3	5
	AVERAGE	67%	89%	100%	67%	33%	33%	56%
		1=yes						
		0=no						

T.I= Teacher-initiated, T.C= Teacher Controlled, L.C= Learner-centred

In School B the preferred mode of presentation was textually consistent with the general tendency noted above for all the schools. Unlike the other schools School B had a relatively large number of lessons which had a visual orientation. All the tasks were teacher-initiated with a relatively large number being teacher controlled when compared with the general picture for all the schools. About a third of the tasks had a reflective component. The defining aspect of the teaching style for School B was its use of visual mode, and the limited extent to which there was active learner involvement.

(c) School C (ex HOR, MOI English)

Table 12: Theme, Presentation mode and Tasks Type

LESSON THEME	SUBJECT	PRESENTATION		TASK TYPES				
		Visual	Textual	T.I	T.C	L. C	Reflective	Experiential
Phonics (Sound words)	English	0	1	1	0	0	1	0
Reading Comprehension	English	1	1	1	1	0	1	0
Phonics (Sound words)	English	0	1	1	0	1	1	1
Story Reading	English	0	1	1	0	1	1	0
Mental Arithmetic	Maths	1	1	1	1	0	1	0
Singing	Xhosa	0	1	1	0	1	1	1
Types of dwellings	Environment Stud.	1	1	1	1	0	1	1
Phonics, Reading	English	0	1	1	1	0	1	0
Word Searching, Creative Writing	English	0	1	1	0	1	1	0
Diagrams	Maths	0	1	1	1	0	1	0
Reading	English	0	1	1	0	1	1	0
Types of dwellings	Environment Stud.	1	1	1	0	1	1	1
Fractions	Maths	1	1	1	1	0	1	0
	SUM	5	13	13	6	6	13	4
	AVERAGE	38%	100%	100%	46%	46%	100%	31%
		1=yes						
		0=no						

T.I= Teacher-initiated. T.C= Teacher Controlled. L.C= Learner-centred

Consistent with the general picture all the lessons had a textual component while about a third (38%) had a visual element. Not surprisingly all the tasks were teacher-initiated with about half the tasks being both teacher-initiated and controlled. The defining feature of School C is that all the tasks had a reflective component to them.

(d) School D (ex-HOR, MOI English)

Table 13: Theme, Presentation mode and Task Type

LESSON THEME	SUBJECTS	PRESENTATION			TASK TYPES			
		Visual	Textual	T.I	T.C	L.C	Reflective	Experientail
Mental Arithmetic	Maths	1	1	1	0	1	1	1
Reading	English	0	1	1	0	1	0	0
Phonic	English	0	1	1	1	0	1	0
Reading	English	1	1	1	1	0	1	0
Praying, good deeds	Biblical Studies	0	1	1	1	0	1	0
Odd, even numbers, < and > signs	Maths	1	1	1	1	0	1	1
Oral, Creative writing	Environment stud.	1	1	1	0	1	1	1
Reading, Phonics	English	0	1	1	1	0	0	0
Oral Exercises	Afrikaans	0	1	1	0	0	1	1
Writing	English	0	1	1	1	0	0	0
	SUM	4	10	10	6	3	7	4
	AVERAGE	40%	100%	100%	60%	30%	70%	40%
		1=yes						
		0=no						

T.I= Teacher-initiated, T.C= Teacher Controlled, L.C= Learner-centred

All the lessons were textual. About 40% had a visual orientation to them. All the tasks were teacher-initiated with a relatively large number being reflective as well. It's interesting to note that in this school there were more tasks that were reflective than experientially real to the learners.

(e) School E (ex-HOR, MOI English)

Table 14: Theme, Presentation mode and Task Type

LESSON THEME	SUBJECT	PRESENTATION		TASK TYPES				
		Visual	Textual	T.I	T.C	L.C	Reflective	Experiential
Time, graphs	Maths	1	1	1	1	0	1	0
Grammar	English	0	1	1	0	1	1	1
Creative Writing	English	0	1	1	0	1	1	0
Time Aspect	Maths	1	1	1	0	1	1	1
Virgin Mary	Bibilical Studies	0	1	1	1	0	1	0
Modes of Transport	Environment Stud.	0	1	1	0	1	1	1
Grammar (punctuation)	English	0	1	1	1	0	1	0
Reading	Afrikaans	0	1	1	0	0	1	0
Time	Maths	1	1	1	0	1	1	1
Compound words, Poems	English	0	1	1	0	1	1	1
	SUM	3	10	10	3	6	10	5
	AVERAGE	30%	100%	100%	30%	60%	100%	50%
		1=yes						
		0=no						

T.I= Teacher-initiated, T.C= Teacher Controlled, L.C = Learner-centred

The mode of presentation for the School was similar to the general picture in which all the lessons were textual with about a third being visual. Although all the tasks were teacher-initiated only a third were teacher controlled as well. This meant that their was relatively large room left for learners to control the tasks. Although all the tasks were reflective, only about half were experientially real to the learners as well.

(f) School F (ex-Model C, MOI English)

Table 15: Theme, Presentation mode and Task Type

LESSON THEME	SUBJECTS	PRESENTATION		TASK TYPES				
		Visual	Textual	T.I	T.C	L.C	Reflective	Experiential
Birds	Environment Stud.	1	1	1	0	1	1	1
Story Telling	English	1	1	1	1	0	1	0
Identifying, *interpreting notes* Oral	Music	1	1	1	0	1	1	1
	English	1	1	1	0	1	1	1
Problem Solving	Mathematics	0	1	1	1	0	1	0
Multiples	Mathematics	0	1	1	0	1	1	1
Story Reading	English	1	1	1	0	1	1	1
Writing		0	1	1	1	0	0	0
Vocabulary	*Afrikaans*	1	1	1	0	1	1	1
Presentation of bird projects	Environment Stud.	1	1	1	0	1	1	1
Story Telling	English	1	1	1	1	0	1	0
Doing words (verbs), *Building words*, Sounds (Phonics)	English	1	1	1	0	1	1	1
Coordination	Art	1	1	1	0	1	1	1
Counting in 4's	Mathematics	1	1	1	0	1	1	1
Story Reading	English	1	1	1	0	1	1	1
	SUM	12	15	15	4	11	14	11
	AVERAGE	80%	100%	100%	27%	73%	93%	73%
		1=yes						
		0=no						

T.I= Teacher-initiated, T.C=Teacher-initiated, L.C= Learner-centred

The striking aspect for School F is that there was a relatively large number of lessons (about 80%) that were visual in orientation. Another striking aspect of School F is that, although all the tasks were teacher-initiated, only 27% were teacher controlled, meaning that learners were left with considerable room to control the material relating to the tasks. The number of tasks that were reflective was also quite high (about 93 %). The striking aspect of the School F was the large number of tasks that were experientially real to the learners. School F had the highest percentage of lessons that were experientially real.

(g) School G (ex-Model C, MOI English)

Table 16: Theme, Presentation mode and Task Type

LESSON THEME	SUBJECT	PRESENTATION		TASK TYPES				
		Visual	Textual	T.I	T.C	L.C	Reflective	Experiential
Operations: Multiplication	Mathematics	0	1	1	0	0	1	1
Division		0	1	1	0	0	1	1
Addition		0	1	1	0	0	1	1
Phonics(Sound words)	English	0	1	1	0	1	1	1
Story Reading	English	1	1	1	0	1	1	1
Knowing Things around you	Life Skills	1	1	0	0	1	1	1
Creative Writing	English	1	1	1	0	1	1	1
Coordination: Drawing	Art	1	1	1	0	1	1	1
Story Reading	English	1	1	1	0	1	1	1
	SUM	5	9	8	0	6	9	9
	AVERAGE	56%	100%	89%	0%	67%	100%	100%
		1=yes						
		0=no						

T.I= Teacher-initiated, T.C= Teacher Controlled, L.C= Learner-controlled

All the lessons were presented textually while about half were visual in orientation. The striking aspect of the School was that not all tasks were teacher-initiated unlike the rest of the schools. The other striking aspect of School G was that all the tasks were both experientially real and reflective unlike other schools.

4.3 Lesson Observations

The following section shows some of the information that was collected using the observation schedule (see Appendix 5). The teacher observation schedule was also used to collect information such as subjects taught, lesson observed, time and the names of the field workers involved. The following illustrates how the observation schedule was used to collect data at schools using the School A, an ex-HOR school, as an example.

(1) Name:	Mrs XX
(2) Gender:	Female
(3) Qualifications:	Junior Primary Teachers Diploma
(4) Teaching Experience:	4 years
(5) Languages spoken by the teacher:	English and Afrikaans
(6) Subject taught:	Environment Studies]
(7) Field workers:	Pinky and Nceba
(8) Date and Time of lesson:	29 May 1998; 1100hrs - 1130hrs.
(9) Lesson	Forms of Water [lesson plan available for inspection
(10) Languages used during the lesson:	Xhosa, English and Afrikaans
(11) Lesson objectives	Identify the different forms of water.
(12) Materials:	Textbooks, Worksheets.
(13) In Class Activities:	Tasting and identifying different liquids e.g. clear salty / sweet water. Activity described in full in terms of how it was carried out and the time it took to complete]

(14) Classroom management:

- Use of space e.g. arrangements of desks.
- Groups - learners worked in pairs.
- Structure of interaction e.g. question-answer format. The format was concluded with a brief ethnographic comment
- Description of activities
- Space: learners seated on a mat in front of the classroom
- Individual activities: learners working individually in building up their own words. Those who have finished selected a reader. Learners worked at their own individual pace. Teacher wrote incomplete sentences on the board which learners copied. The activities had multiple purposes. The teacher also used the completion exercise was also used to demonstrate the use of punctuation. Competitive exercises: learners placed in groups with each group allocated a mark for successfully completing the game.

4.3.1 Case studies of individual schools

The following section is an analysis of the teacher observation schedules using Schools B, C, D and G as case studies.

(a) School B

The languages used were an interconnected mixture of English, Afrikaans, Xhosa and Sotho. Makoni has argued on a number of occasions (see Makoni 1997, 1998) that to describe the languages used as consisting of code-switching between English, Sotho and Afrikaans is conceptually misleading. It creates the impression that the teachers necessarily had discrete proficiency in Sotho, English and Afrikaans when this is not necessarily the case. The most desirable approach is to argue that these speech forms were inherently and dynamically combined. These mixtures were not restricted to oral performance only but were increasingly evident in written modes. The teaching focused largely on linguistic forming material using clothing as illustrations. The supporting material was largely teacher created and pasted on the wall.

The main activities were strongly teacher-fronted with learners reduced to the role of repeaters. For example, learners followed the teacher who read the words aloud and the learners echoed what she said, even though they did not comprehend what the

words meant. There was therefore no systematic attempt to integrate form and meaning.

Learners were shown pictures of clothes worn by different people on various occasions. They had to associate the word with the type of clothing they are familiar with in another language. Emphasis was on repetition of words for pronunciation - although the exercise also developed learners' multilingual capabilities. The learners were also made aware of the etymology of the words -

Broek - ibhulukwe (trousers)
hemp - ihambe (shirt)
kous - ikawusi (socks)

By making learners aware of the origins of words learners became more multilingually sensitised.

(b) School C

An analysis of the Teaching Style at School C has to take into account the nature of the classroom environment within which the instruction occurred. The walls were covered with material which had been generated by the learners' own work. The tasks which the learners were expected to do reflected the teacher's sharp sense of sensitivity to the cultural and religious differences within her class. Some of the learners were Christian Coloureds, while others were Moslems. The main challenge for the teacher was how to design tasks which would accommodate the cultural and religious diversities within the class. The challenge that the teacher faced was how to develop what Kramsch (1993) aptly refers to as 'dialogic pedagogy' of teaching and learning which would focus on cross-cultural explorations between the learners from different religious organisations.

The teacher used song as a resource for the teaching of Xhosa. The lessons began with three songs. The tasks were carefully designed and took advantage of available resources. Unfortunately they went on for too long consequently depriving learners of opportunities for post-task reflection. Because of the length of time the tasks took, the focus of the tasks became increasingly blurred.

The teaching style did provide room to accommodate the different rates at which learners performed. For example, immediately learners completed their work they were assigned new tasks. This meant that learners were always occupied and did not consequently feel bored.

(c) School D

The lessons observed at School D were thematically addressing issues about Easter and lent as religious festivals. The tasks were structured in a way which enhanced learner participation through the use of question - answer discourse format The overall discourse format followed the Initiation, Response Feedback format observed in a number of different classes. The tasks were designed in a way which rendered them experientially real to the learners through an extension of discussions into the value of praying for the sick, disabled and the general importance of carrying out good deeds.

The teacher was multilingual. She spoke Xhosa, English and Afrikaans but the lesson was carried out predominantly in English without recourse to other languages. The tasks were designed in such a way that they cut across different subjects. The tasks consequently became the main organising principle. Learners carried out different tasks at the same time. This particular mode of teaching was designed to take into account the different rate at which the learners were able to complete their tasks. Because of the limited amount of time there were very few opportunities created for post-task reflection.

(d) School G

The teacher whose class was observed was competent in both English and Afrikaans. The lessons observed covered Phonics (word sounds) and story reading/telling. Each lesson involved different activities.

The learners were given teacher-initiated but learner-controlled activities. The learners also used material from worksheets. In the tasks learners were expected to write words beginning with a B and ending either with D or L e.g. BED, BELL. The nature of the tasks varied. For instance, in some cases the teacher divided learners into groups of six. In each group a learner would explain the paragraph to the other learners. The tasks which were used, although teacher-initiated generated a lot of learner interaction, and were marked by increased complexity in terms of expected learner outcomes and the nature of the language used.

The analysis of the teaching style raises fascinating problems about the relationship between lessons and activities / tasks. The overall organising structure was that of a series of tasks: The tasks were sequenced in such a way that they created what may be called the grammar of tasks. The tasks had a systematic relationship to each other. The tasks were the main organising principles. In some cases the same task would spill over into another lesson. There were no specific time limits imposed on the tasks. Lessons in that sense became an administrative unit.

Learners carried out a number of different tasks. For example, while some learners were engaged with writing others would take part in reading.

The presentation was largely oral aimed at building a sense of autonomy. The presentation also aimed at developing learners' skills in preparing material which they would present to fellow learners. For instance, each learner was given a week to prepare their individual presentation. Extra credit was given for those who managed to complete their presentation early, while those who were late were penalised. Learners took an active part in their learning. The teaching was made up of a mixture of audio and visual presentation. In terms of language teaching, some aspects of language were formally highlighted with attention explicitly drawn to the problem areas, while other aspects were acquired largely through a form of immersion into oral and textual material.

4.4 An argument for distinguishing between local and indigenous languages A shift has occurred in the types of discourses used to describe language in education developments in SA. The shifts capture and encapsulate some of the growing

created by English. Unfortunately, the linguistic broker created unintended problems and barriers because s/he lost some of the nuanced meanings. Experience in the analysis shows that such an approach was effective when the learner had a nuanced understanding of the material and so could interpret accurately on behalf of the other learners. In a majority of cases the effectiveness of the educational broker is metaphorically best captured by the metaphor of a broken telephone.

In the Maths lesson that was observed at School F, an ex-Model C school where the majority of learners are White English speakers and a minority Coloured, the mode of presentation consisted of a continuous shift from oral to visual. The shift was systematic and designed to integrate the different modalities e.g. visual, oral and written. Maths studies were used as an umbrella category for studying other subjects such as biology, life skills, etc. Maths in these studies formed the background against which other subjects were taught. The thematic approach evoked Mathematics concepts in the teaching of Biology and Life Skills. Subjects were not treated as discrete categories.

The tasks were designed in such a way as to encourage reflection and meaning making among learners. The learners were encouraged to reflect and anticipate the type of information expected in the tasks. Learners would be expected to relate the information to what they already knew. The purpose was to integrate and build schemas/scripts on which new information could be based. The most effective way of describing the pedagogical processes taking place encouraged learners to not only "reflect across the curriculum but to reflect on and beyond the tasks ".

At Schools F and G, both ex-Model C schools, the teaching followed what may be described as a `Z' shaped curve in the relationship between theory and practice. That is, the teacher moved from theoretical discussion into practical applications, and then back to a higher level of theoretical discussion, and back again to even more sophisticated applications. For example, at School F the material was teacher-initiated but learner-controlled. The teacher introduced the subject matter (Types of birds), and learners came up with examples to illustrate what they understood by types of birds. Different categories of birds where cited and their main characteristics enumerated, such as the place of origin, were the birds were found, etc. The `Z' model of instruction encouraged an exchange of ideas about materials between learners themselves and between teachers and the learners.

4.5 CSA Test Results

Sections 4.5- 4.6 provide the information that was collected through the use of the CSA and the grammar and vocabulary tests.

4.5.1 Group Analysis of three schools

This section outlines the group results of three schools that are representative of the broad spectrum of schools selected for the research project: School A, School B and School F on a CSA test. For School A and School B the test was administered to Grade 7 learners because it was found to be too difficult for Grade 3 (see section 3 for a justification for expanding the research population). A total of 100 learners from the three different schools took part. The following table describes the different cognitive stylistic categories to which the learners belonged, the number of learners falling

under those categories. The analysis of three different groups is presented in Table 17 below.

Table 17: Cognitive Styles Analysis for School A, School B and School F

TYPE	SCHOOL A (GR 7)	SCHOOL B (GR 7)	SCHOOL F (GR 3)
ANALYTIC-BIMODAL	2 (5%)	2 (6%)	
ANALYTIC-IMAGER	5 (12%)	1 (3%)	
INTERMEDIATE-BIMODAL	2 (5%)	7 (20%)	2 (7%)
INTERMEDIA-IMAGER	7 (16%)	4 (12%)	2 (7%)
INTERMEDIATE-VERBALISER	6 (14%)		3 (13%)
WHOLIST-BIMODAL	5 (12%)		3 (10%)
WHOLIST-IMAGER	8 (19%)	10 (29%)	13 (43%)
WHOLIST-VEBALISER	3 (7%)	8 (23%)	7 (20%)

What is most striking about the results is the overlap in the common categories of styles between the three schools. In spite of a huge cultural and linguistic differences, there were quite a number of learners who were Wholist-Bimodal, or Intermediate Verbaliser in both schools A and F. There was no such category in School B. School F results differ from the other two schools because in the School F group no learners fell under the categories of Analytic-Bimodal and Analytic -Imager. It is also important to emphasise that the Analytics were the fewest in all the three groups comprising only 10% of the entire group as opposed to 64% of the group classified as Wholists. Using the parlance of `GEFT" this means that the smallest group overall was made up of Field-Independent learners. Analytics benefit more from de-contextualised teaching than Wholists who prefer learner-controlled contextualised tasks. The different cognitive styles have an implication for the most suitable instructional style that could be most beneficial to the group as a whole. For example, learners who are Wholistic-Imagers or Wholist-Verbalisers would obviously benefit most from instruction that presented a global picture of the area either in pictures or textually.

4.5.2 Analysis of total sample

The following section provides the different types of learning styles identified from the total 202 subjects who took the CSA test. The table below shows the percentages and actual numbers of subjects classified in the different cognitive style categories for the entire group of subjects.

Table 18:Cognitive Styles

TYPE	RAW FIGURE	PERCENTAGE
Analytic Bimodal	6	3%
Analytic Imager	6	3%
Analytic Verbaliser	1	0,5%
Intermediate Bimodal	15	7%
Intermediate Imager	28	14%
Intermediate Verbaliser	14	7%
Wholist Bimodal	24	11%
Wholist Imager	62	31%
Wholist Verbaliser	46	26%

There is evidence from the data that suggests that we have all the possible cognitive styles identified by Riding. However, there is only one (0.4%) Analytic-Verbaliser in all the six schools in spite of the linguistic and cultural diversity of the communities from which the learners were drawn. This is an important finding since it is the first time a CSA test has been used in a South African context. This raises the important question as to the reason such a style occurs so rarely in a group of learners coming from such diverse cultural communities groups.

In the Wholist category, the largest group are the Wholist Imagers. They make up 30% of the entire subject population. This 30 % is comprised of the following:

Table 19 (a): Wholist-Imagers

SCHOOL	RAW FIGURE	PERCENTAGE
E	14	36%
F	13	43%
C	11	31%
B	10	29%
A	8	19%
D	6	21%
	Sum = 62	**Average = 30%**

Wholists -Imagers were the most frequently occurring language learning style not only for the separate schools but for the entire group of learners as well. This is an important finding given the diversity and range of proficiencies within and between groups. It is the most frequently occurring style not only for the group as a whole but for each separate school. This is a most important finding given the wide range of diversity within and between the schools. The pattern noted above is repeated for the second most frequently occurring style i.e. the Intermediates. The Intermediate-Imagers were the biggest group within the Intermediate category. The following table provides details for each school.

Table 19 (b): Intermediate-Imagers

SCHOOL	RAW FIGURE	PERCENTAGE
A	7	17%
B	4	13%
C	3	10%
D	6	17%
E	6	21%
F	3	9%
	Sum=29	**Average=15%**

After the Intermediates category the Analytics followed. They are the least occurring language learning style learners. Within the Analytics as a style there are 2 sub categories as illustrated in Table 19 (c) and (d).

Table 19 (c): Analytic-Bimodals

SCHOOL	RAW FIGURE	PERCENTAGE
A	2	5%
B	2	6%
C	0	0
D	1	3%
E	1	4%
F	0	
	Sum=6	**Average=3%**

Table 19 (d): Analytic-Imagers

SCHOOL	RAW FIGURE	PERCENTAGE
A	5	12%
B	1	3%
C	0	0
D	0	0
E	0	0
F	0	0
	Sum = 6	**Average = 3%**

Using Co-Variance tests showed no relationship between age, sex and cognitive type. This means that one cannot predict which cognitive style learners belong to just because they are male and of a certain age, or because they are female and of a particular age. Age and gender do not determine the cognitive style learners are likely to belong to.

4.6 Grammar and Vocabulary Tests Results

This section gives the different scores attained by various schools in the grammar and vocabulary tests.

Table 20: Test Results

SCHOOLS	No. of LEARNER	GRAM.	VOC. (A)	VOC. (B)
SCHOOL A (GR3)	37			
CA		36%	38%	35%
HS		95%	70%	75%
LS		15%	0	8%
SCHOOL A (GR7)	37			
CA		65%	59%	70%
HS		90%	90%	100%
LS		20%	10%	17%
SCHOOL B (GR3)	39			
CA		24%	23%	18%
HS		55%	50%	50%
LS		10%	0	0
SCHOOL B (GR7)	34			
CA		32%	26%	39%
HS		50%	60%	75%
LS		18%	10%	0
SCHOOL F (GR3)	30			
CA		77%	65%	66%
HS		95%	100%	100%
LS		41%	30%	17%
SCHOOL G (GR3)	36			
CA		70%	53%	64%
HS		88%	90%	92%
LS		40%	20%	33%
Total	231			

Key: CA = Class Average, HS = Highest Score, LS = Lowest Score
GR = *Grade*, *Voc.* = *Vocabulary*, *Gram.* = Grammar

Note: A discrepancy exists between the number of learners who took part in the grammar and vocabulary tests and the CSA test. Learners from one school took part in the grammar and vocabulary test but did not do the CSA test.

4.7 Statistical analysis

This section compares learners' vocabulary scores with their grammar scores. Learners' cognitive stylistic preferences are related to their performance on the linguistic proficiency tests.

4.7.1 Analysis of variance
4.7.1.1 Individual schools
(a) School A

The analytic procedures used for School A included an analysis of the comparison of the vocabulary scores for Vocabulary tests A and B (Synonyms and collocations respectively). The vocabulary scores were subsequently compared with grammar scores.

Table 21
Anova: Single Factor

SUMMARY

Groups	*Count*	*Sum*	*Average*	*Variance*
VOC A	33	19.9	0.60303	0.038428
VOC B	32	22.44	0.70125	0.027992

ANOVA

Source of Variation	*SS*	*df*	*MS*	*F*	*P-value*	*F crit*
Between Groups	0.156728	1	0.156728	4.707576	0.033809	3.993364
Within Groups	2.097447	63	0.033293			
Total	2.254175	64				

Anova: Single Factor

SUMMARY

Groups	*Count*	*Sum*	*Average*	*Variance*
GRAMMAR	33	21.3	0.645455	0.031307
VOC A	33	19.9	0.60303	0.038428
VOC B	32	22.44	0.70125	0.027992

ANOVA

Source of Variation	*SS*	*df*	*MS*	*F*	*P-value*	*F crit*
Between Groups	0.157498	2	0.078749	2.41385	0.094939	3.092218
Within Groups	3.099265	95	0.032624			
Total	3.256763	97				

The P-value for a single factor Analysis of Variance when comparing scores for Vocabulary A and B is 0.033809. This is just below the level of statistical significance at 0.05. When the grammar component was added to vocabulary, and the grammar scores compared with aggregated vocabulary scores, the P-value became 0.0949, meaning that there was no statistically significant difference between grammar scores and vocabulary.

Comments

For School A this meant that the performance of the subjects on the three tests was not statistically significantly different. To contextualise the analysis even further, this could be construed to mean that learners with the same language learning style behaved in a comparable way across different tests: an outcome radically different from School B (see later). The similarity in linguistic performance irrespective of language learning style may be attributed to the teaching style. In the earlier part of the report the nature of the different teaching styles was described and the effects of matching teaching styles and learning postulated.

The interesting aspect about School A was its diversity in terms of the range of 1st languages that the learners claimed to either speak or have expertise in. Learners claimed to speak English, Xhosa and Afrikaans as mother tongues. In order to test the validity of learners' statements about their mother tongue language, learners were grouped into three categories irrespective of their language learning styles and their performance on the three tests compared. The average scores for the learners claiming to have Afrikaans as a mother tongue was 67%, compared with 53% for English mother tongue speakers and 54% for the Xhosa speakers. The results were odd because it was difficult to comprehend how Afrikaans second language learners performed better than English Mother Tongue Speakers whose results were largely comparable with those of Xhosa mother tongue speakers. The lesson to be derived from this brief but important sociolinguistic vignette is that mother tongue status may reflect an imagined proficiency rather than real status - shorthand for an intended goal rather than an accurate description of a prevailing situation

(b) School B

For the analysis of the data from School B statistical analytical procedures comparable to those used in other schools were used. The following table captures the frequency counts on the grammar tests:

Table 22 (a): Frequency Counts

Grammar	Frequency
0.2	1
0.3	19
0.4	13
0.5	3
0.6	0
0.7	0
0.8	0
0.9	0
1	0
More	0

The grammar analysis shows that the majority of the subjects scores were between 30 - 40%, with only 3 learners scoring in the 50% range.

The procedure for analysis of vocabulary scores used for School B is comparable to that used with School A.

Table 22 (b)
Anova: Single Factor

SUMMARY

Groups	*Count*	*Sum*	*Average*	*Variance*
VOC A	35	9.7	0.277143	0.019462
VOC B	35	14.44	0.412571	0.032484

ANOVA

Source of Variation	*SS*	*df*	*MS*	*F*	*P-value*	*F crit*
Between Groups	0.320966	1	0.320966	12.35754	0.000787	3.981896
Within Groups	1.766183	68	0.025973			
Total	2.087149	69				

Anova: Single Factor

SUMMARY

Groups	*Count*	*Sum*	*Average*	*Variance*
GRAMMAR	35	11.27	0.322	0.005975
VOC A	35	9.7	0.277143	0.019462
VOC B	35	14.44	0.412571	0.032484

ANOVA

Source of Variation	*SS*	*df*	*MS*	*F*	*P-value*	*F crit*
Between Groups	0.333156	2	0.166578	8.627734	0.000345	3.085461
Within Groups	1.969343	102	0.019307			
Total	2.302499	104				

The P - value is 0.000787 showing that the performance of the subjects in Voc. A & B are statistically significantly different. Further analysis shows that the groups behave significantly differently when the grammar test was included. The P - value became 0.000345 when the grammar scores were included.

Comments:
The analysis of the School B learners on the two vocabulary and grammar tests showed that their performance was significantly different irrespective of the learners

having the same language learning styles. To contextualise the analysis further this means that, if a learner was categorised as a Wholist, their performance on grammar, Vocabulary A and Vocabulary B would be different. The division of vocabulary into two entities enabled us to investigate whether learners with the same learning style would behave differently when testing two different areas of vocabulary. In the study individuals with the same language learning style responded differently depending on whether the area of vocabulary being tested were collocations (words that tend to occur together because they are associated with the same experience) or synonyms.

(c) School C

The following table captures the results of the analysis. The average score for Voc. A was 40%, while for Voc. B was 50%. The P-value was 0.009591. The scores were significantly different at 0.05 level. This meant that the performance of the subjects was statistically significantly different depending on the test irrespective of similarity in language learning style.

Table 23

Anova: Single Factor

SUMMARY

Groups	*Count*	*Sum*	*Average*	*Variance*
VOC.A	34	13.67	0.402059	0.020084
VOC.B	34	17.16	0.504706	0.030244

ANOVA

Source of Variation	*SS*	*df*	*MS*	*F*	*P-value*	*F crit*
Between Groups	0.179119	1	0.179119	7.11816	0.009591	3.986273
Within Groups	1.660803	66	0.025164			
Total	1.839922	67				

(d) School D

The following are the results for School D, using identical analytical procedures to those used with the rest of the schools. The basic analytic test used was the Analysis of Variance.

Table 24

Anova: Single Factor

SUMMARY

Groups	*Count*	*Sum*	*Average*	*Variance*
VOC.A	28	14.2	0.507143	0.023651
VOC.B	28	12.39	0.4425	0.035582

ANOVA

Source of Variation	*SS*	*df*	*MS*	*F*	*P-value*	*F crit*
Between Groups	0.058502	1	0.058502	1.975304	0.165613	4.01954
Within Groups	1.599296	54	0.029617			
Total	1.657798	55				

The adjusted score for Vocabulary A was 51% and 44 %for Vocabulary B. The P - value was 0.165 indicating that the differences in the performance of the subjects between the test were not statistically significantly different.

This meant that learners with the same language learning styles were behaving consistently across the different tests, although the tests were assessing different aspects of language.

(e) School E

The vocabulary scores for Voc. A and Voc. B were 54% and 52% respectively with a P-value of 0.776185. The high P-value meant that the difference between Voc. A & B was not statistically significant. The situation does not change with the inclusion of a grammatical component. The grammatical score was 54%. When the grammatical component was added, the P-value increased further to 0.946 implying that for this particular school there were no statistically significant differences in the performance of the learners across different tests. The idea that language learning styles were sensitive to modularization of language abilities was not statistically upheld for this school.

Table 25

Anova: Single Factor

SUMMARY

Groups	*Count*	*Sum*	*Average*	*Variance*
VOC.A	36	19.5	0.541667	0.027643
VOC.B	36	19.06	0.529444	0.038383

ANOVA

Source of Variation	*SS*	*df*	*MS*	*F*	*P-value*	*F crit*
Between Groups	0.002689	1	0.002689	0.08145	0.776185	3.977789
Within Groups	2.310889	70	0.033013			
Total	2.313578	71				

Anova: Single Factor

SUMMARY

Groups	*Count*	*Sum*	*Average*	*Variance*
GRAMMAR	35	18.93	0.540857	0.025749
VOC.A	36	19.5	0.541667	0.027643
VOC.B	36	19.06	0.529444	0.038383

ANOVA

Source of Variation	*SS*	*df*	*MS*	*F*	*P-value*	*F crit*
Between Groups	0.003351	2	0.001675	0.054684	0.946811	3.083706
Within Groups	3.186363	104	0.030638			
Total	3.189714	106				

(f) School F

The following section is a description of the results from the statistical analysis of the data from School F. School F was comprised of English Mother Tongue Speakers of English. The vocabulary and grammar scores of the school are captured in Table 26 (below).

Table 26

Anova: Single Factor

SUMMARY

Groups	*Count*	*Sum*	*Average*	*Variance*
VOC A	24	12.7	0.529167	0.029982
VOC B	22	14.02	0.637273	0.025697

ANOVA

Source of Variation	*SS*	*df*	*MS*	*F*	*P-value*	*F crit*
Between Groups	0.134146	1	0.134146	4.801748	0.03377	4.061704
Within Groups	1.22922	44	0.027937			
Total	1.363365	45				

Anova: Single Factor

SUMMARY

Groups	*Count*	*Sum*	*Average*	*Variance*
GRAMMAR	30	20.93	0.697667	0.015122
VOC A	24	12.7	0.529167	0.029982
VOC B	22	14.02	0.637273	0.025697

ANOVA

Source of Variation	*SS*	*df*	*MS*	*F*	*P-value*	*F crit*
Between Groups	0.381848	2	0.190924	8.356998	0.000539	3.122103
Within Groups	1.667756	73	0.022846			
Total	2.049604	75				

The adjusted vocabulary scores for Voc. A was 52%, for Voc. B 64%, and 70% for grammar scores. The adjustment was a necessary statistical procedure because the Analysis of Variance could not be carried out using percentages. It is important to bear in mind when doing the comparison between schools that School F had Grade 3 learners while those from School A and School B were at Grade 7 level, because the Grade 3 learners from those schools could not read meaningfully.

An Analysis of Variance of the scores of the subjects in Voc. A & Voc. B shows that the differences between the scores were statistically significant at a P-value of 0.0337. The differences between the vocabulary and grammatical scores became even more statistically significant as the P-value increased to 0.000539 when grammar was added as opposed to 0.03377 when the analysis was restricted to a comparison of the two vocabulary tests.

The interesting aspect about School F was that there were differences in the linguistic outcome between the performance on grammatical scores and vocabulary. This may be construed as indirect evidence for modularization of language abilities which language learning styles may perhaps unfortunately mask.

4.7.1.2 Whole sample

One-way ANOVA tests revealed that, when results from the three different tests' grammar, vocabulary, collocation and synonymity scores are aggregated, there is a difference that is statistically significant at 0.005 level.

The cognitive type to which an individual belongs (e.g. Analytic or Wholist) and gender, separately and combined made no significant difference on performance in the three tests. Age, however, had an effect on grammar and collocation results but not on synonymity.

A regression analysis showed R square is 0.057. This means that only 5% of the variance on performance in the three tests can be explained by age, sex, and cognitive type.

5 Conclusions

5.1 Towards a cognitive approach in language learning

The general thrust in language studies in SA has to date rightly focused on the effects of social and economic aspects of the educational environment on learning outcomes. This has been the main research thrust because of the obvious differences in the way in which resources were allocated to schools in the apartheid era. The inequitable resource allocation obviously still has effects on the quality of teaching in schools previously belonging to different educational departments. With the exception of Carol Macdonald's Threshold Project, there hasn't been any concerted and systematic efforts at analysing the various ways learning takes place within the educationally deprived environments. The assumption has been that if, we are aware of the sociological factors affecting the educational environment, then we are aware of the nature of the learning processes. This has contributed to the dearth of studies into research into language learning styles and strategies. Although differences in the nature of the educational contexts have been reported, there has been a `conspiracy of uniformity' in which the assumption has been that learners from the same language backgrounds are all identical in terms of the language learning styles and strategies they adopt. Accountability is relatively easier when conceptualising uniformity within a group and diversity between groups. The teaching profession also encourages the notions of uniformity within and diversity between groups by encouraging teaching approaches that focus on the organisation of entire classrooms rather than individuals. It's relatively easier to organise entire classes than individuals. It is, however, encouraging to note that in some schools serious efforts were being made to encourage the development of individuality within the classroom in the way tasks were handled giving room for differences in the rates of development between individuals.

Studies into individual differences enable us to reconstruct the notion of a rainbow nation by seeing differences in language learning styles within similar groups and similarity in language learning styles across different racial groups. Gamaroff cogently articulates the argument when he writes:

> " It would be unwise to ascribe all causes of the inability to learn and do tests and examination to environmental factors such as bad teaching, poverty, politics and the incompatibility of target cultures cognitive styles or tricks What should become a primary focus in educational research is the rainbow of individual differences manifested in the ability to overcome intellectual and social problems. " (Gamaroff manuscript 1998)

What this research managed to demonstrate was that there were comparable ways of language learning which L1 and L2 learners adopted in radically different environments. In other words, in spite of differences in the nature of the school environments, there were common ways of orienting towards tasks. The research has also shown that similar language learning styles do not necessarily yield identical results in language proficiency tests. The differences in teaming outcomes in situations of identical learning styles can thus not be attributed to differences in cognitive styles. Some o£ learners may be more cognitively strategic than others. Future research has to investigate the different types of strategies which learners with identical styles adopt, and the effectiveness of the strategies. Research in Second Language Acquisition (SLA) suggests that "all learners use strategies, and that the crucial issue is whether strategies are used flexibly and appropriately" (Skehan 1998:

264). Future research has to explore ways in which learners may be made into more cognitively strategic learners. Strategic learning is necessary when learners find that their cognitive styles are ill-suited to the environment. Learning strategies should thus be construed as cognitive techniques which learners have to adopt to `translate' material presented in a mode that they do not prefer into a mode of their maximum preference. Learners are going to be confronted with material presented in diverse teaching modes as the data from teacher observation schedules suggests. In as much as teachers have to develop a repertoire of teaching strategies to suit different environments, learners have to develop individualised `cognitive tool kits'.

Learning strategies need to be distinguished from communication strategies and their relationship with language learning styles clearly outlined. It is productive to think of learning strategies as mediating between learning styles and learning outcomes. Learning strategies should therefore be construed as facilitating learning particularly when there is a mismatch between learning styles and expected learning outcomes. Learning strategies could enhance the rate of learning when the learning styles and learning outcomes are in consonance and complementary. O'Malley and Challot (1990) define learning strategies in the following way:

> "Learning. strategies are complex procedures that individuals apply to tasks, consequently, they may be represented as procedural knowledge which may be acquired through cognitive skill, associative, and autonomous stages of learning. As with other procedural skills at different stages of learning, the strategies may be conscious in early stages of learning and later performed without the person's awareness. "

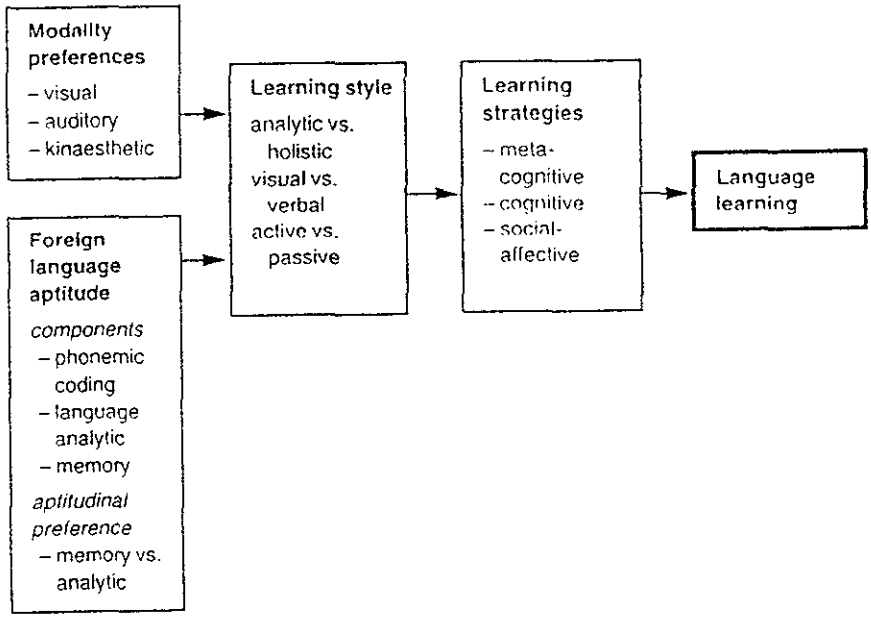
The key aspect about the orientation towards learning strategies adopted above is that learning strategies were a type of skill (Mithchell and Myles 1998). The view that learning strategies are a type of skill has educational implications, it means that like any other skills they can be taught.

The existence of some of these strategies could be supported by evidence from the current NLP research project. For example, in some of the schools there was a relatively large number of learners particularly from ex-DET schools who learnt by rote. Learning by rote could be construed as an example of a strategy being used inappropriately. But this unfortunately leads to an undervaluing of the significance of memory in language learning as a strategy. Memorisation could easily form the basis on which inferencing is developed. Metacognitive strategies involving reflection and evaluation could easily be taught. There is evidence from the data that about half of the tasks currently in use demand that learners use metacognitive strategies, some of which may be ill suited to their learning preferences. Teaching of these strategies is already taking place in some of the schools, although not necessarily in the exact format outlined here.

Evidence from the NLP research project being reported here showed that some of the strategies were being used albeit in a non-systematic way. In order for language learners to use the strategies appropriately, the strategies have to acquire some form of institutional legitimisation. Institutional legitimisation is necessary in order for the strengths and limitations of the strategies to be realised. Clearly there is no single strategy that will be appropriate for all the different language learning problems. Hence the importance of developing a repertoire of useable strategies to complement

learning and by the same token constrain the overuse of a particular strategy. An overuse of strategies may end up doing much more harm than good unless the scope of applicability of the strategies is limited. The `over' generalised use of the social-effective strategies in which learners end up relying too much on each other to mediate information has been shown to be potentially problematic in the project as captured through the metaphor of the `broken telephone'. The following table from Skehan (1998: 268) shows the position o£ learner strategies in the pedagogical scheme.

Table 26: Learner differences and language learning



5.2 Relating personal style to effective Pedagogy

Research into learning styles suggests that teachers need to develop a repertoire of strategies or `regime' of strategies that can form the basis of effective pedagogy. Riding and Rayner (1998) identify the following as reasons for establishing a `regime' of strategies.

> "To suit particular cognitive styles thereby alleviating learning difficulties and problem behaviour. For wholist learners which would provide a clear structure for behaviour and support the direct instruction of strategies for internalising ways of structuring learning. For analytic learners which would provide a set of strategies aimed at changing how they internally structure their learning "(Riding & Rayner 1998: 177).

6. Recommendations

In as much as teachers have to be taught how to teach learners have to learn how to learn. Weinstein and Van Mater Stone (1996) suggest this could be achieved by focusing on the following ways in which learners are taught:

(a) about themselves as learners.
(b) about different types of academic tasks.
(c) about strategies and tactics for acquiring , integrating and applying new learning.
(d) about integrating prior content with current knowledge.
(e) about both present and future contexts in which their knowledge could be used.

The strategies which learners use can be divided into three: social affective strategies, cognitive strategies and metacognitive strategies (Mitchell and Myles, Skehan 1998; O'Malley and Challot 1990) (see Appendix 6). In order to enhance social affective strategies, the teacher has to be sensitive to issues which learners from different groups might find offensive, particularly in multicultural schools. Cognitive strategies would be necessary to build because some learners may be coming from social systems with a knowledge base radically different from that in formal education. The development of metacognitive strategies would be necessary because it enables learners to comment about their learning.

6.1 Future Research

There have been a relatively large number of studies into communication strategies (Faerch and Kasper 1983, Bialystok 1990) but there are none to date in South Africa which have looked at the relationship between Cognitive Styles and a selection of Communication Strategies. An exploration of the relationship is important as a way of contributing towards an understanding of how Cognitive Styles impact on communication strategies and language in interactions.

6.1.1 Flexibility and Stability of Cognitive Styles

In the review of the literature it was proposed that Cognitive Styles are relatively stable or unmalleable as Skehan calls it (see Riding 1998: Skehan 1998). This has implications for the manner in which future empirical research can be conducted. If the construct of Cognitive Style is to be utilised in language pedagogy as we suggest then its stability has to be demonstrated in a longitudinal study. The longitudinal study would examine the extent to which the same Cognitive Styles are used in real time. Preferably a selection of the same learners should be re-tested after a mediating period of at least six months to see if the learners are still using the same type of language learning styles. A useful hypothesis to test in such recommended future study would be that the Cognitive Styles of language learners remain relatively constant in spite of differences in proficiency in language learners. If such stability and unmalleability to time is demonstrated then sound pedagogical decisions for interventions can be made. What is required is a research programme into learning styles across the curriculum that seeks to address the following questions: What sort of strategies would the L 1 learner adopt in learning an L2? What sort of strategies and Cognitive Styles would the L 2 learner adopt when learning an L I ?

An investigation of stability should not only take place in real time but in different languages as well. The multilingual context in South Africa poses fascinating

research challenges and provides an ideal context to extend research into Cognitive Styles into a new domain. For example, Do Xhosa learners of English use the same language learning styles when learning their first language as they do with a second language? Do English mother tongue speakers of Xhosa use the same language learning styles in English as a first language as opposed to Xhosa as a second language?

It is this bi-directionality in testing which should form the basis for future research in South Africa [see Makoni (1998) for an elaboration of such an argument]. A continuation of this project should investigate the extent to which language learners and first language speakers perform not as multiple choice questions but on discrete and integrative (clone) tests as well. Such an analysis would make it possible to compare the findings with studies that have examined the relationship between Field Dependence/Independence and discrete and integrative tests.

Although this study has used some of the cognitive categories from Riding, finer distinctions within the categories could also be postulated in terms of imagery vividness and imagery control. Imagery vividness would refer to the clarity of mental images tasks evoke. Imagery control would refer to the individual's ability to deliberately generate a mental image or to perform certain manipulations such as mental notation. Research to date has analysed the teaching syllabus and not the preferred mode of language learning of the teachers. The teachers' styles may be influenced not only by the way the teacher has been taught as conventionally assumed but by the teachers' preferred mode of learning. Other research found that there were differences between visual and non-visual mathematics' teachers. Non-visual teachers tended to adopt a lecture fronted teaching style while visual teachers adopted a pictorial representation style.

Because of the reading problems confronting learners from some schools future research may seek to examine the extent to which learners with different learning styles responded to reading demands. Preliminary analysis suggests that there are different orientations towards reading. Schmeck (1988) suggests that Analytic readers tend to focus their attention on detail, while Wholistic individuals tend to scan to form an overall global impression.

6.2 Pedagogical Implications

Imagery could easily be used as a pedagogical strategy in the teaching of some parts of language which have been found to be difficult such as prepositions, and the formation of mental images would form the basis on which vocabulary, can be taught. There has been an increased interest in the teaching and learning of vocabulary in a second language (Ellis, 1994).

6.3 From outcomes to Outcomes Based Education via Task Based Learning -

"Task-based learning" as a mode of reaching outcomes

Currently in SA there is a considerable amount of interest in Outcomes-Based Education (see Young 1998). In this Project we propose that one way of achieving educational outcomes is through developing a curriculum that is task-based. The construct of a task that will underpin our understanding is the one used by Skehan (1994) and repeated in Skehan (1998). Tasks could be said to differ along the following parameters of increasing complexity as outlined by Skehan (1998).

Complexity
linguistic
vocabulary
load and variety
redundancy
density

Communicative Stress
time limits and time pressure
speed of presentation
number of participants
length of texts used
type of response
opportunities to control interaction

Cognitive Complexity
Cognitive Processing
information organisation
amount of computation
clarity of information,
information type

Cognitive Familiarity
familiarity of topic and its predictability
familiarity of discourse genre
ease of relationship to backgrounds
knowledge familiarity of task

The tasks should not only take into account learner pre-dispositions but the preferred modes of teaching by teachers who may themselves have their own cognitive preferences which may impact on their teaching styles in ways which still have to be systematically explored.

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