

INTRODUCTION OF BILINGUAL INSTRUCTION INTO KWAZULU  
NATAL CLASSROOMS AS A MEANS TO MAXIMIZE SECOND  
LANGUAGE LEARNER'S ACADEMIC PERFORMANCE.

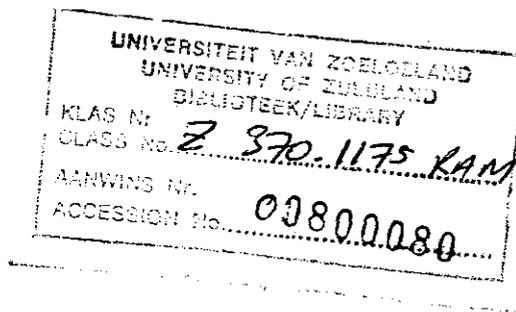
By

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A mini dissertation submitted in partial fulfilment of the requirements for the degree of Masters in Education(Educational psychology) in the Department of Educational Psychology and Special Education, University of Zululand, Kwadlangezwa, KwaZulu – Natal.

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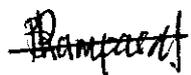
JUNE 2007



I dedicate this endeavour to my adorable daughter Kimehra and dearly loved son, Tejme` whose understanding has enabled me to complete this mini - dissertation.

## DECLARATION

This serves to declare that the work contained in this mini-dissertation represents my original effort, both in conception and execution.



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**Aim 1:** Evaluate the implementation of bilingualism (isiZulu plus English) as a method to increase second language learner performance in English in primary schools in KwaZulu -Natal.

**Aim 2:** Investigate whether or not second language learners in primary schools understand the meaning of words and concepts as compared to English (home language) learners

**Aim 3:** Demonstrate that most second language learners will perform better and benefit from a bilingual programme.

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ANNEXURE A

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## ABSTRACT

In KwaZulu-Natal and the wider South Africa, many learners are challenged in reading, writing and spelling.

### *Aims*

This study aimed at evaluating bilingualism as a method of instruction, or means to improve the academic performance of second language learners, i.e. isiZulu speaking learners in KwaZulu-Natal classrooms.

### *Methodology*

The research took the form of a field experiment and was limited to one school only, namely, the “Green School”. The research paradigm took the form of a Pre-Test Post-Test: Before and After Randomised Control Group. This study is quantitative in nature and sampling is systematic by character. Sampling was executed by the method of random selection, where subjects from the Green School were randomly assigned to the experimental and control groups. Learners from Grades 4, 5, 6 and 7 were the participants in this research. The total number of participants in the study was  $N = 64$ , with 32 subjects being assigned to the control and the other 32 being assigned to the experimental group randomly. The subjects  $N = 64$  were African learners whose home language was (i) isiZulu and (ii) Indian or Coloured learners whose home language was English. Both these groups were presented with vocabulary and comprehension pre-tests. The items listed on the vocabulary and comprehension subtests of the SSAIS-R were utilized to test the learners’ knowledge and understanding of words.

The SSAIS-R was utilized because it has been proved to be valid and reliable. Scoring was conducted as per requirements for scoring in the SSAIS-R on the vocabulary and comprehension subtests respectively. The experimental group was the subjected to one month of bilingual teaching, instructed by an isiZulu speaking teacher aide, who was proficient in and willing to teach bilingually in the experimental classroom. The control group was subjected to “English only” instruction. After one month the tester presented the learners with the same test material and posttest scores were obtained.

Data was then summarized and calculated using the factorial design and a table on the final analysis of variance was obtained.

### *Results*

The results obtained, demonstrated that all F ratios were significant @ the 0.05 level for the Green School. It also verified that bilingualism as a method of instruction had improved the academic performance of second language learners viz. isiZulu learners in the Green School.

### *Conclusion*

This has implications for reviewing and evaluating teaching and learning using bilingual instruction in South African classrooms.

### *Recommendations*

It is recommended that bilingual instruction be introduced in the senior primary phase in schools.

Since this study proved significant in the senior primary phase, it is recommended that a similar type of study be conducted in the junior primary phase in schools.

A further suggestion is that in-service training be provided for all educators in bilingual modes of instruction, thus enhancing academic performance in second language learners.

It should be compulsory for all student teachers to be trained in bilingual methods of instruction in teacher training tertiary institutions.

This study can also be utilized to develop strategies for teaching in rural and peri - urban areas.

## CHAPTER ONE

### Introduction

Language provides as a very important means for the expression of the individuals' thoughts and ideas. It consequently serves as a catalyst for our thought processes and is an important tool for reasoning. Hence, language becomes pivotal for any learning to effectively take place. At The Green School, where this study was conducted, most learners admitted, were from informal settlement areas around the institution. Observations and interviews conducted with these learners, by the researcher, show that most speak in their mother tongue at home. The researcher, also being an educator at the Green School came to the understand that learning in a language that is not the vernacular of the child, appears to create barriers to learning, as the student is unable to grasp concepts fully. Reading, spelling and writing using "English only" as the method of instruction, made it progressively more difficult for these learners to achieve academically. The problems related to academic performance at the school prompted the researcher to experiment with an alternative mode, namely bilingualism as method of instruction in the classroom and as means to improve educational performance. In addition, The Revised National Curriculum Statements (RNCS) recommends that the learner be instructed in their home language and at least one other language. Hence, reading around this paper impelled the researcher to investigate the functional or practical value of this educational policy more extensively.

The researcher further argues that teaching and learning through the English medium only, also has implications for a "sense of identity." Language acquisition has inferences for interpersonal communication and provides definition for communities, cultures and society, the language that one speaks determines one's worldview and is related to a social context. Implications are that in the classroom context language becomes an important tool for the acquisition of knowledge and social relationships. This encouraged the researcher to simultaneously observe how culture comes into play during the process of language usage. Hence, the researcher felt compelled to examine the holistic effect of culture and cognition on learning in an attempt to

improve academic performance at the Green School. This drive to assist learners, gave rise to the study of bilingualism as a means to maximize second language learners' academic performance.

### **1.1. Motivation for the study**

The South African education system inherited an unequal system of schooling, favouring white learners over other race groups. As a method of redress against past inequities, curriculum planning and design gave expression to the RNCS (revised national curriculum statements), which attempts to even out past inequalities. However this curriculum faces challenges, some of which, this study seeks to address. Problems identified include, poor academic performance, especially amongst second language learners, the effectiveness of the new curriculum in terms of curriculum delivery, and the attitude of the target group towards instruction in mother tongue. Further, this study highlights the role of learners, teachers and parents as they endeavour to find their niche as stakeholders in the education system. Finally the study draws attention to education as a tool for upward mobility within the socio economic and political context of South Africa.

More specifically this study seeks to examine the effectiveness of bilingual instruction as a means of improving academic performance in second language learners. This study uses a quantitative or statistical method to reach such means. The results, (all F ratios significant @ the 0.05 level) and deductions, which were significant for the Green School, have inferences in terms of providing guidelines for reviewing and evaluating teaching and learning in South African classrooms.

Whilst there are many dynamics involved in the delivery of quality basic education, language is clearly the key to communication, understanding and academic performance within the classroom. Bilingual as opposed to monolingual instruction offers major pedagogical advantages, which has been constantly documented in academic literature. According to Cummins (1991), the transfer of linguistic skills is facilitated through bilingual programmes. Learners, who acquire basic literacy and communicative skills in the mother tongue language, demonstrate proficiency in

reading, writing and spelling in the second language, as knowledge of language and concepts learned, can be accessed in the second language (Cummins, 1991: 70 –89).

In the South African Education system, many learners are confronted with challenges in reading and writing English. Therefore, a need emerges to provide opportunity for these learners to develop proficiency in English, whilst maintaining skills acquired in the mother tongue. Submersion teaching is characterized by lecture and rote responses, alternatively, bilingual instruction in classrooms permit teacher and learner to negotiate meanings together, thereby creating participatory learning environments, conducive to cognitive and linguistic development (Cummins, 1991: 70 –89). The bilingual approach gives thought to both teacher and learner within the school setting, facilitating a rich culture of instruction within the classroom. Such innovative practices are essential for effective teaching and learning to take place in South African schools.

The introduction of mother tongue programmes go beyond pedagogical motivations, to address wider socio- economic and political goals. The democratic government of South Africa inherited a divided and unequal system of education. Under the previous apartheid government, educational departments were separated by race, geography and ideology. This education system prepared children for public, political and economic positions that they would be expected to occupy in society, hence the school curriculum played and still plays a powerful part in the functions that children are expected to engage in, when positioned later in broader society (DoE, 2002: 4).

Current changes in education; draw attention to democratic, internationally competitive, literate, productive and creative citizens in South Africa. The Revised National Curriculum Statements (RNCS) aim at clarity and accessibility both, in its design and language. In keeping with fundamental values of *Ubuntu* (human dignity), respect, social justice, equity, democracy and diversity, the RNCS was made available in all eleven official languages and Braille. Sign language is not neglected. The RNCS proposes that in a multilingual country like South Africa, learners reach proficiency in at least two languages. The RNCS therefore recommends that:

- All learners learn their home language and at least one other language.

- Learners become competent in an additional language, whilst their home language is maintained and developed.

The curriculum statements further stipulate that the learners' home language ought to be used for teaching and learning whenever possible (DoE, 2002: 20).

Whilst the RNCS make place available for the teaching of home and additional languages, this opportunity is not promoted as some parents and learners are reluctant to utilize this chance.

Plurilingualism acknowledges and promotes the idea that a learner can acquire various levels of language competencies in diverse languages and be able to perform varied tasks at different levels, using these structured language skills (National Council for Curriculum and Assessment, 2005:12).

In South African schools, the Language in Education Policy (LiEP) makes provision for children who speak different languages to be accommodated in the same class although this is not stipulated as a requirement (International Literacy Conference, 1999). With the advocacy for plurilism, multilingualism and bilingualism, the initiative promoted is that learners can study different languages at different levels of competence in different stages in their lives. Many South African schools have not implemented this language policy, fully. It is the researcher's contention therefore, that the different languages can be maintained through sustained and consistent language support services in South African schools. Services should extend to include:

- The further development of schools' language policy.
- Language aides, who speak mostly the main language of the learners.
- Lessons for educators to bridge the gap between the main language prevalent at the school and the language of the learners.

A communicative approach to teaching languages emphasizes language usage over analytical dimensions, thereby maximizing opportunity for learners to use the target

language both inside and outside of the classroom (National Council for Curriculum and Assessment, 2005: 1-2).

The multi-dimensional approach to the study of languages seeks to contribute towards tolerance and intercultural competence and creating a culture of plurilingualism or bilingualism can also assist in addressing the public perception of stereotypes about different languages and what constitutes successful learning. In South Africa, studies conducted in the Western Cape, on the possibility of introducing isi Xhosa as a medium of instruction at schools, show that parents still chose English as a medium of instruction, which in their opinion, was associated with social and economic mobility. This study is elaborated on, later. Thus the introduction of bilingual teachers within the South African in classrooms context has implications for social and linguistic inclusiveness. Studies conducted in Western Cape Area, for the Western Cape Education Department's Language Support Project, indicate that, even with support for language studies, many children do not want to utilize their mother tongue for learning, with such a tendency, having a negative impact on the academic performance of these learners.

Another difficulty that the educators of the "new" South Africa perceive is the close correlation between the "old" systems of racial classification of languages into different language groups. Some South Africans may perceive the obligatory integration of languages, within the school curriculum as racial segregation. Such perceptions do not guarantee harmony amongst the different race groups, but rather tend to have a polarizing effect. However, models based on separate mother tongue instruction in the various languages, together with an integrated and multilingual or bilingual curriculum, appear to be imperative, for constructive learning to unfold and develop. Further, language is also central to social, economic and political structures and how these are sustained. It is connected to all aspects of life and appears difficult to disentangle from its context. Language planning and policy is a significant determinant of who gains access to political power and who does not, in other words who gains full right of entry to citizenship (National Council for Curriculum and Assessment, Dublin, 2005:1).

In South Africa, education, with its emphasis on language policy can play a fundamental role in the contribution towards equity for all citizens, within the constitution of South African Society. Teachers and learners need to collaboratively, play an important role in the nation building of this country.

“Language as a right” highlights the promotion of bilingualism, which is viewed as a legal directive, involving the right of individuals to utilize their mother tongue without suffering unfair discrimination because of such language application. Additionally, isiZulu in KwaZulu- Natal presents opportunity to orientate all individuals and race groups towards reaping political, social and economic benefits of society (McKay, 1998: 2). A major problem facing South African learners currently is language delay or inability to read, spell and write in the English language. In the province of KwaZulu –Natal, South Africa, language proficiency in isiZulu especially amongst mother tongue learners at schools, ought to be emphasized. Cummins (1984) argues that literacy abilities as well as content knowledge acquired in the mother tongue will transfer to the second language. Hence, Cummins affirms that once a learner acquires literacy skills in the mother tongue, literacy in the additional language is facilitated, since learners are able to transfer concepts and skills across languages (McKay, 1998: 2). The implications of this would be that different words are organized into a common conceptual framework. Further, Piaget’s theory on cognitive development highlights deductive reasoning abilities in older children and this conjecture has implications for the late acquisition of English language concepts by second language learners (Cole, 1971:233). However, it appears that such acquisition is facilitated when accompanied by instruction in the mother tongue language. Consequently, the researcher felt compelled to emphasize that in KwaZulu Natal (KZN) isiZulu must to be utilized as the mother tongue language of instruction and learning, together with English, thereby facilitating competence in the English language, whilst maintaining and developing isiZulu as well. This calls for the practice of bilingual schooling in this province.

The curriculum changes and the implementation of the associated language policies in South African Education, makes it imperative that the suggestions regarding bilingualism, language preservation and use of mother tongue languages, combined

with English as a medium of instruction be further analysed, in order to assist and clarify the role that educators and learners engage in, while they endeavour to make important and meaningful contribution towards socio-economic growth and nation building within the South African context.

Such attention on bilingualism and education draws research attention to:

- The purpose of mother tongue language for the maintenance of cultural models already acquired.
- Mother tongue languages as a basis for and instrument to assist in the acquisition of proficiency in the English language.
- Overall improvement in academic performance.

Such attention warrants a clear statement of what constitutes a research problem.

## **1.2. Statement of the problem**

Will the introduction of bilingual instruction maximize the academic performance of learners in KZN classrooms?

## **1.3. Aim of the study**

- The aim of this study is to evaluate bilingualism as a medium of instruction, for improving the academic performance of second language learners in primary schools in KwaZulu Natal.

More specifically:

- This study aims at evaluating the effectiveness of combining isiZulu and English to improve the performance and abilities in English amongst second language learners in KwaZulu Natal primary schools.

The study aims more explicitly at:

- Evaluating the implementation of bilingualism (isiZulu plus English) as a method to increase second language learners' performance in English in the primary schools of KwaZulu Natal
- Investigating whether or not, second language learners in primary schools understand the meaning of words and concepts as compared to English speaking (home language) learners.
- Demonstrating that most second language learners will perform better and benefit from a bilingual programme.

#### **1.4. Hypotheses**

In accordance with the aims of this study, the following hypotheses were formulated:

- Bilingualism (English plus isiZulu) as a method of instruction will increase second language learners' performance in English in primary schools in KwaZulu Natal.
- There will be significant differences between second language learners (isiZulu) and English learners understanding of words and concepts.
- Most second language learners (isiZulu speakers) from ages 9 to 16 will benefit from a bilingual method of instruction.

\*16 years because some learners who came to the school from outlying areas had to be admitted when they were much older than the appropriate age for a particular grade.

### 1.5. Method of investigation

**The Research Paradigm:**

**The Design:**

#### **Pre-Test Post –Test: Before and After Randomised Control Group**

	Y b	X	Y a	(Experimental)
R	-----			
	Y b	~ X	Y a	(Control)

The research paradigm used for this study is the pre- test, post- test randomised control group design, where:

**Key:**

R = randomised groups

Yb = pre test scores in the experimental /control groups

Ya = post test scores in the experimental/ control groups.

X = the manipulated [independent variable] in this study “X” = bilingual instruction

~X = non-manipulation in this study ~X = instruction in English only.

The sample will be drawn from one school only since cost factors and practical problems make it difficult to implement the study throughout the province of

KwaZulu-Natal. Consent to conduct the study will be obtained from all major stakeholders in education. The rationale and procedure for the research will be delineated to relevant individuals within the educational field.

This research will take the form of a *field experiment*, which is a study in a realistic situation, in which one or more of the independent variables are manipulated by the tester, under carefully controlled conditions as the context would allow. (Kerlinger, 1986: 369).

Since the sample size is small this study is intended to be descriptive rather than inferential by nature, the procedures used, will assist in summarizing and describing data, rather than making inferences or generalizations about population parameters. However, with a sample size of  $N = 64$ , some amount of generalization imperatively emerge.

### **Sampling method**

This study is quantitative in character and sampling is systematic by nature.

Systematic sampling procedures are viewed to be unbiased. Sampling was done by **random selection**, so that no bias is introduced into the sample population. Random sampling procedures ensure that each person in the sample has equal opportunity or probability of being selected.

The subjects from the Green School were assigned randomly to the experimental and control groups, using a table of random numbers. The sample included learners from **Grades 4, 5, 6 and 7**. These learners fall within the intermediate and senior phases. The age of learners will range from **9 years up to 16 years**, because of complications around their admissions to school. Some learners at the Green School, who came from outlying areas, settling informally, were admitted at the institution. Since language was a problem and they had no prior schooling, they had to be placed in grades that were lower in comparison to their age. Hence a few learners left the school by the age of 16 years. In addition, the complications of mainstreaming learners i.e. from special classes into mainstream classes as a consequence of educational policy on inclusive education further compounded the problem around age for few learners from the Green school.

16 learners will be randomly selected from each class. Since there are 8 classes of learners in this particular school, a total sample size of 64 ( $N = 64$ ) was drawn.

8 learners from each class were randomly assigned to the experimental group and 8 learners were assigned randomly to the control group.

The total of 32 learners in the experimental group were randomly selected from learners in grades 4, 5, 6, and 7. The number of learners from each grade in the experimental group was 8.

Similarly, learners in the control group were also randomly selected from those in grades 4,5,6 and 7. The total number of learners in the control was 32, with 8 learners being selected in each grade.

In summary, there will be a total of  $n = 32$  in the control group and a total of  $n = 32$  learners, in the experimental group. Total  $N = 64$ .

The *researcher was present* at all times during the assessment; to ensure that the testing procedures are *ethically correct* and followed appropriate guiding principles.

## **Research Method**

### **Step one**

- The learners were randomly assigned to experimental and control groups,  $n = 16$  in each.
- The experimental group consisted of randomly assigned learners from grades 4 to 7.
- The control group also consisted of randomly assigned learners from grades 4 to 7.

## **Step two**

Both these groups were presented with achievement tests simultaneously. The items listed in the vocabulary and comprehension subtests of the SSAIS –R were utilized.

The number of persons obtaining a correct response in each item, in relation to the contents being measured, was interpreted, before and after the introduction of bilingual instruction.

The vocabulary subtest was utilised to test the learners' understanding of English concepts. Although the SSAIS- R is an intelligence test, it closely resembles an achievement test that is drawn up by a class teacher. For example: word – picture association in an achievement test, closely resembles items in the vocabulary subtest of the SSAIS -R. Content validity involves systematic observation of the test content, to assess whether or not test content is built into the test from the outset. Choice of appropriate items being tested ought to represent what the test measures (Anasatsi, 1988: 140 –141). This test therefore measures what is supposed to measure, i.e.: the content of vocabulary.

The comprehension subtest of the SSAIS R was used to test the level of difficulty experienced in understanding English concepts. In the SSAIS- R, the comprehension subtest demonstrates increasing levels of complexity in the knowledge tasks set out. This subtest also, closely resembles the teacher achievement test in comprehension. The SSAIS –R has been proved to be reliable and valid, when measured against the norms, of a specific population group, in South Africa. Scoring was conducted as per SSAIS- R. For the administration and scoring procedures of the vocabulary subtests, which consisted of five illustrated pages, with four black and white pictures on each card, the testee was awarded 1 mark for every correct response and 0 for an incorrect response. The final score was calculated from the maximum score of 50. With the administration of the comprehension subtest, the testee was given 15 items that require reasoning ability. The testee scored marks ranging from 2 to 0 depending on the type of response written. The comprehension subtest consisted of a maximum score of 30. The testee was awarded 2 marks for relevant independent behaviour; 1 mark for dependent behaviour and no marks for incorrect answers.

### **Step three**

The researcher or tester administered the SSAIS R initially, following necessary procedures to avoid misuse of test data, to both the experimental and control groups.

The experimental group was then subjected to bilingual teaching, with the use of teaching aides proficient in and willing to teach bilingually in the experimental classroom. The control group was not subjected to bilingual teaching. After one month, the tester presented learners with the same test material. Subsequent to the test being repeated, differences in performance were analysed.

Although the S AIS-R, as an intelligence test ought not to be administered until after a reasonable time frame of about one year, the test is being used for diagnostic purposes in this context, with both the subtests contained in the SSAIS –R serving the purpose of achievement, rather than intelligence tests, meaning that although the S SAIS R consists of a battery of tests, it is assumed the subtests selected, was controlled the aims of the study, rather than provide a measure of intelligence.

### **Method of Data Analysis**

Whilst a variety of exploratory instruments can be utilized, this study was analysed empirically using the following methods:

Analysis of Variance (ANOVA), a quantitative approach, was used to analyse data:

- A factorial analysis was performed.
- Statistical data such as means, the sums of squares total (SS<sub>t</sub>), sums of square columns (SS<sub>c</sub>), a sum of squares rows (SS<sub>r</sub>) and the interactional effects were determined.
- The f- ratio was calculated, using the “F table” which confirms whether or not, the differences between the groups obtained, are statistically significant.

- Statistics was computed.
- The Sheffe Method was used to calculate the variance and statistical significance between the groups. i.e.
  - Between the experimental and control groups and
  - Between second language learners (isiZulu speakers) and first language learners (English speaking).
- The Tukey Method was used to test for variance and statistical significance between the grades (4 –7).
- Results were analysed systematically
- Conclusions based on research data and statistical findings were summarized and recommendations were made, based on these findings.

## **1.6. Summary**

This chapter endeavours to give clarity or reasons for why the need to introduce bilingual education as a medium of instruction in primary schools in KwaZulu–Natal. Bilingualism maintains and promotes mother tongue instruction, whilst permitting for development and proficiency of instruction in the dominant language, which in this instant is English. The study aims and hypotheses were explained and the method of investigation examined in logical sequence.

The nature and significance and bilingualism and related theories are subsequently discussed.

## **CHAPTER TWO**

### **LITERATURE REVIEW**

#### **Introduction**

This chapter aims to develop an understanding of the processes involved in bilingualism and its relationship to education. The role that bilingualism plays in education, as well as teacher involvement in the learning processes needs to be clearly defined, in order to increase the academic performance of learners.

#### **2.1. Bilingualism:**

Bilingualism can be defined as the ability to perform with proficiency in two languages (Toukomaa & Skutnabb & Kangas, 1998: 1). According to the Proficiency Theory, which was developed by Cummins (1989), an individual is capable of learning two languages, which appear apparently separate, but function through the same cognitive system (Cummins, 1981:38). The implications are that, when an individual learns two or more languages, there is one integrated basis of thought.

#### **2.2. The Nature of bilingualism**

Bilingual education include programmes of learning, which encompass some amount of instruction in the classroom, typical of the learners' mother tongue, whilst integrating instruction in an additional language, for example, English (McKay, 1998: 5). The aim of this method of instruction would be, to develop competency in English, whilst simultaneously expanding on mother tongue education, in this instance, isiZulu. With regard to the acquisition of language abilities, belief systems, what constitutes knowledge and how it is expressed, becomes important. Consequently, instructional methods and contextual factors, when combining isiZulu into the school timetable, in KZN classrooms happen to be significant for stimulating learning to take place.

In KwaZulu-Natal, instruction in the isiZulu language must be acknowledged in classrooms, as it makes significant contributions to curriculum design as well as

implementation and also, to education in general and South African Society as a whole. Such contributions are likely to embrace, aspects such as:

- A generally good acquisition of all languages learned
- A means for enriching language experiences in the classroom environment
- Language change or growth.
- Overall improvement in academic performance

Evaluations on bilingual education programmes conducted in the United States of America, conclude that if such programmes are to be effective, then these must be designed to the needs of a particular group of learners, parents and the community that it serves (McKay, 1998: 15). This would mean that schools, as institutions of education, have to be responsive to the needs of the specific communities, within which they serve. Some South African government schools, like that looked into in this study, (hereafter referred to as the **Green School**) have a large percentage of African learners admitted, yet the importance of bilingual education, has not been discussed with their parents.

Furthermore, when working with the needs of schools and their respective language policies, the importance of isiZulu ought not be ignored, as this language is vital to, nation building and the redress of past inequalities in KwaZulu–Natal, the connotation is that, the introduction of isiZulu will make a definite contribution to the holistic education of the child and create a broader awareness of language, culture and diversification, in this province.

### **2.3. Language, Cognition and Culture**

Several studies conducted on language indicate that, words or language is the principal means by which individuals think. It is the vehicle through which knowledge is acquired, organised and acted on. Language is viewed as the mode for interpersonal communication and one of the means by which cultures and societies define and organise themselves. Language has implications for identity and identity formation (National Council for Curriculum and Assessment, 2005: 15).

The Constructivist position holds, that reality is socially constructed and a function of the individuals' perception. Hence the acquisition of individuals' knowledge involves a good amount of self – reference (Auerswald, 1988: 55). In accordance, it can be hypothesized that the language one speaks, determines one's mode of thinking and worldview, or the way in which one analyses and constructs one's reality. Acquisition of knowledge is therefore related to the social context, of which the individual is a part. Implications are that the classroom context and language become important vehicles for the acquisition of knowledge. Sibaya (1996) further affirms that the acquisition of language and concepts is a dynamic process, where the child's understanding and language use is coupled with the level of educational involvement and specific contexts (Sibaya, 1996: 2.).

The achievement of language abilities tie with cognitive theories of learning which are concerned with how information is processed, or how individuals' acquire, organize, convert and retrieve new information about the world (Cole, 1971: 37).

On closer analysis, cognitive theory links with learning and promotes reference to "epistemology," which is interconnected with how knowledge is acquired, or the method(s) of knowledge acquisition (Wassenaar, 1987: 25). David Ausubel (1960) considered the impact of prior knowledge when learning new information. According to Ausubel, successful learning takes place when relevant existing conceptual patterns are activated, so that new information can be readily assimilated into existing cognitive structures. Mother tongue users have internalised the rules and processes for making meaning. This knowledge can be used to develop "language awareness" implying helping learners to become conscious of what they already know about language and then attempt to build further on this (National Council for Curriculum and Assessment, 2005:15).

Vygotsky, who maintains that, through language individuals' realities are constructed, further documents the relationship between cognitive processes, such as thinking and language formation. Words define the way we experience and understand our world, communicate and think. Hence, language provides the framework through which individuals' perceive, experience and act. According to Vygotsky, culture provides the basic orientation of the self, combined with language, which is the psychological instrument (symbols, signs and so on) that develops awareness. For Vygotsky,

children function inter psychologically at first, or on a social level and thereafter, intra psychologically or from within the self (Cole, & Wertsch, 1996:18).

This position is further strengthened by Cole et. al. (1971), who argue that perception; thinking and memory, all develop as part of the general socialization of the child signifying that these processes are inseparably linked to communication and behaviour. The child's experiences are therefore shaped by the culture, of which he is a member, and is additionally infused with socially defined meanings and emotions.

Language is a fundamental social strength and an instrument for individual communication and thought.

#### **2.4. Language and cognition**

Concept formation involves that in any given cognitive structure, the child consciously accommodates new concepts into previously existing schemata (Sibaya et. al. (1996). Where English is the medium of instruction, in schools, the mastery of the English language becomes essential, for the child to understand and communicate learning concepts. The mastery of the English language would rivet around it developing simultaneously with another language that the child is already familiar with or has already assimilated concepts for. It would appear that assimilated concepts from the mother tongue language, permits the accommodation of new concepts from the English language. In KwaZulu- Natal, this language will be isiZulu. Words already assimilated in isiZulu that could possibly facilitate easy adaptation to the English language include, for example; “ibhotela – butter, ubhusha- butcher, isaka-sack, ushukela – sugar and uthishela – teacher” These words give an idea about similarity to the English language and may assist with the progress and adjustment to communicating in English. Consequently, the need and significance for the introduction of bilingualism in schools, and more especially isiZulu in KwaZulu-Natal becomes emphasized. Analyses on languages demonstrate that cognitive theories and studies, support bilingualism, which highlights the role of language and culture in learning. Hence, in the province of KwaZulu- Natal, good acquisition of the English language could possibly be facilitated by bilingual instruction using isiZulu, within the classroom context. Such a stance not only assists with the attempt to master the English language, thereby improving comprehension, reading, writing, as well as spelling skills and knowledge, but this position will also serve to maintain and

develop mother tongue language, thus creating meaningful learning, language awareness and a strong sense of identity in learners. Bilingualism as a means of instruction will moreover benefit learners of all race groups as emerging participants of our society.

## **2.5. Language support services**

The investigation of learning programmes conducted by PRAESA on bilingualism, demonstrates that language support services or language maintenance improves the effectiveness of bilingual instruction in classrooms (International Literacy Conference: 1999).

## **2.6. Studies on Bilingual Instruction in Western Cape**

The Townsend and Versfeld study (1999), which was concerned with language development in the first three years of formal schooling (Grades 1-3) and conducted in the greater Cape Town area, demonstrated little evidence for effective learning in multilingual classrooms. This study compels the direction of attention to the works of Jean Piaget. Piaget (1969) viewed cognitive growth in terms of progressive stages that develop with increasing age. For Piaget, during the concrete operational stage, (approximate ages 7 – 11 years) there exists the presence of operational or functional thinking around concepts, which tend to become organized into a system.

Children begin to develop a sense of judgement and by the ages 11 –12 years, some amount of logical comprehension begins to unfold. According to Piaget, active experiencing is important for learning to take place. This proposal is in accord with that of Bruner (1966), who advocated that learning is an active process during which the learner constructs hypotheses, makes decisions and transforms information, using cognitive structures. Cognitive structuring provides meaning and organizes experiences. Bruner supported discovery learning at schools, meaning that emphasis was on “hands on” or genuine enquiry learning. For Bruner, intellectual development is enactive when the individual learns about the world through actions or objects and symbolic when individuals` describe their capacity to think in abstract terms.

In the study conducted in the Western Cape, on learning in multilingual classrooms, confounding variables could have affected the study results. The nature of the

multilingual equipment and resources used, lend itself to added investigation. Questions revolve around lesson preparation and whether or not the idea active or discovery learning was encouraged in order to promote enriching and consistent language lessons, given the age and level of cognitions of these children.

The assumption is that areas, which overlap in language learning experiences, need to provide elements of consistency and cultural interest. Non-stimulating lessons tend to have a negative influence on creativity and the desire to learn (McKay, 1998:3).

Another query to this study centres on learners' age and ability to learn new concepts. Whilst most studies promote early literacy learning since children adapt easier to the environment, signifying that because of the cognitive processes assimilation and accommodation, the successful transfer of skills, is promoted and the adaptation to a second language becomes easier. Consequently, also a sense of plurilingual identity develops. Other variables such as the attitude of the instructors toward teaching the mother tongue language may have also influenced the poor results of this study and the lack of desire and disinterest on the part of learners to study within this medium.

These variables link with ideas on the status of the English language.

## **2.7. The Status of the English Language**

On the scrutiny of the status of the English language, Phan Le Ha (2003) points out that English has gained itself prominence as a world language. English is a global language and a medium of intercultural communication. Therefore, native speakers of the English language, experience pride in owning the language of international communication (Phan Le Ha, 2003: 1-3).

Interconnected with the idea of English being a global language, Cal (2001) argues that poor and marginalized parents are aware of the returns of high – status languages such as English, and how this benefits the elite, but when these parents are allowed to make educated or informed choices, they tend to opt for bilingualism (Cal, 2001).

An interrelated myth is that European languages are supposed to have inherent worth, but all human languages are able to express speech and thought. Mother tongue languages have got to be included in such categories or classification of inherent worth. Alexandra (1989) disputes this proposition, commenting that the difference is that some languages have developed further, through publications (Alexandra, 1989: 56 – 68). Most of the literature interrelated with mother languages, seems to have

been told down through “word of mouth” or verbally within communities. Hence publications in the various mother tongue languages tend to be far and few.

Postulations are that a lack of publications does not provide a basis to dispute the value of and develop negative attitudes towards, these different languages.

Quane (2003) asserts the “one nation, one language myth” for a single unifying language has not necessarily brought about stability and educational success in many parts of the world, for example Somalia, Burundi and Rwanda. Quane’s research has inferences for the effectiveness of teaching English as a unified medium of instruction, which some politicians tend to view as beneficial to the South African context and education in general (Quane, UNESCO, 2003).

Therefore, parent, learner and teacher “education” on the significance of bilingualism as a tool to promote both proficiency in English as well as maintain and develop mother tongue languages, becomes central to growth in education, the promotion of individual culture or identity and also, tolerance towards diversity. Knowledge in the area is also fundamental to the principles entrenched in the South African Constitution and inevitably, nation building.

## **2.8. Opportunity for learners 12 years and upward.**

### **Gaining proficiency in the English language.**

The expansion of the culture – cognition debate lends itself to a major problem facing many South African learners, which is the inability to read and comprehend in the English language in the intermediate and senior phases, or at the ages of eleven to twelve years upward. This is the probable outcome of their lack of opportunity to acquire skills in the English language earlier on. Since this study is also concerned with bridging the gap amongst these learners and providing possible solutions as redress to past inequalities in the South African Education system, an understanding of cognitions and the late transfer of skills to the English language become important.

Piaget asserts that during the formal operational and final stage of intellectual development there is fundamental re orientation in thought. Thought at this stage can be described as hypothetical – deductive in nature, meaning that formal intelligence operates systematically from the general to the specific. This has implications for language acquisition at a later age, for it appears that the effectiveness of a second

language would meet with equal success at the formal operational stage of cognitive development, as the individual would then be able to make inferences from generalized to specific information, hence consolidating language concepts, learned earlier, with greater efficiency, thereby developing higher levels of language proficiency. This would mean that learners from ages twelve years and upward could still have opportunity to learn, develop and gain proficiency in the English language.

Although Piaget has been criticised for neglecting cultural dimensions in his study, he did place emphasis on active experiencing whilst learning, which we postulate possibly may overlap with creativity and imagination, which appear central to the cognition and culture relationship.

## **2.9. Language and Assessment.**

### **The South African Curriculum Perspective**

Fundamental to language development is the interrelated idea of assessment. Strategies of how achievement will be monitored managed and evaluated is central to developing competencies in a language. The RNCS proposes an additive approach to the multilingual stance, experienced in the South African context. With this approach, schools are able to add on languages, to their language policies. However, the languages chosen must be representative of needs of the school. Fakir and Waghid (2004) criticised the South African Curriculum on the basis that while the Outcomes Based Education Curriculum, seems to operate from a strategic paradigm, it perpetuates ideological hegemony, as it shows a tendency to reproduce educational and societal inequities. Fakir & Waghid (2004) concludes that the curriculum does not show much promise for critical emancipation and therefore, does not engender space for creativity, which it consequently endeavours to express (Fakir, & Waghid, 2004:60). Outcomes Based Education has since been streamlined as well as modified and currently referred to as the “Revised National Curriculum Statements”. Prescribed within the RNCS are approaches to teaching and assessing home languages, first additional and second additional languages. Each language category has its own set of assessment criteria, which vary, according to the assumption that learners’ knowledge and skills range along a continuum from very little to moderate or competent, on a particular language type. Assessment techniques analogous methods of teaching and learning, inevitably embrace facets of the culture – cognition debate.

Assessing individuals' with dissimilar backgrounds, receives increasing and ongoing attention. Cross cultural tests aim at ruling out boundaries along which cultures vary. Boundaries may include aspects such as prior knowledge, time limits and language used in the test. Culture free tests control for the content of test material, as specific cultures may lack the precise vocabulary, stipulated in the prescribed test.

## **2.10. Psychological assessment**

The Senior South African Individual Scales Revised (SSAIS- R), an intelligence test, which will be used in this research design, has been developed for English and Afrikaans speaking learners' from the ages 9 years to 16 years. Norm scores were based on these population groups (Human Research Council, 1991:1). This test is unsuitable for testing cultural minorities in South Africa. The test measures information processing in terms of input, integration storage and output. Differences in terms of socio- economic background, emotional factors and intellectual potential are not considered. These discrepancies are vital when assessing the cognitions of diverse groups of people as present within the South African context. The S SAIS – R consists of 5 subtests on the Verbal scales and 4 subtests on the Non-verbal scales. Additional subtests include “memory for digits and coding.” (Human Research Council, 1991) Verbal scales measure knowledge, content or crystallized abilities, whilst the non-verbal scales measure fluid abilities a tendency towards lateral thinking (Anastasi, 1988: 250.). The language used in the test and time limits set (speed) allocated for different subtests can be postulated to have a damaging effect on learners' of varied cultural groups. As attempted to establish and reiterate, the cultural milieu within which the individual is raised, affects cognitive skills and knowledge acquired. Tests like the SSAIS –R, which are developed within a single cultural framework, can assist in ascertaining the degree of an individual's acculturation to a specific culture, rather than provide a universal yardstick for measuring intelligence.

Contrastingly, dynamic assessment moves away from standardised testing, focusing attention on assessing the potential for growth in specific cognitive processes (Anastasi, 1988: 503).

The Learning Potential Assessment Device (LPAD) is a tool that operates on the principles of dynamic assessment. This approach is useful across cultures. Conversely, this study make use of language tests that are culturally biased or based

on the English medium of instruction and assessment, with the conjecture that such this type of assessment tool, when used unaided, as when with assessing English as a first language, disadvantages culturally diverse learners in South Africa. The need for bilingual instruction and testing or assessment becomes a necessity.

In accord with ideas of creativity, diversity and equality, which the curriculum appears to support, programme planning in education requires finance, funding and budgeting.

### **2.11. Financing bilingualism**

#### **A cost factor**

Education ministries, including that of South Africa are often concerned with finances or cost, when changing or considering change in the medium of language instruction at schools. However, resource allocation is essential to any educational innovation. Bilingual education both in Bolivia and Namibia were found to facilitate pedagogy.

An investment of time and money, together with commitment is required to prepare bilingual programmes. High quality material and teacher training become essential.

However, some studies explain that when weighting the cost of drop –out rates, per learner expenditure against that of bilingual schooling, bilingualism greatly reduces student wastage (Patrinós, & Velez, Working Paper, No 74.).

### **2.12.The South African Context and Bilingualism**

Presently in South Africa, the idea of twofold medium in language policies is gaining ground and the language in education policy, (LiEP), passed by the post apartheid government, in 1997, implicitly endorses dual medium of instruction (Mati, 2003:1-17). The RNCS proposes that in a multilingual country like South Africa, learners reach proficiency in at least two languages. The RNCS therefore suggests that learners become competent in an additional language, whilst their home language is maintained and developed. With regard to the amount of instruction time that ought to be utilized on languages, the LiEP recommends that children who speak different languages should be accommodated in the same class and notional time ought to vary according to the prescribed timetable for South African Schools (DoE, 2002:20).

Whilst English is viewed as the language of both educational and socio economic advancement and the LiEP in South Africa seeks to address the dominance of English and uplift the status and development of African languages. The LiEP provides guidelines for the development of a language policy within each school, obviously based on the needs of that particular school. It also stipulates explicit assessment standards that all learners must attain in each learning area, including the main language and additional languages (DoE, 2002: 9 –11).

Further, the South African pedagogical framework focuses on seven critical outcomes or academic requirements that all learners need to achieve before they leave school.

The challenges for South African classrooms then, are to make provision for sustained bilingual education, together with the appropriate teaching resources, in the attempt to promote the academic development of second language learners (Mati, 2003:2).

The responsibility lies with the relevant stakeholders in education, to ensure that this curriculum is sustained and the relevant resources, appropriately utilized.

### **2.13. Language Statistics in South Africa**

The percentage distribution of languages spoken as “first languages” in South Africa by 1996, are as follows: isiZulu 23.8%; Afrikaans 16.5 %; isiXhosa 16.3%Setswana; 9.5% English 8.7%; Sesotho sa Leboa; 7.7%; Sesotho 6.8%; seSwati 3.3%; Xitsonga 3.2%Tshivenda 1.8% and isiNdebele 1.2% (Census, 1996)

Mati, (2003) position is that, although only 8.7 % of the South African population use English as a medium of communication, which is viewed as the language of access for those who were previously oppressed. African people have come to perceive the English language as bridge towards accessing international literature, commerce and technology. In attempts to change perceptions and attitudes on the supremacy of the English language, Xola, (2003) further identifies the need to explore different models of bilingual education, as this would ensure the use of both the learners’ home language together with English as the language of instruction.

Also, the model of language instruction chosen, should qualify the development of cognitive and language skills necessary for learning across the curriculum. Hence, Cummins model of bilingual instruction, where, through the interaction with both lingos, language proficiency and achievement is established, becomes relevant (Cummins, 1981: 38).

Xola, (2003) argues that as South African schools move away from monolingual teaching, so too, should educators. They ought to be trained to use more than one language of instruction. Xola, (2003) maintains that all educators in South African public schools must be either multilingual or bi-lingual. If language support for learners' is to be provided, then all educators will have to be trained to teach in more than one language, in order to enable them to facilitate language learning in classrooms (Xola, 2003: 2). With the introduction of diversity in education, since the post – apartheid government, the view expressed by Mati becomes imperative, if a culture of teaching and learning is to succeed especially in less affluent schools. It is additionally argued that since curriculum 2005 is a pedagogical orientation that seeks to promote co-operative problem solving, meaningful communication between learner and educator, becomes imperative. The challenges of educational practice then, necessitate sustained provision for bilingual education, together with pre – service and in-service educator training programmes that will successfully empower teachers to implement such a programme.

#### **2.14. Status of African Languages in South Africa**

Studies conducted in The Western Cape schools, indicate the challenge for, not only, promoting isiXhosa, but also, attaching status to and enhancing the value of African languages in general. The greatest problem that these schools meet is that of attaching value to Xhosa or African languages. Studies conducted here show that English gained more status as the Language of Learning and Teaching (LoLT)

Non-English speakers find themselves in need of attaining some level of proficiency in English in order to function in jobs or in the contexts of the work and study worlds (Cobb, 1999:1). An historical review of past language- in- education policies in South Africa show that generally policies have been imposed using the “top – down” approach and without consultation with the people affected by these policies. Further, the implementation of such policies has been motivated by political rather than educational considerations. In South Africa, from 1910 onwards, language policies have reflected the political and economic power of certain sectors of society. English and Afrikaans were the dominating languages overlaid with strong political overtones. According to Xola, the impression from a survey of language in education models is that, these representations, or word symbols, seek to impose an ex- colonial language

as a medium of language and instruction (Mol). Xola asserts that as long as African languages are not used as the Mol, there will always exist a pressure to prioritise English. The point of departure then is that African languages should be taught in conjunction with English as the LoLT. Xola, (2003) postulates that in order for meaningful learning and teaching to occur, there must be a commitment to establishing methods that enable learners' to use their home language as well as English in the classroom (Xola, 2003: 9–11).

Postulations are that if cognitive and linguistic foundations are not adequately laid and developed in the primary school, then, there will be an inevitable mismatch eventually, between learner competence and the demands of the LoLT.

### **2.15. The Characteristic of Bilingual Models**

Bilingual education can be characterized as a way of delivering content-based subjects to learners, through the medium of a language that is not the mother tongue of the majority of the students who study through it (Toukomaa & Skutnab & Kangas, 1997: 2).

#### **The Goals of Bilingual Models**

These models, as assumed by the Threshold Theory, aim at developing two or more languages in persons by the process of moving them through identifiable levels and crossing through distinct thresholds in order to enhance cognitive skills.

#### **Models of Learning and Language**

Presumptions on second language acquisition ought to include both, a conjecture of language development as well as a theory of human learning.

According to the **Cognition and Conation Model**, in second language acquisition, mental structures in learning develop and change in a complementary way. In this cognitive model, The Vector Model is the simplest of inter language development (Beretta, 1991:493-511).

The position that this model assumes is that, knowledge and skills in second language, add on consistently and the learner gradually enhances speed of comprehension and language production (Young, 1988: 281-302). Knowledge and skills of the second language is in one direction only and parallel with acceleration in comprehension and

processing speed. There is no backsliding. Through the process of accretion, new knowledge in the second language can be developed during the acquisition of vocabulary from the conventional language. Studies conducted by Broeder et. al. (1988) demonstrate the growth of Dutch as a second language, over time, in adult learners. Similarly, Yorio (1989) reports on several studies, where second language adult learners used second language progressively and more extensively. In these studies the growth in lexicon exemplify a linear accretion of words and expressions. Such findings agree with those conducted by Schmidt (1990) These affirmations further develop the argument that bilingual modes of instruction are suggestive of increased levels of language proficiency.

The cognitive conative model addresses the concept of restructuring knowledge.

Second language learning also involves some amount of restructuring of knowledge, morphology, lexis and discourse. McLaughlin, (1988) reviewed the restructuring phenomena in second language learning and assert that language acquisition is initially stimulus -driven, with the child trying to closely match similar symbols or adult input. During the second phase of language acquisition syntactic generalizations are made (McLaughlin, 1990: 617 – 634). Restructuring also implies replacing rules with that of the target language. Finally restructuring involves the transfer of knowledge of words or language, using cognitive processing strategies. Further, the acquisition of second languages lends itself closely to cognitive theories, like that of Piaget's which focus on processes like assimilation and accommodation. Piaget viewed development from a biological perspective although he was aware of the importance on communicative forms of interaction and subject – object experiences in development (Chapman, 1988b: 31, 92-106). Piaget explained cognitive development in terms of concepts assimilation (incorporating new information into previously existing mental structures or schema).

In bilingual education we can make inferences that processes of assimilation are at work when the target learner incorporates new word patterns or sounds into his / her existing cognitive frame. During the process of accommodation new mental structures are formed. When new information does not fit into the child's mental picture, then new representations are created. Mental procedures of assimilation and

accommodation allow for the learners adaptation to the new language system, or experience (Solso, 1995:1). This theory has presumptions for bilingual education.

For bilingual instruction like that of isiZulu and English to flourish in classrooms, cognitive practices of restructuring, assimilation and accommodation are essential. Through such cognitive processes, knowledge and thereby language transformation and usage becomes possible. Hence cognitive methods for restructuring language become an integral part of curriculum development and bilingual education.

The mastery of the English language rivets around it being developed simultaneously with another language. It is assumed that assimilated ideas from the mother tongue, allows for the accommodation of new concepts derived from the English language.

Transformation occurs in second language acquisition, when knowledge structures become procedural through practice. Transformation attracts attention to the pragmatic use of the second language, which is necessary for bilingualism to succeed (Cohen, 1990: 9-11). Although traditional measurement theory assumed a learner to be a collector of facts and skills, this view in addition stresses the interrelationship between different types of meta- cognitive skills and physical action (Mislevy, 1993).

Further, Schumann (1991) studies on the neurobiology of emotions, holds that positive affect creates a desire to attend to incoming stimuli and learning only occurs, when new stimuli are attended to. Thus initial affective structures may influence how conceptual structures are elaborated and processed. Consequently, motivation also influences learning (Schumann, 1991: 667-684).

The practices of teaching, then, call on educational stakeholders to identify the need for relevant teacher expertise, careful curriculum planning, practical forms of teaching methods, at least during the initial phases of learning and the creation of a classroom environment that is conducive to language development for second language learners

This information connects with that set out in the document on curriculum planning for South African schools. Teachers are envisaged as key contributors to the process of transformation, who are qualified, competent, dedicated and caring, upholding values of human dignity, respect, democracy and social justice. The RNCS clearly defines educational objectives and associated outcomes, necessary for all learners. The learner envisaged is one who can think critically, organise and manage activities, work as a team member, communicate effectively and demonstrate good problem solving skills.

Educational activities ought to revolve around those of oral presentations, graphics, audio-visual resources as well as some amount of written work.

This model therefore presents a fundamental basis for the culture - cognition debate on language learning and bilingualism. The **cognitive- conative model** of human learning recognizes the richness and diversity of the cognitive and affective processes underlying learning, which makes an apt model to apply in the South African context for bilingual teaching and learning.

### **2.16. The Constructivist Model**

According to the Constructivist position, individual understanding involves the collective processes of self-experiences as well as communicative interaction with others. The review of this evidence suggests then, that children's understanding of mind develops gradually and in the context of social interaction, before skills are appropriated at an individual level. Sibaya, (1996) affirms that the acquisition of language and concepts are a dynamic process, where the child's level of understanding and language are coupled with specific contexts Sibaya et. al. (1996).

Studies conducted by Cole et al; 1999 indicate that the nature of relationships that children experience, influences their development, which includes the cognitive dimension. Application of the Constructivist Model becomes relevant for an understanding of the diverse South African context and education, in particular.

Bilingual teachers should become role models addressing the needs of the target learners and also ensuring opportunity for development and growth in two languages. The utilization of suitably trained teachers, needs assessment of underachieving groups, task appropriate activities, provision of suitable teaching material or resources and intensive support for these target learners, especially at the early stages of English learning emerge as significant (Bourne, 1989: 2).

The Constructivist Model is extremely relevant to South African classrooms and finds expression in the RNCS, which includes various strategies to boost diversity in school settings. Some of the approaches include, nurturing a culture of communication and participation in schools, promoting competent teachers, who are worthy of emulation,

Infusing the classroom with a culture of human rights, learning about the rich diversity of cultures, focusing on bilingualism and multilingualism and promoting ethics, together with non-racism at schools.

### **2.17. The Lexical Threshold**

Within the context of the increasing demand world – wide for English, Alderson (1984:1) articulates a particular position on reading. He maintains that when reading is a problem, then poor readers will make poor readers in any language. If the language problem however, stems from missing knowledge, related to lexis, syntax and discourse patterning, then an English course for second language learners can be helpful. According to Alderson (1984) word knowledge is the key ingredient, which contributes to academic English reading success in second language readers. In search for a “lexical threshold” Alderson proposes that vocabulary (number of words a learners knows or can identify) and comprehension (knowledge and understanding of a particular text) be explored further (Alderson 1984: 1-27).

The challenge for South African education and KwaZulu -Natal schools specifically then is to design bilingual reading programmes, that identify the lexical threshold for each second language learner and in addition, permits word acquisition and subsequently, word understanding, at an accelerated pace, possibly by method of bridging or scaffolding programmes so that lexical growth and reading success are achieved within a suitable time slot and without disadvantage to the target learners.

The inference made is, that identifying the lexical threshold in second language learners emerges as significant, for good academic performance. According to Vygotsky (1978) the difference between what an individual accomplishes on his/ her own (developmental level) and what he/ she can achieve when assisted by capable peers and adults (potential level) is defined as the “zone of proximal development”(European Conference on Educational Research, 2000: 19 –21). Central to the zone of proximal development is the idea that individuals can learn through social interaction. Vygotsky asserts that children are able to internalise words, sentences and other symbolic systems by internalising the language of experienced members of a community. Such skills are later transferred to an individual plane. Concurrent to the idea of zone of proximal development, is that of scaffolding.

In scaffolding, the teacher aims to assist the child in the learning of mental processes, which are difficult to grasp, in anticipation of the person being able to eventually utilize such mental processes on their own. Scaffolding is a process that occurs within the zone of proximal development. Scaffolding in education would mean a combination of mental and physical structures (European Conference on Educational Research, 2000:19 – 21).

Fieldwork conducted in schools in Norway (1997 – 1998) show that working with the zone of proximal development and scaffolding has proved successful for young children in the country (European Conference on Educational Research, 2000:19-21).

It can be conjectured from Alderson (1984) that recognizing lexical thresholds together with the impact of prior knowledge, new information, is learned. Following on Vygotsky's ideas it becomes apparent that the language one speaks influences ones thinking and worldview. Through appropriate teacher support and the development of cognitive processes like that of scaffolding, academic performance is increased. Implications are that the classroom context and additionally, the language the individual uses, become important vehicles in the acquisition of knowledge. Vygotsky's concepts have additional implications for the teaching of language in schools. The learning process envisaged when teaching reading and languages, is that processes ought to be to be dynamic and reciprocal with appropriate teaching and learning material. Educators need to be suitably trained in both the languages that they teach in order to support language development in schools. The classroom milieu and teaching methods also need to be carefully planned and the target learner's problem solving skills needs to be enhanced. Motivating and involving learners fully in language tasks are central elements to teaching and learning. Teachers should serve as adult models, which develop appropriate thinking and working skills in the classroom. Bilingual educators need to choose tasks that learners can manage, but also feel somewhat challenged by to some extent. Teaching programmes ought to focus on conquering learner frustration, whilst developing excitement and a way of attaining learning goals. Linden (1989) maintains that teachers should aim at increasing the complexity and difficulty of tasks, at the same time as slowly stepping down their level of support (European Conference on Educational Research, 2000: 19 –21).

The RNCS curriculum document proposes methods of language development and assessment standards that surface as congruent with those ideas expressed by Vygotsky.

## **2.18. Code switching**

### **A strategy for Bilingual Teaching**

Another strategy that affirms learning in other languages, as well as English, is that of code switching. In these situations, reading and writing of the educator and learner takes place in English, whilst the speaking of the learner and educator is articulated in the home language, for example isiZulu. This naturally evolving strategy appears to be beneficial, when learning the content of subjects (Wieden, & Nemse.1991: 1).

## **2.19. Summary**

Bilingual education includes some amount of instruction in the classroom, typical of the learners' mother tongue whilst incorporating an additional dominant language, example English in which the child gains proficiency. Further, when working with the needs of a school and their respective communities, language policies and practice in schools, ought not ignore the importance of mother tongue, which in KwaZulu – Natal tends to be isiZulu. The National curriculum statements, proposes that in a multilingual country like South Africa, learners become skilled in at least two languages and has accommodated these proposals in the “Language in Education Policies” which implicitly endorse dual medium of instruction. Several studies conducted show that language, apart from being a vehicle through which knowledge is acquired, also has implications for identity and identity formation. Hence the position that this study holds is that language is socially constructed and has reference to how learning takes place. Language abilities tie with cognitive theories. Such presumptions emphasize the knowledge of past learning experiences as a pre requisite for acquiring additional information, the interrelationship between languages, culture and identity. Consequently the mastery of the English language rivets around developing simultaneously with another language that the child is familiar with or the mother tongue. Children from 12 years upwards, also have the ability to gain proficiency in the English language, as at this stage, thought can be described as hypothetical – deductive, and so the individual, would be able to make inferences

from generalized to specific language concepts, thereby developing language skills in English. From the understanding gleaned on the nature and theories related to bilingualism; it can be concluded that the study conducted in the Western Cape on multilingual classrooms, *the demonstration of little evidence of effective learning*, would appear to be related to confounding variables such as discovery learning, inconsistency in cultural interest and the “status of the English language” which possibly could have impacted on these study results. Research indicates that English is a global language and native speakers of this language experience pride in owning a language of international communication, but once educated on languages and allowed to make informed choices, most tend to opt for bilingualism.

There are numerous models on language acquisition, but the basic stance is that the child’s understanding of language concepts develops in a social context before it is appropriated at an individual level. Further the difference between an individuals’ developmental and potential levels, can be achieved through social interaction and scaffolding, where the teacher initially to assist the child with the learning of mental processes, until the child becomes capable of such achievement on his/ her own. Finally, code switching affirms learning in English as well as another language such as isiZulu, where reading, and writing happen in English, whilst instruction and speaking of the educator and learner is articulated in the home language.

Ultimately, this study utilizes as *achievement tests*, the subtests vocabulary and comprehension from the S SAIS R, intelligence battery for assessment purposes with the contention that this type of appraisal tool, when used unaided, disadvantages culturally diverse learners within the South African context. On examination of the cost factors, studies explain that when weighting drop- out rate expenditure, per learner, bilingual schooling greatly reduces financial wastage on students. An understanding of the nature and theories of bilingualism provides the means for permitting experimentation into whether or not such a strategy is feasible in education in KwaZulu Natal schools. In an attempt to prove hypotheses related to the study aims on bilingual education, a study was conducted at an individual school namely, the “Green School.”

## CHAPTER THREE

### RESEARCH MEHODOLOGY AND DESIGN

#### 3.1. Introduction

This research was conducted at the Green School in the Pietermaritzburg Region of KwaZulu – Natal. This primary school has a total population of approximately 450 learners, which is inclusive of both the junior and senior levels. The Senior Phase, which is the setting in which this study was conducted, consists of approximately 280 learners in total, aged between 9 to 16 years. The age range is related to complications with late admissions of a few learners, who come from outlying areas.

A large percentage or roughly 70% of the learners admitted at the Green School are **African**, with **isiZulu** as the home language. Most reside at the informal settlements nearby. Hence the Green School is situated in a low socio economic area.

The remainder of learners at the school are Indian (as this was an institution governed by the “Ex House of Delegates”) with a few **Coloured English** learners, also attending. Observations are that the **Indian** learners (Home language **English**) are slowly phasing out of the school, with an increase in the enrolment of African children.

#### 3.2. The study sample

This study is quantitative in character and sampling was of a systematic nature.

Systematic sampling procedures are viewed to be unbiased. Sampling was done by **random selection**, so as not to introduce bias into the sample population. Random sampling procedures ensure that each person in the sample has equal opportunity or probability of being selected. A table of random numbers was used to select the sample from the population of learners at the school. Every “nth” or 5<sup>th</sup> number using the table of random numbers was assigned to the experimental and control group, respectively for the population under study.

**TABLE ONE: Distribution of subjects in the study sample:**

Criteria						
Sex	Male	Female				
	29	35				
Grades	Gr4	Gr 5	Gr 6	Gr7		
Learners Experimental	8	8	8	8	Total (n)=32	
Learners control	8	8	8	8	Total (n)= 32	
Age in Years	9	10	11	12	13	14
	16					
						TOTAL N = 64

**RANDOM DISTRIBUTION OF SUBJECTS: N = 64**

**TABLE 2: DISTRIBUTION OF SUBJECTS FOR PRE-TEST POST-TEST STUDY**

<b>LANGUAGE OF INSTRUCTION</b>				
<b>BILINGUAL (EXPERIMENTAL)</b>			<b>ENGLISH (CONTROL)</b>	
	<b>HOME LANGUAGE:</b>	<b>HOME LANGUAGE:</b>	<b>HOME LANGUAGE:</b>	<b>HOME LANGUAGE:</b>
	<b>ISIZULU</b>	<b>ENGLISH</b>	<b>ISIZULU</b>	<b>ENGLISH</b>
<b>GRADE 4</b>	4	4	4	4
<b>GRADE 5</b>	4	4	5	3
<b>GRADE 6</b>	5	3	3	5
<b>GRADE 7</b>	2	6	4	4
<b>TOTAL</b>	<b>15</b>	<b>17</b>	<b>16</b>	<b>16</b>

**N= 64      n = 8**

**KEY:**

E = Experimental group

C = Control Group

**3.3. Procedure for the study**

Parents and relevant stakeholders of the participants were informed accordingly, on the rationale behind this research and informed consent was obtained.

This study was conducted outside of the school time, ensuring that the regular school curriculum was not disrupted in any way. The learners were randomised to experimental and control groups. The tester performed a pre- test, over two days, (vocabulary subtest was administered on first day and the comprehension subtest on the following day) and subjects were given 50 minutes per day to read and write down their responses. A similar procedure was followed for the post – test, which was at the end of the programme. The experimental group was thereafter subjected to four weeks of bilingual instruction, which included that of both isiZulu and English. A Zulu teacher aide was selected to tutor in the experimental group, using bilingualism as the medium of instruction. The control group were instructed in “English only” Language activities took the form of vocabulary, comprehension role-plays and speeches in both groups.

The researcher was present throughout the testing procedure was to ensure proper ethics, with daily and relevant observations conducted, as well. The tester also considered all relationship dynamics during the testing process.

#### **3.4. Bilingual assessment**

This study assesses bilingualism in the classrooms through the utilization of trained bilingual aides who are also suitable role models for the learners. Teaching methods in these bilingual classrooms included those of problem solving, critical thinking and communication amongst the participants, together with fostering an environment for the tolerance of cultural diversity. Various teaching and learning resources were used during lesson planning such as audio- visual aides, graphics, and oral presentations, collectively with written work. The psychological assessment takes the form of a pre test, post – test randomised design and items listed on the vocabulary and comprehension subtests of the SSAIS R was used to test learners’ understanding of English concepts and level of comprehension, before and after the implementation of bilingual instruction. Although the SSAIS R is an intelligence test, the items, like those found on the vocabulary and comprehension subtests, closely resemble achievement tests like those administered by teachers. Since the scales on the SSAIS R will be used for diagnostic purposes only, and not to measure the intelligence of learners, the timeframe between the pre and post-tests will not be interpreted as significant, i.e. these subtests will be administered again after one month. The S SAIS

R is a standardised intelligence test; which has been proved valid and reliable. Whilst the assumption may be that this intelligence test is not culture fair, it is therefore used in this study for diagnostic purposes only.

### **3.5. The research instruments and method of data scoring**

Academic performance was assessed within the context of a bilingual programme, which took the form of a **pre- test – post – test** research design. As mentioned, the test subjects were randomised into experimental and control groups. The research instruments used were the **vocabulary** and **comprehension** subtests of the S SAIS R. These were utilized as achievement tests rather than function as subtests from the battery of the intelligence test. The time interval between the pre-test and post-test was 4 weeks.

#### **[Pre- test]**

Refer to Annexure “A”

Each learner was given worksheets with the following information:

The pre- test on **vocabulary** consisted of 5 pages with 4 pictures on each page. A list of vocabulary words, relevant to these pictures (as per S SAIS R vocabulary subtest,) appeared under these, on each page. The learners were asked to “Look at the four pictures presented on each page and write down the word that best describes each picture in the space provided and from the list given below.” The test or research material was novel to the learners at this point. Learners were scored one point for each correct response and zero for an incorrect answer. The total score = 50 points.

Refer to Annexure “B”

A pre-test on **comprehension** was conducted the following day. Learners were given 15 items (questions) as set out in the S SAIS R comprehension subtest and asked to read these statements and write down their responses to each item or question. The respondents were scored 2, 1, or 0 points depending on their written responses on each item or statement. The scoring technique used was as per S SAIS R. The total score = 30.

### 3.6. Test reliability and validity

The test reliability and validity of the S SAIS R has already been proven, as this is a standardized method of assessment. The internal validity of this experiment appears to be strong, as the study design controls for extraneous variables. There exists a large probability that the external validity or factors that contribute to making this experiment representative of the population outside the school setting is justified.

In this instant, the selected items from the S SAIS R were used as *achievement tests*, similar to those drawn up by teachers, although not all items on the test drew on the learners' life experiences, as the norms for this test device have been standardized for English and Afrikaans speaking learners from 7 to 16 years of age. Hence the tests were not totally "culture fair"

[Post – Test] refer annexure A. and B. (at the end of the study)

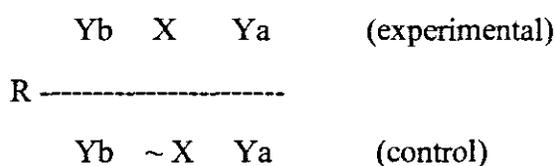
After four weeks of bilingual instruction, academic performance, using a post – test (pre- test repeated) was conducted and the learners were again scored on their academic performance. Results were evaluated by analysing the differences between the pre-test and post- test scores on the combined vocabulary and comprehension subtests.

### 3.7. The research design

Research designs are important for the facilitation of structure, or to provide a framework for an experimental study. The design assists with the statistical analysis and conclusions that are drawn from such investigations.

The research design selected for this study is:

#### RANDOMISED CONTROL GROUP PRE- TEST POST- TEST DESIGN



By means of this design, subjects were assigned to the experimental group (top line) and control group, (bottom line) at random. A pre- test was conducted and a measure of scores for “Yb” or the dependent variable was obtained. In this study, a pre- test was conducted for academic performance or achievement in vocabulary and comprehension, using English as the medium of instruction, with both the groups. The experimental manipulation “X” was performed on the experimental group, and in this study, bilingualism as the medium of instruction was introduced. After one month, both the groups were again measured on “Ya (academic performance) and the difference between these; Ya and Yb, was statistically tested, i.e.  $Yb - Ya = D$ .

Hence, the pre- test, post –test randomised research paradigm was utilized as the structure or research paradigm for a factorial design and to test for statistical significance between the dependent and independent variables.

Factorial analysis, calculation of the “F” ratio, the Sheffe Test and Tukey Method are included in the study design and to support the test for statistical significance.

### **3.8. Summary**

This study was conducted at the Green school, which has a diverse population of scholars, most of whom are African, with isiZulu as the home language. This school also consists of Indian and a few Coloured learners, whose home language is English.

This study is quantitative in nature, with the sample selection being systematic and random, ensuring that each person in the sample had an equal probability of being selected. The nature and purpose of the study was clearly explained Parents, relevant stakeholders of and including the research participants, were updated on the study. Informed consent was obtained. The research was conducted out of school time and learners were randomised into experimental and control groups. The research design took the form of a pre – test post – test randomised control group design. A pre- test was performed over two days using the vocabulary and comprehension subtests respectively, of the S SAIS R intelligence battery. The experimental group was thereafter subjected to 4 weeks of bilingual instruction (isiZulu and English), using stimulating teaching methods. The control group received a placebo, but since the programme was run outside of school hours, some activities had to be conducted. These took the form of role – plays quizzes and speeches. After 4 weeks a post –test was conducted. (pre- test repeated). The differences between the pre and post tests,

$Y_b - Y_a = D$  was statistically tested. Academic performance was assessed using the vocabulary and comprehension subtests, similar to those *scholastic* tests administered by teachers. Learners were scored as per S SAIS- R. The S SIAS-R has norm scores for English and Afrikaans speaking learners from 7 to 16 years of age. This test devise is a standardized method of assessment and the test validity and reliability has already been proven. However, this assessment tool is not culture fair, as it is not totally representative of diverse population groups such as those present at the Green school. As discussed, both the subtests were uses as achievement rather than intelligence tests. Factorial analysis, calculation of the “F”ratio, the Sheffe Test and Tukey Method were included in this study to test for statistical significance. The researcher was present throughout the testing procedure to ensure that the processes followed, were relevant and ethical.

## CHAPTER FOUR

### ANALYSIS AND INTERPRETATION OF RESULTS

#### 4.1. Introduction

In this chapter the data gathered will be examined carefully.

Data collated from Table 3 (4.1) **data and summary of calculations for a factorial design** below, will be utilized in this chapter. Data gathering procedures will be studied and interpreted, using appropriate methods of analyses. Further, the results of the study will also be explained. This study takes the form of a factorial analysis, using the randomised control group, Pre-test, Post-test Design.

#### 4.2. TABLE 3: Data and summary of calculations for factorial design

LANGUAGE OF INSTRUCTION												
BILINGUAL (EXPERIMENTAL)						ENGLISH ONLY (CONTROL)						
HOME LANGUAGE: ISIZULU			HOME LANGUAGE: ENGLISH			HOME LANGUAGE: ISIZULU			HOME LANGUAGE: ENGLISH			TOTAL ROWS
VS	CS	TOT	VS	CS	TOT	VS	CS	TOT	VS	CS	TOT	
6	6	12	3	3	6	4	3	7	0	4	4	
4	6	10	6	5	11	2	2	4	3	2	5	
5	6	11	4	5	9	7	4	11	1	3	4	
10	8	18	4	5	9	3	4	7	14	2	16	
n = 4			n = 4			n = 4			n = 4			n = 16
$\Sigma = 51.0$			$\Sigma = 35.0$			$\Sigma = 29.0$			$\Sigma = 29.0$			$\Sigma = 144$
-			-			-			-			-
X = 12.75			X = 8.75			X = 7.25			X = 7.25			X = 9
$\Sigma X^2 = 689$			$\Sigma X^2 = 319$			$\Sigma X^2 = 235$			$\Sigma X^2 = 313$			$\Sigma X^2 = 1556$

GRADE 4

<b>GRADE 5</b>	<b>VS</b>	<b>CS</b>	<b>TOT</b>	<b>VS</b>	<b>CS</b>	<b>TOT</b>	<b>VS</b>	<b>CS</b>	<b>TOT</b>	<b>VS</b>	<b>CS</b>	<b>TOT</b>	
	3	5	8	5	5	10	2	4	6	3	3	6	
	7	6	13	3	6	9	1	4	5	4	5	9	
	8	11	19	5	8	13	4	6	10	4	6	10	
6	3	9	2	6	8	4	4	8					
							2	9	11				
	n=4		n=4			n=5			n=3			n=16	
	$\Sigma = 49$		$\Sigma = 40$			$\Sigma = 40$			$\Sigma = 25$			$\Sigma = 154$	
	-		-			-			-			-	
	X = 12.25		X = 10			X = 8			X = 8.33			X = 9	
	$\Sigma X^2 = 675$		$\Sigma X^2 = 414$			$\Sigma X^2 = 346$			$\Sigma X^2 = 217$			$\Sigma X^2 = 1652$	
<b>GRADE 6</b>	<b>VS</b>	<b>CS</b>	<b>TOT</b>	<b>VS</b>	<b>CS</b>	<b>TOT</b>	<b>VS</b>	<b>CS</b>	<b>TOT</b>	<b>VS</b>	<b>CS</b>	<b>TOT</b>	
	6	4	10	0	2	2	2	5	7	2	1	3	
	4	3	7	2	4	6	2	3	5	2	4	6	
	1	6	7	3	7	10	0	6	6	1	4	5	
3	8	11							0	11	11		
2	5	7							3	4	7		
	n=5		n=3			n=3			n=5			n=16	
	$\Sigma = 42$		$\Sigma = 18$			$\Sigma = 18$			$\Sigma = 32$			$\Sigma = 110$	
	-		-			-			-			-	
	X = 8.4		X = 6			X = 6			X = 6.4			X = 6.88	
	$\Sigma X^2 = 368$		$\Sigma X^2 = 140$			$\Sigma X^2 = 110$			$\Sigma X^2 = 240$			$\Sigma X^2 = 858$	
<b>GRADE 7</b>	<b>VS</b>	<b>CS</b>	<b>TOT</b>	<b>VS</b>	<b>CS</b>	<b>TOT</b>	<b>VS</b>	<b>CS</b>	<b>TOT</b>	<b>VS</b>	<b>CS</b>	<b>TOT</b>	
	4	3	7	5	3	8	5	4	9	0	2	2	
	5	8	13	6	2	8	2	4	6	2	4	6	
				2	3	5	3	2	5	3	4	7	
			4	3	7	4	4	8	4	9	13		
			3	5	8								
			3	5	8								
	n=2		n=6			n=4			n=4			n=16	
	$\Sigma = 20$		$\Sigma = 44$			$\Sigma = 28$			$\Sigma = 28$			$\Sigma = 120$	
	-		-			-			-			-	
	X = 10		X = 7.33			X = 7			X = 7			X = 7.5	
	$\Sigma X^2 = 218$		$\Sigma X^2 = 330$			$\Sigma X^2 = 206$			$\Sigma X^2 = 258$			$\Sigma X^2 = 1012$	

TOTAL  
COLUMNS

Nc= 15 ΣXc= 162 ΣX <sup>2</sup> = 1950	Nc=17 ΣXc= 137 ΣX <sup>2</sup> = 1203	Nc=16 ΣXc= 115 ΣX <sup>2</sup> = 897	Nc= 16 ΣXc= 114 ΣX <sup>2</sup> = 1028	<b>TOTAL COLUMNS/ ROWS</b>  Nc= 64 ΣXc= 528 ΣX <sup>2</sup> = 5078
--	---	--	--	--

**KEY FOR THE ABOVE TABLE**

vs = difference between Pre-test Post-test vocabulary scores

cs = difference between Pre-test Post-test comprehension scores

tot = total of vocabulary and comprehension scores (performance)

c = column

r = rows

**4.3. TABLE 4: Final analysis of variance**

SOURCE	ss	df	ms	F	F cv @ 0.05
Rows	78.50	(r-1) 3	26.17	<b>4.06</b>	@ 3 & 48 df = 2.81
Columns	96.13	(c-1) 3	32.04	<b>4.97</b>	@ 3 & 48 df = 2.81
Interaction	237.87	(3x3) 9	26.43	<b>4.10</b>	@ 9 & 48 df = 2.09
Within cells	309.50	(16 x 3) 48	6.45		
TOTAL	722.00	63			

df for within cells

$$= rc(n-1)$$

$$= 4 \times 4(4-1)$$

$$= 48$$

**KEY:**

Uez = isiZulu experimental group

Ucz = isiZulu control group

Uee = English experimental group

Uec = English control group

#### 4.4. Procedure for computing the statistics

The null hypotheses tested are:

1. For rows: -  $H_0: U_{gr4} = U_{gr5} = U_{gr6} = U_{gr7}$
2. For columns: -  $H_0: U_{ez} = U_{ee} = U_{cz} = U_{ce}$
3. For experimental/ control: -  $H_0: U_e = U_c$
4. For the interaction: -  $H_0: \text{All } (U_{rc} - U_r - U_c + U_t) = 0$

For the interaction, the hypothesis is that the population cell means are equal after the effects of language of instruction, home language spoken by the learners and level of education have been removed.

For this study the level of significance is at the 0.05 level.

##### 4.3.1. Procedure for computing statistics: (refer to Table 1 for distribution)

- Refer to Table 3 for the data and summary computations for the Pre-test and Post-test factorial analysis of variance.
- The test statistics were computed by using basic statistical procedures for a factorial design, with 3 independent variables viz:

- *Language of instruction* viz. bilingual instruction for the experimental and English only, for the control group.
- *Home language* of learners, viz. isiZulu and English groups
- *Level of education*, viz. grades 4,5,6 and 7.

#### **4.5. The Research Paradigm and Factorial ANOVA**

As mentioned, the statistical design is factorial, with 3 factors, or independent variables tested simultaneously, viz. language of instruction, home language of learners, level of education. Subsequently, procedures for analysing the data take the form of a factorial ANOVA.

For testing the 1st independent variable, i.e. language of instruction, the 64 subjects were randomised into two groups, experimental and control.

The experimental groups (n= 32) were subjected to a bilingual method of instruction. The control group (n = 32) was instructed in English only.

With the testing of second independent variable, i.e. home language of learners' consisted of 4 groups (N= 64). The 1<sup>st</sup> group, learners with home language, isiZulu (n= 15) were randomised to the experimental group. The 2<sup>nd</sup> group (n=17) learners with home language English were also randomised to the experimental group. The 3<sup>rd</sup> group (n=16) comprising of learners with home language isiZulu were randomised to the control group. The 4<sup>th</sup> group (n=16) of learners with home language English were also randomly assigned to the control group.

The third independent variable, i.e. level of education consists of four groups, ranging from grades 4 to 7. For each grade (n =16) learners are randomly assigned to the experimental group consisting of (n = 4) learners with home language isiZulu and (n = 4) learners with home language English.

Similarly, learners were randomly assigned to the control group consisting of (n = 4) learners with home language isiZulu and ( = 4) learners with home language English.

The dependent variable is the achievement scores attained by each of the 64 learners. The scores are tabulated in 3 columns within each of the 16 cells of the factor matrix. The first column in each cell is the vocabulary test scores (VS) and the adjacent column is the comprehension test scores (CS). In the third column, the scores obtained are combined to give a total score (TOT). Every achievement score is the difference between the Pre-test and Post-test.

The variation in the factor matrix consists of:

- Variation between rows (SSr)
- Variation between columns (SSc)
- Variation between the interaction (SSrc)
- Variation within the cells (SSw)

#### **Calculation of the F Ratio** (Refer calculation of ANOVA)

Using the information below from the factorial ANOVA, the F ratio was calculated:

- $\Sigma T^2_r = 70\,952$
- $\Sigma T^2_c = 71\,234$
- $\Sigma T^2_{rc} = 19\,074$
- $SS_r = 78.50$
- $SS_c = 96.13$
- $SS_{rc} = 237.87$
- $SS_w = 309.50$
- $SS_t = 722$

#### 4.6. Interpretation of final analysis of variance (Refer table 3)

Computing the test statistic:

Using the statistical formulae for a factorial ANOVA, the following were calculated:

- Sums of squares (SS), means of squares (MS), the frequency distribution ratio (F) and the critical value of the F ratio (F<sub>cv</sub>).
- Computation of the F ratio is the quotient when the two mean squares are divided.
- The F ratios in this experiment were  $SS_r/SS_w = 4.06$ ,  $SS_c/SS_w = 4.97$  and interaction  $SS_{rc}/SS_w = 4.10$ .

The F<sub>cv</sub> of SS<sub>r</sub> at 3 and 48 df (degrees of freedom) are 2.81 at the 0.05 level of significance as derived from the population distribution table. The F<sub>cv</sub> of the SS<sub>c</sub> is also equal to 2.81 at 3 and 48 df. For the SS<sub>rc</sub> at 9 and 48, the F<sub>cv</sub> is equal to 2.09. When the computed F ratio is less than or equal to the F<sub>cv</sub> then the probability that the observed sample means would have appeared by chance or due to random sampling holds true. In each of the sources, i.e. the rows, columns and interaction, the computed F value is greater than the F<sub>cv</sub>, or is statistically significant.

Therefore the null hypothesis is rejected and the alternate hypotheses accepted.

#### 4.7. Testing the hypotheses

In this study we have 4 null hypotheses:

- Ho: U<sub>e</sub> = U<sub>c</sub>  
There is no difference between the experimental and control groups.
- Ho: U<sub>g4</sub> = U<sub>g5</sub> = U<sub>g6</sub> = U<sub>g7</sub>  
i.e. there is no difference in the obtained scores amongst the four grades, ranging from grades 4-7.

- $H_0: U_{ez} = U_{ee} = U_{cz} = U_{ce}$

Where  $U_z$  is the variation in the column of isiZulu speaking learners assigned to the experimental group.

$U_{ee}$  is the English-speaking learner assigned to the experimental group.

$U_{cz}$  is the isiZulu-speaking learners assigned to the control group.

$U_{ce}$  is the English-speaking learners assigned to the control group.

- $H_0: \text{All } (U_{rc} - U_r - U_c + U) = 0$

For the interaction, the hypothesis is that the population cell means are equal after the effects of language of instruction, home language of the learner and level of education have been removed.

#### 4.7.1. Setting the criterion for rejecting the null hypotheses ( $H_0$ )

The sample distribution for the  $H_0$  for both the rows and columns is the F ratio, with 3 and 48 df. We find from the F distribution tables. (Stockburger, 2001) that the  $F_{cv}$  at  $\alpha = 0.05$  are both equal to 2.81.

The sample distribution for the interaction hypothesis is the F distribution with 9 and 48 df, with the  $F_{cv}$  at  $\alpha = 0.05$  is equal to 2.09.

#### 4.7.2. Rejection or retention of null hypotheses [ $H_0$ ]

From the final ANOVA (table 4), we find that for all null hypotheses the observed F ratios of 4.06, 4.97 and 4.10 all exceed the  $F_{cv}$  of 2.81, 2.81 and 2.09 respectively. Therefore, all null hypotheses are rejected, implying that the population means for all three independent variables and their interactions are statistically significant at the  $\alpha = 0.05$  level. Subsequently, the population means differ significantly and cannot be attributed to sampling fluctuation. The deduction is that the mathematical difference calculated, is solely beyond that of chance. These findings characterize the effects of the independent variables on achievement scores obtained. (dependent variable)

We extrapolate from the above:

### **The null hypothesis for rows**

- $H_0: \mu_{g4} = \mu_{g5} = \mu_{g6} = \mu_{g7}$  is rejected.

Since the sample number for each row is equal, ( $n=16$ ) the Tukey Post Hoc Multiple Comparison procedure will be used to determine, which pairs(s) of means differ significantly.

### **The null hypotheses for Columns**

- $H_0: \mu_e = \mu_c$
- $H_0: \mu_{ez} = \mu_{ee} = \mu_{cz} = \mu_{ce}$  are also rejected.

It is concluded that the sample means for learners (isiZulu, English) randomised to either the experimental or control groups differ significantly.

Since the number of learners in each column are unequal, (15,17, 16, 16) the Scheffe Post Hoc Multiple Comparison procedure will be used to determine which pair(s) of means differ significantly.

The null hypothesis for interaction

- $H_0: \text{All } (\mu_{rc} - \mu_r - \mu_c + \mu) = 0$  is rejected and can be concluded that the difference among all cell means, after accounting for rows and column differences, are statistically significant.

## **4.8. Interpretation of the results**

The results of the experiment were interpreted by means of the Sheffe and Tukey methods.

### **4.8.1. The Scheffe Method**

This method examines the variance between the columns, i.e. experimental and control groups on one level and home language of the learners on another.

The Sheffe method is used to determine which pair(s) of means differ and was the preferred method, in this study, because of unequal sample sizes in the four means (columns). The Sheffe involves computing an F value for each pair of means.

In this study there are four groups of means compared, providing six possible combinations.

From table 2, the four means are:

- a. Experimental group, with bilingual instruction received by the 15-isiZulu speaking learners randomly assigned.
- b. Experimental group with bilingual instruction received by 17 English speaking learners
- c. Control group with “English only” instruction received by 15 isiZulu speaking learners.
- d. Control group with “ English only” instruction received by 16 English-speaking learners.

The null hypothesis for each of the above columns is:

- Ho:  $U_{ez} = U_{ee} = U_{cz} = U_{ce}$

The six computed F values are each compared to the Fcv to determine statistical significance.

$$\begin{aligned} F_{cv} &= (k-1) \text{ (F distribution table @ 3 and 48df) @ 0.05 level of significance} \\ &= 3(2.81) \\ &= 8.42 \text{ @ the 0.05 level of significance} \end{aligned}$$

The computed F values for the six-paired comparisons are:

Formula:  $F = (x_1 - x_2)^2$

$MSw (1/n_1 + 1/n_2)$

1.  $F_{a-b} = (10.8 - 8.06)^2$

$6.45(1/15 + 1/17)$

$= 9.28$

2.  $F_{a-c} = (10.8 - 7.19)^2$

$6.45(1/15 + 1/16)$

$= 15.65$

3.  $F_{a-d} = (10.8 - 7.13)^2$

$6.45(1/15 + 1/16)$

$= 16.17$

4.  $F_{b-c} = (8.06 - 7.19)^2$

$6.45(1/17 + 1/16)$

$= 0.97$

5.  $F_{b-d} = (8.06 - 7.13)^2$

$6.45 (1/17 + 1/16)$

$= 1.11$

6.  $F_{c-d} = (7.19 - 7.13)^2$

$6.45(1/16 + 1/16)$

$= 0.01$

From the above computation we find that the first three paired comparisons exceed the Fcv of 8.42, with **group a** common to all three paired comparisons.

Hence the **group a** sample mean differs significantly from the means of the other three sample **groups**, viz. **b**, **c** and **d**.

Ho: for Ua-b, Ua-c and Ua-d is rejected.

Most of the variance is due to **group a** indicating these learners with isiZulu as their home language, together with bilingual instruction, obtained the highest scores. Accordingly, they benefited the most from the programme.

#### 4.8.2. The Tukey Method

The Tukey method was used to calculate paired comparisons, in this case, between the grades. William & Stephen (1982)

The computation of the test statistic “**Q**” between rows (level of education) is used here because equal sample sizes in for each the 4 rows or grades 4 to 7.

##### 2.1. The Null hypothesis: Tukey Method

Ho: U gr4 = U gr5 = Ugr 6 = U gr7

##### 2.2. Computing the test statistic “**Q**”

$$Q = X_i - X_j$$

$$\sqrt{MSw / n_j}$$

#### KEY:

X = mean of each row

MSw = mean sums of squares within groups

n<sub>j</sub> = to the number of paired comparisons

The group means are ranked from low to high, for convenience.

Rows/ Group	Grade 6	Grade 7	Grade 4	Grade 5
X	6.88	7.50	9.00	9.63
$X_i - X_j$		0.62	2.12	2.75
			1.50	2.13
				0.63
$\sqrt{MSw/n_j} = \sqrt{6.45/16} = 0.64$				
Q =		0.97	3.31	4.30
			2.34	3.33
				0.98

Using the students range tables:

- Q cv. @ 0.05 for 4 and 60 df is equal to 3.74

From the above computation, only the null hypothesis  $U_{gr5} = U_{gr6}$  is rejected. The remaining null hypotheses are retained.

It can be concluded, that most of the variation contributing to the statistical significance of the study is between Grade 5 and Grade 6.

The comparison pairs with computed Q values are:

- $G_{4/5} = 0.98$
- $G_{4/6} = 3.31$
- $G_{4/7} = 2.34$
- $G_{5/6} = 4.30^*$

- $G_{5/7} = 3.33$
- $G_{6/7} = 0.97$

\* Only computed  $Q = 4.30$  for  $G_{5/6}$  moderately exceeds the  $Q_{cv} = 3.74 @ 0.05$  level. The null hypothesis for  $G_5 = G_6$  is rejected meaning that the groups are not equal, with moderately significant variation between these.

It is concluded that only one of 6 pairs produced variation on achievement scores, This result is minimal compared the 5 of the 6 pairs showing little or no variation. From the above results we deduce that bilingual instruction benefited all of the grades.

#### **4.8.3. Interpretation of interactional effects using the graph below:**

Interaction can be interpreted graphically by plotting the cell means.

Using the data from Table2, the nature of the experimental interaction will be graphically illustrated and explained, i.e.

The relationship between the X and Y-axes will be described and the interactional effects shown.

Since the interaction is significant as demonstrated in the computation, this study necessitates proving the interactive relationship, also by means of a graph.

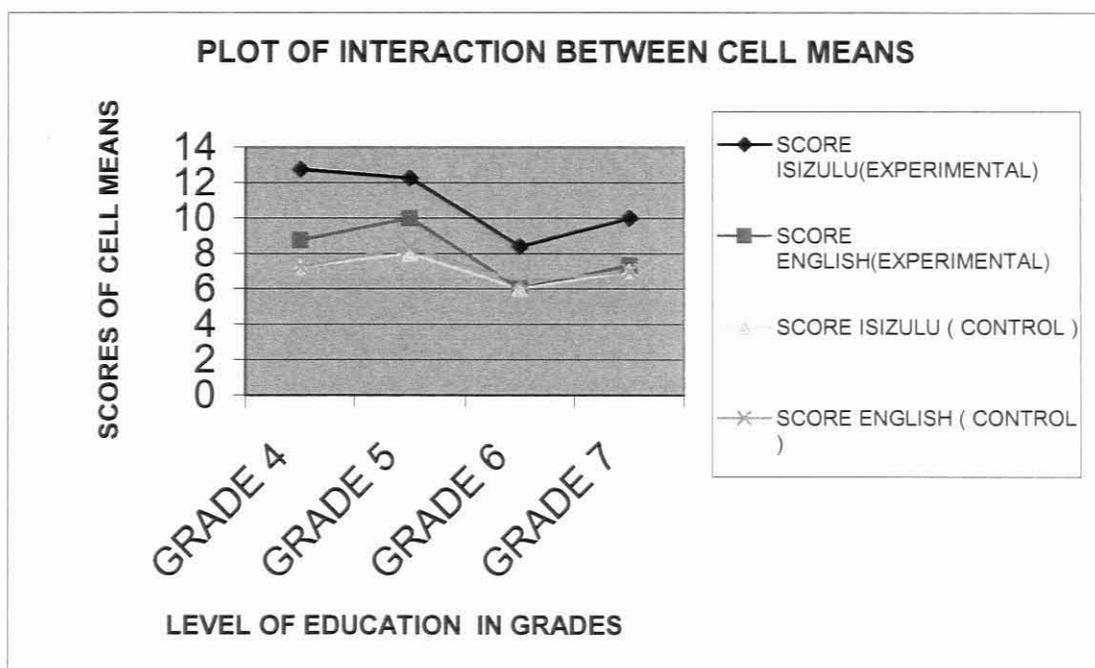


FIGURE 1: Plot of Interaction between cell means

**In figure one:**

On the Y-axis scores of cell means obtained by the learners are plotted. On the X-axis, the independent variable, levels of education from grades 4-7 are illustrated. The performance scores of the learners in their respective grades are plotted on the graph.

In the above graph the effects of the independent variables, bilingual instruction and home language of the learners on the dependent variable scores attained is not the same across the grades 4-7.

Conversely, the mean cell scores for both the control groups are similar.

The mean cell scores of the isiZulu experimental group were the highest across all four grades.

**This implies that isiZulu plus English or bilingual instruction impacted significantly on learner performance.**

Also, since the lines within the graph intersect, such an interaction can be described as disordinal.

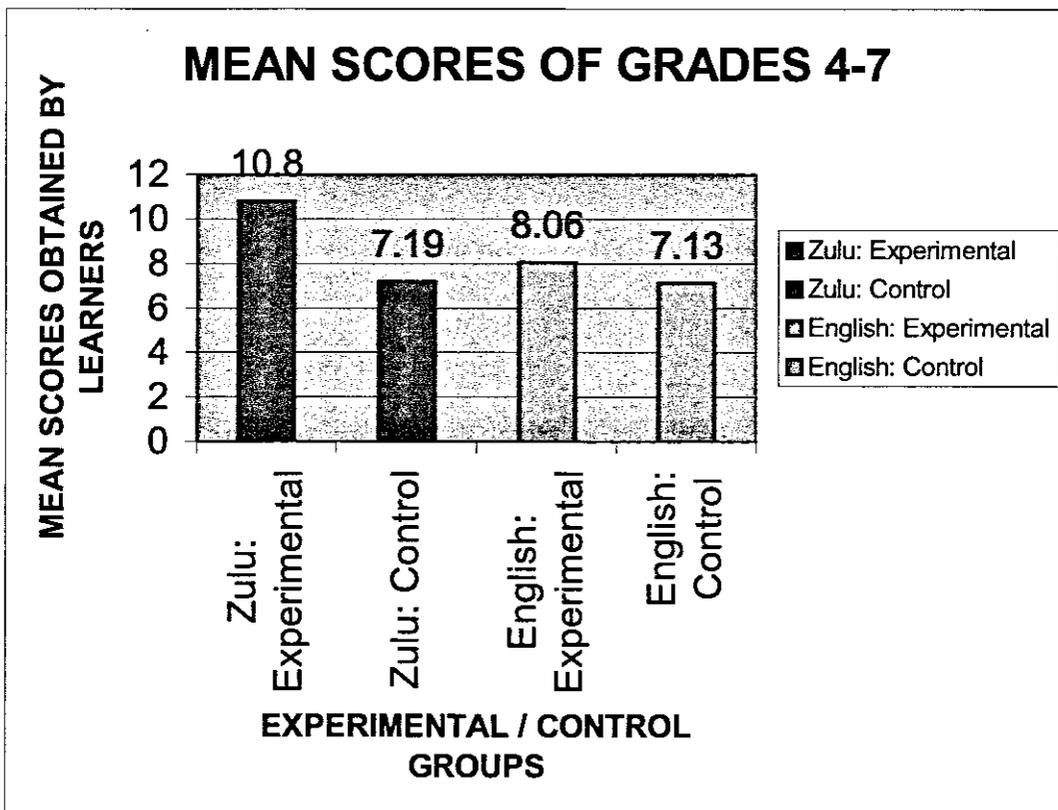


FIGURE TWO: Mean Scores of Grades Four to Seven.

**Graph results (Fig. 2)**

The data of obtained mean scores from table two are graphically illustrated in figure 2 above. These study findings indicate that learners in the experimental group, who were exposed to bilingualism as a method of instruction, demonstrated the highest results as expressed in their performance scores.

The mean scores obtained for all grades are plotted on the “Y” axis. The randomised experimental and control groups which included both isiZulu and English speakers, are represented on the “X” axis.

The hypothesis that isiZulu speaking learners instructed, in bilingualism will perform better than isiZulu speaking learners instructed in English only was proved.

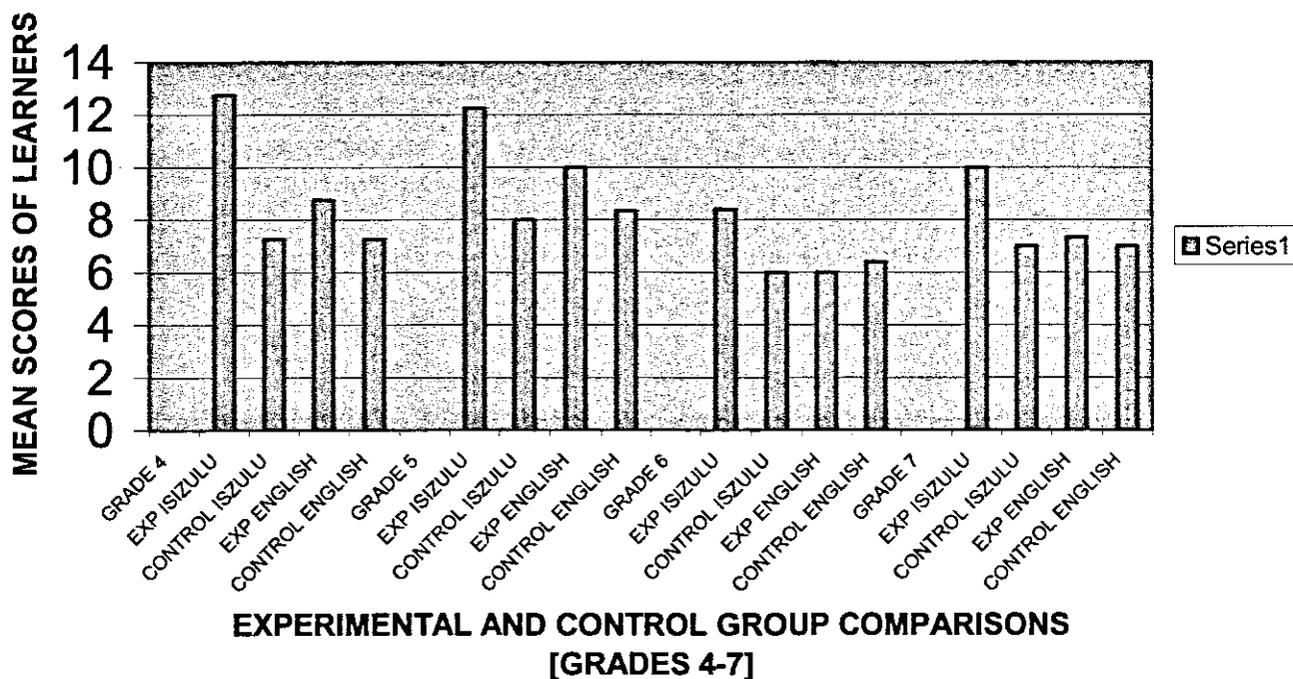
The mean score for the isiZulu experimental group was 10.8 against the mean score of the isiZulu control group, which were 7.18. **The results indicate bilingualism as a**

**method of instruction, increased second language learners' understanding of words and concepts**

A significant difference emerged between the English learners in the bilingually instructed experimental group, mean score = 8.06 and the English only instructed control group, mean score = 7.13. The expectation was that there would be no significant difference between these two groups. These differences maybe understood in relation to the innovative methods used in the experimental group.

The scores obtained by both isiZulu and English speakers in the control groups, are 7.19 and 7.13 respectively demonstrating little difference. The assumption is that there is little difference in the level of understanding between English and isiZulu speakers in the control groups. This finding maybe attributed to the fact that English learners in the control group were subject to non-stimulating methods of instruction and hence did not perform optimally.

## COMPARISON OF THE MEAN SCORES OF EXPERIMENTAL AND CONTROL GROUPS [GRADES 4-7]



**FIGURE THREE: Comparison of Mean Scores of Experimental and Control Groups**

Figure. 3. Is a graphic representation of the mean scores obtained by all learners from Grades 4 to 7.

As the graph in Fig.3 illustrates, in each of the four grades, (i.e. 4-7) the isiZulu-speaking learners randomised to the experimental groups achieved significantly high scores, benefiting considerably from the bilingual programme.

The mean scores obtained by isiZulu learners, in the Grade 4 experimental group = 12.75, isiZulu learners in experimental group, Grade 5 obtained a mean score = 12.25, those in grade 6 obtained a mean score = 8.4 and the mean score of those in grade 7 = 10. These scores are significantly higher than the mean scores obtained by isiZulu learners in the control groups, which were Grade 4 = 7.25. Grade 5 = 8, Grade 6 = 6 and Grade 7 = 7 respectively.

The isiZulu learners in the Grade 4 and 5 experimental groups benefited more especially, as demonstrated in the high scores obtained i.e. Grade 4 mean score =12.75 and Grade 5 mean score = 12.25, as compared to the isiZulu learners in Grade 6, mean score = 8.4 and learners, in Grade 7 mean score = 10.

**Hence, results of the study also show those isiZulu learners in the experimental group in grades 4 and 5 benefited most from the bilingual programme, rather than all isiZulu learners profiting equally from this experimental programme.**

#### **4.9. Summary**

The data was analysed using a factorial design and a randomised, control group pre- test post-test design. **Table 3** provides data on difference in pre- test and post - test scores in both the vocabulary and comprehension test items, and the total of the vocabulary and comprehension scores or *performance scores* across the **grades, experimental and control** groups and across the **home language** of learners.

Procedures for calculating the ANOVA is thereafter delineated and the table for the final analysis of variance obtained. **Refer 4.2. Table 4.**

The data was computed using the statistical procedures for a factorial design, i.e. calculation of rows, columns, and interaction and within group variance. Information used for the calculation is displayed on Table 3, on the summary of computations.

Statistics were calculated for:

- Language of instruction, viz; bilingualism versus English only in the experimental and control groups.
- Home language of learners viz; isiZulu and English learners
- Levels of education viz; grades 4, 5, 6, and 7.

The procedure for analysing and interpreting this data are then explained, using appropriate illustrations and tables. The criterion for testing the hypotheses are set out and explained. The Sheffe Method was used to examine the variance between *columns* experimental and control groups on one level and home language of the learners on another. The Tukey Method was used to unequal sample sizes in each of the *rows* or grades, ranging from 4 to 7 and the variations.

The interpretation of the interactional effects is demonstrated on the graph, refer *figure one*, and the results on the graph are explained and discussed.

In figure one, *findings indicate that bilingual instruction impacted significantly on learner performance.* In figure 2, the mean scores obtained by learners from grades 4 to 7 are then discussed with the aid of a bar graph. *The hypothesis that isiZulu learners instructed in bilingualism will understand concepts better and will therefore improve academically, than those isiZulu learners instructed in English only was proved.* A significant difference emerged between the English learners in the bilingually instructed experimental group and the English only instructed control group. It can be inferred that the innovative methods of instruction and some amount of scaffolding may have impacted on learner performance amongst this group. Finally figure 3, illustrates that *learners who benefited most from the bilingual programme were those in grades 4 and 5 in comparison to those learners in grades 6 and 7.* On the basis of this conclusion, we surmise that early introduction to bilingual methods instruction prove to be more effective in improving academic performance amongst second language learners, than when introduced later on, or when learners are older.

## CHAPTER FIVE

### SUMMARY AND CONCLUSION

#### 5.1. Introduction

##### 5.1.1. The Problem

In this study bilingualism as opposed to monolingual teaching was investigated, i.e. this study was designed to investigate bilingual instruction as a means to increasing academic performance of second language learners in KwaZulu –Natal (KZN) schools. In KwaZulu -Natal and the wider South Africa, many learners are challenged in the reading and writing of English, consequently, there emerges a need to provide opportunity for such learners to develop proficiency in English, whilst maintaining the skills acquired in their mother tongue.

##### 5.1.2. Literature Review

According to Cummins (1991) the transfer of linguistic skills (example vocabulary and comprehension) are *significantly* facilitated through bilingual programmes.

Also, studies on curriculum structures in South Africa show that The National Curriculum Statements propose that all learners learn in their home language and at least one other language. These curriculum statements hence stipulate that the learner's home language ought to be used in teaching and instructing whenever possible. Bilingual teaching accommodates these statements concisely. Further, studies indicate that another reason for different languages in the curriculum is that language planning and policy is a significant determinant of who gains full right of entry to citizenship. This study assists in demonstrating that English plus isiZulu is relevant for learner empowerment, especially for purposes of job creation and issues relating to nation building in the South African context.

According to the Mc Kay studies, (1998) integrated instruction such as bilingualism is significant for stimulating learning to take place. Studies also indicate that learning is a cognitive course, which requires inter psychological basis initially, upon which the intra psychological follows. Consequently, it is hypothesized that the language a person speaks, determines his worldview and the manner in which s(he)learns.

In KwaZulu - Natal classrooms, instruction in isiZulu plus English becomes imperative for exciting and motivating learning to take place. According to the language, cognition and culture debate, language is the standard means by which individuals' communicate. It is the method, through which knowledge is acquired, organised and acted on. Language also has implications for identity and identity formation. The constructivist position holds that reality is socially constructed, implying that the acquisition of knowledge is related to a social context, of which learning is a part. In accordance, it can be presupposed that language one speaks determines ones thinking. Similarly, Vygotsky (1996) maintains that it is through language that the individual's world is constructed. Words define the way we experience, communicate and think and culture is basic to the orientation of the self. Vygotsky postulates that children function inter-psychologically first and then intra psychologically and the child's experiences of language is therefore shaped initially by the culture of which the child is a part. Hence, bilingualism has an important role to play in the mastery of the English language and maintenance of culture in this instant, the isiZulu language.

Subsequently, concept formation involves that in any given cognitive structure, the child consciously accommodates new concepts into existing schemata. Hence the mastery of the English language rivets around it developing simultaneously with another language that the child is already familiar with. This follows with Piaget's theory on cognitive development. He explains cognition in terms of the concepts accommodation and assimilation and asserts that through such cognitive processes, knowledge and thereby language transformation and usage becomes possible. Hence cognitive methods become integral to the restructuring of language. Intertwined in the understanding of language development, the idea of scaffolding becomes important. Scaffolding assists with information processing and language transformation across the "lexical threshold". According to Vygotsky, (1978) the difference between an individual's developmental level and potential level, is defined as the "zone of proximal development" Concurrent with his idea of the zone of proximal development, is that of scaffolding. In scaffolding the teacher aims to assist the child in learning, by constantly providing additional cues, so that the child is essentially able to attain his/ her potential level. Vygotsky's assumptions has connotations for the teaching of languages in schools. Language teachers should aim at initially providing

language cues, whereby bilingual instruction comes into play, gradually increasing the complexity of tasks. Whilst slowly stepping down their level of support as they find that learners are functioning at their potential level. Bilingualism, which can also be defined as a code switching strategy, is in addition, a naturally evolving approach, which appears beneficial in the teaching and learning of languages. Related to bilingual studies, is the status of the English language. Phan Le Ha (2003) points out that English has gained prominence as a global language and native speakers of this language, experience pride in owning this language of intercultural communication. Further, Cal (2001) argues that poor and marginalized parents are aware of the returns of the 'high status' languages like English the accompanying benefits. In addition, Mati, (2003) points out that although only 8.7% of the population use English as a medium of communication, it is still viewed by many as the language of access especially, for the previously oppressed. In attempts to change perceptions and attitudes on the supremacy of the English language, the need to explore bilingualism as a method of instruction becomes essential, as this would ensure both, the use of the learner's home language as well as English as the language of instruction.

Studies conducted by Townsend and Versveld (1999) on language development during the 1<sup>st</sup> three years of schooling in the Western Cape; demonstrate little effect for learning in multilingual classrooms. Some of the problems that this study met with were, that the learners showed a negative attitude towards learning in languages other than English, despite having language aides. Also, the parents were pessimistic about their children learning in a language other than English. However, Cal (2001) points out that when parents are educated on bilingual forms of instruction and are able to make informed choices, they tend to opt for bilingualism. The surmise is that, confounding variables such as innovative methods of instruction and an experimental "hands on" approach to learning may have impacted on study results. This study aims to investigate whether or not bilingualism can work in K.Z.N classrooms.

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## 5.2. Discussion of the study findings in relation to the Aims.

The AIMS of the study were:

- To evaluate *bilingualism as a medium of instruction*, for improving the *academic performance of second language learners* in primary schools in Kwa Zulu- Natal.
- More specifically the study aimed at investigating whether or not *second language learners* in primary schools (grades 4-7) understand the *meaning of words and concepts* when compared to English [home language] speakers.
- This study also aimed at demonstrating that *most second language learners* will benefit from this bilingual programme.

In accordance with the aims, the following findings were obtained.

In figure **one**, *findings indicate that bilingual instruction impacted significantly on learner performance.*

In figure **two**, the mean scores obtained by learners from grades 4 to 7 are then discussed with the aid of a bar graph. *The hypothesis that isiZulu learners instructed in bilingualism will understand concepts better and will therefore improve academically, than those isiZulu learners instructed in English only was proved.*

A significant difference emerged between the English learners in the bilingually instructed experimental group and the English only instructed control group. It can be inferred that the innovative methods of instruction and some amount of scaffolding may have impacted on learner performance amongst this group. Finally figure **three**, illustrates that *learners who benefited most from the bilingual programme were those in grades 4 and 5 in comparison to those learners in grades 6 and 7.* On the basis of this conclusion, we surmise that early introduction to bilingual methods instruction prove to be more effective in improving academic performance amongst second language learners, than when introduced later on, or when learners are older.

In accordance with the study aims, the hypotheses set, proved valid.

### **5.2.1. Methodology**

A detailed method of the study was presented

*In summary*, after consultation with relevant stakeholders in education and obtaining informed consent, subjects for this study were randomised to experimental and control groups. The research paradigm takes the structure of a Pre- Test Post Test Design and the research took the form of a field experiment. Subjects from grades 4,5, 6 and 7, with an age range of between 9 and 16 years, were randomly assigned to the experimental and control groups. The total sample size was N= 64, with n= 32 in each, the control and experimental groups.

This programme was run after school hours so as not to disrupt the curriculum.

Both these groups were presented with achievement tests simultaneously [pre- test]

The S SAIS R vocabulary and comprehension subtests were utilized as individual *achievement tests* rather than subtests from the battery of the intelligence test.

The tests were scored as per S SAIS R, which has already proved reliable and valid, as it is a standardised form of testing although this assessment devise is culturally biased. The experimental group was thereafter subject to bilingual education whilst the control group worked with English activities such as quizzes and role-plays.

After a period of one month, the post -test was administered, where the learners were presented with the same test material and the difference between scores were analysed. The method of data investigation was conducted using the factorial analysis method. Group means, “SSr, SSc” and interaction were calculated and the F ratio, determined. Thereafter the Scheffe Test was used to determine the variance between experimental and control groups. The Tukey method was utilized to analyse the variance between the grades 4 -7 Graphic illustrations of the relationship between bilingual instruction and learner performance were explained.

### **5.2.2. Discussion of findings.**

Results from this study show that bilingualism as a method of instruction increased second language learner performance in English. Findings indicate that the isiZulu experimental group benefited most from the bilingual programme, with a mean score 10.8.

The second language learners were able to understand the meanings of words and concepts when compared to English home language speakers.

Further, learners most learners in grades 4 and 5 benefited from this bilingual programme, in comparison to those in grades 6 and 7.

The English experimental group also benefited from this bilingual programme, possibly due to innovative study methods and the process of scaffolding. Since this study had to be conducted after school, the control group had to engage in some kind of activity. Hence. The mean score of 8.06 of the English control could be attributed to the incidental language activities such as quizzes and role-plays that the learners engaged in. Learner levels of intelligence in this group cannot be ignored as well.

Subsequently, the isiZulu control group also benefited from this programme, with a mean score = 7.19. The reason for this group benefiting may perhaps be attributed to incidental learning and level of intelligence of the learners in the isiZulu control group.

Deductions from **figure 1** are that bilingualism as a medium of instruction, improved overall second language learner academic performance.

From **figure 2**: It can be concluded that:

- ❑ The learners who benefited most from this bilingual programme were those randomised to the isiZulu experimental group.
- ❑ Surprisingly, learners in the English experimental group also benefited from the bilingual programme.

**In Figure 3:** Research findings further point out that:

- ❑ IsiZulu learners randomised to the experimental group in grades 4 and 5 benefited most from the bilingual programme.
- ❑ The mean scores of all the experimental groups being significantly higher than those of the control group.

### 5.3. Limitations of the study

Although this study achieved the aims as set out, some limitations to this research also exist.

- Sampling and generalization

This study took the form of a field experiment, limited to one school only, i.e. the Green School. Whilst the research can be used to make inferences for that particular population group, the extent to which the study can be generalized outside of the school setting becomes contentious.

The method of sampling was randomised, but unfortunately in some grades like Grade 7 for example, had only 2 of the subjects in the experimental group, who were second language learners. This impacted on the findings of the study, especially in terms of the impact of the programme on older aged learners. (12 –16 years)

- Attendance of the programme

Most of the learners attended the programme, even though it was run after school hours. Incentives for attending included, an “after school” programme or activity for many bored children, especially since they come from a low socio economic background, which offer little else to do. A further motivation was the hand out of certificates at the end of the programme for all those who had successfully completed it.

However, there were instances when not all research participants were available. Since participation was voluntary in nature, minor dropouts on intermittent days impact on study findings. Some of the learners did not attend every single session.

Initially a larger number had enrolled for the programme (N= 80) and invariably; there had been some dropouts. Statistics had to be changed accordingly. (N= 64)

- The Research Design

The research paradigm chosen was the Pre- test Post – Test Design.

One problem encountered was that of the time interval between the pre and post - test. The duration or time interval between these tests was one month. Although the results

of the study proved optimistic, a longer time interval between the pre and post-tests may have been more suitable for this study

#### **5.4. Conclusions of the study**

Research findings show that bilingual instruction increased second language learners' performance in English. IsiZulu learners instructed in bilingualism understood concepts better than those instructed in English only. The experimental and to some extent, even the control group benefited from the bilingual programme. Most isiZulu learners randomised to the experimental group benefited from the programme, especially the Grades 4 and 5.

#### **5.5. Recommendations**

- The present study focused on bilingualism as medium of instruction for improving second learners' academic performance in one educational institution only, viz. the Green School. Whilst this research evidently proved significant for this population group, there emerges a need to generalize this study to a larger population study or similar types of schools.
- This study was conducted in the senior primary (9 – 16 years) section of the school and results indicate that the learners younger in age, benefited more from this programme, than older ones, therefore it is recommended that similar type of research be conducted in the junior phase [6 to 9 years] of learning and the to in order to assess the extent to which bilingual instruction impacts on early child learning. Children in readiness classes may also benefit from bilingual instruction and it is recommended this course of study be pursued as well.
- Following on the conclusions and recommendations reached from this study, the idea or assumption emerging is that, second language learners will benefit more when the home language of the learner and the dominant language and

/or content subjects are taught simultaneously, starting from readiness classes or Grade One. Schools need to take cognisance of this information and use it in order for meaningful learning to take place in classrooms. Educational institutions also need to commit themselves to developing and sustaining *instruction in home languages as well as the dominant additive language*.

This type of strategy also provides incentive for learner achievement.

- This study be used as a promising guideline for implementing bilingual education in classrooms, whilst constantly reviewing and evaluating this approach, as it can serve a greater role than one that is simply didactic in nature, it can also assist with reducing “barriers to learning” and build on cultural diversity.
- It is recommended that there be an investment in resources, which promote bilingualism. Support material for the implementation of a bilingual method of instruction, becomes important.
- Findings from this study point to the idea of including in- service training for all educators, so that they can become competent in bilingual modes of instruction. Hence, educators need to be adequately trained. Further, the training and placement of African language educators in national schools becomes imperative.
- Results from this study can be used to develop strategies for teaching in peri - urban and rural areas.
- It is recommended that a comprehensive bilingual model in schools take into consideration the school community’s views, when embarking on implementing such language – in- education policies. In the present research

conducted, the overwhelming support from the parents for the programme, clearly indicate their positive attitude towards bilingual instruction in schools.

## REFERENCES

Abstract, *International Literacy Conference*. (1999). Cape Town.

Alexandra, N. (1989). Language and Society in Africa: *The Theory & Practice of Sociolinguistics*. 56 –68: Witswatersrand University Press.

Anastasi, A. (1988). *Psychological Testing*. (6<sup>th</sup> edition) New York: Macmillan Publishing Company: London.

Bloch, C. (2002). Concepts of Early Childhood Development (ECD), Literacy, *Learning and Materials Development in Multilingual Settings*. PRAESA, Occasional Papers No. 8 Cape Town: PRAESA.

Cal, (2001). *Expanding Educational Opportunities in Linguistically Diverse Societies*. Washington DC. *Centre for Applied Linguistics*.

Cummins, J. (1984). *Bilingualism in Special Education*. San Diego: College Hill Press.

Cummins, J. (1991). *The Interdependence of First and Second Language Proficiency in Bilingual Children*. Cambridge University Press, 70 – 89.

Dennis, E.H. William, W. & Stephen G.J. (1982). *Basic Behavioural Statistics*. Houghton Mifflin Company, Boston.

Fakir, M & Waghid, Y. (2004). On Outcomes Based Education and Creativity in South Africa, *International Journal of Special Education*. Vol 19, No.2

*Kerlinger, F. N. (1986). Foundations of Behavioural Research, 3<sup>rd</sup> edition*. Orlando, Florida: Harcourt Brace Jovanovich College Publishers.

McKay, S.L. (1998). *Teaching English in Multilingual Settings*. San Francisco University: Newbury House.

National Council for Curriculum and Assessment, (2005). *Review of Languages in Post – Primary Education*: Dublin.

Patrinos, H & Velez, E. (1996). Costs and Benefits of Bilingual Education in Guatemala, *A Partial Analysis, Human Capital Development*. Working Paper, No 74. Washington DC. World Bank.

Phan Le Ha. (2003). Toward a Critical Notion of Appropriation of English as an International Language. *Asian EFL Journal: English Language Teaching*, Vol 7, Issue 3, Article 3.

Quane, A. (2003). *Towards a Multilingual Culture of Education*. Hamburg: UNESCO. Institute for Education.

Sibaya, P.T & Sibaya D.C. (1996). Black Secondary Pupils' Problems with Mathematical Concepts. *South African Journal of Education*. 16 (1)

Stockburger, D.W. (2001). *Introduction to Statistics, Models and Applications*. Atomic Day Publishers.

Stroud, C. (2002). Towards a Policy for Bilingual Education in Developing

Countries. *Education Division, Document No.10*, Stockholm: Sida

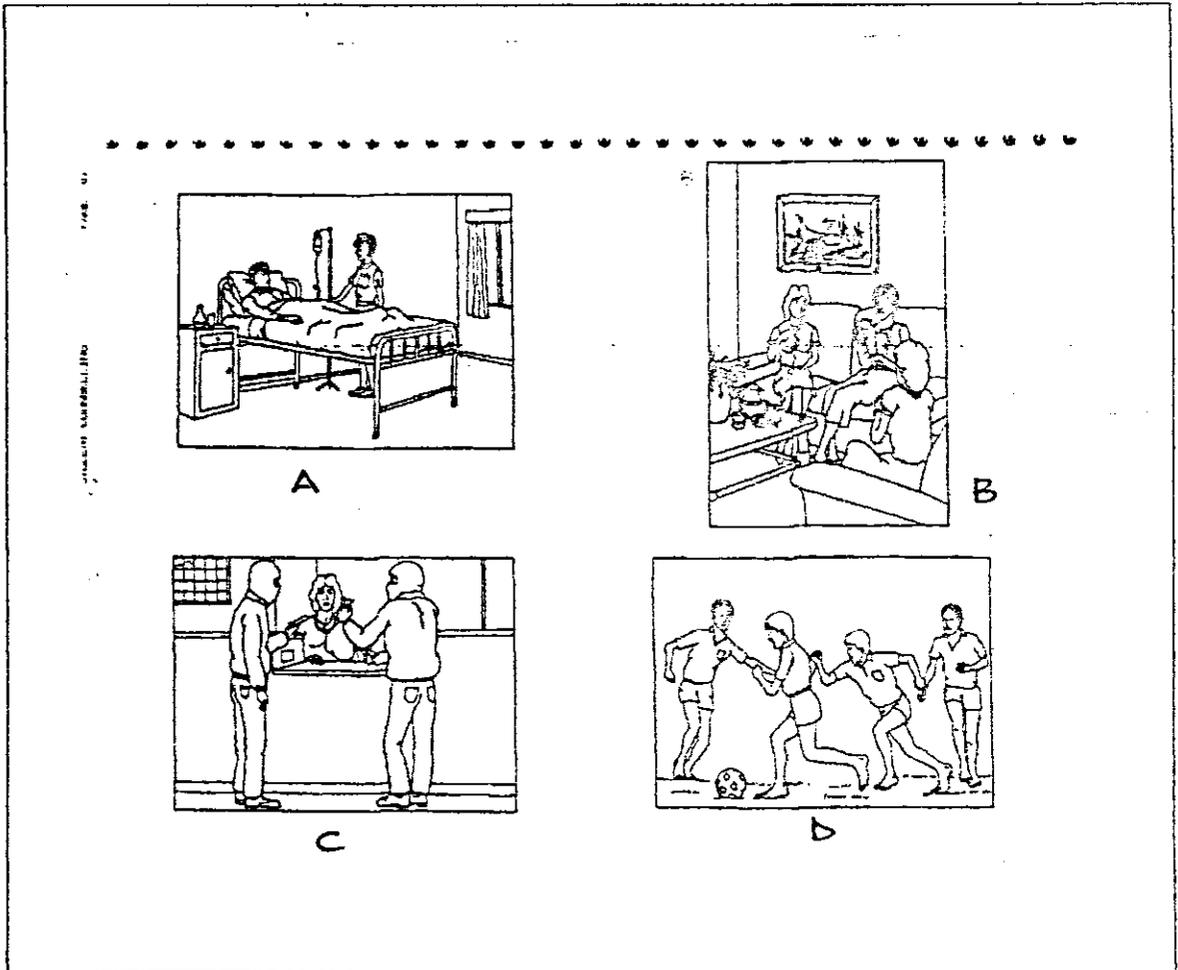
The Department of Education of South Africa. (2002). *Revised National Curriculum Statements (Grades R –9)*, School Policy.

NAME \_\_\_\_\_

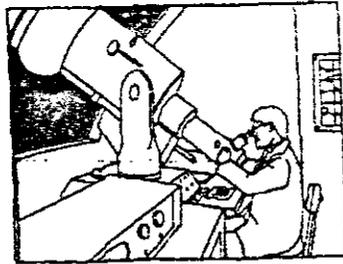
GRADE \_\_\_\_\_

QUESTION ONE

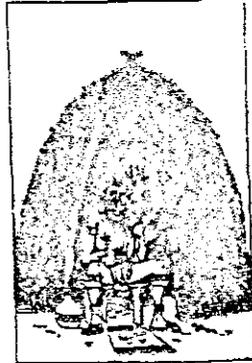
THERE ARE FOUR PICTURES ON EACH PAGE.  
 LOOK AT THESE; NOW WRITE DOWN WORDS THAT BEST DESCRIBE EACH PICTURE  
 FROM THE LIST PROVIDED BELOW. [Match the word to the picture]



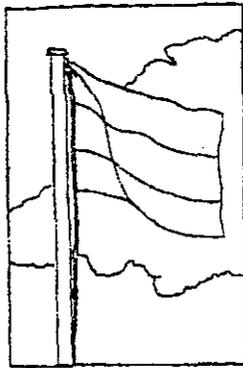
- |                  |               |
|------------------|---------------|
| 1. CRIME         | PICTURE _____ |
| 2. REFRESHMENTS  | PICTURE _____ |
| 3. STETHOSCOPE   | PICTURE _____ |
| 4. ANASTHESIA    | PICTURE _____ |
| 5. SURGICAL      | PICTURE _____ |
| 6. SYMPTOMS      | PICTURE _____ |
| 7. PRESCRIPTION  | PICTURE _____ |
| 8. SATMINA       | PICTURE _____ |
| 9. INTIMIDATE    | PICTURE _____ |
| 10. CONVIVIALITY | PICTURE _____ |



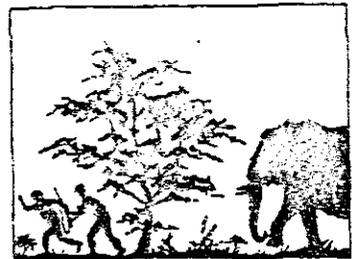
E



F



G

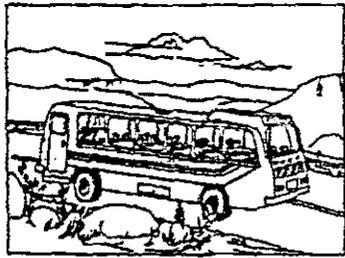


H

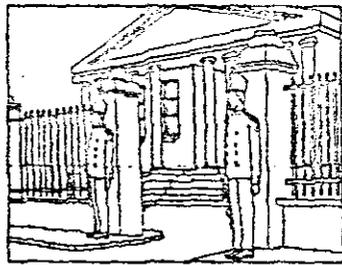
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1. STARS
2. UNEXPECTED
3. GALAXY
4. EMBLEM
5. ORBIT
6. PRIMITIVE
7. RITUAL
8. METEOR
9. PATRIOTISM
10. SILHOUTTE

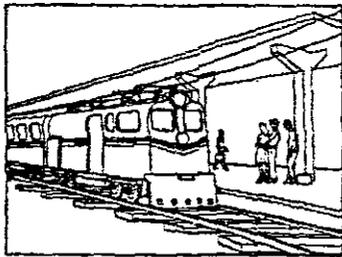
- PICTURE \_\_\_\_\_



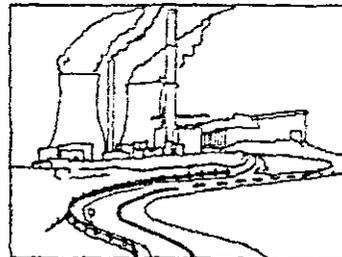
I



J



K



L

1. BUS

PICTURE -----

2. GOVERNMENT

PICTURE -----

3. PLATFORM

PICTURE -----

4. MANUFACTURE

PICTURE -----

5. REFINERY

PICTURE -----

6. PRODUCTIVITY

PICTURE -----

7. ELICTION

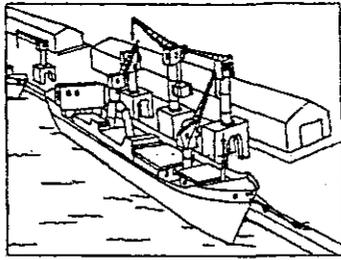
PICTURE -----

9. INAUGURATION

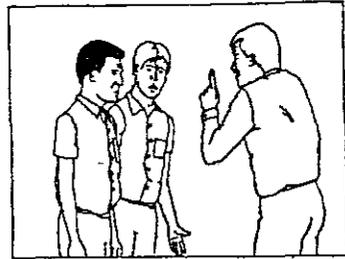
PICTURE -----

10. PANORAMA

PICTURE -----



M



N



O



P

1. HARBOUR

2. MEMORIZE

3. ACADEMIC

4. CONFLICT

5. REPRIMAND

6. AUTHORITY

7. CUSTOMS

8. LEVY

9. MALCONTENT

10. AFFLUENCE

PICTURE -----

Page 5

Illustration by [unreadable]



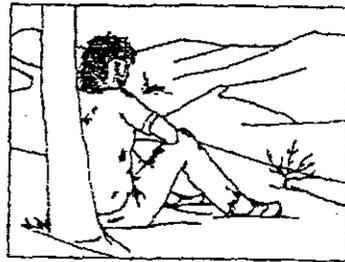
Q



R



S



T

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1. SHOPPING

2. MAGAZINE

3. HORIZON

4. BUDGET

5. SWELTERING

6. ELEGANT

7. ISOLATION

8. DESOLUTION

9. HOUSEHOLD

10. GRIPPING

PICTURE \_\_\_\_\_

## ITEMS OF TEST 2

1. *What should you do if you have cut your toe?*
2. *Why should you stay at home when you have an infectious illness?*
3. *Why do we save money?*
4. *What should you do if you pick up someone else's purse?*
5. *Why do children have to go to school?*
6. *Why is an accused person put on trial in court?*
7. *Why are there parks, and not only buildings, in towns and cities?*

The tester may use "... in the town?/... in the city?" with younger children.

8. *Why should one rather give money to a welfare organization than to a street beggar?*
9. *Why does one make a will or testament?*
10. *What is the function of parliament?*
11. *Why must all drivers have a valid driver's licence?*
12. *Why are the buildings in cities usually very high?*
13. *Why are we allowed to hunt and fish during certain months of the year only?*

This question is put as simply as possible, bearing in mind that hunting and fishing restrictions sometimes only apply to certain kinds of fish or game.

14. *Why should one keep a promise?*
15. *Why is it necessary to hold elections?*