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Andor, Karen Erica

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FIRST AND SECOND LANGAUGE ENGLISH STUDENTS IN TERTIARY EDUCATION: READING AND ACADEMIC PERFORMANCE

Karen Erica Andor

A research report submitted to the Faculty of Humanities, University of the Witwatersrand, Johannesburg, in partial fulfilment of the requirements for the degree of Masters of Education (Educational Psychology)

Johannesburg, South Africa 2006

DECLARATION

I hereby declare that this research report is my own unaided work. It is being submitted for the degree of Masters of Education (Educational Psychology) at the University of the Witwatersrand, Johannesburg. It has not been submitted for any degree or examination at any other university.

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Karen Erica Andor

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ABSTRACT

Previous studies have examined the issue of assessing university students and relating their performance on the assessment measures to their academic performance in South Africa (Butler & Van Dyk, 2004; Nel, Dreyer, & Kopper, 2004). Nel et al (2004) used a comprehensive assessment battery whereas Butler and Van Dyk (2004) used a single test, the ELSA-PLUS. However, there is very little research on the relationship between reading and academic performance (Onwuebuzie, Mayes, Arthur, Johnson, Robinson, Ashe, Elbedous & Collins, 2004). The Stanford Diagnostic Reading Test (SDRT) Blue Level was administered to 380 first year students in the one of the schools in an English medium university in South Africa at the beginning of 2005. 67 students volunteered to have their results used in the study of which 22 were English second language (L2) speakers and 43 were English first language (L1) speakers. The results showed that there were significant differences between the L1 and L2 students, where the performance of the L2 students was significantly weaker than that of the L1 students on the Reading Comprehension, Vocabulary, Word Parts and Structural Analysis subtests of the SDRT. However, it emerged that the SDRT is not a good predictive test for academic achievement for either L1 or L2 students.

KEY WORDS: academic performance, English first language, English second language, reading, SDRT, university

TABLE OF CONTENTS

Declaration i
Acknowledgements ii
Abstract iii
Table of Contents iv
List of Tables vi

Chapter 1: LITERATURE REVIEW 1

1.1. Rationale 17

1.2. Aims 18

1.3. Research Hypotheses 18

Chapter 2: METHODOLOGY 19

2.1. Design 19

2.2. Subjects 19

2.3. Materials 20

2.4. Procedure 22

2.5. Ethical Considerations 23

Chapter 3: RESULTS 24

3.1. Data Analysis 24

3.2. Differences between L1 and L2 on the SDRT 24

3.3. Predictive Ability of the SDRT 27

Chapter 4: DISCUSSION 30

4.1. Recommendations for Interventions 37

4.2. Limitations of the Research 39

4.3. Further Research 41

4.4. Conclusion 42

Chapter 5: REFERENCES 43

APPENDICES

APPENDIX A

A.1. Information Sheet

A.2. Consent Form

A.3. Biographical Questionnaire

APPENDIX B

B.1. Descriptive Statistics

APPENDIX C

C.1. Results of the biographical questionnaire

APPENDIX D

D.1. Bar Graphs for the SDRT results

Appendix E

E.1. The variables: Age and Gender

LIST OF TABLES

Table 1:	Descriptive Statistics	20
Table 2:	Results of the t-test for L1 and L2 speakers on the SDRT	25
Table 3:	Results of the t-test for L1 and L2 learners for the subcomponents of the significant subtests of the SDRT.	26
Table 4:	Regression results for the Reading Comprehension and Structural Analysis subtests for the L2 students.	28
Table 5:	Regression results for the Word Parts and Structural Analysis subtests for the L1 students.	28

1. LITERATURE REVIEW

The Sunday Times newspaper reported some alarming statistics on the 23rd July 2000 (cited in Nel, Dreyer, and Kopper, 2004). Approximately, 100 000 students drop out of tertiary institutions each year and graduation rates are at a shocking 15% or below. These statistics are 5 years old now, but according to Nel et al. (2004), they remain an issue and a cause for concern. The White Paper 6 (Department of Education, 2001a), states that every learner in South Africa has the right to pursue their learning potential to the fullest. It does not seem that this is happening for English Second Language tertiary education students. Research shows (Butler & Van Dyk, 2004; Nel et al., 2004) that a significant number of English first and Second language first year students enter their tertiary education without adequate reading abilities, which are required to cope with the large amount of reading that must be undertaken within a relatively short period of time.

According to Rozin and Gleitman (1977) the average adult reader should be able to use the written word as a tool for communication and learning. He should be able to read as fast as he can comprehend speech, which is about 250 words per minute and in fact, the average university student should have a reading rate of 280 words per minute. Decoding should be automatic so that he can focus on meaning. He will use phonics only for unfamiliar words, but should have a sightword pool of 50 000 words. Although his reading rate will slow down with difficult texts, in general, he will by-pass phonics, making guesses as to what words mean and will self-monitor himself to make sure his guesses are correct.

However the average university student in South Africa is not coping with the required readings. It seems at first that s/he has not mastered all the skills that an average adult reader should possess. Foucault (1972) warns that 'knowledge is power' and that power creates knowledge. Reading is about learning knowledge and so is embedded within the relations of power (Williams & Snipper, 1990). It is not simply about mastering decoding strategies.

This paper will examine the traditional reading model, which focuses on decoding and sequencing strategies. The discussion will then demonstrate that this model is not an adequate explanation of reading for first language (L1) and especially not for second language (L2) learners, as issues of

culture and the relations of power play a role in all aspects of literacy. The discussion will then briefly describe the state of education in South Africa. Finally, research on university education in general and in South Africa in particular will be discussed, where issues of culture and relations of power are affecting how students cope with university level reading and writing.

According to Roy (2005) the traditional model, of reading falls into the "realism theory" of reading. It is based on the idea that reading is comprised mainly of learning phonics and that language is therefore a representational medium for describing reality. Realism advocates that objects and their properties exist independently of a person's linguistic practices. There is thus a one-to-one correspondence between 'the word' and 'the object' without the interference of subjective interpretation. Learning and reading are therefore processes of gaining accuracy of representation over reality. Various skills involved in reading are mastered separately over time.

Gibson and Levin (1975) state that the beginner, first-language (L1) reader must master a finite number of phonemes (single sounds) in her particular language system. Phonemes are then combined into syllables. Syllables are in turn combined to form morphemes or words, which are the smallest meaning units in a language. Words have clear and constant meanings in all contexts. Morphemes are joined together using the rules of grammar to form sentences and this is called syntax. Sentences are combined in a logical structure to compose texts, which are read by the reader. The reader therefore needs to possess knowledge of all these language structures from phonemes to syntax, in order to perform the process of reading. However, when examined closely flaws appear in this traditional model of reading. Kennedy (1984) argues that in English phonemes are problematic when represented visually. This is because the same letter is given different sounds depending on the word it is placed in. Furthermore, in English systematic rules are also not helpful as there are so many irregularities with the spelling of words.

Realism was challenged by Foucault's (1972) theory of the discourse of knowledge and power. This theory cast doubt upon the neutrality and inanity of words. Constructivism on the other hand, is linked to whole language learning and sees language as playing a role in producing reality. Constructivists argue for a critical approach to the study of language (Roy, 2005). Spivey (1997) argues that to be human is to create meaning and to have a desire to share meaning which is done either orally or through the written word. In this way meaning is built and is not just passively

received (Elkind, 2004). This means that in relation to reading, the reader brings his own meaning to the text by using his prior knowledge to understand the text (Spivey, 1997). Children learn language at the same time that they learn other things about the world. Therefore constructing reality is inseparable from constructing the semantic system in which reality is encoded (Haliday, 1978). The learner eventually cognizes by using an individual, internal context, which is embedded within sociocultural contexts (Goldman, 1987). Furthermore, if meaning is individual, then interpersonal understanding is impossible (Gergen, 1994). Understanding of texts occurs by virtue of a common culture shared by the reader and the writer (Gergen, 1994; Overton, 1994). Language is an intrinsically social activity because it is impossible to produce a discourse that cannot be understood by another who shares the same language and discourse community. If the reader has nothing in common with the community of which the text is a part, then the text is incomprehensible to that reader (Williams & Snipper, 1990). A critique that has been made against constructivism is that if taken to its extreme, the path led by constructivism would end in an existence where there is no external reality (Roy, 2005). Roy (2005) offers a truce to the realism/constructivism conflict.

Roy (2005) argues that language has a life of its own and that phonics and language structures are necessary for the creation of meaning. Therefore a string of sounds with no language structure is meaningless (Kennedy, 1984) and reading is not simply the act of combining letters into words, but is a meaning-making process (Balota, Ferraro & Connor, 1991; Gibson & Levin, 1975). Reading is therefore a combination of decoding and comprehension (Adams, 1990; Cornoldi & Oakhill, 1996; Gibson & Levin, 1975; Park, 2004; Ramirez, 1994; Stothard & Hulme, 1996; Williams & Snipper, 1990). Palmer (2004) and Williams and Snipper (1990) support Roy's (2005) argument by emphasising that meaning does not exist independently of the text or the reader, but lies within the interaction of the text and the reader. Thus a poor reader may be poor at decoding or comprehension or weak at both whereas a good reader excels in both comprehension and decoding (Cornoldi & Oakhill, 1996; Stothard & Hulme, 1996). It can be seen that the ultimate goal of reading is thus the act of understanding meaning, which requires both decoding skills and comprehension (Gibson & Levin, 1975; Ramirez, 1994; Williams & Snipper, 1990).

Comprehension is the process by which the reader constructs meaning during or after interacting with the text using a combination of factors including: previous experience, knowledge,

information in the text, the reader's stance and the immediate, remembered and anticipated social interactions and communications elicited by the text (Ruddell, 1994). Comprehension consists of phonological (sounds), lexical (words), semantic (sentence structure), conceptual (general knowledge) and belief (the reader's beliefs about the world) levels (Ashcraft, 2006).

Gernsbacher (1991) provides a model of comprehension. In this model comprehension is a process of building mental structures. The foundation is initiated as the sentence begins and this is stored in memory. Mapping is the process by which elements are added to the foundation. This includes inferences. Finally, distinctive substructures from other phrases are mapped to the initial structure, which was formed from the foundation and initial elements.

Ashcraft (2006) provides a distinction between inferences and references. A reference occurs when the reader finds connections between elements within the sentences and the text. Inferences on the other hand occur when the reader finds connections between schemata in the reader's mind and elements in the sentences or text. Cornoldi and Oakhill (1996) state that reading comprehension is one of the main goals of learning and education. It is evident that comprehension is a complex process and that many factors can affect the reader's ability to construct meaning.

The first of these factors is vocabulary knowledge. The more words one knows, the better one understands what has been written (Linan-Thompson, Vaughn, Hickman-Davis, and Kouzekanani, 2003; Ruddell, 1994, Stahl, 1991). However, it is often difficult to build vocabulary knowledge from dictionaries as definitions can be vague, abstract or too short, which leads to an incorrect understanding of a word meaning (McKeown, 1991). Stahl (1991) states that when a reader is provided with adequate background knowledge of a text, this is enough to overcome any difficulties he would experience from a lack of vocabulary knowledge. However, while contexts can aid the understanding of word meanings if they are rich (in other words the sentences are explicit), they can hinder the understanding of words if they are not. As yet, no direct causal relationship has been established between vocabulary knowledge and comprehension, as many variables interfere with the study of this relationship such as the type of instruction and learner characteristics (Ruddell, 1994).

A second factor is the reader's schemata (del la Luz Reyes, 1987; Palmer, 2004; Park, 2004). A reader only comprehends a message when a schema is activated that gives a good account of objects and events described in the message (Anderson, 1994). Williams and Snipper (1990) state that a text containing completely new information is incomprehensible, because according to Anderson (1994), the reader cannot activate a familiar schema. A text therefore needs to contain both old and new information. When the reader achieves a match between their hypothesis and the actual meaning of the text, they are able to comprehend the text (Williams & Snipper, 1990). Anderson (1994) claims that the reader relies so heavily on her own schemata that she is often unaware that another interpretation exists. Familiar schemata are activated more quickly than unfamiliar schemata and thus speed up the reading rate as the reader does not need to spend time processing the meaning of the information.

In addition to the reader's background, Delgado-Gaitan (1987) states that a third factor - the context of the text - determines the meaning of the text. The time taken to read a passage is directly related to the number of propositions the passage contains (Kennedy, 1984; Kintsch, 1977). Kennedy (1984) states that a text produces learning if the propositions are new and if the propositions are well-known, then the purpose of reading is for pleasure. The reader's knowledge, attitude and point of view are also propositions. Thus, inferences exist already in the reader's knowledge. Some propositions are embedded and need to be inferred from other propositions in the text. Furthermore, a high level of linguistic knowledge is needed for inferential comprehension (Park, 2004). It is erroneous, as claimed by Kintsch (1977), to believe that a text contains only one meaning because if this were the case, then no text would require inferences on the reader's part. The reader checks if their inferences are correct by reading the information in other sentences. When the text is totally explicit, there is no room for inferences, but this seldom happens. Kennedy (1985) states that when new propositions are contained in the text, reading time is increased. Furthermore, Kintsch (1977) claims that it is easier to recall higher-order propositions then lower-order ones. Low-level propositions are used to build high level ones (Kennedy, 1984).

A fourth factor affecting comprehension is metacognitive strategies (Linan-Thompson et al., 2003; Oakhill & Yuill, 1996), which include evaluating what has been read, predicting what will happen next and verifying if what has been read makes sense. A significant relationship has been found to

exist between improved metacognitive strategies and comprehension ability (Ghaith & Obeid, 2004).

Reading is thus not simply a process of decoding letters and sounds to form words and sentences. It is a meaning-making process for constructing and understanding reality. There are three levels of understanding what has been read – functional, cultural and critical literacy. Functional literacy is the most elementary form of literacy where the reader possesses basic writing and reading skills, which enable her to understand a basic text (Williams & Snipper, 1990). Functional literacy proficiency enables a person to function in society (Goldman, 1987; Williams & Snipper, 1990). Devine (1994), however, claims that functional literacy in a highly literate society is not sufficient for personal growth and for the fulfilment of one's needs. In this case cultural literacy is required (Williams & Snipper, 1990). This is the ability to fully understand texts based on shared experiences and points of reference. This provides a deeper and richer appreciation of what is being read. One is not just reading to follow instructions or gain basic information as with functional literacy. The highest form of literacy is critical literacy. When a reader is critically literate, he is able to analyse what has been read and to evaluate the writer's stance and standpoint.

In this way, a L1 reader should have a high level of comprehension and a higher repertoire of abilities to aid their comprehension. It is important to understand the way in which a L1 reader reads in order to understand the unique challenges faced by L2 readers.

Cummins (1999) argues that cognitive academic language proficiency (CALP) is necessary for academic tasks. CALP takes five to seven years to be mastered by L2 learners (Cummins & Swain, 1986; Cummins, 1999), whereas Basic Interpersonal Communication Skills (BICS) takes approximately two years to develop (Cummins, 1999). A second language (L2) learner (Cummins, 1999), who acquires their L2 too early, may have mastered the second language on an oral level, but may not be able to engage with the language on a more rigorous academic level after a period of two years. Studying in L2 under these circumstances places the learner at a disadvantage as opposed to a first language (L1) learner (Dean, 2002; Etim, 1990; Ghaith & Obeid, 2004; King & Jordaan, 2005; Nel et al., 2004; Palmer, 2004; Park, 2004; Salim, 1996).

Ideally, a child should be educated in L1 until they are proficient in their L1 CALP, where after they can learn L2. This is approximately at the age of seven. L2 therefore builds on L1 (Cummins & Swain, 1986; de la Luz Reyes, 1987; Lenters, 2005). There are only cognitive gains when both languages develop to a level of proficiency where transfer can take place (Cummins, 1998; Lenters, 2005; Watson, 1991). This linguistic interdependence is supported by a plethora of international research (Cummins, 1991). According to Cummins (1991), L2 learners have a unique difficulty as compared to L1 speakers in that they take a great deal longer to develop their academic skills as they are learning the language while using the language to learn, as opposed to L1 speakers who are able to use the language to learn. However, if the individual has literacy skills appropriate for schooling in the first language, then literacy skills in the L2 can be facilitated (Duran, 1987).

Cummins (1991) states that an adequate development of L1 results in a better level of achievement in comprehension tests. Innate specialised language skills are developed with the first language and so are already developed when the learning the second language. This is due to the innate language learning mechanism that allows the majority of humans to learn their mother-tongue (Sharwood-Smith, 1991; Wong-Fillmore, 1991). Bilingual theory suggests that information is processed by this innate ability that does not distinguish between L1 or L2 (Sharwood-Smith, 1991). This adds weight to Cummins's theory of linguistic interdependence, which suggests an experience in L1 or L2 will promote proficiency in both languages (Cummins & Swain, 1986). The skills involved in the acquisition of new knowledge in L1 can be transferred to L2, as the conceptual system is common to both language systems (Jordaan & Jordaan, 1998).

Academic performance reflects underlying cognitive attributes present in both languages (Cummins, 1991). However, when becoming bilingual later in life, the mechanisms involved in learning L1 are not involved in the learning of L2. There is a great deal of individual variation in how learners learn an L2 (whereas there is no variation in how a L1 is learnt), which makes it difficult to study L2 acquisition (Wong-Fillmore, 1991).

Lenters (2005) states that there is little data and a great deal of opinion as to when L2 instruction is best for children. Older students should only learn a L2 once they have developed a L1 proficiency

(Cummins & Swain, 1986). According to Wong-Fillmore (1991), older learners acquire the L2 better than younger children do because they have more effective strategies and cognitive abilities.

However, problems, also arise when acquiring the L2 at an older age, because communication is more complex, mental rigidity increases, and an awareness of social judgement results in less risk taking. In opposition to Cummins' theory Lenters (2005) has shown that young children in kindergarten can learn L2 well, provided instruction in L1 continues. Children in preschool after the age of 3 can acquire bilingualism after a year. Children who are bilingual from birth have little difficulty in acquiring both languages (Schaffer, 2002).

Wong-Fillmore (1991) states that in order for a learner to learn an L2 she must have the motivation to learn the L2. She must have constant access to L2 speakers who know the language in an authentic situation (Cummins & Swain, 1986; Wong-Fillmore, 1991). She can then observe social and linguistic data in order to figure out word meanings. L1 speakers make language more repetitive and redundant in order to help L2 speakers understand (Wong-Fillmore, 1991). Furthermore, Lenters (2005) claims that oral proficiency must be fostered in the classroom as a prerequisite for reading proficiency. If any of these factors is missing, then adequate language learning is not possible (Wong-Fillmore, 1991).

The following literature claims that there are a number of advantages to being bilingual. Proficient knowledge in two languages enhances cognitive flexibility and metalinguistic skills and also increases the cultural repertoire (Cummins and Swain, 1986; Duran, 1987; Zuss, 1994). It also increases metalinguistic awareness of phonics and letter correspondence (Cummins & Swain, 1986; McLaughlin, 1987; Schaffer, 2002).

Research has shown that when bilingual and monolingual children are matched on social economic status, bilingual children have higher IQ scores, better general language proficiency and better attention than monolinguistic children have (Bialystok, 1988; Cummins & Swain, 1986; Diaz, 1985; Ginsburg and McCoy, 1982).

Bilinguals are more likely to develop flexible and creative uses of language in areas that are accessible to conscious manipulation (Watson, 1991). Bialystok (1991), however argues that

although bilingual children process language differently to monolingual children, they are not superior to monolingual children. She claims that early studies were overly enthusiastic about the positive effects of bilingualism and that this optimism was used as a political tool. However, Bialystok, Shenfield and Codd (2000) later state that bilinguals are superior because they recognise from early on that linguistic representations are arbitrary. They are less distractible as they have learnt to inhibit the interference of one language when focusing on the other.

Despite these advantages, there may also be difficulties that are encountered when studying in a L2. When a child or adult has not developed their L1 adequately, he encounters difficulties with L2 (Cummins, 1999). Mora (2003, cited in King & Jordaan, 2005) found that L2 learners read sentences word by word instead of chunking words into meaningful units. In this way, they were not able to pick out the relevant detail in readings. They struggle with idiomatic expressions, unfamiliar vocabulary and grammatical constructions. They also have a difficulty with connecting sentences to each other and fail to consistently use self-monitoring strategies. They experience problems with inferential comprehension as they have to rely on their culturally embedded schemata, which misguide their interpretations.

Learning a second language includes adopting aspects of the culture of that language and this has a number of difficulties. Langer (1989:1, cited in Cummins, 1994) defines literacy as "the ability to think and reason within a particular society" and this is defined by the dominant group. It is therefore easier for the dominant members of the culture to express themselves than it is for the subordinate members, because the language is more relevant for them (Devine, 1994; Malakoff & Hakuta, 1991).

Devine (1994) sees illiteracy not as a deficiency, but as a failure or a refusal to internalise the values and attitudes of the dominant culture, which are reflected in its language and literacy. Literacy is neither value nor culture-free. Cummins (1994; 1997) claims that minority groups may choose illiteracy over losing their own language. Minority groups must translate their beliefs, values and expectations in terms of those set by the dominant culture. Sometimes these are so different that they do not translate. Teaching a L2 learner functional literacy is not sufficient for them to be able to succeed in society, as the subordinated group's culture is devalued and they are denied access to power and resources, held by the dominant group. To succeed the minority culture

must adopt the ways of the dominant culture and at the same time devalue their own cultural identity (Cummins, 1994; 1997; Devin, 1994). Minority groups are over-represented in school failure (Cummins 1997; 1998). Stedman (1987, cited in Cummins, 1994) states that effective schools reinforce the ethnic identity of all students and academically-rich programmes engage students in the learning process by engaging them in tasks that can be related to their own experiences. There are cognitive advantages to being bilingual only if the L1 is not under threat by the L2 (Cummins & Swain, 1986).

As with L1 learners, the background experience of the L2 learners is important for comprehension. Lang (1990, cited in Park, 2004) found that L2 learners recall more information from familiar texts than from unfamiliar texts and that background knowledge or schemata are important for comprehension. If a reader has no cultural knowledge of an event described in the text, she will misinterpret the information by activating inappropriate schemata and this in turn affects comprehension (Anderson, 1994). Furthermore, L2 learners have to rely heavily on previously constructed schemata because they have a lack of linguistic knowledge, in other words, lack of word constructions and grammar (Park, 2004). Salim (1996) found that if the learner was unwilling to identify with the second language's culture, they would not be motivated to learn about that culture's background and that in turn would impact on their being able to comprehend readings in that culture's language.

To illustrate this, the following statement from the Tao Te Ching shows it is difficult to gain understanding without background knowledge of Chinese culture: "The Tao that can be talked about is not the true Tao. The name that can be named is not the eternal name. Everything in the universe comes from nothing" (Kwok, Palmer, & Ramsay, 1994; 37). This to the western mind may seem baffling and difficult to understand. However, when given a background on the Chinese culture from whence Taoism stems, it is much easier to understand this passage. Taoism originated in 221BCE to 420CE. At the time China was in a state of anarchy and no one was safe either physically or intellectually. The aim of Taoisim was therefore to free oneself of all earthly concerns. They believed life was short, that one had no control over one's destiny and that life was not worth sacrificing for wealth, renown or social reputation (Wong, 1995). Therefore the goal was to empty one's mind of all judgement and desires in order to recognise the Tao (Richards, 1997; Saso, 1998).

Additionally, a second language learner may be at a loss for words because the second language does not have the right words for expressing what they have in their own language (Schwanenflugel, Blount & Lin, 1991; Zuss, 1994). For example, English does not have the formalities of class and birth-order that Balinese has (Zuss, 1994). Category structures vary from culture to culture, for example, categories may contain more or even less items and different concepts (Schwanenflugel et al., 1991). Polysemous words (words that are identical orthographically, but have different meanings) create problems for L2 learners (Stahl, 1991). In order to comprehend what has been written, a learner must have an oral knowledge of the vocabulary contained in the text (Lenters, 2005). Droop and Verhoeven (2003) caution that L2 learners need extensive training in vocabulary. In order to develop a written grammatical proficiency, the learner needs to have had a great deal of exposure to L2 on an oral level (Cummins & Swain, 1986).

Another obstacle that L2 readers must deal with is understanding cultural metaphors. Kennedy (1984) states that a metaphor brings together two different propositions and the comparison between the two gives rise to a new concept, where according to Kintsch (1977) and Lakoff (1994), ordinary words are not used in their everyday senses. The two propositions must have one element in common to allow the connection to be made. It requires inference on the part of the reader in order to obtain the meaning. According to Palmer (2004), the reader must have an ability to suspend a literal interpretation of what has been read. Metaphor allows one to use everyday aspects of one's concrete experience to understand other aspects of experience (Lakoff, 1994; Scholnick & Cookson, 1994; Spivey, 1997). Therefore metaphor informs how one thinks. It is a highly structured, fixed system that is conventional, and is used constantly and automatically without effort or awareness (Lakoff, 1994).

Viewing language literally, makes the hegemonic cultural metaphors of dominant groups invisible. These metaphors are inscribed in and normalised in language (Roy, 2005). According to Suleiman and Moore (1995, cited in Palmer, 2004) figurative speech is a part of everyday cultural experience. Individuals of the same group share the same metaphors (Spivey, 1997). According to Palmer (2004), in order for a reader to interpret figurative language, she must be familiar with the values and beliefs of the culture from which the text came. For example, a conceptual system

underlies the English language and this influences the metaphors used (Lakoff, 1994). For instance, in western English culture, love is understood as a journey. This is not a figure of speech, but a mode of thinking that is influenced by culture. In this way, it influences the actions taken by the members of western culture. This poses a difficulty for L2 learners and for their inferential comprehension as they may lack knowledge of the culture's belief in romantic love and conceptual systems about love. Many non-western cultures do not marry for love, but for economic and political reasons and so the notion of romantic love would be hard to comprehend (Johnson, 1983; Lakoff, 1994). Dean (2002) on the other hand, advocates the use of poetry to enable L2 learners to express themselves through figurative language. This is because their lack of knowledge of linguistic structures will not hinder their expression if they use figurative language.

The discussion has examined reading in detail and the way in which bilingual learners read in a L2. The paper will now discuss the South African context briefly as South Africa is a multilinguistic society, where learners are being educated in a L2, usually English, and so they too struggle with many of the difficulties already described. They also have to face certain problems that are unique to the South African situation.

The South African government is currently endeavouring to increase the literacy of its nation (White Paper 6, 2001a). However, due to South Africa's diverse population, difficulties have been encountered with teaching reading and writing. South Africa (Jordaan & Jordaan, 1998) is a multilinguistic society where many people have not mastered the standard form of the dominant language, English, as a communication and teaching medium. As a result they are not able to express themselves adequately in English.

People may know the words but not the concepts and are therefore not able to apply the concepts. Alternatively, they may know the concepts (which they can apply) but they do not know the words to signify the concepts (Jordaan & Jordaan, 1998). King and Jordaan (2005) and Jordaan and Jordaan (1998) claim that at this point in South Africa's history, most children are learning through English as a medium of instruction and that this is often their second, third or fourth language.

A recent survey of children in rural Limpopo, KwaZulu-Natal and the Eastern Cape found that 54% of all the children do not understand what their teachers are saying in class and 27% do not

understand what is written in textbooks. One possible reason is that teachers are using traditional methods of teaching (HSRC & EPC, 2005) instead of methods based on constructivism (Elkind, 2004).

Current school policy employs the method of additive bilingualism (where the second language is built upon the foundation of the mother-tongue). Therefore the Junior phase at school is taught in the mother-tongue and the Intermediate, Senior and High School phases are taught predominantly in English (HSRC & EPC, 2005). This should be the ideal situation for learning a L2 according to Cummins and Swain (1986). However, the problem with rural (and township) schools is that they are monolingual (HSRC & EPC, 2005). There are few cases of children having regular contact with L1 English speakers. Most teachers are not English L1 speakers and so find it difficult to articulate in English themselves. There are also no English L1 learners, which mean that these classrooms are not English-speaking environments. These children are not exposed to English-proficient role models.

A further problem is that learners may speak different dialects of any of the African languages, but they are taught in the official dialect of that language in the Junior Phase. They may not know the official dialect as it is different from their L1 dialect. This will then adversely affect their mastery of their L1 (HSRC & EPC, 2005). In urban areas, a child may have been born to parents who speak different languages, and in addition to this, may have been exposed to 'township language', which is a mixture of the Black languages/Afrikaans and English. Urban children are therefore also at a disadvantage when learning at school as they may not be learning in any of the languages they know. As such, Wong-Fillmore's (1991) conditions for the adequate learning of a L1 and L2 are not being met.

The result is that although L2 learners in South African schools may have been educated in English, they may not have developed the cognitive academic language proficiency (CALP) to allow them to comprehend English texts adequately at a school level or at a tertiary level (King & Jordaan, 2005). This may be, according to Cummins and Swain (1986), because these learners have not had the opportunity to develop CALP in their mother tongue. CALP in one's mother tongue is essential for a learner to be able to master a second language. These are the learners that are feeding into the tertiary institutions in South Africa.

One of the loftiest goals in a learner's education is to receive a tertiary education. Under Apartheid, most South Africans were prevented from obtaining a tertiary education and it has only been in the last decade that all South Africans have access to university. However, as discussed in the previous section, many South African students are still disadvantaged by the circumstances surrounding their school education and this affects their ability to perform at university. In addition to these difficulties that a student must face, universities also have their own micro-culture, which the student must adopt in order to learn.

A discourse community is formed when "a common ground is established through shared experiences, values and language" (Williams & Snipper, 1990; 2) that guide thinking (Spivey, 1997). Zuss (1994) and Spivey (1997) state that discourse communities are organised around the production and legitimisation of particular forms of knowledge and social practices at the expense of others. Discourse communities in academia establish conventions for establishing the truth, for example the concept of developing hypotheses for analyzing data. Students are therefore required to surrender their own language and modes of thought to conform to the language belonging to a particular academic department. Furthermore (Crystal, 2005), every academic discipline at university has its own unique set of vocabulary and concepts that are not used in everyday English, which the student has to learn.

In addition, Zuss (1994) states that it is important to master "abstract formalism" in order to succeed in academic life and so students deny their own linguistic expertise as they see academic language as privileged and superior. "Abstract formalism" is based on the supra-empirical and formal language of mathematics. It became the dominant cognitive structure with the emergence of western capitalism. Its main characteristic is that it rejects concrete experience. It is characterised by an absence of narrators, personal voice, situation-specific relevance and other indicators of subjectivity (Devine, 1994; Zuss, 1994). Knowledge thus becomes abstract. It is removed from the context and references of lived experience. Literacy in universities then becomes technocratic. Figurative language provides a way to combat abstract formalism as it allows the L2 learner subjective expression. The L2 learner should also be made aware of the culture of the dominant society in order to better cope with the literacy of that culture (Zuss, 1994).

According to Zuss (1994), the academic community legitimises what constitutes literacy and the functional criteria for measuring cognitive development. For this reason many students are seen to have a low level of critical thinking and to be academically illiterate. As a result, in America, (Bernesch, 1991) students have sued Colleges for being disqualified for entry based on reading tests that showed them as lacking proficiency in English. Onwuebuzie, Mayes, Arthur, Johnson, Robinson, Ashe, Elbedous and Collins (2004) state that it is problematic to assume that standardised texts are suitable for assessing literacy, since comprehension relies on understanding a set of grammatical rules, the ability to decipher texts and the sociocultural background of the reader. There are few studies on adults with respect to sociocultural context. There is also little research on the reading ability of undergraduate students and even less on postgraduate students linked to academic achievement. The current available research has shown that the performance of minority students is weaker than that of majority students as the language of the tests favour majority students.

As is the case with minority students in America (Onwuebuzie et al., 2004), a pervasive problem facing South African universities is the low language proficiency of first year students (Butler & Van Dyk, 2004; Nel et al., 2004). One third of first year students have a language proficiency of Grade 10 or below (Butler & Van Dyk, 2004). According to Butler and Van Dyk (2004) it is widely agreed that a low language proficiency makes it difficult to succeed at university level in South Africa. Nel et al. (2004) argue that the key skill needed to succeed at university level is reading ability.

Most students are unable to cope with the prescribed readings or with the level of writing in tests and assignments (Butler & Van Dyk, 2004). Onwuebuzie at al. (2004) state that college students report being overwhelmed by the volume of reading. Blue (1993) states that, at a tertiary level, a learner needs to be able to understand the overall concept of what is read, to distil the main points from the supporting detail, to skim and scan, to analyse, and to synthesise and evaluate what has been read. These are all aspects of reading that facilitate comprehension but students need to have first mastered the basic skills of decoding, skimming, and scanning, and have a good knowledge of vocabulary and grammar. According to Nel et al. (2004), it is very important to identify factors that are affecting learners' academic achievement - particularly in the first year of university. This is necessary to help stem the heavy drop out rate at the tertiary educational level. The University of

South Africa (Bekker, 2004) is currently investigating the option of allowing students to study in their mother-tongue.

Nel et al. (2004) advocate that it is important to have a comprehensive assessment battery in order to assess all possible components that are affecting a learner's reading in order to appropriately assist that learner in the areas where he is weak. This test battery demands a great deal of time to administer and is often rejected by universities for this reason (Kasper, 1996). On the other hand, Butler and Van Dyk (2004) found that the English Language Skills Assessment for Tertiary Education (ELSA-PLUS) Test, which is a single test, has an 84% predictive validity for first year academic success. The ELSA-PLUS seems to be an appropriate measure for South African students.

However, Delagado-Gaitan (1987) and Onwuebuzie et al. (2004) argue that not all tests are culturally fair and that many minority students have been disadvantaged because tests have shown that they are lacking skills when they are not. Furthermore, minority students have been sent on English Second Language (ESL) courses that are on a level that is too elementary for the needs of the L2 student (Delgado-Gaitan, 1987).

With these issues in mind, Butler and Van Dyk (2004) and Kasper (1996) developed an ESL course that was based on a particular academic discipline. The ESL component of the course develops reading skills through texts that focus on topics in the mainstream course. Kasper (1996) claims that discipline-based texts help students construct schemata, which are built on existing schemata and introduce new vocabulary in context. Metacogintion is improved as students learn how to overcome difficulties with comprehension. Exercises force inferences and predictions which lead to the development of efficient comprehension strategies and to the growth understanding if learners have to make connections with things they already know. Block (1986, cited in Ramirez, 1994) found that tertiary students, through being aware of the text structure and through monitoring their reading skills, were able to learn more course content. Research has shown that discipline-based language skills teaching is very effective for overcoming language difficulties at university (Butler & Van Dyk, 2004; Kasper, 1996) as opposed to past interventions, where students were taught ESL skills in an ESL course that was not related to what they were

learning at University. These past programmes had a very low success rate. The pass rate was 54% for the ESL course as opposed to a 100% for the discipline-based course (Kasper, 1996).

South Africa, like many other countries, is a multilinguistic nation and is faced with students trying to learn, often in a second, third or fourth language. Many South African L2 students (as discussed) were not exposed to situations that fostered either their L1 or their L2 competence adequately. They are therefore faced with a huge disadvantage as compared to their L1 peers at university. This study aims to investigate the effectiveness of the Stanford Diagnostic Reading Test (SDRT) as a suitable test for assessing learners and for predicting their academic performance in order to aid their learning.

1.1. Rationale

As Nel et al. (2004) state, the dropout rate of students at a tertiary level of education is high. One third of the students, who study at university in English are not proficient in English and this leads to low success rates (Butler and Van Dyk, 2004). There is little research on university students and reading (Butler and Van Dyk, 2004, Nel et al., 2004, Onwuebuzie et al., 2004) and even less research on the link between reading and writing at any level of education, whether it be primary school or university (Spivey and King, 1994). Nel et al. (2004) call for assessment batteries that will help to identify students, who are struggling with their reading, so that appropriate interventions can be devised in order to improve their performance. This study uses the Stanford Diagnostic Reading Test (SDRT) Blue Level in order to see if there are in fact differences between L1 and L2 learners and to see if the SDRT has a good predictive ability for academic achievement at a tertiary level. The SDRT was used as it has been created to determine in which areas of reading students are experiencing difficulty, it required far less time to administer in comparison to Nel et al's. (2004) comprehensive assessment battery and the SDRT is one of the most comprehensive reading tests created (Bjorn, 1986). The results of the study will help to add to the literature on L2 learners at university and suggest interventions so that they are able to achieve their academic potential. The study will further add to the literature on synthesis research.

1.2. Aims

- The study aims to investigate the relationship between reading in one's second language and its effect on academic achievement, in other words, its effect on learning.
- The study will investigate if a student's ability in any of the different aspects of reading, i.e. knowledge of vocabulary, comprehension, phonics knowledge, word-building skills and the ability to skim-read and scan, is a predictor of academic achievement.
- This study will investigate the different subtests on the Stanford Diagnostic Reading Test (SDRT) and their relationship with academic achievement for the L1 and L2 language groups.

1.3. Research Hypotheses

1. There is a difference between First Language (L1) and Second Language (L2) learners in the performance on the aspects of reading measured by the SDRT (reading comprehension, vocabulary, phonics, word-building, skim-reading and scanning).
2. Performance on the SDRT predicts academic performance at a tertiary level of education.

2. METHODOLOGY

2.1. Design

This study is quantitative in nature, as a measure of reading achievement, the SDRT was administered and the results of the mid-year academic marks were collected. The research design takes the form of an *ex post facto* design. According to Neale and Liebert (1986), an *ex post facto* design is used to simulate experimental procedures after an event has occurred. In this study, the *ex post facto* design was used to examine as the relationship between factors that already exist. The three factors in the study were the students' results on the SDRT, their academic marks on an introductory course and the language groups the students belonged to. The factor being 'manipulated' is language as some of the students are English first language speakers and others are English second language speakers. A problem with the *ex post facto design* (Neale & Liebert, 1986) is that it is not always possible to account for all the variables that have an effect on the outcome of the situation being researched.

2.2. Subjects

The research was conducted in a tertiary educational setting. The Stanford Diagnostic Reading Test (SDRT) Blue Level was administered to first year students at the beginning of 2005 by the a school in an English-medium university in South Africa. The sample was drawn from this pool and students were asked to give their consent to have their SDRT results, their biographical information as well as their mid-year exam and essay-type assignment results used in the study. Approximately 120 students were approached at the end of 2005, of which 97 gave consent to have their results and information used in the study. The sample was reduced from 95 students to 67 students as some of the students were not first year students. In the sample, 43 students were English first language speakers and 22 were English second language speakers. The descriptive statistics are given in Table 1. Descriptive statistics are used to describe a set of data (Howell, 1995; McCall, 1990). More detailed descriptive statistics are given in Appendix B.

Table 1. Descriptive Statistics for the variables of age and gender for the L1 and L2 groups.

		Frequency		Percent	
		L1	***L2***	***L1***	***L2***
AGE	18	16	8	37.2	36.4
	19	21	8	48.8	36.4
	20	5	3	11.6	13.6
	21	1	3	2.3	13.6
GENDER	Male	14	7	32.6	31.8
	Female	29	15	67.4	68.2

A number of factors were taken into account with respect to the choice of sample. The first is the number of years of prior exposure to instruction in English. Cummins (1999) states that it takes 5 to 7 years for a learner to gain a level of cognitive academic language proficiency. Thus only learners who have had language instruction in English for their high school career (100% for the L1 group and 91% for the L2 group, please refer to Tables 4 & 5 in Appendix A) participated in the study. Furthermore, the majority of the sample were educated in English in Grade 1 and 2 (100% of the L1 group and 81.8% of the L2 group, see Table 3 in Appendix A). The majority of students were using English textbooks to learn from by the beginning of high school (See Tables 7 and 8 of Appendix A). Therefore the majority of the students had a lengthy exposure to learning through English as a medium of instruction. In addition, most of the L2 group learnt English from first language speakers or from their families of origin (See table 1 in Appendix A).

2.3. Materials

The Stanford Reading Diagnostic Test (SDRT) was designed to identify specific strengths and weaknesses in reading. It assesses four main domains of reading; Decoding (auditory and visual discrimination, phonics, and structural analyses), Vocabulary (word parts, word meanings), Comprehension (understanding passages) and Rate (scanning, skimming and fast reading). The test was created for use with children and adolescents from Grade 1 through to Grade 12 and the first year of college. The test is divided into four different levels. The Red Level assesses Grades 1 to 3, the Green Level is for Grades 4 to 5, the Brown Level was designed for Grades 6 to 8, and the Blue Level tests Grades 9 to college level (Karlesen, Madden & Gardener, 1966).

The SDRT Blue level was used to obtain scores for reading comprehension, vocabulary, phonics and word-building skills, as well as for skim-reading and scanning. Bjorn (1986) claims that the

SDRT is different from other reading surveys in that it is a diagnostic instrument, which provides detailed coverage of a selected range of reading skills in depth as opposed to other surveys, which examine a broad range of areas in less detail. The SDRT is based on the premise that reading comprehension is the most important aspect of reading and that all other skills (for example, phonics and word recognition) are necessary aspects for comprehension to occur.

Bjorn (1986) states that Reading Comprehension in the SDRT: Blue Level is divided into functional, textual, recreational, inferential and literal comprehension. Functional comprehension assesses functional literacy. Textual comprehension tests the ability to read in a content area and tests the ability to learn from a text. Recreational comprehension in the SDRT is the ability to read literacy from an English cultural heritage and the ability to understand figurative language. Inferential comprehension is the ability to predict outcomes, to see cause and effect relationships, and to understand tone and mood. Literal comprehension, on the other hand, is the ability to understand what has been explicitly stated in the text.

The Vocabulary subtest is comprised of words from common high school subjects in the fields of Maths and Science, Reading and Literature and Social Science and Art. The Word Parts subtest measures knowledge of prefixes, suffixes, and root words, which occur frequently in the English language. The Phonetic Analysis subtest examines the reader's knowledge of the relationship between word sounds and letters. The Structural Analysis subtest examines the ability to decode words by using word parts such as suffixes, affixes and root words. This is also related to the ability to break words into syllables, which is a skill needed for decoding words. Finally, the Skimming and Scanning subtest assesses the learner's ability to skim and scan as these are skills that are considered necessary for efficient reading (Bjorn, 1986). Research supports that these six aspects measured in the SDRT are essential aspects of reading (Etim, 1990; Ghaith & Obeid, 2004; Nel et al., 2004; Palmer, 2004; Park, 2004).

The SDRT is different to other reading surveys in that emphasis within the test is placed on low achievers, as many of the questions are easier than they are in other reading tests. This allows for the SDRT to be a fairer measure for readers whose language skills are not strong (Bjorn, 1986). The SDRT has been well standardised on an American sample. It is not, however, normed on a South African population. The reliability of the SDRT is very weak for pinpointing specific

domains of reading in which pupils demonstrate strengths and weaknesses (Salvia & Ysseldyke, 1999), because factors such as guessing and IQ may affect the results (Anastasi, 1988). The validity of the test can only be judged relative to the content of the local curriculum and thus no validity scores for the test are given (Salvia & Ysseldyke, 1999). On the other hand, the SDRT has been criterion-referenced (Karelson et al., 1966). A criterion-referenced test evaluates performance in terms of mastery as opposed to actual achievement (Anastasi, 1988) and this is the focus of this study.

2.4. Procedure

Permission to conduct the study was obtained from the Department Head at the school at the university. Permission was also obtained from the Ethics Committee and the Registrar of the university to conduct the study. The purpose of the study was explained to the students. They were then asked to fill in consent forms in order to allow the researcher access to their results and to their biographical information. At the same time as filling in the consent form, the students filled in a biographical questionnaire (See Appendix B). Once all the consent and biographical information was obtained, the school allowed the researcher access to the students' SDRT results and to their introductory course marks.

A biographical questionnaire was handed out to the students in order to determine whether the learners were English L1 or L2 speakers, as this is known to affect the learner's reading performance (Etim, 1990; Salim, 1996; King & Jordaan, 2005). Furthermore, the information on the biographical questionnaire was collected to allow a qualitative interpretation of the data (See Appendix A).

Nel et al (2004) state that reading ability is directly related to academic performance and so the students' overall mid-year exam results were collected as well as their essay assignment results from their coursework for the first half of the year. The results from the Introduction to Law course were used, as all students take this course and are assessed via essay-type tests, exams and assignments.

2.5. Ethical Considerations

- The purpose of the study was explained to all the participants, i.e. the first year students. The students participating in the study were asked to complete consent forms to permit the researcher to collate the data on their SDRT performance with their biographical questionnaire and their academic marks (Please refer to Appendix A).
- All data is kept confidential and research findings will be reported back to the school at the university as pooled information from the entire study (with no personal information) so as to preserve the confidentiality of the students.
- The SDRT test results will remain in the school at the university and no names of students have been entered in the data analysis.

3. RESULTS

3.1. Data Analysis

The data gathered was described statistically and analysed quantitatively. Data gathered from the SDRT: Blue level test was analysed together with the students' mid-year exam and essay-type assignment results in terms of the categories of L1 and L2. A t-test was carried out to ascertain if there was a significant difference between the means (Breakwell, Hammond & Fife-Schaw, 2003) for the L1 and L2 students on the SDRT in order to investigate the hypothesis that there would be a significant difference between the results of the L1 and L2 students.

A stepwise regression was applied to investigate the second hypothesis - that the performance on the SDRT can predict academic performance. Regression is used when the association between variables is used as a method of prediction (Breakwell et al., 2003; Howell, 1995; McCall, 1990; Neale and Liebert, 1986). The predictor in this case is the scores on the subtests of the SDRT and the criterion is the academic score. The biographical data was used to determine which language groups the students belong to in order to see if there is a difference between language groups or not, as well as to aid a qualitative interpretation of the results.

3.2. Differences between L1 and L2 on the SDRT

The L2 students as a group, performed less well than the L1 group on every item of the SDRT. (See the bar graphs in Appendix D). A t-test was performed for each of the subtests of the SDRT for the L1 and L2 students. The results are presented in Table 2. Neither gender ($t=0.064$, $p>0.05$) nor age ($F=2.052$, $df=3.61$, $p>0.05$) were significant variables with respect to performance on the SDRT.

Table 2. Results of the t-test for L1 and L2 speakers on the SDRT.

Subtest	Language group	N	Mean	Std. Deviation	Std. Error Mean	Mean Difference	t	Sig.
Comprehension	L1	43	54.65	4.423	0.675	4.969	2.584	**0.015***
	L2	22	49.68	8.448	1.801			
Vocabulary	L1	43	28.56	1.817	0.277	2.285	2.823	**0.006****
	L2	22	26.27	4.692	1.000			
Word Parts	L1	43	23.88	2.602	0.397	2.111	2.212	**0.035***
	L2	22	21.77	4.070	0.868			
Phonetic Analysis	L1	43	22.51	6.497	0.991	2.966	1.676	0.099
	L2	22	19.55	7.236	1.543			
Structural Analysis	L1	43	22.58	3.382	0.516	2.763	3.150	**0.003****
	L2	22	19.82	3.275	0.698			
Scanning & Skimming	L1	43	11.88	3.095	0.472	0.247	0.300	0.765
	L2	22	11.64	3.230	0.689			
Total test Score	L1	43	67.28	13.963	2.129	6.234	1.716	0.091
	L2	22	61.05	13.643	2.909			

*p≤0.05 **p≤0.01 ***p≤0.001

It can be seen from Table 2 that the mean scores for the L2 group are lower than those for the L1 group for all six subtests. Furthermore, the standard deviation in the scores of the L2 group is far higher than the L1 group, meaning that there was a greater spread of scores in the L2 group than there was in the L1 group. There were significant differences on the Comprehension ($t=2.584$, $p\leq0.05$) Vocabulary ($t=2.823$, $p\leq0.01$), Word Parts ($t=2.212$, $p\leq0.05$) and Structural Analysis ($t=3.150$, $p\leq0.01$) subtests of the SDRT, where L1 speakers performed better than L2 speakers. This means that, in relation to L1 speakers, L2 speakers experience more difficulties with comprehension. Their knowledge of vocabulary is lower and this includes a less detailed knowledge of the roots of English words, suffixes and affixes.

There were no significant differences between the L1 and L2 speakers for the Phonetic Analysis ($t=1.676$, $p\geq.05$) and the Scanning and Skimming ($t=0.300$, $p>0.05$) subtests of the SDRT. This may mean that both L1 and L2 speakers know the phonics system of English equally well and that their abilities to skim-read and scan a text are similar. Overall, there was no significant difference between the two groups on the total test score ($t=1.716$, $p>0.05$).

A further analysis was conducted in order to see which of the subcomponents of the significant subtests in the above analysis were significant. The significant subtests were Comprehension, Vocabulary, Word Parts and Structural Analysis. Each of these subtests are comprised of different subcomponents. This was done in order to investigate which aspects of reading the L2 speakers are struggling with, as compared to L1 speakers. The results are presented in Table 3.

Table 3. Results of the t-test for L1 and L2 learners for the subcomponents of the significant subtests of the SDRT.

Parent test	Sub-test	Language group	N	Mean	Std. Deviation	Std. Error Mean	Mean Difference	t	Sig.
Total Reading Comprehension	**Functional Comp**	L1	43	18.42	1.52	0.23	1.873	3.878	**0.002****
		L2	22	16.55	2.36	0.50			
	Textual comp	L1	43	18.65	1.88	0.29	1.378	2.224	0.067
		L2	22	17.27	3.12	0.67			
	Recreational comp	L1	43	17.58	2.04	0.31	1.718	2.471	**0.046***
		L2	22	15.86	3.58	0.76			
	Literal Comp	L1	43	27.02	2.65	0.40	2.160	2.301	0.066
		L2	22	24.86	4.94	1.05			
	Inferential Comp	L1	43	27.63	2.26	0.34	2.810	3.670	**0.004****
		L2	22	24.82	3.92	0.84			
Total Vocabulary	**Reading and Literature**	L1	43	9.28	0.80	0.12	0.961	3.010	**0.024***
		L2	22	8.32	1.78	0.38			
	Social Sciences and Arts	L1	43	9.12	0.91	0.14	0.253	0.840	0.404
		L2	22	8.86	1.52	0.32			
	Maths and Science	L1	43	9.60	0.73	0.11	1.059	3.685	**0.007****
		L2	22	8.55	1.60	0.34			
Total Word Parts	**Affixes**	L1	43	12.60	1.40	0.21	1.150	2.791	**0.007****
		L2	22	11.45	1.87	0.40			
	Roots	L1	43	11.28	1.80	0.28	0.961	1.806	0.109
		L2	22	10.32	2.42	0.52			
Total Structural Analysis	**Affixes**	L1	43	11.30	1.85	0.28	1.666	3.513	**0.001*****
		L2	22	9.64	1.73	0.37			
	Syllables	L1	43	11.28	2.26	0.34	1.097	1.846	0.070
		L2	22	10.18	2.28	0.49			

*p≤0.05 **p≤0.01 ***p≤0.001

The mean scores in Table 3 demonstrate that the L2 speakers in the sample scored lower on all subcomponents of all the subtests of the SDRT than the L1 speakers. The standard deviation in the

L2 group means was also greater than that in the L1 group. Significant results were obtained for the Functional ($t=3.878$, $p\leq0.01$), Recreational ($t=2.471$, $p\leq0.05$) and Inferential ($t=3.670$, $p\leq0.01$) subcomponents of the Reading Comprehension subtest, which indicate that these aspects of comprehension are areas of difficulty for L2 speakers. Furthermore, significant differences were found for the Reading and Literature ($t=0.961$, $p\leq0.05$) as well as for the Maths and Science components ($t=3.685$, $p\leq0.01$) of the Vocabulary subtest, which indicates that L2 speakers have less knowledge of these areas as compared to L1 speakers. L2 speakers have a significantly lower score on Affixes for both The Word Parts ($t=2.791$, $p\leq0.01$) and for the Structural Analysis ($t=3.513$, $p\leq0.001$) subtests. The results of the above analyses support the hypothesis that there is a significant difference between L1 and L2 speakers on the SDRT, though this difference was significant for only 4 of the 6 subtests.

The non-significant results for the other components (although lower for the L2 students) were not significantly different from the L1 speakers. It seems that L1 and L2 learners can gain understanding from textual passages almost equally well and have a similar literal comprehension. In other words, they are able to understand the explicit details of a text. Furthermore, both L1 and L2 learners in the sample have similar levels of vocabulary in the sphere of Social Sciences and Arts. They seem to be able to break words into syllables equally well and have a similar understanding of the roots of English words.

3.3. Predictive Ability of the SDRT

The results from the above t-tests indicate that there is a significant difference between the L1 and L2 groups on 4 of the 6 subtests of the SDRT. A stepwise regression was performed in order to ascertain if the SDRT results could predict academic performance for the two groups. The results of the SDRT were statistically analysed against the results the students obtained for the Introduction to Law course, which is a course taken by all Law students. The total mark for the Law course was included. This consisted of two essay-type assignments, one class test and an essay type exam.

Only two components of the subtests had a significant relationship with academic performance for the L2 group. This is presented in Table 4.

Table 4. Regression results for the Reading Comprehension and Structural Analysis subtests for the L2 students. The criterion is academic score.

	Non-English (N=22)	
Test	b	Sig.
Inferential Comprehension	3.086	**.000*****
Structural Analysis: Affixes	-2.881	**.016***
R	0.826	
R Square	0.682	
Adjusted R Square	0.649	
Model ANOVA – F (sig.)	20.420 (0.000)	

*p≤0.05 **p≤0.01 ***p≤0.001

In Table 4, Inferential Comprehension is the best predictor of academic performance for the L2 group (b=3.086, p≤0.001). The Affixes component of the Structural Analysis subtest is also significantly related to academic performance, but this relationship is negative (b=-2.881, p≤0.05). These two components have a 68% predictive ability for academic performance (R^2=0.682). No other components of the SDRT had a significant predictive ability for academic performance for the L2 group. The results for the L1 group were slightly different and these are presented in Table 5.

Table 5. Regression results for the Word Parts and Structural Analysis subtests for the L1 students. The criterion is academic score.

	English (N=43)	
Test	b	Sig.
Word Parts: Affixes	3.995	**.006****
Structural Analysis: Affixes	-2.329	**.030***
R	0.500	
R Square	0.250	
Adjusted R Square	0.213	
Model ANOVA – F (sig.)	6.676 (0.003)	

*p≤0.05 **p≤0.01 ***p≤0.001

In Table 5, the Affixes component of the Word Parts subtest was the best predictor of academic performance for the L1 group (b=3.995, p≤0.01) and as with the L2 group, the Affixes component of the Structural Analysis subtest had a significantly negative relationship with academic

performance (b=-2.329, $p \leq 0.05$). On the whole however, these two components had a very poor predictive ability for academic performance for the L1 group ($R^2=0.250$). No other components of the SDRT had a significant predictive ability for academic performance for the L1 group.

4. DISCUSSION

This study aimed to investigate two hypotheses. The first hypothesis was that there is a difference between L1 and L2 learners in their performance on the aspects of reading measured by the SDRT (reading comprehension, vocabulary, phonics, word-building, skim-reading and scanning). The second hypothesis stated that performance on the SDRT predicts academic performance at a tertiary level of education.

In order to investigate these hypotheses, students were asked to voluntarily participate in the study. Of the 98 students that gave consent, 67 were deemed appropriate for the purposes of the study in that they had taken the SDRT test and that they were first-time university students. Data was then collected and analysed from the SDRT results, mid year course and exam results for the introductory course and from the biographical questionnaires that the students filled in. L1 and L2 students' results on the SDRT were compared in order to investigate the first hypothesis. The data of the SDRT was statistically analysed with respect to the students' course marks to determine if the SDRT predicted academic performance in order to explore the second hypothesis.

The results of the study show that there is a significant difference between the L1 and L2 students on the Reading Comprehension ($t=2.584$, $p\leq0.05$), Vocabulary ($t=2.823$, $p\leq0.01$), Word Parts ($t=2.212$, $p\leq0.05$) and Structural Analysis ($t=3.150$, $p\leq0.01$) subtests of the SDRT. In each case, the L2 students scored significantly lower than the L1 students. These results are to be expected as they support the findings of the two South African studies conducted by Butler and Van Dyk (2004) and Nel et al. (2004). A further analysis of the results indicates that L2 students struggle more with Functional ($t=3.878$, $p\leq0.01$), Recreational ($t=2.471$, $p\leq0.05$) and Inferential ($t=3.670$, $p\leq0.01$) comprehension. The L2 students also have lower vocabulary knowledge in the realms of Reading and Literature ($t=0.961$, $p\leq0.05$) and in Maths and Science ($t=3.685$, $p\leq0.01$). Furthermore, they experience more difficulties with affixes than L1 students do in both the Word Parts subtest ($t=2.791$, $p\leq0.01$) and in the Structural Analysis subtest ($t=3.513$, $p\leq0.001$). These results will be examined in the following discussion.

The L2 students may have scored less well on the Functional Comprehension component due to a lack of knowledge of the vocabulary used in this component, for instance most students did not

understand the meaning of the word “wayfarer” (see item 31 in the Reading Comprehension bar graph in Appendix D) and due to a lack of knowledge of certain conventions, for example, that the first ingredient listed on a food item is the main ingredient of that food item (See item 2 of the Reading Comprehension bar graph in Appendix D). Furthermore, half of the Functional Comprehension items were also Inferential Comprehension items and as the L2 learners struggle with Inferential Comprehension, this would bring down their score on the Functional Comprehension items that had an Inferential component. It is therefore probably the case that L2 learners do not have a Functional Comprehension that is significantly lower then the L1 students. There was no difference between the L1 and L2 groups on Literal Comprehension ($t=2.301$, $p>0.05$). This result is to be expected as all the students in the school know how to read and can link elements of the text together (Ashcraft, 2006) otherwise they would not have been able to reach a tertiary level of education.

The significantly lower scores obtained by the L2 students on the Recreational and Inferential Comprehension subtests are to be expected. As both these components have a heavy cultural loading, it would make it difficult for an L2 student to perform well in these aspects of the test if they do not have background knowledge of the content of these passages (Anderson, 1994; del la Luz Reyes, 1987; Palmer, 2004; Park, 2004; Williams & Snipper, 1990). For example, in the passage of the Reading Comprehension subtest (which tests Inferential, Literal and Recreational comprehension), on which the last 6 items are based many words are used that L2 learners would not know from their everyday communications, for example, “heath”, “myrtles” and “crag”.

With respect to vocabulary, the L2 learners performed significantly less well on the Reading and Literature and on the Maths and Science components. It is possible that many of the students did not have knowledge of maths and science vocabulary as they did not take science in high school (since they do not require science as a prerequisite for being accepted into the degree which they were registered for). The L2 students may have scored lower on the Reading and Literature component as they read far less English books then the L1 students do and therefore are gaining less exposure to new English vocabulary. 45.4% of the L2 students read 1 to 5 books per month as opposed to 67.4% of the L1 learners (See Table 6 in Appendix C). It is interesting to note that a more L2 students (although this is a small percentage of the overall sample) read more than 10 books (9% of L2 students) and magazines (27.2% of L2 students) in English than the L1 students

do. This may be a strategy that some L2 students have adopted to help improve their English language comprehension (See Table 6 in Appendix C). With respect to the Social Sciences and Arts component of the Vocabulary Subtest, many of the words of that part of the test are used in the subjects the students are studying such as “appointed’, “treasurer” and “residence”. Since the students in the study may have been interested in their registered subject prior to registering at university, they may have been exposed to these words and have thus learnt them. This may account for why there was no significant difference between the L1 and L2 groups ($t=.84$, $p>0.05$).

The L2 students may have performed less well on the Affixes aspect of the Word parts subtest as many of these words are Latin or Greek-based and so are difficult to understand if the student has no knowledge of Latin or Greek. The L2 students struggled with all the aspects of the Word Parts subtest, they struggled to understand the affixes of item 8 “quadruplicate” and item 12, “pseudonym” (See the Word Parts bar graph of Appendix D). There was no significant difference between the two groups on the Roots component of the word parts subtest. This may have been because it was easier to determine the meaning of the root from the meaning of the whole word, for example “hydro’ in “hydroelectric” means “water”. Therefore, even if a student did not know Latin or Greek, they would be able to work out the root, from having heard that word before.

The results of the Structural Analysis subtest need to be questioned as the recent version of the SDRT - the SDRT 4, has removed Structural Analysis as a subtest (Salvia & Ysseldyke, 1999) as it does not assess a skill that good readers use or that many learners at school are taught, in other words, the skill of syllabification. It therefore seems that in this study, the significantly negative correlation between the Affixes component of the Structural Analysis subtest and the students’ academic score is anomalous.

These results also need to be examined in the context of the South African situation. According to Cummins (1999) it takes approximately 5 to 7 years for a learner to achieve a cognitive academic proficiency (CALP). It is preferable if the child is taught in their home language until they reach the age of 7 (Cummins & Swain, 1986; de la Luz Reyes, 1987; Lenters, 2005). In this way they are able to develop an adequate level of CALP. The education policy in South Africa has put in place a system where children are taught in their home language for the Junior Phase of their schooling, approximately until the age of eight. They are then educated in English for the rest of their school

career (HSRC & EPC, 2005). These factors should be enough to enable the L2 learners to be as proficient in English as their L1 counterparts are, but the results show that this is not the case. It is therefore important to look at what is happening in the South African situation.

South Africa, as a nation, has only recently started to reform its education policies after the discriminatory practices of the Apartheid era were dismantled. It was not until 1996 that the government started to look at ways of reforming education and implementing strategies in order to bring about reform (Department of Education, 2000). The majority of the students in the sample, who were on average, 18 to 19 years old, were already in Grades 3 and 4 by the time the government was starting to reform education. They were therefore caught in the transition period and may not have received adequate education in their first languages in order to develop an adequate level of CALP. The biographical data in the study supports this assumption. 72.7% of L2 learners were instructed in English in Grade 1 or in Grade 2. The majority of them therefore did not have an adequate amount of time to develop their CALP in their first language, which Cummins (1999) argues is essential for learning and for linguistic interdependence. English instruction should have only begun in Grade 3, but they may have been enrolled in Private English-medium schools and thus their English-language instruction began in Grade 1.

A further problem may have beset these students as learners at school. Wong-Fillmore (1991) argues that a key condition must be met in order for a learner to learn a L2. The L2 learner must have constant access to second language native speakers in an authentic situation, where the L2 learners are forced to speak the L2. In addition to this, Lenters (2005) claims that oral language proficiency must be fostered in the classroom as a prerequisite for reading proficiency. As stated by the HSRC and EPC (2005), the majority of second language learners in South Africa who live in rural areas (or townships) are not exposed to English first language speakers. The only second language learners who are exposed to English first language learners at school, are those who attended school with children from traditionally White, Indian or English-speaking Coloured areas.

Therefore, the second language learners are put into a situation where they are trying to learn a language from other second language learners and this according to Wong-Fillmore (1991) is extremely difficult to do. In addition their teachers according to the HSRC and EPC (2005) report, are also second language speakers who themselves have been educated in an environment that

lacked access to English first language speakers. It is difficult to create an English language environment in the classroom where, as Lenters (2005) claims, oral proficiency can foster an adequate reading competence level.

Second language learners who learn English in a synthetic situation, are at a disadvantage in South Africa. These learners not only have to struggle with learning to use a language in a situation where there is no necessity to learn it (as it is easier to communicate with their peers and teachers in their mother tongue) but are also not exposed to the culture of the language they are learning and this in turn affects their understanding of what they are reading.

As Anderson (1994) argues, if a reader has no cultural background knowledge of an event described in a text, he will misinterpret the information by activating the incorrect schema. His schema is based on his experience. This will adversely affect reading comprehension as he will not fully understand what he is reading. If the event is foreign to his experience, he will not comprehend what he is reading and will have no recourse to alternate strategies to help him understand what has been written.

On a deeper level, Lakoff (1994) claims that metaphor underlies the structure of all language - and in fact, underlies the structure of thought. A second language learner needs to understand the beliefs and values that underlie the thinking structures of the culture whose language she is attempting to learn in (Palmer, 2004). If the learner is unable to understand what she is reading due to a lack of knowledge of the culture's language, comprehension will be affected, which in turn will affect her ability to learn. This will also ultimately affect her writing ability in that language as Spivey (1984, cited in Spivey & King, 1994) states that reading performance is closely related to writing performance.

The Reading Comprehension subtest scores of the SDRT may have been significantly lower for the L2 learners in this study as opposed to the L1 learners for any or all of these reasons. The L2 learners also performed significantly weaker on the Vocabulary subtest of the SDRT. In addition, their performance on the Word Parts was lower. The Word Parts subtest assesses the reader's knowledge of the deeper aspects of vocabulary such as knowledge of affixes.

Research has established a correlation between vocabulary and comprehension, although it has not been conclusively proven (Ruddell, 1994). It would therefore make sense that, if the L2 learners had a significantly lower comprehension score, they would have a significantly lower vocabulary score and vice versa.

Like comprehension, vocabulary poses difficulties for the L2 learner. As Schawnenflugel et al. (1991) and Zuss (1994) claim, it may not always be possible to directly translate certain words from one language into another and this causes the second language learner to struggle with expression. Polysemous words pose many difficulties for second language learners (Stahl, 1991). Although 50% of L2 learners, as opposed to 27.9% of the L1 learners in the study used dictionaries, this does not seem to help with building vocabulary. McKeown (1991) argues that dictionaries often consist of definitions that are vague, abstract and too short and thus lead to a misunderstanding or misinterpretation of a word. Furthermore, if the reader understands the vocabulary, but not the proposition or concept (Kennedy, 1984) that the vocabulary is used in, this will also affect comprehension. Again, unless the L2 learner is exposed to an authentic situation (Wong-Fillmore, 1991) where meaning and understanding of words and concepts can be developed, it will be difficult for her to understand and remember word meanings.

The results showed that there was no significant difference between the L1 and L2 students' performance on the Phonetic Analysis ($t=1.676$, $p>0.05$) and Skimming and Scanning ($t=0.300$, $p>0.05$) subtests of the SDRT. Although the L2 learners' performance was weaker than that of the L1 learners, it was not significantly lower. This means that the L2 learners have a good grasp of phonics and have therefore learnt the sound system of English, which is fundamental for reading (Gibson & Lewis, 1975). They seem to have a similar ability to skim-read and scan texts to that of the L1 learners. Blue (1993) states that skim-reading and scanning are essential aids for facilitating comprehension, and in addition, are necessary tools for coping with large volumes of reading encountered at a university level.

The results therefore seem to lend support to the hypothesis that there is a difference in performance between first language and second language learners on the aspects of reading measured by the SDRT. However, the results did not support the second hypothesis that performance on the SDRT predicts academic performance at a tertiary level of education.

The results show that only the Affixes (b=3.995, p≤0.01) component of the Word Parts subtest predicts academic achievement for L1 students. This may have been due to the fact that the students in this study are studying subjects with specific terminology which is based on Latin. Therefore many words have Latin roots and affixes. Knowledge of these may help to increase vocabulary knowledge and the correct usage of vocabulary within sentences, which may in turn result in higher marks in exams and assignments. On the otherhand, motivated students in this case may be motivated to learn words in order to improve their understanding of legal jargon. If they are, they may be further motivated to study and learn more about Law and therefore they may perform better academically.

Inferential Comprehension (b=3.086, p≤0.001), on the other hand, predicts academic performance for the L2 students. This result was highly significant and has a 68% predictive ability for academic performance (R^2=0.682). As Ashcraft (2006) states, inferences depend on the connections made between the schemata in the reader's mind and the concepts in the text. If a student does not have the ability to make inferences, due to a lack of knowledge about the cultural underpinnings of a particular text, then she will not be able to make inferences about what has been read (Anderson, 1994; del la Luz Reyes, 1987; Palmer, 2004; Park, 2004; Williams & Snipper, 1990). L1 readers on the other hand do understand the cultural elements of the text as it relates to their everyday experiences and they can thus form that connection between their schemata and the elements of the text in order to make inferences. This is why Inferential Comprehension was not a significant predictor of academic achievement for the L1 group.

As seen in the results section and mentioned before, the Affixes component of the Structural Analysis subtest was significant for both the L1 group (b=-2.329, p≤0.05) and the L2 group (b=-2.881, p≤0.05). Both these relationships between Affixes and academic performance were negatively significant. This means that if a student does well in the Affixes component of the structural Analysis subtest, he will do poorly academically. This result is illogical. As mentioned before, the Structural Analysis subtest has been left out of the new SDRT4 (Salvia & Ysseldyke, 1999), as most learners at school are not taught to syllabify words in order to read. Furthermore, good readers read words as whole words without breaking them up into parts or sounding them out

as they have automatised a large number of words (Rozin and Gleitman, 1977). The results of the Structural Analysis subtest therefore should be discounted.

It therefore seems that the SDRT as a whole does not predict academic performance. The reading and comprehension abilities of the L1 group are not limiting factors (R^2=0.250), which affect academic performance. In other words, the L1 students have adequate skills to cope with texts at university and it is possible that other factors such as motivation and cognitive abilities are more important predictors for academic success than they are for the L2 students, for whom comprehension is a limiting factor and directly influences their academic performance (R^2=0.682). This is to be expected as a low level of exposure to the cultural background of the dominant culture affects the ability of the students to make inferences.

Certain factors may have interfered with the results and these are discussed in the limitations section of this discussion. Since L2 students were found to be experiencing more difficulties than L1 learners, certain interventions have been suggested.

4.1. Recommendations for Interventions

A number of suggestions for interventions are now put forward to improve the performance of L2 students at university level as the results, as mentioned, indicate that L2 students are struggling with aspects of reading in comparison to L1 students.

Firstly, there are many advantages to being bilingual, as discussed in the literature (Bialystok et al., 2000; Cummins & Swain, 1986; Diaz, 1985; McLaughlin, 1987; Watson, 1991; Zuss, 1994). L2 learners should be made aware of the advantages of being bilingual and not just the difficulties in order to build their self-esteem and self-confidence.

Secondly, since culture seems to have a huge impact on a L2 learner's ability to comprehend what is read, L2 learners need to be made aware of what the underlying assumptions and beliefs of the foreign culture are (Lakoff, 1994). At university, for instance, part of the course structure could include the culture of university academia, as well as an in-depth lecture on the assumptions underlying Western English thinking. In this way, both L1 and L2 students will be able to see that they are entering a new culture at university. L2 students will be better able to comprehend the

thinking behind many of the academic texts. They should, at the same time, learn to value their own culture so that they do not feel that it is under threat by the L1's culture (Devine, 1994).

Thirdly, 50% of L2 students and 57.2% of L1 students found that the readings in their first year Law courses were of an average level and so they felt they were coping with them adequately. However, 62.8% of L1 learners and 63.6% of L2 learners stated that they struggled to cope with the volume of reading (Refer to Tables 10 & 11 of Appendix C). Despite this and the perceived need for extra support, students are utilising very little support, other than dictionaries (See Tables 11 & 12 in Appendix A). Many students, upon entering university from high school, find they cannot cope with the volume of reading (Butler & Van Dyk, 2004; Nel et al., 2004). Universities need implement specific programmes to help students with summarising, skim-reading and scanning strategies in order to help them to effectively derive the main points from readings.

Fourthly, 69.8% of the L1 students and 90.9% of the L2 students felt that receiving extra assistance from their lecturers would be helpful. 44.2% of L1 students felt that working in groups with their fellow learners would be helpful, whereas 63.7% of L2 students felt that it would be beneficial. 65.1% of L1 learners and 72.7% of L2 learners felt that extra readings around difficult topics would be helpful, despite feeling that they could not cope with the volume of reading (Please refer to Table 13 of Appendix C). The students did not come up with any alternative suggestions for interventions themselves. It seems that they would like to have more support from extra readings, tutors, peers and lecturers. One suggestion for the university would be to establish a culture where students are encouraged to work together and to seek assistance from lecturers and tutors on a more individual basis.

Finally, Kasper's (1996) and Butler and Van Dyk's (2004) programmes, where students are taught English Second Language (ESL) skills within their subject of study seems to be an effective strategy for assisting L2 students with their language difficulties. Teaching students in context improves schemata, vocabulary, comprehension, metacognition and writing skills (Kasper, 1996). The Engineering Department at the University of Pretoria in South Africa has implemented such a programme and preliminary results have shown that the course is extremely effective and is also enjoyed by L2 students (Butler & Van Dyk, 2004).

These interventions need to be kept in mind, whilst examining the limitations of the study, as certain factors may have led to the results in the study and had they been dealt with differently, they may have led to different results and thus different interventions.

4.2. Limitations of the Research

There were a number of limitations that affected the ability of the results of this study to be generalised to other studies. The limitations of the study may have influenced the results that were obtained. Each of the limitations will be discussed in detail.

As stated by Neale and Liebert (1986), it is not always possible to account for all the variables that have an effect on the outcome of the situation being researched. Three possible variables may have had a confounding effect on the results of this study. The one variable is that L2 students may have an unequal access to English books and teaching in English as compared to their L1 counterparts. This may have accounted for the significant differences between the L1 and L2 learners in the one-tailed t-tests.

A shortcoming of the biographical questionnaire was that there was no item for the type of school the student attended. There was therefore no way of differentiating L2 speakers, who attended schools from disadvantaged communities from those who attended ‘ex-model C’ schools. This may have affected the results as the L2 students, who attended ‘ex-model C’ schools may have performed as well as the L1 students.

The number of books read may have been a second confounding variable. It is widely believed that reading practice improves reading ability (Ruddell, 1994). The biographical questionnaire showed that only 45.4% of L2 students read 1 to 5 English books per month before attending university, whereas 67% of L1 students read 1 to 5 English books per month before attending university. This means that L2 learners are reading fewer English books then L1 learners are and have therefore less practice in reading, which may account for the difference in the SDRT results. The smaller volume of reading on the part of the L2 learners may be due to unequal access to English books. On the other hand, the reason the L2 learners may be reading fewer English books is that they are struggling with the language that the books are written in as most L2 learners stated that they were

reading books written in English. Only 13.6% of the L2 students were reading books written in their home language.

The third possible confounding variable may have been cognitive ability. The SDRT measures reading ability and not cognitive ability. A high cognitive ability may have been a better predictor of academic achievement than a high reading ability. If all the subjects were matched on cognitive ability, then possibly the SDRT may have been able to predict academic achievement more accurately based on reading ability. However, since the subjects were not matched on cognitive ability, cognitive ability may have been a confounding variable.

Unfortunately, the study could only be carried out at the end of the year. Many of the first year students, who were doing poorly at the beginning of the year, may have dropped out of the university course at the time when the course marks were collated (which was in the middle of the year). This may have skewed the results in the study as the students, who were performing better overall and had adjusted over time to the universities academic programmes, were the ones who volunteered to have their results and biographical data used in the study. Therefore there may have been a greater spread in the data and the results would have been more representative if students who were possibly failing the course were included in the study. This may have resulted in the SDRT being a better predictor of academic achievement amongst first year university students.

A further limitation of the study was the sample size. The SDRT was administered to 380 students at the beginning of 2005. As the consent forms and biographical questionnaires could only be administered at the end of 2005, only 97 students out of three classes gave consent to have their results and information used in the study. Unfortunately, some of these students had not taken the SDRT test at the beginning of 2005 and some were repeating a course at university and so were in fact not first year students straight out of high school. This resulted in the sample size consisting of 67 students and this is not a large enough sample size to make the results of the study generalisable.

Furthermore, the L1 and L2 groups consisted of unequal numbers of students. The L2 group with 22 students was half the size of the L1 group with 45 students. However, as means were compared,

this does not affect the statistical results in this study to a great extent. However, it does affect representation and the L1 group had a greater level of representation then the L2 group had.

The above limitations affected the results that were obtained in this study. Future research needs to take these limitations into account in order to ascertain whether or not the SDRT is a good predictor of academic performance for university students.

4.3. Further Research

In the future, research needs to be carried out on a larger sample of students in order to make the results more generalisable. The two groups of students, the L1 and the L2 learners, should be of approximately equal size in order to make the findings more comparable.

If the results of this study are in fact accurate, despite the shortcomings of the sample size and the possible confounding variables, then it seems that the SDRT, as a whole test, is not a good predictor of academic achievement of university students. In future, if a similar study is to be conducted, the ELSA-PLUS used by Butler and Van Dyk (2004) seems to be more accurate as it has an 87% predictive validity for academic achievement amongst first year students.

Furthermore, this predictive ability has been established over three years of research done by the University of Pretoria, a South African university, whereas the SDRT has been developed and used mainly in the United States of America and therefore may not be as accurate for South African students as it is for American students. The ELSA-PLUS takes one hour to administer, whereas the SDRT takes three hours. The school at the university found that the SDRT took away too much of their contact time with students and would prefer a shorter test. Furthermore, future research needs to investigate how culturally sensitive the SDRT is.

The area of reading and its relationship to academic achievement specifically with regard to university students deserves a great deal more attention. This is a vastly under-researched area (Onwuebuzie et al., 2004) and is of specific importance in the South African context (Butler & Van Dyk, 2004; Nel et al., 2004), especially when there is such a high drop-out rate of first year students in South African universities (Nel et al., 2004).

4.4. Conclusion

This study adds to the research that is currently underway in South Africa (Butler & Van Dyk, 2004; Net et al., 2004), where academic performance and reading ability amongst university students is being examined. The results of this study agree with Butler and Van Dyk's (2004) and Nel et al's (2004) findings that L2 learners struggle more at university than L1 learners do, due to difficulties with reading, which in turn is due to a lower English language proficiency. The results of this study at present indicate that the Stanford Diagnostic Reading Test, as a whole, does not seem to have a good predictive ability for the academic achievement of South African university students. This may be for the reason that the L1 students generally know how to read and so factors other than reading may affect academic performance such as motivation and aptitude. This may apply to the L2 students too, but in addition to struggling with motivation and aptitude they are also affected by their difficulty in being able to make inferences. However, the SDRT did significantly predict academic achievement for L2 learners based on their Inferential Comprehension scores. The results indicate that future research needs to compare the results of the SDRT in this study to another test to determine if students are struggling in other areas of reading so as to assist them more effectively.

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APPENDIX A

A.1. Information Sheet

A.2. Consent Form

A.3. Biographical Questionnaire

INFORMATION SHEET

My name is Karen Andor and I am a Masters student in the Department of Specialised Education at the University of the Witwatersrand. I am conducting research to explore the link between reading skills and academic performance at a tertiary education level. The reason for the research is to see if there is a way to aid tertiary institutions like Wits to assist students more effectively with their learning. This study at present is exploratory in nature.

The study involves using the results of the Stanford Reading Diagnostic Reading Test (SDRT) that all the first year law students wrote at the beginning of the year and seeing if those results are a good predictor of academic performance. In order to see this, statistical procedures will be used to analyse the results of the SDRT and the mid year essay-type assignment and exam marks from a course that all first year law students take.

The assistance of first year law students would be greatly appreciated. Their involvement would be for them to fill in a short biographical questionnaire to give some background information for analysing the results of the SDRT and for them to fill in a consent form to allow myself to have access to their SDRT results as well as their mid year exam and essay-type assignment marks. All information given will be treated with the strictest confidentiality and none of their personal information will be disclosed to the staff of the Law School. If students decide that they would not like to participate in the study, they will in no way be penalized by the Law School or Wits University. However, the participation of the law students would be much appreciated as the results of this study will be of assistance to future students.

CONSENT FORM

I understand that this is a consent form that will allow my Stanford test results, my biographical information that I have filled in on the attached form, and my mid year essay assignment and exam results, to be used in a study conducted by Karen Andor, a Masters student in the Department of Specialised Education. The study is an exploration into issues of reading and academic performance at a tertiary level. The aim of the research is to provide strategies for assisting university students to improve their academic performance at University.

All information gathered in this study will be treated with the utmost confidentiality and your lecturers will not be informed of any of your personal details. Your co-operation would be greatly appreciated as the results from this study would be used to help future first year students with their academic skills.

I hereby give consent for my Stanford test results, my biographical information and my mid year essay assignment and exam results to be used in the above study. I understand that if I choose not to sign this form, I will not be penalised in any way by the University.

Name: _____

Student Number: _____

Signature: _____

BIOGRAPHICAL QUESTIONNAIRE

Student Number_____

Age _____

Gender (please tick):

Male

Female

Home language _____

From whom did you learn to speak English? (please tick)

	mostly	often	seldom	not at all
Parents				
Siblings				
Grandparents				
English first language teachers				
English second language teachers				
English first language peers				
English second language peers				
Books				
Television				
Music				

What was the medium of instruction at your primary school? _____

Please fill in, for each of the Grades below, the main language you learnt in at school.

Grade 1 and 2	
Grade 3 and 4	
Grade 5 to 7	

What was the medium of instruction at your high school? _____

Please fill in, for each of the Grades below, the main language you learnt in at school.

Grade 8 and 9	
Grade 10 to 11	
Grade 12	

As an estimate per month, how many books did you read before attending university?

	English	Other language (please state)
1 to 5		
5 to 10		
10 to 20		
More than 20		

As an estimate per month, how many magazines did you read before attending university?

	English	Other language (please state)
1 to 5		
5 to 10		
10 to 20		
More than 20		

In what Grade did you start using English textbooks for the first time? (please tick one).

Grade 1 to 4	
Grade 5	
Grade 6	
Grade 7	
Grade 8	
Grade 9	
Grade 10	
Grade 11	
Grade 12	

In what Grade were you first expected to use English textbooks on your own to study from without any help from your teachers? (please tick one)

Grade 1 to 4	
Grade 5	
Grade 6	
Grade 7	
Grade 8	
Grade 9	
Grade 10	
Grade 11	
Grade 12	

Did you get any extra assistance at school? If so, what exactly? (please tick)

Remedial Support	
Extra English Lessons	
Extra Maths Lessons	
Extra Lessons in another subject	
Occupational Therapy	
Speech Therapy	

Other (please specify):_____

_____

_____

_____

_____

How difficult or easy have you found the texts you have been required to read this year? (please tick one).

Very easy	
Easy	
Average	
Difficult	
Very Difficult	

The reason I have found the work difficult or easy is because of: (please tick)

	Agree	Neutral	Disagree
The quantity of reading is too much to cope with			
The volume of reading is easy to cope with			
The language in the readings is unfamiliar			
There is a lot of new vocabulary			
The structure of language in texts is difficult			
The language in the readings is very familiar			

Other (please describe): _____

_____

_____

What support have you used to help you read more effectively this year?

	often	fairly often	average	sometimes	never
Extra support from tutors or lecturers					
Use of dictionaries					
Work groups with fellow students					
Support outside the university					
Extra readings around difficult topics					
Remedial support					

Other (please describe):_____

_____

_____

What assistance do you think would help you with your university studies? (please tick)

	Very helpful	Helpful	Somewhat helpful	A little helpful	Not at all helpful
Extra support from tutors or lecturers					
Work groups with fellow students					
Extra readings around difficult topics					
Remedial support					

Other (please describe): _____

_____

_____

_____

_____

In a few words, can you describe how you are feeling about your studies this year in relation to the texts you've been required to read?

_____

_____

_____

_____

_____

Thank you for taking the time to fill in this questionnaire. Your help is much appreciated.

APPENDIX B

B.1. Descriptive Statistics

DESCRIPTIVE STATISTICS

Table: Descriptive Statistics for the scores for the L1 and L2 groups on the components of the subtests of the SDRT

L1= English (N=43) L2=Non-English (N=22)	Mean		Std. Deviation		Minimum		Maximum	
	L1	***L2***	***L1***	***L2***	***L1***	***L2***	***L1***	***L2***
Total A	54.65	49.68	4.423	8.448	35	29	59	59
Functional comp	18.42	16.55	1.516	2.365	13	12	20	20
Textual comp	18.65	17.27	1.876	3.120	10	9	20	20
Recreational comp	17.58	15.86	2.038	3.576	9	8	20	20
Literal Comp	27.02	24.86	2.650	4.941	14	13	30	30
Inferential	27.63	24.82	2.258	3.924	21	16	30	29
Total B	28.56	26.27	1.817	4.692	24	17	31	31
Vocab (R & L)	9.28	8.32	0.797	1.783	7	4	10	10
Vocab (SS & A)	9.12	8.86	0.905	1.521	7	4	10	10
Vocab (M & S)	9.60	8.55	0.728	1.595	7	6	10	10
Total C	23.88	21.77	2.602	4.070	18	13	30	27
WP - A	12.60	11.45	1.400	1.870	10	7	15	14
WP - R	11.28	10.32	1.804	2.418	7	6	15	13
Total D	22.51	19.55	6.497	7.236	7	6	30	30
PAS - C	7.91	7.18	2.438	2.575	1	2	10	10
PAC - D	4.07	3.59	1.121	1.501	2	1	5	5
PAS - V	2.74	2.27	1.878	1.279	0	0	5	5
PAL - V	4.00	3.32	1.234	1.555	1	0	5	5
PAO - V	3.79	3.18	1.206	1.435	0	0	5	5
Total E	22.58	19.82	3.382	3.275	14	14	29	27
SA - A	11.30	9.64	1.846	1.733	7	6	15	13
SA - S	11.28	10.18	2.261	2.281	6	5	15	14
Total F	11.88	11.64	3.095	3.230	4	5	16	16
Total	67.28	61.05	13.963	13.643	38	37	87	92
Age	18.79	19.05	0.742	1.046	18	18	21	21

APPENDIX C

C.1. Results of the biographical questionnaire

RESULTS FROM THE BIOGRAPHICAL QUESTIONNAIRE

Table 1: Sources from where L1 and L2 students learnt English

Source of English Learning	Language	Percentage of L1 and L2 students' answers				
		Mostly	Often	Seldom	not at all	no answer
Parents	L1	95.3	0	0	4.7	0
	L2	40.9	22.7	27.3	9.1	0
Siblings	L1	32.6	11.6	11.6	23.3	20.9
	L2	22.7	27.3	9.1	27.3	13.6
Grandparents	L1	23.3	20.9	16.3	23.3	16.3
	L2	9.1	9.1	13.6	59.1	9.1
English first language teachers	L1	34.9	32.6	11.6	2.3	18.6
	L2	63.6	9.1	0	13.6	13.6
English second language teachers	L1	0	0	9.3	58.1	32.6
	L2	27.3	18.2	4.5	40.9	9.1
English first language peers	L1	20.9	25.6	20.9	11.6	20.9
	L2	36.4	22.7	18.2	9.1	13.6
English second language peers	L1	0	2.3	9.3	58.1	30.2
	L2	13.6	22.7	18.2	36.4	9.1
Books	L1	25.6	48.8	7	18.6	0
	L2	54.5	40.9	0	4.5	0
Television	L1	20.9	44.2	16.3	18.6	0
	L2	54.5	36.4	4.5	4.5	0
Music	L1	11.6	18.6	30.2	18.6	20.9
	L2	36.4	22.7	22.7	13.6	4.5

Table 2. Medium of instruction in Primary School

Medium of Instruction	Percentage of L1 & L2 students	
	L1	L2
English	100	72.7
Non-English	0	27.2

Table 3. Grade in which students were first taught in English

Grade	Percentage of L1 & L2 students	
	L1	L2
Grade 1 and 2	100	81.8
Grade 3 and 4	0	9.1
Grade 5 to 7	0	9.1

Table 4. Medium of instruction in High School

Medium of Instruction	Percentage of L1 & L2 students	
	L1	L2
English	100	90.9
Non-English	0	9.1

Table 5. Grades at High School in which students were taught in English

Grade	Percentage of L1 & L2 students	
	L1	L2
Grade 8 and 9	100	81.8
Grade 10 to 11	0	9
Grade 12	0	9.1

Table 6. Number of books and magazines read per month before attending university

Quantity	Percentage of L1 and L2 students, who read Books				Percentage of L1 and L2 students, who read Magazines			
	In English		In Other language		In English		In Other language	
	L1	L2	L1	L2	L1	L2	L1	L2
1 to 5	67.4	45.4	2.3	27.3	55.8	40..8	2.3	13.5
5 to 10	25.6	18.2	0	0	33.5	31.8	0	0
10 to 20	2.3	4.5	0	0	4.7	9.1	0	0
More than 20	0	4.5	0	0	7	18.1	0	0

Table 7. Grades in which students first used English Textbooks

Grade	Percentage of L1 & L2 students	
	L1	L2
Grade 1 to 4	60.5	86.4
Grade 5	18.6	9.1
Grade 6	9.3	4.5
Grade 7	2.3	0
Grade 8	7	0

Table 8. Grades in which students were first expected to study independently from textbooks

Grade	Percentage of L1 & L2 students	
	L1	L2
Grade 1 to 4	30.2	36.4
Grade 5	9.3	27.3
Grade 6	14	4.5
Grade 7	11.6	4.5
Grade 8	16.3	18.2
Grade 9	2.3	4.5
Grade 10	2.3	4.5
Grade 11	2.3	0
Grade 12	0	0

Table 9. Type of extra assistance received at school

Type of support	Percentage of L1 & L2 students	
	L1	L2
Remedial Support	4.6	13.5
Extra English Lessons	11.6	45.4
Extra Maths Lessons	41.8	58.9
Extra Lessons in another subject	16.3	4.5
Occupational Therapy	2.3	4.5
Speech Therapy	2.3	4.5

Table 10. The difficulty rating for texts in first year according to students

Difficulty level	Percentage of L1 & L2 students	
	L1	L2
Very easy	2.3	9.1
Easy	27.9	13.6
Average	48.8	54.5
Difficult	20.9	13.6
Very Difficult	0	9.1

Table 11. Perceptions of quality and quantity of work in first year of university

Quantity and quality of work	Percentage of L1 & L2 students who					
	Agree		Neutral		Disagree	
	L1	L2	L1	L2	L1	L2
The quantity of reading is too much to cope with	62.8	63.6	30	27.3	0	4.5
The volume of reading is easy to cope with	16.3	9.1	51.2	50	20.9	36.4
The language in the readings is unfamiliar	11.6	13.6	46.5	36.4	34.9	45.5
There is a lot of new vocabulary	44.2	63.6	27.9	18.2	20.9	13.6
The structure of language in texts is difficult	25.6	27.3	46.5	40.9	20.9	27.3
The language in the readings is very familiar	30.2	22.7	34.9	54.5	25.6	18.2

Table 12. Support utilised by students this year

Type of support	Percentage of L1 & L2 students who used the support:									
	often		fairly often		average		sometimes		never	
	L1	L2	L1	L2	L1	L2	L1	L2	L1	L2
Extra support from tutors or lecturers	7	9.1	2.3	18.2	20.9	13.6	16.3	22.7	44.2	31.8
Use of dictionaries	27.9	50	14	0	18.6	13.6	20.9	36.4	11.6	0
Work groups with fellow students	9.3	4.5	18.6	4.5	16.3	22.7	23.3	36.4	25.6	27.3
Support outside the university	2.3	4.5	2.3	13.6	2.3	13.6	11.6	13.6	69.8	54.5
Extra readings around difficult topics	2.3	18.2	9.3	22.7	18.6	4.5	32.6	36.4	30.2	18.2
Remedial support	0	4.5	4.7	4.5	7	4.5	0	13.6	76.7	63.6

Table 13. Assistance students believe would be beneficial for their studies

Type of Assistance	Percentage of L1 & L2 students who found the assistance:									
	Very helpful		Helpful		Somewhat helpful		A little helpful		Not at all helpful	
	L1	L2	L1)	L2	L1	L2	L1	L2	L1	L2
Extra support from tutors or lecturers	46.5	59.1	23.3	31.8	4.7	9.1	14	0	4.7	0
Work groups with fellow students	20.9	27.3	23.3	36.4	18.6	9.1	20.9	13.6	7	9.1
Extra readings around difficult topics	37.2	59.1	27.9	13.6	18.6	9.1	11.6	4.5	2.3	0
Remedial support	4.7	27.3	11.6	13.6	14	18.2	14	9.1	44.2	13.6

APPENDIX D

D.1. Bar Graphs for the SDRT results

Reading Comprehension

Component	Items on bar graph
Functional Comprehension	1, 2, 3, 4, 5, 6, 7, 20, 21, 22, 23, 24, 38, 39, 40, 41, 42, 43, 44, 45
Recreational Comprehension	14, 15, 16, 17, 18, 19, 31, 32, 33, 34, 35, 36, 37, 54, 55, 56, 57, 58, 59, 60
Textual Comprehension	8, 9, 10, 11, 12, 13, 25, 26, 27, 28, 29, 30, 46, 47, 48, 49, 50, 51, 52, 53
Literal Comprehension	1, 4, 6, 8, 9, 13, 15, 17, 22, 26, 27, 31, 34, 37, 38, 39, 40, 42, 44, 46, 47, 48, 50, 51, 54, 55, 56, 59, 60
Inferential Comprehension	2, 3, 7, 10, 11 12, 14, 16, 18, 19, 20, 21, 23, 24, 25, 28, 29, 30, 32, 33, 35, 36, 41, 43, 45, 49, 52, 53, 57, 58

Vocabulary

Component	Items on the bar graph
Reading and Literature	1-10
Social Sciences and Arts	11-20
Maths and Science	21-30

Word Parts

Component	Items on the bar graph
Affixes	1-15
Roots	16-30

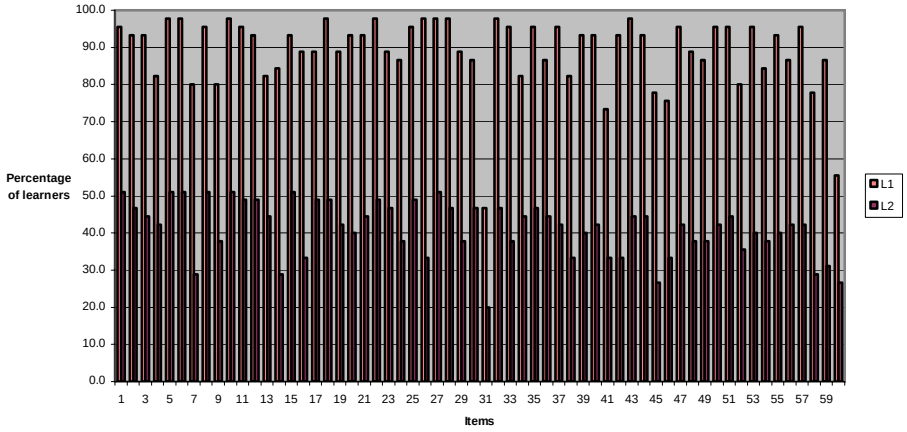
Phonetic Analysis

Component	Items on the bar graph
Simple Consonants	1-10
Consonant Digraphs	11-15
Short Vowels	16-20
Long Vowels	21-25
Other Vowels	26-30

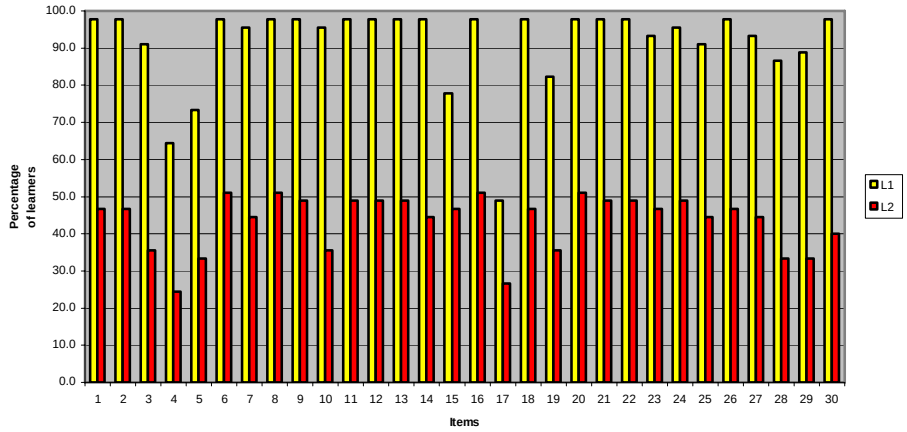
Structural Analysis

Component	Items on the bar graph
Affixes	1-15
Syllables	16-30

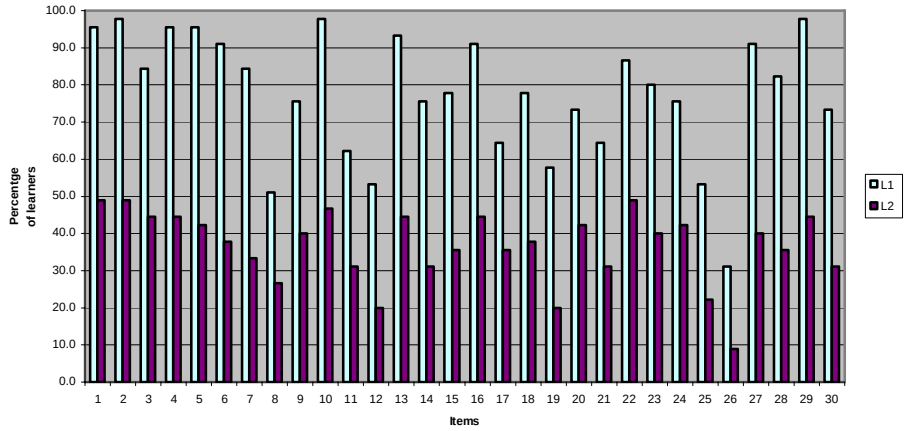
Comprehension Subtest



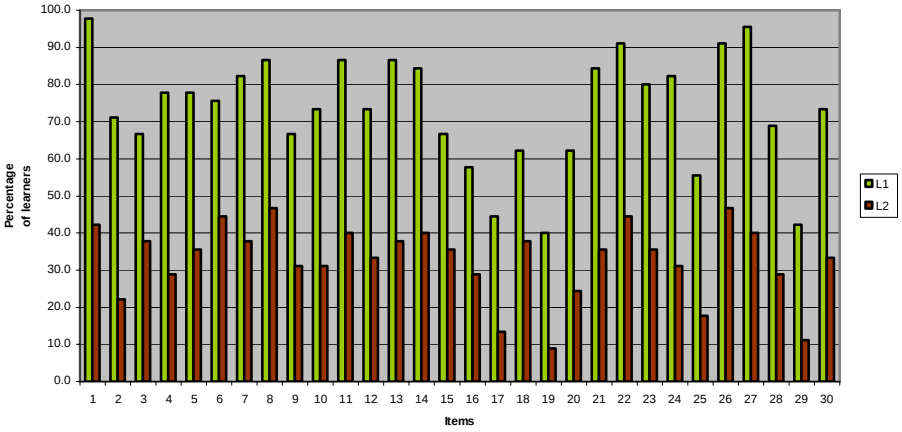
Vocabulary Subtest



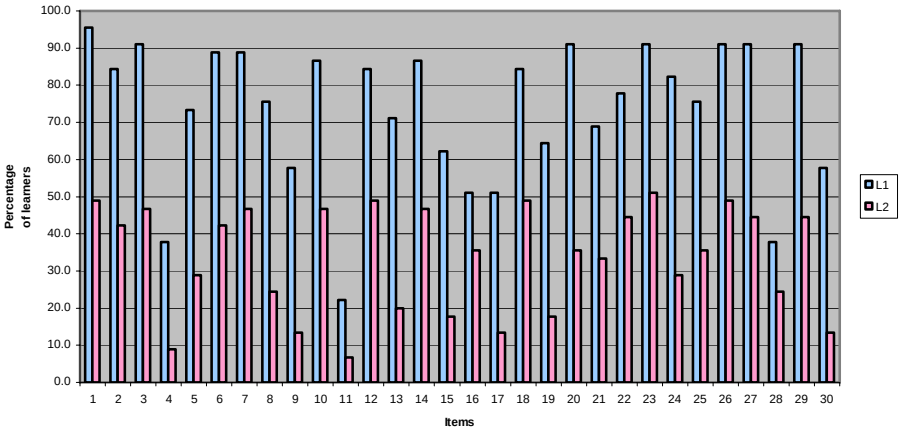
Word Parts



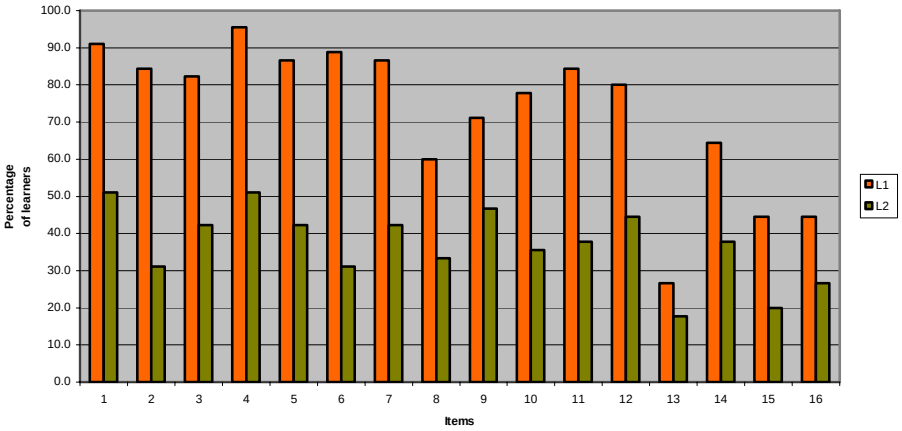
Phonetic Analysis



Structural Analysis



Scanning and Skimming



APPENDIX E

E.1. The variables: Age and Gender

Effects of Age and Gender

Table 1: T-test (Gender)

Test	L1L2	N	Mean	Std. Deviation	Std. Error Mean	Mean Difference	t	Sig.
Academic Performance	Male	21	65.33	14.715	3.211	0.242424	0.064	0.949
	Female	44	65.09	13.920	2.098			

* p<0.05

Table 2: **ANOVA (Age)**

Test		Sum of Squares	df	Mean Square	F	Sig.
Academic Performance	Between Groups	1160.939	3	386.980	2.052	0.116
	Within Groups	11502.200	61	188.561		
	Total	12663.138	64			

*p<0.05

The results in Tables 1 and 2 shows that neither age nor gender were significant with respect to total academic score.