An analysis of the vocabulary and reading comprehension challenges faced by first year B.Ed. students

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Dissertation submitted in fulfillment of the requirements for the degree *Magister Educationis* in Curriculum Studies at the Potchefstroom Campus of the North-West University

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October 2014

ACKNOWLEDGEMENTS

My sincere gratitude to the following people:

Prof Carisma Nel, my study leader, for her invaluable guidance, advice, patience and immense academic support in the completion of my studies.

Prof R Balfour, for the study leave that was granted to me.

Ms Wilma Breytenbach, Senior Subject Specialist, Statistical Consultation Services, who computed the results of the research meticulously and added constructive suggestions.

My colleagues especially, for our inspirational work environment and continuous support of and interest in one another and the pedagogical situation in which we are situated.

My husband and children, who showed faith in my endeavours and encouraged me to persevere.

ABSTRACT

First year students at university level encounter various challenges that might impact on their success or failure. At this level, learning is fairly dependent on extensive and intensive reading, thus the reader should have an adequate vocabulary size to assist with the reading comprehension process. Knowledge of vocabulary (or words) is deemed an essential factor in reading proficiency, mainly because meaning is derived from words and also because of the connection between words and comprehension of text. This study investigated the particular relationship among vocabulary size and vocabulary depth and reading comprehension of 105 first year B.Ed. students majoring in English at a university in the North West Province. Also, the vocabulary test results of two different groups, first and fourth years, were compared to determine if advancement of vocabulary levels occur over the study period of four years. A quantitative research approach was used in which the study population was required to complete standardised vocabulary size and vocabulary depth tests, reading comprehension tests and a survey questionnaire. The results were statistically computed to determine the relationship between vocabulary size and breadth and reading comprehension. The results showed a positive and significant effect size correlation between vocabulary size and depth, and reading comprehension. The participants in the study were mainly Afrikaans speaking students who received their school education in Afrikaans. The instruments used in the research were the Vocabulary Levels test (Nation, 1990), Read's Word Associates Test (1992) and TOEFL reading comprehension tests. The questionnaire was added to determine previous exposure to English and current reading habits of the participants. A two-tailed Pearson product moment correlation and multiple regression analyses were run in order to determine which of the variables, vocabulary size or depth, makes a more significant contribution to reading comprehension and also to establish which variable was the most significant predictor of academic success in the June examination. Vocabulary size was identified as predictor for success in the June examination; furthermore, if gender is used as independent variable, different vocabulary size tests are identified for males and females.

Keywords: reading comprehension, vocabulary size, vocabulary depth, vocabulary threshold for reading, academic success at university.

OPSOMMING

Verskeie faktore kan die akademiese sukses van eerstejaarstudente beïnvloed, soos onder andere die leesbegripvlakke van studente. Op hierdie vlak berus leer op intensiewe en ekstensiewe lees en die leser moet dus oor ‘n woordeskat beskik wat hom of haar sal ondersteun in die leesproses. Woordeskat is ’n belangrike element in die leesbegripproses aangesien daar ’n verband tussen die woordeskat en die leesbegrip van ’n teks bestaan. In hierdie studie is die verband tussen woordeskatgrootte en -diepte en die leesbegrip van honderd en vyf B.Ed- eerstejaarstudente met Engels as hoofvak, aan ’n universiteit in die Noordwes Provinsie, ondersoek. Die studie het die verhouding tussen woordeskatgrootte, en diepte en leesbegrip ondersoek. Verder is die resultate van die woordeskattoetse van twee verskillende groepe, eerstejaars en vierdejaars, met mekaar vergelyk om te bepaal of daar enige vooruitgang betreffende woordeskatgrootte of -diepte was in die vier jaar van studie. ‘n Kwantitatiewe navorsingsmetode is gevolg: die studiepopulasie het gestandaardiseerde woordeskattoetse en leesbegriptoetse geskryf en ‘n opname vraelys voltooi. Die resultate was statisties verwerk om die resultate van die toetse te interpreteer en daar is bevind dat die korrelasie tussen woordeskatgrootte en -diepte en leesberip van hierdie studente ‘n positiewe effekgrootte aantoon. Die studiepopulasie het hoofsaaklik uit Afrikaanssprekende studente bestaan wat op skool onderrig in Afrikaans ontvang het. Die instrumente wat in die studie gebruik is, is die Vocabulary Levels test (Nation, 1990), Read se Word Associates test (Read, 1992) en TOEFL leesbegripstoetse. Die ondersoekgroep het ’n vraelys voltooi om onder andere die studente se agtergrondkennis rakende vorige en huidige blootstelling in Engels te bekom. ’n Tweeledige Pearson produkmoment korrelasie en meervoudige regressie analises is gebruik om te bepaal watter van die veranderlikes, woordeskatgrootte of woordeskatdiepte, ‘n beter voorspeller is van akademiese sukses in die Junie eksamen. Die resultate het verder aangetoon dat verskille in die voorspellerveranderlikes voorkom wanneer geslag as onafhanklike veranderlike gebruik word.

Sleutelwoorde: leesbegrip, woordeskatgrootte, woordeskatdiepte, minimum vereiste woordeskat vir leesbegrip, akademiese sukses op universiteitsvlak

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Learning, as a language based activity, is fundamentally and profoundly dependent on vocabulary knowledge. Learners must have access to the meanings of words that teachers, or their surrogates (e.g., other adults, books, films, etc.), use to guide them into contemplating known concepts in novel ways (i.e. to learn something new).

(Baker, Simmons, & Kame'enui, 1998)

CHAPTER 1: INTRODUCTION AND PROBLEM STATEMENT

1.1 Introduction

In general, first year students at university level encounter various challenges that might impact on their success or failure. The level of their vocabulary knowledge could be indicative of their reading comprehension ability, especially in the module ENGE111, which is the first semester subject when majoring in English in the B.Ed. course at a university in the North West Province. Knowledge of vocabulary (or words) is deemed an essential factor in reading proficiency (Vermeer, 2001), mainly because meaning is derived from words and also because of the connection between words and comprehension of text. To determine reading proficiency, it seems as if research into vocabulary size and reading comprehension could be a worthwhile pursuit. In this chapter vocabulary breadth and depth and reading comprehension are introduced and the motivation for this study is explained. The formulation of the purpose of the research, study hypotheses, the research design and the methodology of the research of this empirical study are then discussed. The chapter concludes with a brief summary of the presented content and an explanation of the ensuing chapters of the dissertation.

1.2 Problem statement and motivation for this study

Success at university level mainly depends on existing pre-entry university attributes, including the mastery of some fundamental academic skills (Tinto, 1993). These include reading, writing, critical thinking, oral presentation, and media literacy. Despite the importance of these skills for academic success, lecturers seldom teach them (Bean, 1996). They generally take them for granted as they tend to presuppose that all students already acquired these skills either as part of their secondary education or elsewhere in other courses at university or college (Erickson, Peters & Strommer, 2006). The reality is that most first-year students lack academic reading skills, especially because university-level reading greatly differs from high school reading. Thus, most students employ non-university strategies to read academic texts, which result in students taking a surface approach to reading (Torgesen, Housten, Rissman, Decker and Roberts 2007).

The success rate of first year students is worldwide a topic of concern and research (Alliance for Excellent Education, 2007) and in Texas, USA, Raymond Paredes, a Higher Education official at the Texas Coordinating Board, states that “students are just not ready” and “too many need remedial college courses” (Peters, 2010. p.1), to cope with the rigour and *reading* of the academic world. Additionally, SkyNews (2012) reported that Cambridge Assessment (a committee which investigated pass rates at universities in England), announced that universities

in the United Kingdom are implementing extra classes for new students amid concerns that many first-year undergraduates are unprepared for degree study. These classes usually focus on writing and reading skills and independent learning.

In South Africa, especially since 2007, government grants and bursaries have allowed students from diverse backgrounds to enroll at universities (HESA: Higher Education South Africa, 2010). Some of these students, however, are ill-equipped for academic life and its requirements (Macgregor, 2007), and there is a general concern about the poor academic achievement and the associated drop-out rate of first year students (Nel, Dreyer and Klopper, 2004; Van Staden, 2011). Although many factors can contribute towards the failure rate at university level, studies involving 313 Pensacola freshmen, conducted by Einbecker, as early as 1974, indicate that *reading ability* may be a meaningful indicator of academic success at tertiary level. Researchers who have published results regarding the relationship between reading ability and academic success include Stedman and Kaestle (1987) who suggest the upgrading of literacy skills at college level; Cooper (1995) who determined that vocabulary size has a significant impact on academic achievement; Pretorius (2000) who found that reading ability is strongly related to academic performance; and Hermida (2009) who reported on the need to assist students with reading strategies to ensure academic performance.

Many questions still remain unanswered. In addition to foregoing concerns, there is a practical need motivating the present research at a university in the North West Province. The number of B.Ed students majoring in English is stable but the pass rate for the first semester module, ENGE111, induces concern (cf. Table 1.1). The theme of the first semester ENGE111 module is "The injustices of Man towards Man" and the module includes the in-depth study of four prescribed works: a Shakespearean drama, *The Merchant of Venice*; two novels, which are: *To Kill a Mockingbird* by Harper Lee and *Things fall apart* by Chinua Achebe; and an Athol Fugard play: *My Children, My Africa.* Additional reading and film study are also part of the course. It is evident that *reading* in itself is an important basis for the course, not only the reading of prescribed texts but also critical analyses and evaluation of texts, the interpreting and writing of essay questions, the identifying and discussion of themes and values in literature and the display of skills to use and teach literature in elementary and secondary school environments.

Table 1.1: Pass rate of first year ENGE111 module

Year	Enrollment number	Pass rate
2010	132	55%
2011	104	51%
2012	116	52%
2013	120	56%

Over the last three years, lecturers responsible for the module incorporated various and different intervention strategies to address the problem: writing workshops, multiple and different methods of assessment, tutorials, identifying at risk candidates, personal consultation with at risk students (to name a few), to assist students in coping with the academic demand of the subject. The results were still not promising. There is a general belief that vocabulary size impacts on reading comprehension (Laufer, 1996, 2003; Nation, 1993; Read, 1993), but also, since two decades ago, another dimension of vocabulary has asserted its role in this equation, namely vocabulary depth (Read, 1993; Qian, 1998; Vermeer, 2001). These dimensions need to be investigated to assist in identifying possible difficulties and solutions to problems.

The relationships between vocabulary breadth and vocabulary depth and reading comprehension have not as yet been thoroughly investigated in South Africa even though vocabulary teaching is now considered a priority area in L2[1] teaching worldwide (Nation, 1990; Eyckmans, 2004). Word consciousness is a coveted concept which should be cultivated by all concerned educators of L2 students. Validated and widely accepted vocabulary tests can provide information on the development of the L2, how fast vocabularies grow, if vocabulary instruction is effective (achievement testing), if there are gaps in the vocabulary knowledge (diagnostic testing), and to determine appropriate standards and levels (placement testing).

But vocabulary learning is not a mere quantitative issue. Qian (2002) proposes that *two* dimensions of vocabulary, namely breadth (number of words of which some meaning is known) and depth (the quality of vocabulary knowledge), are both crucial to reading comprehension and therefore could be measured to better predict comprehension.

It would be beneficial to first year B.Ed. students majoring in English if the vocabulary size and vocabulary depth, as suggested by Laufer (1996), Hazenberg and Hulstijn (1996), Qian (2002),

[1] L2 – Second language of learner or student

Nation (2001) and others, could be determined so that deficits could be identified and timely intervention could take place.

1.3 Review of the relevant literature

Reading comprehension and vocabulary, as variables contributing to failure at university level, have been investigated by a number of researchers in South Africa specifically, such as Pretorius (2000), as well as Pretorius and Bohlmann (2003) who compiled profiles of students and found a strong relationship between reading ability and mathematical performance. The reading levels of computer science students at the University of the Witwatersrand were scrutinized by Rauchas, Rosman and Konidaris (2006) and they concluded that reading success in English (the then higher grade home language), rather than high school mathematics, correlates with successful achievement in computer science.

A comparative study which is of interest to this researcher is a one conducted in Norway by Hellekjær (2009) to investigate the reading comprehension of Norwegian undergraduates and graduates at three faculties (of which one is also their education faculty), at Oslo University. The students in Norway, as in many schools in South Africa, have English as a second language at school level and are regularly exposed to English through the media, social media and textbooks. With this similarity in background, it is well worth looking at the results of that particular study: 30% of the respondents had serious difficulties reading English, while an additional 44% found reading in English more difficult than reading in their first language. The main problems encountered were unfamiliar vocabulary and slow reading with a particular deficit in vocabulary knowledge and decoding skills.

Literacy, however, is complex and comprises a set of skills which people may possess in varying degrees (Stedman & Keastle, 1987). In the USA, the National Reading Panel Report (2000) condensed decades of research to identify the following five components as elements of reading: phonemic awareness, phonics (decoding), fluency, vocabulary and comprehension (NRP, 2004), of which the last two (vocabulary and comprehension) are of concern to this study. Biemiller (2012) states that success in reading depends on the identification of words and the comprehension of these words. Furthermore, Chall (1983) has defined widely accepted reading stages. According to her, students at university level should be at Stage five of the Reading Development Stages. She refers to it as “Construction and reconstruction – A World view.” This stage implies critical reading, into which past knowledge is integrated and the reliance on extensive vocabulary is automatic; mature reading skills are then involved (Chall, 1983). There is, however, not convincing evidence that Stage five is attained by many first-year students at

university. This study attempts to analyse the challenges B.Ed. students face with regard to their vocabulary size and breadth and reading comprehension.

The two primary dimensions of vocabulary are, (i) breadth of vocabulary, which refers to the number of words of which the reader has some superficial knowledge; and (ii) depth of vocabulary, which incorporates knowledge of pronunciation, spelling, meaning and collocational features - in other words, in-depth knowledge of the word. Mehrpour, Razmjoo and Kian (2011) and Qian and Schedl (2004) all propose that both vocabulary size *and* depth are important in reading comprehension. Most of the studies in the field of vocabulary and reading comprehension focus on the relationship between vocabulary *size* and reading comprehension. Empirical studies on the topic of vocabulary depth, however, are few (Qian, 2002), even though studies acknowledge the importance of vocabulary depth (Mezynski, 1983; Read, 1993, 2007; Greidanus & Nienhuis, 2001).

Vocabulary for the first year student includes words anticipated to appear in academic texts. Liben (2010), however, points out that not only tier three words (new subject-specific vocabulary and words introduced by the subject expert and often repeated), but also tier two words that include general instructions and directions in any academic text (e.g., relative, formulate, vary, accumulate, etc., which are used in academic texts) need to be applied "productively" to ensure academic success.

Although Beglar and Hunt (1999) believe that vocabulary should be assessed in contextualized language use, they also deem discrete tests, like those developed by Paul Nation (1983; 1990) and Meara and Jones (1987), useful for determining the vocabulary breadth of participants. The Vocabulary Levels Test (VLT) includes 2000, 3 000, 5 000 and 10 000-word frequency levels, as well as a University word list. These tests can be ultilised at different levels of proficiency to test vocabulary size. The VLT has been deemed effective in determining vocabulary size of L2 and L1 speakers by Anderson and Freebody (1983), Meara and Jones (1989) and Beglar (2000). The Word Associates Test (WAT) developed by Read (1993), and adjusted by Qian and Schedl (2004) as the Depth-of-vocabulary-knowledge-test (DVK), are accepted as tests to measure vocabulary depth. Both tests measure three aspects of vocabulary depth namely, polysemy and synonymy, and collocation[2]. Although the aforementioned tests (VLT and WAT) are successful in measuring vocabulary knowledge, there are still unanswered questions about the relationships between the components: vocabulary size and depth and reading comprehension.

[2] Polysemy = many possible meanings of a word; synonymy = words with the same meaning; collocations = the habitual juxtaposition of a word with another

Reading comprehension is defined as the ability to acquire meaning from the act of reading and to transfer this information either in speech, writing or thought (Hermida, 2009). In what is deemed "persistent findings in research" (Baumann, 2005), researchers (Baumann, Kame'enui & Ash, 2003; Becker, 1977; Einbecker, 1974; Davis, 1942) acknowledge the relationship between reading comprehension and overall academic achievement. Successful reading depends on the comprehension of words: this argument is supported by researchers such as Becker (1977), Anderson and Freebody (1981) and Baumann, Kame'enui and Ash (2003), who propose that vocabulary knowledge contributes to reading comprehension. Koda (1989), Laufer (1997), and Zhang and Anual (2008) all support the importance of a high level of vocabulary knowledge as prerequisite for comprehension of texts.

Baumann et al. (2003) state that comprehension entails both knowledge of a word (decoding), and skill in using the word (understanding). Comprehension is thus both the conscious awareness and conscious control of reading and by implication, learning. Reading comprehension is the result of cogent interaction by the reader with the words in a sentence or text: the purpose of the reading, the reader's knowledge of the world, language and print, and comprehension strategies – all coalesce to promote understanding of texts and subsequently, learning. Biemiller (2012, p. 9) states unequivocally: "Vocabulary size has an impact throughout the life span". He continues to add that students with inadequate vocabularies are at higher risk to fail academically, a statement also supported by Cunningham and Stanovich (1997). A cycle of frustration and malfunction is set in motion that persists throughout their education if students do not have sufficient vocabulary (Hart & Risley, 2003). Students with limited vocabularies will find reading a challenge because they do not possess enough word knowledge and therefore avoid the activity of reading, thereby losing the opportunity to see, read and learn new words and subsequently improve their reading. This phenomenon of the "rich become richer and the poor become poorer" – based on the parable in Matthew 25:29 from the Bible, was coined by Stanovich (1986, p.376) as the Matthew effect: good readers read more and consequently improve their vocabulary size and vice versa. This reciprocal relationship between reading and vocabulary emphasizes the importance of developing reading skills to facilitate an increase in vocabulary which then will lead to an improvement in reading comprehension. Stanovich (1986) also warned that this is an effect that may persist throughout the language learner's development. Lei et al. (2009) comment on the fact that students who experience difficulty in reading comprehension, will not be academically successful, resulting in lowered academic levels.

Many researchers have investigated the role of vocabulary knowledge in first language (L1) reading comprehension, for example, Anderson and Freebody (1981; 1983), Mezynski (1983)

and Kame'enui, Dixon and Carnine (1987). From this research different perspectives on how vocabulary knowledge relates to reading comprehension have been identified which is valuable information and background when investigating these relationships in L2 students' reading. The research into L2 vocabulary and reading comprehension is gaining ground. Most studies though, focus on *how* L2 learners acquire vocabulary through reading while few studies have attempted to determine the role of vocabulary knowledge in L2 reading comprehension in academic contexts. Only a very limited number of studies (e.g., de Bot, Paribahkt & Wesche, 1997; Laufer, 1989; 1992a; 1992b; 1996) have investigated the relationship between vocabulary knowledge and reading comprehension in L2. Most of the studies that have assessed this relationship (between vocabulary knowledge and reading comprehension) in L1, focus on the relationship between vocabulary *size* or breadth of vocabulary knowledge and reading comprehension and little recognition is awarded to the role of other aspects of vocabulary knowledge in reading comprehension.

Baumann et al. (2005) propose that vocabulary involves knowledge of a word and skill in using the word in the language and this subsequently leads to comprehension (Baumann, Kame'enui & Ash, 2003). Word knowledge is also *multidimensiona*l because words have multiple meanings and different functions; the *interrelated* knowledge of words points to the fact that one word can connect to many other words (Nagy & Scott, 2000). In L1 research various proposals have been made as to what vocabulary knowledge consists of (Cronbach, 1942; Dale, 1965). Researchers of L2 have also argued about what is meant by "knowing a word" (Nation, 1990; Richards, 1976). The notions are, although different in perspectives, generally complimentary. In attempting to define aspects and components of vocabulary knowledge, a number of L1 researchers have noted the importance of depth - or quality – of vocabulary knowledge in reading comprehension. Although there appears to be few publications about empirical research on this topic in L1, the principle of the importance of depth of vocabulary knowledge has generally been accepted (Beck, Perfetti & Mckeown, 1982; Mezynski, 1983). The situation in L2, however, is different: little recognition has been awarded to the importance of *depth* of vocabulary knowledge in reading comprehension, and empirical investigations have only recently been released.

The purpose of this research was to assess the relationship between vocabulary size and vocabulary depth and reading comprehension in the L2 reading process of B.Ed. first year students[3] with the intention to address the following questions:

[3] Only the vocabulary breadth and depth of fourth year students were determined.

What do the reading literacy profiles of the B.Ed. first-year students (majoring in English) look like?

How do the vocabulary levels of first year B.Ed. students compare with those of fourth year B.Ed students majoring in English?

How do scores of the first year study population on vocabulary size, depth of vocabulary and reading comprehension correlate with each other?

To what extent does depth of vocabulary knowledge add to the prediction of reading comprehension over and above the prediction afforded by vocabulary size?

Which of these variables will be the best predictor for academic success in the June examination of students taking ENGE111 as major subject?

How does gender impact on the results of the reading literacy profiles of first year students?

1.4 Purpose of the research

The purpose of the research is to:

Compile a reading profile of first year B.Ed. students majoring in English by determining vocabulary breadth and depth and reading comprehension and comparing those with their marks attained in English in Grade 12.

Compare the vocabulary levels of the first year and fourth year B.Ed students.

Determine how scores on vocabulary size, depth of vocabulary and reading comprehension correlate with each other.

Determine if vocabulary depth adds to the prediction of reading comprehension over and above the prediction afforded by vocabulary size.

Determine which of these variables will be the best predictor for academic success in the June examination for students majoring in English.

Determine how gender impacts on the results of the reading literacy profiles of the first year students.

1.5 Hypotheses

The following hypotheses are proposed for this study:

H_0: There is no relationship among vocabulary breadth and vocabulary depth and reading comprehension.

H_1: There is a relationship among vocabulary breadth and depth and reading comprehension.

1.6 Research design and methodology

1.6.1 Research paradigm

A research paradigm represents a school of thought which reflects the world view in which the research is embedded. One of the major philosophical schools of thought is Positivism - a scientific approach which originated with philosophers like Aristotle, Comte and Kant. They propose that the social world can be studied in the same way as the natural world of science. Educational research then is approached in a scientific way and with the assumption that human behaviour can be objectively and accurately explained (Gall, Gall & Borg, 2003). The research problem is approached by determining which variables will have influence on an outcome.

This worldview is based on four major assumptions: the deterministic philosophy of cause and effect; it is also reductionistic as complex ideas and problems are broken into smaller parts (variables) to be analysed; the assumption that empirical observation and measurement will be developed; and theory verification which imply the verification and testing of theories (Creswell, 2009, p. 7). In this study the relationship between vocabulary size and depth and reading comprehension was investigated, as well as students' academic achievement as measured by their performance in the June examination. The variables which were analysed in this study included breadth and depth of vocabulary, reading comprehension and academic achievement. Measurements have been collected quantitatively and Qian's model (cf. Figure 2.2, chapter 2) was used as theoretical conceptual departure point for this study. Phillips and Burbules (2000) add the following assumptions to this paradigm: the researcher working in this paradigm realises that objectivity is important and standards for reliability and validity are essential and were thus computed and released as prerequisites for interpreting the results. The researcher captures and analyses data completed by the participants to gain knowledge about the relationship, which in this case would be the relationship between vocabulary depth and breadth and reading comprehension. The researcher also posits that knowledge is conjectural and that absolute truth might not be found (Creswell, 2009, p. 7).

1.6.2 Research approach and design

Quantitative research proposes to find answers to research questions by collecting and analysing numerical data that represent different variables and constructs. According to Lodico, Spaulding, and Voegtle (2010, p. 13), "a construct is a hypothetical concept that is typically developed from a theoretical framework". These constructs are characteristics that impact on educational situations and when measured, are the variables in the equation. In this study, an assumption is made that levels of vocabulary size and depth, have an impact on reading comprehension.

The research of this study is non-experimental in approach with a one shot cross-sectional survey design which is cost-effective and allows the researcher to collect the data in a short period of time from a large population. This type of research can be used to describe characteristics that exist in a population, but not to determine cause-and-effect relationships between different variables. It is rather a matter of employing methods to make inferences about the possible relationships between vocabulary size and depth and reading comprehension. The data could also be used to support further research and experimentation. According to Creswell (2009), this is a design decidedly compatible with research in the education field.

Data was captured and analysed by the North-West University's Statistical Consultation Services at the Potchefstroom Campus using SAS (SAS Institute Inc., 2011).

1.6.3 Participants

The participants of the study are the total population (N_1=105) of first year students majoring in English and the total population (N_2=70) of the fourth year students majoring in English in 2013. The age group of N_1 is between 18 and 25 and there are 14 males and 91 females in the group. The age group of N_2 is between 20 and 26 and there are 10 males and 60 females in the group.

1.6.4 Data collection instruments

The following paper and pencil tests were used in this study:

1.6.4.1 The vocabulary levels (VLT) test

The VLT was developed by Paul Nation (1990) to measure vocabulary size and is used globally as a diagnostic and placement test. The VLT is composed of five parts representative of five different vocabulary size levels in English, namely, the 2 000 word level, the 3 000 word level, the 5 000 word level, the university word level, and the 10 000 word level. For this study the

first level of 2 000 words was not included as it tests high frequency words which are used in basic reading and conversation (cf. chapter 3 for a detailed discussion).

1.6.4.2 Word associates test (WAT)

The Word Associates Test[4] was developed by Read (1989; 1993; 1994; 1995) to assess depth of vocabulary knowledge in English. The test is composed of 40 items designed to measure three aspects of depth of vocabulary knowledge: polysemy and synonymy, and collocation, or the paradigmatic and syntagmatic relationships of words. The aspects that the WAT measures match some important components of the operational definition of depth of word knowledge; components that have been proposed for the present research (cf. chapter 3 for a detailed discussion of the test).

1.6.4.3 Reading comprehension test

This test is a standardized multiple-choice reading comprehension test (hereafter RC), which is taken from a version of the Test of English as a Foreign Language (TOEFL, Educational Testing Service 1987). It is sections of an official TOEFL test. Four passages were randomly selected consisting of about 10 comprehension questions using a multiple-choice format (cf. chapter 3 for a detailed discussion).

1.6.4.4 Background questionnaire

This self-compiled questionnaire is designed to obtain background information on participants' age, school education and medium of instruction at school level, home language, exposure to English before enrolling as first year student at the university, and current reading habits of the participants (cf. Appendix D).

1.6.5 Data collection procedure

First and fourth year B.Ed. students majoring in English, completed the tests. The venue was the Avanti lecture room. Students were informed about the procedures and intent. The writing of the tests and completing of the questionnaire were individual activities and completion of these was done without interference and/or discussion. The tests were administered in three periods of 40 minutes each; the VLT in the first session, the WAT and the questionnaire in the second session a week later, and the RC in the third session, another week later.

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[4] Qian (2003) adjusted the Word Associates Test (WAT) and it became known as the DVK – the Depth-of-Vocabulary-knowledge-Test.In this research the WAT was used.

1.6.6 Data analysis

Correlational and multivariate data analyses techniques were used in this study. The data was analysed by means of the SAS statistical program (SAS Institute Inc., 2011). Pearson product-moment correlations were used to determine the direction and strength of the relationship between the predictor (independent) variables and the criterion variable (dependent variable).

Cohen's effect size *d* was used to determine if there are any practically significant differences in vocabulary size and depth between first and fourth year students. (Cohen, 1988, pp. 20-27).

Stepwise multiple regression analyses were conducted to determine the most effective predictor(s) of the criterion measure.

1.7 Ethical Aspects

The study was submitted to the Ethics Committee of the North West University and approved (NWU-00070-13-A2). The following ethical rules have applied:

Permission to partake in the study was obtained from the students.

Students were not subjected to unnecessary stress and anxiety.

The right to privacy is upheld: the identity of the students will not be revealed and results are regarded as confidential and have not influenced their university course results.
(cf. Appendix A).

1.8 Chapter division

This dissertation is organized into five chapters. The first chapter provides the context and problem statement and the motivation for the study. A review of the literature to support the problem statement is included, as well as a concise rendition of the research design and methodology. Chapter 2 deliberates the research background and then reviews relevant literature on the minimum threshold for academic reading and vocabulary size. The second dimension of vocabulary knowledge, namely vocabulary depth, and the various attempts to define depth of vocabulary knowledge are then discussed. Reading comprehension is examined and then the relationship between vocabulary knowledge and reading comprehension is deliberated by a review of the different hypotheses linking these two aspects. Qian's model on the relationship between different components of the reading comprehension-vocabulary relationship is presented. This provides the theoretical conceptual framework for the study. Chapter 3 describes an overview of the research design and methodology, the instruments

used in the study and the participants. The quantitative research approach is disclosed as well as data analyses methods and the reliability and validity of the procedures. In chapter 4 the results are discussed. Chapter 5 contains the conclusion, the limitations of the study and the recommendations for further study.

1.9 Summary

In this chapter an overview of the study was presented. The literature review provided information regarding the importance of reading comprehension at university level and that comprehension is influenced by breadth and depth of vocabulary. Research in South Africa on the relationship between reading comprehension and vocabulary knowledge has not yielded unequivocal results. This relationship is regarded as basis for the conceptual framework of the study and the ensuing research questions, purpose of the study and hypotheses. A brief description of the research design and methodology were included to introduce the empirical research.

CHAPTER 2: THE RELATIONSHIP BETWEEN VOCABULARY KNOWLEDGE AND READING COMPREHENSION

2.1 Introduction and background

The audio-lingual teaching methods in second language (L2) instruction which gained ground in the 1940s, included limited vocabulary teaching (Coady, 1993), but relied on the assumption that increased exposure to the second language would eventually lead to an increase in vocabulary size. The communicative approach of the 1970s (which generally is still used today), concentrated on teaching functions of language in discourse, and vocabulary learning was and still is understated (Coady, 1993). The supposition of the communicative method is that second language (L2) vocabulary acquisition progresses similarly to first language (L1) acquisition: vocabulary will be acquired instinctively during meaningful learning/communicative processes (Coady, 1993). While there might be legitimacy in both of these approaches, it is also a reality that in the past two decades vocabulary teaching has become a focal point in L2 teaching and issues relating to this topic have been scrutinized by many researchers (Qian, 1998; Ellis, 2009).

Research on the acquisition of vocabulary has led to many valid strategies, methods and suggestions on how to increase the lexical knowledge of language learners and speakers (Pikulski & Templeton, 2004). While these studies focus on vocabulary learning, relatively few researchers have investigated the role of vocabulary in relation to reading comprehension (Qian, 1998; Stahl, 2003). Researchers such as De Bot, Paribahkt and Wesche (1997), Laufer (1989; 1992a; 1992b; 1996), and Mehrpour, Razmjoo and Kian (2011) have investigated vocabulary knowledge in L2, but many questions are still unanswered.

Baumann and Kame'enui (1991) report that Becker (1977) was among the first to highlight the importance of vocabulary size. He linked vocabulary size to the academic achievement of disadvantaged students and proposed that inadequate vocabulary size was the primary cause of academic failure of disadvantaged learners in grades 3 through 12. Since Becker's (1977) observations about the relation between vocabulary knowledge and academic achievement, research into this matter increased rapidly. Baumann and Kame'enui (1991, p. 605) suggested three additional reasons which might have prompted renewed interest in vocabulary size: i) public concern about declining literacy levels has influenced vocabulary research; ii) the realisation that building knowledge requires *more* than mere definitions of words, and iii) a shift in education towards problem-solving and higher-order thinking skills and not only the emphasising of basic skills. According to Baker, Simmonds and Kame'enui (1995, p. 2), "[t]his

shift has resulted in additional research directed toward understanding language and vocabulary acquisition within the context of prior knowledge and constructivist pedagogy".

A number of L1 researchers have noted the importance of depth of vocabulary knowledge in reading comprehension (Beck, Perfetti & Mckeown, 1982; Mezynsky, 1983). Mehrpour et al. (2011) and Qian and Schedl (2004) all propose that both vocabulary size *and depth* are important in reading comprehension. Researchers (e.g., Read, 1993; 2000; Wesche & Paribahkt, 1996; Qian, 2002) have been developing instruments to measure depth of vocabulary knowledge, but relatively few studies (de Bot, Paribahkt & Wesche, 1997; Ho & Lien, 2009; Rouhi & Negari, 2013) have, in some way, linked analyses about depth of vocabulary knowledge to reading comprehension.

In this chapter the two dimensions of vocabulary knowledge are examined. Pertinent theoretical research perspectives regarding vocabulary size as predictors for reading comprehension are discussed, and also threshold vocabulary for reading comprehension. Depth of vocabulary is the second dimension which is clarified and precedes a discussion of reading comprehension. The different hypotheses to describe the relationship between vocabulary knowledge and reading comprehension are presented and factors influencing this relationship are deliberated. Qian's model to indicate the different relationships among aspects of vocabulary and reading comprehension are presented. This model is the conceptual framework on which this study on the relationship among vocabulary size and vocabulary depth and reading comprehension is based.

2.2 Vocabulary knowledge

The following section provides background and information about vocabulary knowledge and various perspectives on the definition of vocabulary knowledge.

Vocabulary refers to the words needed to communicate (Collins & Collins, 2004). It is evident that communication can take place with only knowledge of words and no application of syntax or grammatical structures. In the past much emphasis in L2 learning was placed on the teaching of grammatical structures and vocabulary teaching was de-emphasised. Since three decades ago, though, ample research has deemed vocabulary acquisition crucial to language learning, albeit research mainly focussing on L1. These researchers include: Anderson and Freebody (1981) who acknowledged that not only vocabulary size, but also *quality* word knowledge impacts on reading comprehension; Mezynski (1983) who conceded that more research into other aspects than only vocabulary size needs to be initiated; Nation (1990) who developed the Vocabulary Levels tests to determine vocabulary size; Read (1993) who developed the Word

Associates Test to measure depth of vocabulary; and Beglar and Hunt (1999) who validated and stressed the importance of knowledge of the 2 000 word and University Word List levels.

2.2.1 What it means to "know" a word

Vocabulary is regarded as the knowledge of words and the knowledge of word meanings, but this simplistic view is misleading as one has to consider additional aspects of vocabulary. Firstly, vocabulary appears in two forms: print and oral and knowledge of vocabulary in these two fields may differ. Secondly, knowledge about words is receptive or productive, of which productive knowledge is more limited than the receptive (Lehr, Osborn and Hiebert, 2004). Also, to "know" a word requires incremental word knowledge, which according to Nagy and Scott (2000), requires many exposures to the word and in as many contexts, before it is "known". Word knowledge is also multidimensional because words have multiple meanings and different functions; the interrelated knowledge of words points to the fact that one word can connect to many other words (Nagy & Scott, 2000).

To "know" a word involves much more than only the identification of the word: it includes knowledge about *meaning* of the word including concepts, associations and referents. It also includes knowledge about the *form* of the word: spelling, pronunciation and word parts. Furthermore, it also involves knowledge about the *use* of the word, which will indicate a familiarity with collocations and constraints and functions which include awareness of the nuance and the social/cultural appropriateness of a word (O'Rourke, 1974; Johnson & Pearson, 1984; Nation, 2001).

Qian (1998) suggests that knowledge of vocabulary has two primary dimensions: breadth of vocabulary, which refers to the number of words (size) of which the reader has some superficial knowledge; and depth of vocabulary which incorporates knowledge of pronunciation, spelling, meaning and collocational features; in other words, in-depth knowledge of the word. Since Qian's (1998) proposal, researchers like Greidanus and Nienhuis (2001), Read (2000), Vermeer (2001) and Wolter (2001) agreed on this classification of breadth and depth of vocabulary. Thus, it appears as if word knowledge is a multi-dimensional concept and a concept which will still evoke response in future.

2.3 The two dimensions of vocabulary knowledge

Although many aspects are involved in the process of recognizing a word, the two dimensions of breadth and depth of vocabulary, as agreed upon by several researchers, are also preferred for and relevant to this study.

2.3.1 Vocabulary size

The general perception about a large vocabulary size is that it is an indication of an individual's intelligence, education and how well read he/she is. This is an attribute which is worth pursuing but not easily measured. The question arises: how many words would classify vocabulary knowledge as "large"? Qian (1998, p. 13, 14) mentions two prominent issues emerging in this research:

(i) What is the threshold level of vocabulary size for academic reading comprehension? This aspect is referred to in the ensuing discussion (cf. 2.3.1.1), and,

(ii) Does vocabulary size serve as a predictor of academic reading comprehension? (cf. 2.3.1.3).

2.3.1.1 Word count and threshold level

The term "threshold" might imply that words in a language can be counted. This is, however, a formidable task due to the changing and organic nature of a language: new words are constantly added or invented and old words fall into disuse or old words are newly applied. Issues of what should be counted as a word are also problematic: counting words with derivatives or not; the inclusion or exclusion of proper nouns (like Swanee, Marmite); classifying compound words like lemon grass as one or two words; counting homonyms (bark of a tree and the dog's bark) as one or two words; classifying abbreviations or acronyms as words - the intricacy of such a calculating task seems daunting. What then, should be counted as a word? According to researchers and lexicographers it would be more convenient and sensible to classify words into "families" based on the root or lemma (or base word, e.g., *count*), its inflected forms (*counting*, *counted*), and a small number of recognizable derived forms (*account* and *accountable*, but not *count* as in title of a European nobleman). Thus, following Goulden, Nation and Read's (1990) research, there are about 54 000 word families in Webster's Third International dictionary (1963). This is a goal that even most native speakers of English will consider overwhelming.

Research into an acceptable word count for L1 speakers yielded interesting results. If a child enters school with a vocabulary size of between 4000 and 5000 word families, it is expected that another 1000 word families will be added annually (especially in the primary grades) to the child's vocabulary (Baumann & Kame'enui, 1991; Beck & McKeown, 1991; Graves, 1986). A university count will then be around 20 000 word families (Goulden, Nation & Read, 1990). These are estimated figures and a large variation between individuals is also possible. The

same increase in vocabulary is predicted by Jamieson (1976) for L2 speakers but the original gap that exists between L1 and L2 speakers is not that easily and immediately bridged.

Liu and Nation (1985) proposed that with a vocabulary size of the most frequent 2 000 words, a reader knows 80% of the words in a text (neither academic, nor necessarily authentic text), and this relates to one unknown word in every five words (this could be as many as two words per line). They also determined that this ratio is just too low to allow for reasonably successful guessing of meaning or skill transfer from L1 to L2. Consider the following: 80% control over words in a text will roughly yield knowledge of four words out of five; 32 words out of 40. A simulation for the L1 speaker would entail the following in a text about the mining industry in South Africa (assuming the reader has schema knowledge of the topic):

Gold mining was a fundamental ---------- for the development of ----------, as well as many ---------- and service ----------. Africa's largest --------- market was started soon after the ---------- of gold, mainly to --------- the mining ---------- of the country.

(Adapted from Nation, 1990, p. 242).

If a reader, especially an L2 reader, is confronted with a text with the above ratio of unknown words, the reading task might be so daunting or time consuming that the reader becomes demotivated and fails to complete the task. Research by both Laufer (1989) and Hirsh and Nation (1992) indicate that an unfamiliar word density of 80% is an unreliable base for reading comprehension and inference. Now regard the same text with a gaps ratio of 1:10 (4 words out of 40 are unfamiliar) – 90% of the words are familiar:

Gold mining was a fundamental ---------- for the development of infrastructure, as well as many ---------- and service industries. Africa's largest --------- market was started soon after the discovery of gold, mainly to --------- the mining sector of the country.

The above text might still be problematic to the L2 reader especially, but the reader might be able to make meaning of the passage by inferencing or activating content schemata.

Over the last two decades, vocabulary has been upgraded as a component of language proficiency, both in L1 and L2 acquisition. When Laufer (1989; 1992) established that the same principles regarding vocabulary and reading performance in L1 also apply to L2, she also determined that a lexical coverage of 95% of words in a text would lead to comprehension of the text, whether in L1 or L2. The following paragraph is the same as the above text with a ratio of 1:20 (2 words out of 40 are unfamiliar): 95% of the words are familiar:

Gold mining was a fundamental ---------- for the development of infrastructure, as well as many manufacturing and service industries. Africa's largest --------- market was started soon after the discovery of gold, mainly to fund the mining sector of the country.

Reading comprehension is not that much compromised with this ratio of unknown words in the text, although more precise knowledge could be required when performing specific tasks. Laufer's (1997) research points to a requirement of 95% word knowledge of a text for comprehension and this is supported by the work of Hirsch and Nation (1992) who suggested that 5,000 individual words (the equivalent of 3,000 word families) would enable a reader to understand texts.

Hirsch and Nation (1992) did research on novels written for teenage or younger readers. These specific novels were chosen because the authors wrote the novels aimed at a specific age group (non-adults) and this had an influence on choice of vocabulary. In a novel there is also the opportunity for vocabulary about the topic to be repeated. Table 2.1 shows that under favourable conditions, (reading a novel aimed at a certain age group), a vocabulary size of 2 000 to 3 000 words may provide a sufficient basis for language use and comprehension.

Table 2.1: Coverage of vocabulary size when reading novels

Vocabulary size	%Coverage	Density of unknown words
2 000 words	90%	1 in every 10
2 000+proper nouns	93.7%	1 in every 16
2 600 words	96%	1 in every 25
5 000 words	98.5%	1 in every 67

Compiled from Hirsch and Nation (1992, pp. 207, 208).

A more recent study by Nation (2006) though, suggests a much higher level of vocabulary (8 000 – 9 000 word families), which is needed to enable *wide reading* and coverage of 98% of known words. In this study, Nation investigated percentages of most frequent words, combined with proper nouns and the 1- 3% of unknown words in a text.

From the above discussion it is clear that one cannot underestimate the effect of the amount of unknown words or, too low threshold, on the reader. According to Carver (1994), even L1 speakers classify two unknown words per 100 words (98% known) as difficult reading. Laufer (1997) also warns that inferencing from context does not easily occur from L1 to L2 before the

threshold of at least 97% known words has been reached. It is thus clear that, especially at university level, the reader has to possess a large enough vocabulary to make meaning of texts.

2.3.1.2 Threshold for minimum academic proficiency

Laufer (2000) investigated studies from eight different countries to determine the vocabulary size of L2 high school and university students and found it ranging between 1000 – 4000 word families. To expect an expansion to the level of 8,000 word families might appear unattainable. Schmitt, Jiang and Grabe (2011) refer to this vocabulary size target as "a pedagogical issue" and relate it back to the relationship between vocabulary knowledge and reading comprehension. The L2 reader especially, might come across unfamiliar/unknown words in a text and it will affect the reader's comprehension. Nonetheless, the question remains: how many unknown words in a text can be tolerated by the L2 reader before it renders comprehension of the text impossible or inadequate or defective?

Both Laufer (1989) and Hirsch and Nation (1992) deemed 80% knowledge of words in a text as inadequate for comprehension. Research done by Hu and Nation in 2000 indicated that an L2 reader should know at least 95% of the words in a passage to be able to infer the meaning of words in that passage with which they are not familiar. Hu and Nation's research involved teachers of L2 who were second language speakers themselves. They had to infer meaning from two different passages: one passage had a 4% ratio of nonsense words and the other a 10% ratio of nonsense words in the text. The concentration of unidentified words in the second passage affected their understanding of the text and added to the assumption that vocabulary size has an effect on comprehension. Hu and Nation (2000) refined the study to suggest that 98% of coverage is required for adequate comprehension of 71% and that the corpus data (Nation, 2006) shows that 98% coverage is indicative of 5 000 word families; only 95% coverage can be reached with 3000 word families.

Laufer (1989; 1996) contributed to this research by investigating the vocabulary size of L2 students (native speakers of Arabic and Hebrew) at Haifa University to determine reasonable reading comprehension. The reasonable reading comprehension score was set at 55% and the group that scored 95% and above on the vocabulary test had a considerably higher number of successful readers than those scoring below 95%. Laufer and Ravenhorst-Kalovski (2010) "revisited the lexical threshold"[5] and investigated the relationship between L2 students' vocabulary size, lexical text coverage and reading comprehension. The participants were 745

[5] Title of the article: Lexical threshold re-visited: Lexical coverage, learners' vocabulary size and reading comprehension (Laufer & Ravenhorst-Kalovski, 2010).

students at an academic college in Israel taking a course in English for Academic Purposes. The researchers define vocabulary knowledge as the percentage of words that the reader understands. If the Academic Word List (AWL) consisting of 570 words (Coxhead, 2002) provides coverage of 10% of an academic text, it signifies that 10% of the text (10% of all the word tokens) consists of AWL words. By the same token: the reader's (limited) knowledge of the AWL will allow the comprehension of 10% of the vocabulary in the academic text. Coverage can also refer to the percentage of words that the reader understands: 95% text coverage indicates the reader understands 95% of the word tokens. They also refer to "sight vocabulary" in their research to indicate words of which the meaning is so familiar to the reader that the word is understood out of context. When encountered in a text these words are effortlessly recognized and rapidly decoded to "free" the reader to use higher cognitive skills in comprehending content, options and implications. Vocabulary knowledge and sight vocabulary are related factors to the lexical threshold and it is logical to assume that a reader with a large sight vocabulary will have a high percentage of text coverage. The authors further refer to the previous oversimplification of two factors: the estimate of 8000 – 9000 word families is the highest approximation for 98% coverage which implies that 98% coverage could be reached by a lower vocabulary range; the 95% coverage indicative of a 3,000 word knowledge will only render minimal comprehension, around 55%, which might not be satisfactory in many situations. The authors claim to have used more exact research tools than in earlier studies and that their research is a confirmation of earlier results regarding the percentage of text lexis and vocabulary size. They also declared that in a technical text with jargon vocabulary, provided that the field is the reader's expertise, knowledge of more low frequency words would be needed, thus lowering the overall percentage of the threshold.

The reading of academic texts, however, requires a vocabulary size of up to 10 000 words (Hazenberg & Hulstijn, 1996), and Nation (2001) proposes at least 97% knowledge of vocabulary for comprehension in academic textbooks. At university level, the 97% is an indication of knowledge of 10 000 to 11 000 word families (Hazenberg & Hulstijn, 1996). Laufer and Ravenhorst-Kalovski (2010) are cautious in their judgment of this threshold as it was carried out in Dutch and not English. Nevertheless, this elevated threshold still falls short of the 15 000 to 20 000 word families believed to be in the scope of the L1 speaker (Nation & Waring, 1997). With particular relevance to academic reading, Alderson (2000, p. 39) points out that "this linguistic threshold[6] is not absolute but must vary from task to task: the more demanding the task, the higher the linguistic threshold".

[6] This refers to the minimum word knowledge level which the reader might possess.

Thus, it seems that the threshold vocabulary for reading comprehension in L2 is influenced by descriptors like “adequate”, “favourable” or “reasonable” comprehension, and it is also influenced by different contexts and purposes of the reading exercise. One thing that is clear though, is that an extensive vocabulary will assure a high percentage of text coverage. It is also evident that if a reader/student is confronted with text in which more than 5% of words are unfamiliar, comprehension is compromised.

2.3.1.3 Vocabulary size as predictor of reading comprehension

A number of researchers used scores on vocabulary size to predict levels of academic reading comprehension. Koda (1989) used a self-made vocabulary test in conjunction with two reading tests (a cloze test and a comprehension test) in his study of 24 college students learning Japanese. He established a 0.69 correlation between the students’ scores on the vocabulary test and the cloze test and a 0.74 correlation between the scores on the comprehension test and the vocabulary test. He established that “content-word meanings significantly contribute to reading comprehension” (Koda, 1989, p. 533).

Coady (1993) trained 79 students in high frequency vocabulary in an academic preparation programme and they achieved better reading comprehension than the control group who had not received training. He came to the conclusion that instruction of the most frequent 2,000 words in English could elevate the level of reading comprehension. The researcher was cautious though to assume that there is a definite relationship between vocabulary and reading comprehension and conceded a need for more research in this matter.

Laufer (1996) reported significant correlations between the vocabulary size tests and reading comprehension with ninety two first-year English learning university students with Hebrew and Arabic as first languages. A correlation of 0.50 was reported on the relationship between the Vocabulary Levels Test (VLT) and the score on reading comprehension. In another study of eighty first-year students of similar L1 backgrounds, a correlation of 0.71 was established between the score on the VLT and a comprehension test.

Tschirner (2004) conducted a study at the University of Leipzig in Germany with first semester students with the subject English Language and Literature to determine vocabulary breadth and vocabulary gain after eight years of studying English (at school level) as L2 language. The VLT and a productive levels test (Nation, 1983) were used, supplemented by a questionnaire. The results show that these students, with respect to the size of their productive and receptive vocabularies required of L2 speakers, were not really equipped for using English in their

university studies, and that English instruction of up to eight years in German schools does not necessarily enable German students to meet the vocabulary thresholds for the academic level.

A recent study by Pringprom (2012) at Bangkok University involving 81 undergraduate students taking a compulsory English course in their second academic year, explored the relationship between vocabulary breadth and reading proficiency. The VLT was used together with a multiple-choice reading comprehension test and the results revealed that the students' small vocabulary size at the 5 000 level (an average of 30.89%) had seriously impacted on their reading.

It is clear that research on L2 vocabulary concerns is ongoing and significant. It is also noteworthy that Laufer (1992a,) and Jamiesen (1976) conceded that vocabulary acquisition in L2 follows the same patterns as in L1. The current research in L2 however, does not always address the aspect of vocabulary *depth* even though the suggested hypotheses in L1 on the connection and relationship between vocabulary and reading comprehension is proof of the importance and relevance of this aspect.

2.3.2 Vocabulary depth

It is difficult to ascertain precise "deep" knowledge of a word. Often, only sketchy knowledge of a word would allow the reader/speaker to perform tolerably within a specific task, although in certain situations, precise knowledge of a word might be required and crucial. The endeavours to find an inclusive definition for vocabulary knowledge are many. Cronbach (1942, p. 207) refers to Dolch who regarded fullness of a word's meaning as "richness of meaning", a description which could well encompass the modern term of *vocabulary depth.* In the following section different dimensions of vocabulary knowledge and attempts at defining vocabulary, and particularly vocabulary depth, are presented.

2.3.2.1 Defining vocabulary: depth and dimensions

Many lexical researchers have suggested various criteria for defining word knowledge. Cronbach (1942, p. 206) summarised "various sorts of behaviour that may be called for in understanding a word" into five questions:

(i) Can the reader define the word? This indicates generalization of knowledge.

(ii) Can the reader select appropriate use for the word? This indicates application of knowledge.

(iii) Can the reader recall the different meanings of the word? This indicates breadth of knowledge.

(iv) Can the reader apply the term correctly to all possible situations? This indicates precision of meaning.

(v) Can the reader make appropriate use of the word? This aspect is referred to as availability.

Cronbach's criteria place emphasis on knowledge of word meaning (generalization, breadth and precisions of meaning) and accessibility of this knowledge (availability and application) but do not include aspects like spelling and pronunciation and morphological issues which refer to added in-depth knowledge as well. He acknowledges though, that one word can have different meanings and various applications. Richards's (1976, p.86) framework of seven aspects of vocabulary knowledge is more extensive than that of Cronbach's and includes also register and word frequency assumptions, but he disregards spelling, pronunciation and collocation. His assumptions on what it means to know a word, are knowing:

(i) the degree or probability of occurrence of the word in speech or print (frequency);

(ii) the limitations imposed on the use of the word according to function and situation (register);

(iii) the syntactic behaviour associated with the word;

(iv) the underlying form of the word and the derivations that can be made of it;

(v) the associations between the word and other words in the language (synonyms, antonyms, etc.);

(vi) the semantic value and connotations of the word; and

(vii) the many different meanings associated with the word.

The next worthwhile attempt to address this issue came from Nation (1990) who made use of Richards's framework to tabulate a set of sixteen questions which reflect four aspects of an L2 learner's vocabulary knowledge (Nation, 1990, p. 31):

(i) Form: oral and written form;

(ii) Position: grammatical patterns and collocations;

(iii) Function: frequency and appropriateness;

(iv) Meaning: concept and association.

Qian (1998) regards Nation's classification to determine word knowledge as comprehensive, as it added spoken and written form and collocations to Richards's framework and superficial word knowledge is now supported by added knowledge aspects of and about the word. Nation's framework, which is presented as sixteen questions, is accessible to L2 researchers, educators and learners.

Research in L1 accepts the fact that a word can be known in "varying degrees" (Baumann & Kame'enui, 1991; Beck & McKeown, 1991; Nagy, Anderson & Herman, 1985). However, there is no agreement about how to define the levels of varying degrees and how to differentiate between them. Dale (1965, p. 898) proposed the existence of four incremental stages of word knowledge:

(i) never having seen the term before;

(ii) knowing there is such a word, but not knowing what it means;

(iii) having context-bound and vague knowledge of the word's meaning;

(iv) knowing the word well and remembering it.

These stages might very well exist but the testing at each level might be problematic and also the presenting of correct evidence at each stage. Instead of stages, Beck, McKeown, and Omanson (1987, p.151) refer to a person's word knowledge as falling along a continuum. These include:

(i) no knowledge of the term;

(ii) general understanding;

(iii) narrow but context-bound understanding;

(iv) having knowledge of a word but not being able to use it appropriately (productively); and

(v) decontextualized knowledge of a word's meaning, its relationship to other words and metaphorical uses.

Again, it would be difficult for the reader to always accurately place a word in the suggested category. The relationship between words and reading comprehension is also not recognised. If

an unknown word is placed in a familiar context and reading comprehension is possible, is the reader then at stage iii? Stahl (1999) also added to the conundrum and suggested an intuitive three-level scale of the processing of word knowledge in an ascending order of difficulty, a strategy that might not be traceable or measurable, precisely because of the intuitive process. The levels are: association – comprehension – generative processing. In addition to Stahl's suggestion, Kame'enui, Dixon and Carnine (1987, p. 139) devised a continuum on three levels of lexical knowledge in a descending order of difficulty: full concept - partial concept - verbal association. This again, points towards levels of knowledge but does not suggest a manageable practise to determine on what level exactly the reader performs or gains comprehension of reading.

Henriksen (1999, p.309) regarded the previous proposals as not specific enough and suggested three continua for lexical competence:

(i) partial to precise knowledge – this describes the different levels of word knowledge: vocabulary size is more towards the partial knowledge end of the continuum;

(ii) depth of knowledge – this is knowledge of the word's different relations to other words;

(iii) receptive and productive knowledge.

Especially the first category - partial to precise knowledge – might not always yield the same results as the need for precise knowledge might very well depend on the nature of the task in which precise knowledge might not be a prerequisite. Qian (1998, p.20) has summarised all of the above attempts to formulate definitions into three categories:

(i) component-focus (e.g., Richards, 1976);

(ii) the reader's familiarity with a word (e.g., Dale, 1965); and

(iii) a combination of the previous two (e.g., Cronbach, 1942, Nation, 1990).

All these approaches to determine lexical competence imply that depth of vocabulary is not, in Qian's (1998, p. 21) words, a "solid mass", but a concept with *different levels* of lexical knowledge. Qian (1998) deems the above mentioned approaches complimentary. His attempt at defining vocabulary knowledge consists of four dimensions which are intrinsically connected and includes the following:

(i) vocabulary size: the number of words of which the user has some superficial knowledge;

(ii) depth of vocabulary knowledge: this includes all lexical features such as phonemic, graphemic, morphemic, syntactic, collocational, semantic and phraseological properties, also register and frequency;

(iii) lexical organisation: the storage, connection and representation of words in the mental lexicon of the student;

(iv) automaticity of receptive and productive knowledge: the supporting processes to access word knowledge through encoding and decoding and semantic structures from the mental lexicon of the student.

The foregoing attempted definitions and suggested dimensions of word knowledge are proof of the fact that word knowledge is not a mere recalling of meaning but that various aspects are linked to this concept. Combining different definitions and assumptions, Qian (1998, p.24) then compiled a list of attributes relevant to the relationship between depth of word knowledge and reading comprehension:

Pronunciation and spelling;

Morphological properties (the root, inflection, derivation of a word and parts of speech);

Syntactic properties (the word's position in a sentence, syntagmatic relations, collocations);

Meaning (denotation and connotation, polysemy, antonymy, synonymy, other paradigmatic relations);

Register (adherence to stylistic, social or regional requirements, and the field, mode and manner of discourse);

Frequency of the word (specialised word, rarely or commonly used).

The need to measure and assess depth of vocabulary prompted Read (1993) to design an interview protocol to assess depth of vocabulary of adult L2 learners in New Zealand. The interview questions encompassed aspects like the following:

(i) knowledge and ability to pronounce the word;

(ii) explanation of meaning of the word;

(iii) identification of field of study to which the word belongs;

(iv) naming of synonyms and collocations;

(v) knowledge of other derivatives of the word.

The study, however, lacked a workable measurement dimension or method and Read continued his research and eventually developed the Word Associates Test which could measure the test taker's ability to recognize synonyms and collocations, thus determining depth of vocabulary to a certain extent. This is discussed in detail in chapter 3.

In the foregoing discussions, earlier and more recent definitions of what is involved in "knowing" a word have been presented. These efforts by researchers are evidence of the importance of depth of vocabulary but it seems as if research on the *relationship* between depth of vocabulary and reading comprehension is still inadequate.

2.3.2.2 Empirical studies on depth of vocabulary

Nurweni and Read (1999) conducted a study at an Indonesian university with a large sample of first year L2 students. The students were tested on their understanding of words which appear in academic texts. The researchers made use of a translation test, a word associates test, and the participants were also interviewed. The results showed that the students fell short of the academic threshold in terms of breadth and depth of vocabulary knowledge and only a few reached the required 3 000 – 5 000 word range. They also determined that students could identify less than half of the possible meanings for high-frequency polysemous words.

An exploratory study by Santos (2009) in California with ten L2 students investigated breadth and depth of vocabulary. The background to the study was the assumption that knowledge of academic vocabulary distinguishes well-prepared students from underprepared students at university. The researcher mentions that academic words often have multiple meanings that influence *common* and *specific* application of vocabulary and that this kind of polysemy becomes problematic for L2 speakers who may not have knowledge of the *range* of meanings and applications of the academic lexicon. The researcher made use of the University Word Levels Test (Beglar & Hunt, 1999), a modified Depth of Vocabulary Knowledge Task (Wesche & Paribahkt, 1996), and a native language[7] academic writing task to assess academic proficiency. Results showed that students with a larger breadth of vocabulary also revealed a greater depth of vocabulary knowledge. This study focused on and made use of academic vocabulary in the tests.

The results of a study by Ho and Lien (2009) at a Taiwan university conducted with 191 English major students, proved that depth of vocabulary had an impact on reading comprehension.

[7] Native languages included Spanish, Japanese, and Vietnamese.

Students with more depth of vocabulary understood texts better. The researchers also suggested that depth of vocabulary instruction should be emphasised by highlighting both synonyms and collocations.

Mehrpour et al. (2011) conducted a study with Iranian students studying English as a foreign language to determine the relationship between depth and breadth of vocabulary knowledge and the effect on reading comprehension. Their findings on the relationship between vocabulary size and reading comprehension show a high correlation which indicates that wide-ranging vocabulary knowledge leads to better reading comprehension. Furthermore, they determined that the relationship between depth of vocabulary and reading comprehension is positively and considerably interrelated which indicates that vocabulary depth is an encouraging factor in reading comprehension. They also suggested that because of the interrelatedness of vocabulary breadth and depth, referred to as "much overlap between these two aspects" (Mehrpour et al., 2011, p. 121), students need to develop them simultaneously. The aspect of prediction power of vocabulary knowledge to reading comprehension was also investigated and the researchers determined that vocabulary depth is a stronger predictor than vocabulary breadth.

Qian (2002) investigated the relationship between vocabulary size and depth and reading comprehension of 217 students attending an intensive ESL programme at the University of Toronto. The students were from different L1 backgrounds (including Korean, Russian, Chinese, etc.) and from different academic fields at the university. A TOEFL reading comprehension test, the Depth-of-Vocabulary-knowledge (DVK) test and the vocabulary levels test (VLT) were used as instruments. Qian validated all the instruments and his results show that the inter-correlations among the four variables (breadth and depth of vocabulary, TOEFL vocabulary items and reading comprehension) are fairly high. This means that the vocabulary measures are related to reading comprehension scores to a similar degree of strength. Qian warns however, that one should keep in mind that the DVK only addresses three components of depth of vocabulary knowledge, namely synonymy, polysemy and collocation. The phonemic, graphemic, morphemic, syntactic, semantic and phraseological features were not covered in the test.

The role of vocabulary breadth and depth in reading comprehension was investigated by Rouhi and Negari (2013) at an Iranian University in which fifty English learning students were involved. Nation's (1983, 1990) Vocabulary Levels Test, the Word Associates Test (WAT) by Read (1993) and a reading comprehension test were used as instruments. The results also revealed a significant and positive relation between breadth, depth and reading comprehension like in

similar studies but this research also showed that breadth or *size* of vocabulary knowledge led to better reading comprehension than depth of vocabulary knowledge.

Vermeer (2001) though, states that breadth and depth of vocabulary are two dimensions of the same factor: input. She continues to state that too little is known about the relationship between breadth and depth of word knowledge and there might not be a conceptual distinction between the two dimensions.

2.4 Reading comprehension

Underwood, Yoo and Pearson (2007) have referred to the many theoretical views regarding reading comprehension over the last fifty years. The "simple view" of reading comprehension before the mid-seventies was that reading comprehension is the product of decoding and listening comprehension (Juel, 1988). By decoding it is implied that a word is recognised and then converted to speech which will reflect meaning. The psycholinguistic and cognitive perspectives of the late 1970s saw the reader as meaning maker and the most significant aspect in this approach is the reciprocal relationship between comprehension and knowledge (Pearson & Stevens, 1993). This is reminiscent of the knowledge hypothesis describing the relationship between vocabulary and reading comprehension (cf. 2.5.1.2). The 1980s were dominated by the sociolinguistic perspectives in reading (Wells, 1986), which supported the functional view of reading in which the social and cultural contexts in the reading process are central to reading. By the 1990s the word *reading* had been replaced by *literacy* which implied a broader and more contextualised term (Gee, 1987). The postmodernist perspective of this era regards texts as products of power of control whether it be social, political or economic (Giroux, 1991). It can be assumed that while many theoretical views of reading comprehension have existed over the decades, the *act* of reading itself is difficult to define.

In 1990, Freebody and Luke introduced their model of literacy instruction based on the above mentioned historical views and which later (1997) was refined to present the following four stages through which the reader passes to achieve reading comprehension:

(i) Code breaker (written text is broken down using the alphabet, sounds, spelling, patterns and conventions);

(ii) Meaning-maker (what is the message of the text, knowledge required for understanding);

(iii) Text user (pragmatics of use, what is the function of the text in a social context);

(iv) Text critic (critical view of the text, the assumptions behind and consequences of using the text).

The first stage of code breaking refers directly to the simple view of reading comprehension of the early 1970s in which the decoding stage of comprehension is emphasised and other aspects are somewhat neglected. Furthermore, the meaning-maker stage places emphasis on the fact that "knowledge is the cause and consequence of comprehension" (Underwood et al. 2007, p.93). During the text user stage the reader has to take into consideration the social and cultural functions of the text (the sociolinguistic influence of the 1980s), and in the fourth stage the reader should realize that all texts are ideologically biased. This implies that each text presents different viewpoints and is influenced by ideas, purposes and critique. These stages may well be implemented in the first year of university reading and will assist in the overall comprehension of and analytical thinking about prescribed texts, but the initial point of departure in the reading comprehension process is still the recognition of words and then reacting to this process in whichever way.

Meneghetti, Caretti and De Beni (2006, p.291) define reading comprehension as a complex cognitive ability which requires "the capacity to integrate text information with the knowledge of the reader and resulting in the elaboration of a mental representation". Vocabulary recognition is then part of text recognition. Rapp and van den Broek (2005, p. 276) label reading comprehension as the "most complex and uniquely human of cognitive abilities" and warn that our understanding of the processes still is "fragmented".

The National Reading Panel (2000) describes the comprehension process as follows: if a reader cannot easily put sound to a symbol (phonemic awareness), apply rules (phonics), combine information quickly (fluency), and relate to what they have read (vocabulary), the reader will not be able to remember what he has read by the time he finishes reading a sentence and needs to make some sense of it (NRP, 2000). Comprehension in reading (and even listening) then is a process: if a word is recognised, readers connect what has been read to what they know. The reader constructs logical meaning about the word/topic and organises it to make meaning. If a shortfall occurs in comprehension, it indicates a deficit in one or more of these processes of vocabulary recognition and reading comprehension.

Researchers in this field widely accept that reading comprehension is a multifaceted, complex, cognitive process that operates on different levels to be applied to different reading tasks (Perfetti, Stafura & Adlof, 2013). These levels are: the word level, which indicates the lexical processes; the sentence level, which are syntactic processes, and the text level. According to Perfetti et al.(2013), the reader constantly subjects these three levels to methods of analysis, referential mapping, word identification, inferencing and interaction with his/her conceptual knowledge to produce reading comprehension. They single out two major processes: the identification of words and the language-processing mechanisms. These two function together

to connect words into a message. They also state that "[w]ord identification is a critical first component of reading comprehension" (Perfetti et al., 2013, p. 5) and, that while word reading might be a "low-level"[8] component in reading comprehension, all other processes rely heavily on its success.

Automaticity in reading comprehension refers to the automatic recognition and swift conception of a specific word (Mezynski, 1983; Qian, 1998). This is a skill which is needed in the reading process so that when the reader is confronted with a new word, recognition and comprehension are automatic and the brain is "freed" to process other aspects that might influence reading comprehension (e.g., syntax, topic relevance, prediction, drawing conclusions, etc.).

Another view on reading comprehension is that reading comprehension is dependent on the direct access of meaning of only the words the reader already knows. New words can be explained only in terms of old words. According to Adams (1990, p. 205), this can be done either explicitly, by producing their definitions, or implicitly, by explaining them in a context of familiar/known words. New learning then occurs when the reader builds on what is already known. This seems to be especially relevant to vocabulary knowledge and its influence on reading comprehension.

At university level, reading is fundamental to all disciplines (White, 2004), but, according to Lei, Rhinehart, Howard and Cho (2009), students at university level are ill-equipped to successfully comprehend advanced academic textbooks and lecturers often believe that their students already possess the skills to read and understand university material in all its components (Lei et al., 2009). The teaching of reading and reading strategies usually terminate in primary school (White, 2004). It is thus not surprising that many first year students often have to attend formal reading instruction classes to improve that skill specifically. In the ICAS *Academic Literacy Report* (2002) published by universities in California, it is stated that an increasing number of L1 students do not reach the required threshold level for academic reading on entering university and the report alerted students to the fact that "reading is a process that requires time and reflection and that it stimulates imagination, analysis, and inquiry" (ALR, 2002, p. 20). Then again, good comprehenders are able, knowledgeable and strategic readers (Anmarkrud & Braten, 2008) and while there are many components involved in the reading process, a considerable vocabulary size and knowledge of depth of vocabulary can support the process.

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[8] Higher level components include parsing, inferencing, meaning of text and form (Perfetti et al., 2013).

Learning, naturally, is reliant on comprehension and is more than mere literal understanding. Especially at university level, higher order language skills, including prediction, drawing conclusions, and recognising elements of humour, sarcasm, innuendo and exaggeration are required: these all involve advanced comprehension skills and add holistically to the interpretation of text and life.

2.5 The relationship between vocabulary size and depth and reading comprehension

The relationship between vocabulary knowledge and reading comprehension has been recognized for close to a century (Baumann, 2005). The "classic" work Baumann refers to is the research done in this field by Cronbach (1942), Rosenshine (1980), Anderson and Freebody (1981), Mezynski (1983), Nagy (1983), Graves (1986), Stahl and Fairbanks (1986) and McKeown and Curtis (1987). He also acknowledges the work of Beck and McKeown (1991), Baumann, Kame'enui and Ash (2003), Blachowics and Fisher (2000), Nagy and Scott (2000) and Hiebert and Kamil (2005). Baumann (2005, p. 117) comments that, "[h]owever, the exact nature of and theoretical explanations for associational or causal connections between word knowledge and comprehension vary, as do the theoretical, empirical, and instructional implications of vocabulary-comprehension connections".

Most of the initial studies in the field of vocabulary and reading comprehension however, focus on the relationship that vocabulary *size* has on reading comprehension. Empirical studies on the topic of vocabulary depth in L2, however, are few (Qian, 1999), even though studies acknowledge the importance of vocabulary depth (Mezynski, 1983).

2.5.1 Hypotheses linking vocabulary and reading comprehension

Researchers have suggested various hypotheses to describe the relationship between vocabulary and reading comprehension. Hu and Nation (2000, pp. 403, 404) name three essential factors which are present in these hypotheses: language knowledge (which includes vocabulary knowledge), world knowledge (also referred to as background knowledge) and language skill (which results in reading comprehension). Anderson and Freebody (1981) combined earlier (20th century) research in L1 reading comprehension and suggest the Instrumentalist, the Knowledge and the Aptitude Hypotheses to describe the relationship between vocabulary knowledge and reading comprehension:

2.5.1.1 The instrumentalist hypothesis

This hypothesis regards vocabulary knowledge as a prerequisite to reading (Anderson & Freebody, 1981). An individual who performs well in a vocabulary test will in all probability

understand more words in the text than one who scores lower in the vocabulary test. This suggests a direct causal link between vocabulary and reading comprehension. Mehrpour et al. (2001) refer to this hypothesis as the "commonsense model" of the vocabulary-reading comprehension link: knowing more words leads to a better reader (Mehrpour et al., 2011, p. 98). But in turn, this implies a simplistic pedagogical approach to poor reading performance, as if the teaching of vocabulary only, might improve or allow full reading comprehension.

Stahl (1999) uses the following graphic representation to describe this hypothesis:

Vocabulary Knowledge ⇨ Reading Comprehension.

2.5.1.2 The knowledge hypothesis

This hypothesis regards vocabulary size as an individual's knowledge of and about the world. To know a word means the reader possesses knowledge to relate this word to prior knowledge and previous experience. If the vocabulary size of an individual is rather limited, it indicates a narrow view of the world. This hypothesis relies on the constructivist and schema theory (Rumelhart, 1981) in which the reader uses top-down and bottom-up strategies to decode text. This entails that, depending on the context, an individual uses his/her world knowledge and knowledge of written symbols to comprehend texts. According to Ruddell (Ruddell, Ruddell and Singer, 1994), this hypothesis does not stand in contrast to the Instrumental, Aptitude and Access hypotheses as suggested by Anderson and Freebody (1981), but should be regarded as "a higher order construct that subsumes the other three hypotheses" (Ruddell et.al., 1994, p. 429). She substantiates her reasoning on the fact that declarative, procedural and conditional word knowledge contribute considerably to schema networks which in turn promote vocabulary development and consequently, reading comprehension. Pedagogically, it implies that vocabulary should be taught in context and in specific domains. Mezynski (1983) points out that if semantically unrelated words are taught, students might remember definitions but would not learn where the word fits in with their sets of related knowledge. There is, however, not much evidence that scores derived from vocabulary tests will reflect background knowledge (Qian, 2002). This hypothesis is therefore only one aspect of the knowledge construct that impacts on reading comprehension.

Stahl's (1999) graphic model to indicate the relation of the Knowledge hypothesis and reading comprehension is presented like this:

Vocabulary Knowledge ⇨ Topic Knowledge ⇨Reading Comprehension.

2.5.1.3 The aptitude hypothesis

This hypothesis, first suggested by Hunt (1987), emphasizes the verbal aptitude of the language user. The higher the mental capacity (aptitude), the larger the size of the reader's vocabulary and the more developed is his/her reading comprehension. An individual who performs well in a vocabulary test is verbally more talented than one who obtains a low score in a vocabulary test. Subsequently, the individual who is mentally agile should be able to acquire a larger vocabulary than the next one and his/her reading comprehension would also be more superior because of his/her aptitude and not because of vocabulary size. Thus, the aptitude hypothesis implies that reading comprehension is *not* indicative of vocabulary size, but rather of the mental capacity and verbal aptitude of the individual. Pedagogically, this suggests that the teaching of vocabulary to improve reading comprehension is rather redundant as aptitude is the gage and not vocabulary size. Ruddell (Ruddell, et.al.,1994) adds that this hypothesis implies conditional knowledge. The reader knows when and how to apply strategies for reading and why these are effective. Some readers apply these procedures more effectively than others. However, these behaviours are difficult to determine and to describe. Stahl's (1999) graphic indication of Hunt's hypothesis is presented as:

Vocabulary Knowledge ⇦ General Ability ⇨ Reading Comprehension.

2.5.1.4 Access hypothesis

After having scrutinized various vocabulary instruction studies and research papers, Mezynski (1983) proposed that reading comprehension is related to effective practice of vocabulary. Vocabulary is seen as to have a causal relationship with comprehension as long as the vocabulary can be effortlessly accessed. This has led to the Access hypothesis: activities to practice new vocabulary will result in rapid assessment of word meanings and converting meanings successfully into text processing. The notion of "automaticity" of word knowledge, or, what Stahl (1999) refers to as the "speed-of-access" hypothesis, will assist the reader in comprehending texts. This implies that sufficient practicing of the target words is necessary for the words to become part of the lexical catalogue of the language user. Various factors can be involved with this access: fluency, speed in coping with attached forms, speed in recognizing words and nuances, and speed in making connections and predictions (Nation, 1993). Pedagogically this means that many opportunities for practicing vocabulary should be implemented so that automaticity could occur which would "free" the brain to comprehend overall meaning of the text and not engaging the brain to concentrate on the meaning of single words to the detriment of an overall understanding.

2.5.1.5 The reciprocal hypothesis

The Reciprocal hypothesis, a fairly recent model proposed by Nagy (2005), is the result of the researcher's concern that existing hypotheses disguise the complexity of vocabulary/comprehension relationships, and that the causal relationship (e.g., vocabulary directly affects reading comprehension, i.e. Instrumentalist hypothesis), is unidirectional. He acknowledges the Matthew effect (Stanovich, 1986) and suggests that the relationship between vocabulary and reading comprehension is bidirectional: a large vocabulary leads to a competent reader, but being a good reader also leads to the possession of a large vocabulary. This would suggest that students would have to read extensively, an action which might be influenced severely by intrinsic motivation. Nagy (2005) graphically represents the Reciprocal hypothesis as:

↱Vocabulary ⇨Reading Comprehension ⇨ Volume of Reading ↵

The arrow at the beginning indicates the number of words of the reader that will allow reading comprehension. Reading comprehension will determine the amount of reading which in turn will affect the amount of vocabulary.

The aforementioned hypotheses present different perspectives on how vocabulary knowledge is connected to reading comprehension: the Instrumentalist hypothesis supports the knowledge of vocabulary as prerequisite for reading comprehension; the Aptitude hypothesis regards mental aptitude as indicative of vocabulary knowledge and reading comprehension; the Knowledge hypothesis places emphasis on the background knowledge of the language user and not on individual word meanings; the Access hypothesis supports vocabulary instruction and training to assist the language user in assimilating vocabulary to the point of "automaticity" to come to an understanding of text. The view of the Reciprocal hypothesis is that vocabulary influences reading comprehension and vice versa and both are influenced by the amount of reading undertaken by an individual.

Both Qian (2002) and Stahl (1999) warn against placing emphasis on one specific hypothesis to the exclusion of others. It is safe to assume that these hypotheses are interlinked with each other and that as a combination they could hold true. The final words on these hypotheses are not yet disclosed: this is only again proof that the relationship between vocabulary knowledge and reading comprehension is a complex one and one that will continue to elicit response. However, as Alderson (2000, p. 99) points out: "more subtle and informed definitions of 'vocabulary' are needed…" It therefore seems to be a worthwhile pursuit to investigate the impact that vocabulary size and vocabulary depth have on reading comprehension.

Despite the more central role of vocabulary in theories and models in language acquisition, research into language proficiency, vocabulary knowledge and reading comprehension that would ensure academic success, have not yielded satisfactory answers. The actual relationships among vocabulary size, depth of knowledge or lexical richness and their effect on comprehension seem difficult to describe and to ascertain.

2.6 Theoretical conceptual framework: Qian's model

It is well worth noting that the hypotheses discussed in 2.5.1 are all valid in the L2 learning sphere as well, especially looking from the pedagogy perspective. Researchers like Qian (1998, 1999) and Stahl (1999) though, acknowledge that a framework as connected whole is still required.

Nation (1993, p.116) proposes that different relationships exist at different stages of vocabulary growth and skill development and he presents the knowledge hypothesis as follows (cf. Figure 2.1)::

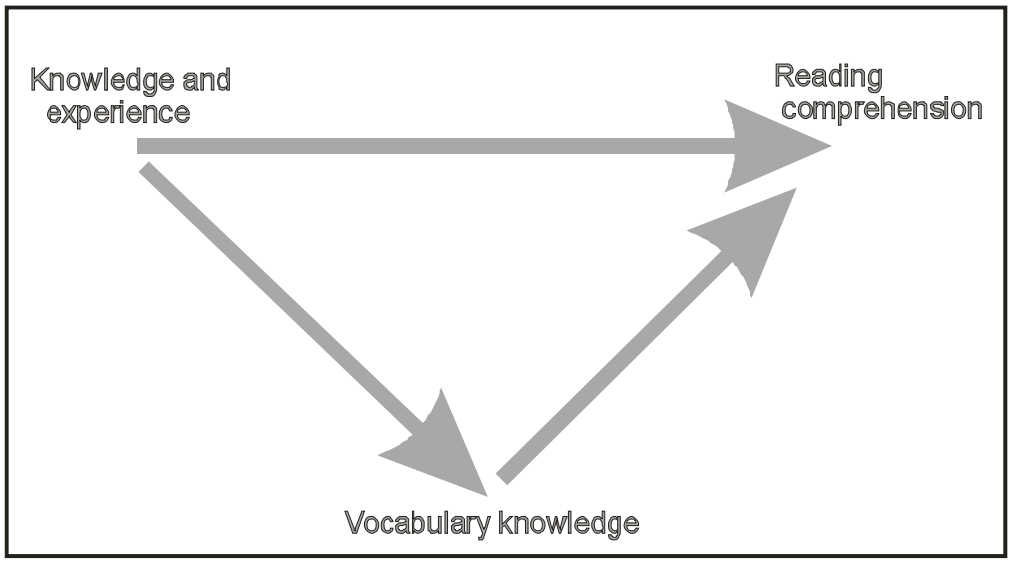

Figure 2.1: Diagram of the Knowledge hypothesis

(Nation, 1993, p.116).

Nation argues that good world knowledge is indicated by vocabulary which then enables reading comprehension because "the reader must bring as much information to the text as the reader expects from it" (Nation, 1993, p.116). This implies that reading about geology is strenuous if the reader's knowledge about the topic is scant. On the other hand, knowledge and

familiarity with the discipline geology may add to the vocabulary about the topic and assist in reading comprehension.

Nation applied four of the vocabulary-reading hypotheses of L1 to L2 (he disregarded the aptitude model - the reader's mental ability - as irrelevant for instruction) and stated that vocabulary size, language skill and world knowledge are three prominent factors involved in L2 reading comprehension. He used a triangular diagram to indicate the relationships among these three aspects (cf. Figure 2.2):

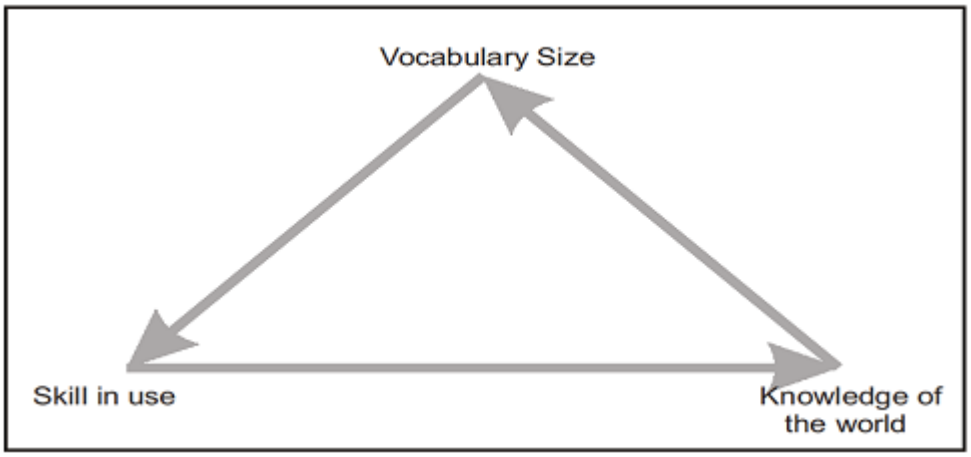

Figure 2.2: Nation's triangle

(Nation, 1993, p.117).

Nation admits that the diagram does not cover all the conceivable relationships in the vocabulary-reading chain. The aspect of depth of vocabulary, unfortunately, is also not addressed. This prompted Qian (1998) to design a model in which depth of vocabulary knowledge is incorporated. Qian (1998) based his model on four of the vocabulary knowledge-reading comprehension hypotheses: the instrumentalist, knowledge, aptitude and access hypotheses. He also incorporated the following factors in the relationship: breadth and depth of vocabulary knowledge, automaticity of access to vocabulary knowledge, other linguistic knowledge, world knowledge, reading comprehension, and cognitive and affective variables (cf. Figure 2.3):

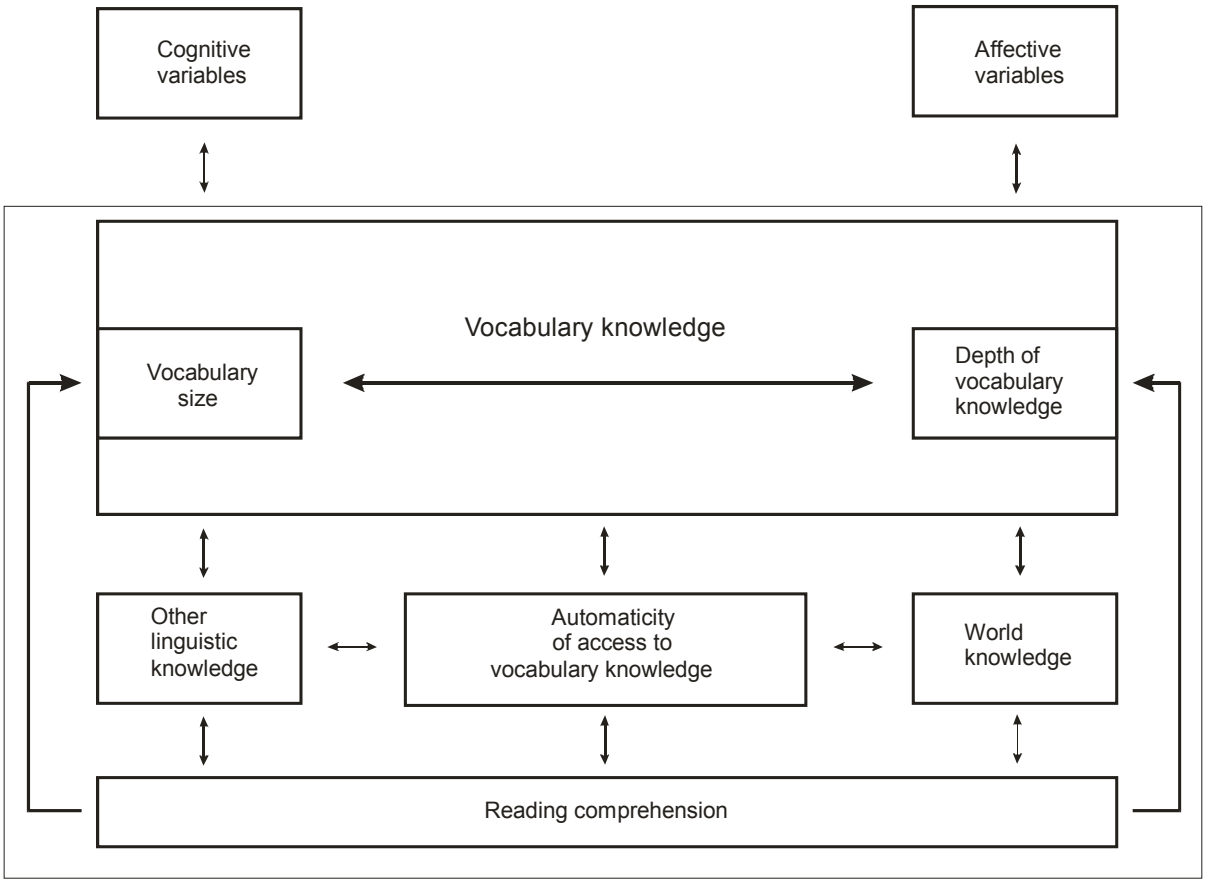

Figure 2.3: Qian's Model hypothesising the relationships among various factors in the chain of vocabulary knowledge – reading comprehension

(Qian, 1998, p.28).

This model suggests interactive relationships among many factors and Qian (1998) states that these factors inform and influence one another. This indicates that strength or weakness in one factor might cause change in some of the other factors.

The first relationship which is emphasised is the fact that vocabulary knowledge is a combination of vocabulary *size* and *depth*: these dimensions are interactive and interdependent and should deserve equal attention. *Other linguistic knowledge* (e.g., syntax) is also linked to vocabulary knowledge in the comprehension process.

Secondly, *automaticity of access* is also linked to both aspects of vocabulary knowledge. "If automaticity involves only arriving at simple and discrete meanings of lexical items without any supporting depth of vocabulary knowledge, this automaticity would be theoretically questionable" (Qian, 1998, p. 29).

In the third place, the emphasis is on world knowledge or background knowledge. Qian refers to Bernhardt (1991) who determined three categories of background knowledge:

Local-level knowledge (distinctive knowledge of specific communities);

Domain-specific knowledge; and

Culture-specific knowledge.

According to Qian (1998), world knowledge impacts on the quality of and also interacts with vocabulary knowledge.

Fourthly, the comprehension process is also shaped by cognitive (which include linguistic aptitude, memory and analytic capacity) and affective variables (which include motivation, attitude and emotions).

The fifth point of emphasis is the reciprocal causal relationship in the vocabulary knowledge – reading comprehension chain which was first described by Stanovich (1986) and has significance for reading as instructive measure for vocabulary development.

The present study focused only on part of the model: the role of vocabulary depth and size on reading comprehension. The above discussion on depth of vocabulary and part of Qian's model is the departure point for this study.

2.7 Summary

In this chapter an overview was given of vocabulary knowledge and its two dimensions, size and depth. The role of a minimum threshold for academic proficiency was investigated and references were made to empirical studies on vocabulary size and vocabulary depth. Reading comprehension was discussed and the relationship between this component and vocabulary knowledge was investigated and presented. The five hypotheses linking these two components were also included to provide a background for the preferred model for this study. Finally, Qian's model to hypothesize about the relationships between different aspects of vocabulary knowledge and reading comprehension was discussed as it provides the theoretical conceptual framework for this study.

In the next chapter the research methodology of this empirical study is discussed.

CHAPTER 3: RESEARCH METHODOLOGY

3.1 Introduction

The methodology of the study is discussed in this chapter. Firstly, the research design and approach are presented. Then information regarding the study population is provided. The instruments used in the study are described: two vocabulary tests, a comprehension test and a questionnaire were used. The questionnaire was compiled by the researcher to collect background information of the participants and their past and current exposure to English. The reliability of the instruments is included. The data collection procedures are stated and the design and statistical analysis techniques which were used in the study are explained.

3.2 Research paradigm

This research is embedded in Positivism, a worldview which originated with Aristotle, Bacon, Locke, Comte and Kant (Mertens, 2010). This paradigm reflects the scientific approach to research. Human behaviour is described in terms of numeric data which are then applied to support or disprove a theory or to describe an experience, which in this case are the results of the vocabulary tests and a reading comprehension test (collected data) that were analysed to determine if relationships exist between the variables. Within this research knowledge is hypothetical and absolute truth is not to be found (Creswell, 2009, p. 8). Positivism is thus characterised by quantitative research and is defined by Gall et al. (2003, p.632) as "[t]he epistemological doctrine that physical and social reality is independent of those who observe it, and that observations of this reality, if unbiased, constitute scientific knowledge."

The features of quantitative research are described by Johnson and Christensen (2008, p.34) as follows:

- Emphasis is placed on the confirmatory part of the research cycle;
- Behaviour is regarded as predictable and regular;
- The general aims of research are to predict and explain;
- Understanding the laws of whole populations rather than specific groups is favoured;
- Behaviour under controlled conditions is studied attempting to determine the effect of single variables;
- The approach is one of objectivity so that different observers should agree with observations;

- Structured and validated collection instruments are used and data should be precisely measured;
- The data analyses aim to investigate and describe statistical relationships.

The above mentioned principles were the departure points for the methodology of this study.

3.3 Research approach and design

Statistics is at the heart of a quantitative research design and thus the research involved the collection of precise scientific data (measured vocabulary tests and a reading comprehension test) and the statistical analyses and interpretation of the results. The research for this study was non-experimental which indicates that the researcher had no direct influence on the data and could not manipulate the data, which, in this case, consisted of vocabulary tests and a areading comprehension test completed by the study population under controlled circumstances. Data of all the variables were analysed, examined and interpreted (cf. section 3.5).

The primary objective of the research was to compile reading literacy profiles of first year B.Ed. students by investigating the relationships among vocabulary depth and breadth and reading comprehension. The relationship between variables was tested and explored to enable the researcher to make predictions.

The non-experimental quantitative approach with a one shot cross-sectional survey design was used as data was collected from two populations at one time. This method is cost-effective and allowed the researcher to collect the data in a short period of time from a large population. As a result of the fact that no random sampling was done, interpretation of statistical analyses were done according to Cohen's effect sizes (Cohen, 1988). Thus, no inferential statistics were interpreted, although p-values are reported as if random sampling was done.

3.4 Target population and selection of participants

The target population involved B.Ed. students who are majoring in English at a university in the North West Province. First year and fourth year students of 2013 were included in the study.

3.4.1 First year group of the study population

All students enrolled for the first year course ENGE111 in 2013, were targeted for the study. The pre-requisites for the module are, apart from university exemption in the final grade 12 examination of South Africa, achievement of at least 60% in English First Additional Language (EFAL= L2) and 50% for English Home language (EHL=L1).

At the beginning of 2013 the initial total enrolment for the module was 140 students. During the course of the semester, some students terminated their studies or changed subjects and for various reasons, discontinued with ENGE111. The test taking procedures took place towards the middle of the semester and it became difficult to get hold of the students who discontinued with this module, for some students left the faculty or the campus altogether. There were some students who did not complete all the tests, either by omission or through absence on the days of the test procedures. A few of the first year students also cancelled the module just before the final semester examination partly because they realised that they would not gain a pass mark for the module or because they experienced the module as too strenuous and difficult (personal communication).

Most of the students in the first year study population, N_1 = 105, completed their secondary school training in 2012, the year before their first year of university training: 66 of the sample completed school in 2012, 25 of them in 2011 and 9 at an earlier stage. Their average age at the time of the study was between 18 and 19 years and there were 91 females and 14 males in the study population of the first years. The language orientation of the study population is presented in Table 3.1:

Table 3.1: Language orientation of the first year study population

	L1 %	frequency	L2 %	frequency	LOLT %	frequency
Afrikaans	92.16%	94	3.88%	4	90.10%	91
English	1.96%	2	95.15%	98	8.91%	9
Setswana	4.9%	5			0.99%	1
Sesotho	0.98%	1	0.97%	1		

L1 – Home language
L2 – Second language
LOLT – Language of learning and teaching

It is clear that most of the participants (92%) are Afrikaans speaking and their LOLT (language of learning and teaching) was Afrikaans. The small percentage of Setswana, Sesotho and English speaking students mostly received their school education through English (LOLT) and only one of the participants received education in Setswana. What is noticeable is the fact that 95% of the participants who are majoring in English in the B.Ed. course, regard English as their *second* language (L2). Only 7% of the sample indicated that they could express themselves in a third language.

3.4.2 The fourth year group of the study population

All the students in the fourth year group taking ENGD416 (Intermediate phase) and ENGD417 (Senior and FET phase)[9] were part of this study population, N_2 = 70. There were 12 males in the sample and 58 females. This group did not complete the questionnaire or the reading comprehension test (RC) as only the results of their vocabulary tests were compared to the results of the vocabulary tests of the first year sample.

3.5 The Variables

Variables for the statistical analyses include the following (cf. Table 3.2):

Table 3.2: Variables of this study

Name	Abbreviation	Variable type
The Vocabulary Levels test VLT	5 000W	independent variable
	10 000W	independent variable
Academic word list	AWL	independent variable
Word Associates test	WAT	independent variable
Reading comprehension	RC	dependent variable
Grade 12 result	Grade12mark	independent variable
June examination result	Junescore	dependent variable

Note that the VLT comprises three sections which were computed as three separate tests: the 5 000 and 10 000 word levels and the AWL (Academic Word List).

3.6 Instruments

The following instruments were used in the study:

[9] These modules are compulsory for students majoring in English in the B.Ed course.

3.6.1 The vocabulary levels test (VLT)

3.6.1.1 Introduction

The test was developed (1983) and revised (1990) by Nation to measure vocabulary size. The validated VLT has been universally accepted as a reliable measure of vocabulary knowledge at different levels (Laufer 1992b, 1996; Laufer & Nation, 1999; Yu, 1996). It is a decontextualized knowledge of the word test, so the tested word appears in a non-defining context in the test. The test is designed to measure both L1 and L2 students' written receptive vocabulary size required for reading in English. It does not measure listening vocabulary or vocabulary needed for speaking and writing, and although vocabulary size is of critical importance in reading, the VLT does not give an indication of reading skill per se as vocabulary is only *one* aspect of the reading skill.

The multiple-choice format test is divided into the following difficulty levels:
2 000 words, 3 000 words, 5 000 words, 10 000 words and an added section, the Academic Word List (AWL) compiled by Coxhead (2000), which determines knowledge of frequently used words in academic reading and writing. The first two levels, the 2000 and 3 000 word levels, contain high frequency words necessary to comprehend unsimplified texts. The 5 000 word level is the boundary level between high and low frequency words and the 10 000 word level covers the more familiar low frequency words of English. The AWL consists of 570 word families of general academic vocabulary and covers about 10% of the words appearing in academic texts (Coxhead, 2000). The AWL is especially applicable to this study as the results of this level would reveal how many words from the AWL are mastered by the participants (who are first and fourth year students and regularly exposed to these words).

The test taker needs to match words and definitions. Each level contains 30 items and each item has six words on the left and three definitions/explanations on the right. Test takers need to choose three out of the six words on the left to match the three definitions on the right (cf. Appendices B, C and D):

Example:

1 business

2 clock	6	part of a house
3 horse	3	animal with four legs
4 pencil	4	something used for writing

5 shoe

6 wall

This paper and pencil test is time efficient and tests more depth of knowledge than Meara's Eurocentres Vocabulary Tests (Meara and Jones, 1987) which are based on the signal detection theory in psychology and only requires a yes/no answer from the test-taker and might reveal knowledge of receptive vocabulary more than productive vocabulary (Qian, 2002).

According to Chall (1983), a university student should have reached Stage five of the Reading Development stages which indicates extensive vocabulary, automaticity and mature reading skills. But because of the poor pass rate for this module, it was decided to not only test academic vocabulary, but also the 3 000, the 5 000 and the 10 000 word levels (cf. Appendices B, C and D). The 3 000 word level test, however, was not statistically reliable and was therefore removed from the study.

3.6.1.2 Method of scoring

Each word level (2 000 or 5 000 word level, etc.) consists of 10 questions with three answers each, which brings the total of a section to thirty answers. In scoring, each correct answer is worth one point. A wrong answer scores zero. Nation (2008, p. 143) explains that each word in a test represents 33 words of that specific level and with each level containing 30 questions (33 x 30) roughly a 1 000 words are represented in a specific level. If a student scores 20 out of 30 it signifies that the student knows 667 words of that level and 333 words are unfamiliar to him/her. A score of at least 90% (27 out of 30) will prove adequate knowledge of that level (Nation, 2008).

3.6.1.3 Reliability and validity

The consistency of scores obtained by the same persons when they are re-examined with the same test on different occasions, indicates the reliability of a test (Anastasi & Urbina, 1997, p. 84).

The international reliability of the VLT is reported to be: Cronbach α = 0.95 and Rasch reliability estimate = 0.97 (Nation, 1990, Schmitt, Schmitt & Clapham, 2001). Due to its well-documented reliability and high correlation with the reading comprehension section of the TOEFL, the VLT was used in this study to provide an estimate of the number of words the participants knew.

Cronbach α values were determined for this particular study to test the reliability of the items/instruments for the study. The value of α ≥ 0.6 is accepted. The following results refer to the reliability score of three levels of the VLT (cf. Table 3.3):

Table 3.3: Reliability score on the VLT for this study

Instruments	Cronbach alpha
5 000W	0.70
10 000W	0.81
AWL	0.71

A vocabulary test is valid when it measures what it is meant to measure (Anastasi & Urbina, 1997:, p 113). In this case the test is designed to measure the number of words the test taker recognises at a particular level. The VLT is internationally accepted as valid in the L2 assessment domain. The content of the test is aimed at the L2 speaker of English in a westernised setting.[10]

3.6.2 Word associates test (WAT)

3.6.2.1 Introduction

Read (1993, 1995) developed the Word Associates Test (WAT) after which it went through a process of repeated piloting (e.g., Schmitt, Ng & Grabe, 2011). It is designed to measure three vocabulary items: synonymy, polysemy and collocation. The test taker has to recognize the

[10] The VLT is also adapted to be used in an oriental milieu.

various semantic and collocational relationships that a word has with other words in the language.

There are 40 target words, which are all adjectives, and each is linked to two boxes with four words each (mainly nouns). From the first box on the left the test taker has to choose a word or words synonymous with the target word, and from the box on the right the test taker has to choose a word that collocates with the target word. The number of chosen answers per target word should always be four regardless of the number per box; in other words, the answers are not evenly spread and three situations are possible:

(i) the left and right boxes each contain two correct answers;

(ii) the left box contains one correct answer and the right box contains three correct answers;

(iii) the left box contains three correct answers and the right box contains one correct answer.

This arrangement reduces the chances of guessing (Read, 1993).

An example from the test follows (cf. Appendix E):

beautiful

enjoyable expensive free loud	education face music weather

3.6.2.2 Method of scoring

In scoring, each answer is worth 1 point. A wrong choice scores 0. Test-takers are not penalized for providing wrong answers. In this study the maximum possible score was 39 x 4 = 156. The first item of the test was used as an example and explanation to the students and was therefore not taken into account with the final scoring.

3.6.2.3 Reliability and validity

Read originally intended to use this test to measure depth of vocabulary knowledge of adult L2 speakers in New Zealand. Since 1993 the test was subjected to large-scale field testing (N=103) (Read 1994; 1995; Schmitt et al., 2011) to refine and validate the process and content. Read (1995) reports a high correlation (r = 0.82) between the WAT and a comparison vocabulary matching test. The Rasch reliability coefficient of the WAT in which N = 94, was 0.93 compared to the matching test of 0.90. In this study the reliability score was 0.86 (cf. Table 3.4):

Table 3.4: Result on the reliability of the WAT

	N	Cronbach alpha
WAT	102	0.86

The WAT is designed to test knowledge of synonyms, polysemy and collocations. Although it does not address *all* the aspects of depth of vocabulary (pronunciation and spelling, morphological and syntactic properties, register, etc.), it incorporates aspects which are often emphasised by researchers (Nation, 1990; Read, 1993). The content validity of the test is accepted internationally and is used in both L1 and L2 assessment situations.

3.6.3 Reading comprehension test (RC)

3.6.3.1 Introduction

The TOEFL test is an internationally accepted, standardized multiple-choice test to determine the proficiency in English of L2 speakers.

To investigate the students' reading comprehension ability they had to complete a comprehension test with four reading passages with the titles: *Eugene O'Neill*, *Looking at Art*, *Word Choice* and *Levels of Vocabulary*. The four reading passages were randomly selected from the TOEFL repertoire and deal with topics like art, history, and language. The test measures the ability to understand non-technical reading material. Each reading passage is followed by questions about the main and secondary ideas of the passage. Questions also included a choice between correct words and phrases (cf. Appendix F).

3.6.3.2 Method of scoring

The questions were answered by selecting the correct answer from a multiple choice format. In scoring, one point was awarded for each correct answer. Wrong answers scored 0.

3.6.3.3 Reliability

Four standardized multiple-choice reading comprehension tests (RC) from TOEFL (Test of English as a Foreign Language) were used. These tests were developed by The Educational Testing Service (Winersky, Cook and Eignor, 1987) and carefully pretested for reliability and validity (cf. Table 3.5). Three of the reading passages had to be removed from the study: *Eugene O'Neill, Word Choice* and *Levels of vocabulary.* No statistical reliability was established on these reading passages and only the reading passage *Looking at art* was accepted as reliable.

Table 3.5: Results on the reliability of the reading comprehension

Reading passage	N	Cronbach alpha
Word choice	101	0.45
Eugene O'Neill	103	0.10
Levels of vocabulary	82	0.25
Looking at Art	100	0.68

Only one reading passage, *Looking at Art,* revealed the required reliability score of ≥ 0.5 at 0.68.

The comprehension test contains four reading passages of which the titles are a fair indication of the content of each. A possible reason for the lack of reliability could be that the questions are not only aimed at testing comprehension ability but also knowledge about language and vocabulary. There are also questions included in which the test taker has to select an appropriate sentence to fit into a certain paragraph and questions about the chronological order of paragraphs. The answers to the contextualised questions are presented in a multiple-choice format. There are at least 10 questions per reading passage.

3.6.4 Questionnaire

The questionnaire was compiled to obtain background information of the test-takers (cf., Appendix F). The questionnaire is a Likert-scaled, self-report instrument compiled by the researcher. It assesses the frequency with which the participant is engaged (in the past and present) with English. Personal information about the participant's (age, gender and language orientation, medium of instruction and academic results) was also provided in the completion of the questionnaire (cf. Appendix G). The results of the questionnaire is discussed in chapter 4.

3.7 Data collection procedure

Data collection was conducted by the researcher in May 2013. Because contact sessions are valuable lecturing periods, it was decided to administer the tests just before, or at the end of an ENGE111 contact/lecturing session. In this way attendance was also assured. The students were informed well in advance of the test taking about the purpose and processes of the study and that the outcome of the tests would not influence their module outcome.

The data collection procedure was carried out in three sessions over a period of three weeks. In the first session of 40 minutes, the VLT was completed by the students (cf. Appendix B). They had to match the definitions on the right in each item with the corresponding words on the left.

They had to complete the 3 000, 5000, 10 000 levels and the AWL. In the second session the WAT and the questionnaire (cf. Appendices C and E) were completed in 40 minutes. The students were instructed on how to complete the WAT; they had to tick the four words of each item which are related to the target word. The first item was used as example. They then had to complete the questionnaire. In the third session of 45 minutes the comprehension test with four reading passages was completed (cf. Appendix D). The students had to choose the correct answers presented in a multi-choice format and indicate the answers on the answer sheets provided. The fourth year group completed the VLT and WAT in one session at the end of May 2013.

3.8 Quantitative data analyses

In this study, Qian's Model (1998) provides a conceptual framework for the constructs vocabulary size, vocabulary depth and reading comprehension. These constructs are characteristics that impact on educational situations and when measured, are the variables in the equation.

Descriptive statistics were used to order and summarise data and calculate measures so that by means of tabulation certain properties of the data could be observed.

The Cronbach alpha coefficients were calculated to assure reliability of constructs. If a Cronbach alpha value ≥ 0.6 was yielded, the construct was considered reliable (Field, 2005). Pearson product-moment correlations were used to determine if linear relationships existed between the variables.

Interpretation of comparisons between means of constructs of independent groups was done according to Cohen's effect size d (Cohen, 1988). Effect sizes signify practical significance – that is the extent to which a difference is large enough to have an effect in practice (Steyn, 2009). Cohen uses the following scale for the d values:

$d = |0.2|$ (small effect);

$d = |0.5|$ (medium effect, noticeable with the naked eye), and

$d \geq |0.8|$ (large effect, practically significant).

Cohen's effect size d was used to determine if there are any practically significant differences in vocabulary size and depth between first and fourth year students. Cohen's (1988, pp. 20-27) effect size d was used to calculate the difference between two means.

Interpretations of the practical significance of the Pearson correlation coefficients were done. Cohen's effect size *r* was used. Cohen (1988) uses the following guidelines for the *r* values:

r = |0.1| (small effect);

r = |0.3| (medium effect, noticeable with the naked eye), and

r ≥ |0.5| (large effect or practically significant).

Forward stepwise multiple regression analyses were conducted to determine the most effective predictor(s) of the criterion measure (Tabachnick & Fidell, 2001). A stepwise multiple regression analysis was conducted separately on the following variables: three levels of the VLT, (the 5 000W, 10 000W and the AWL), the WAT and using the RC scores of N_1 (the first year study population) as the dependent variable. In this regression method a new variable is added at each step, starting with the one which has the highest correlation with the criterion. When a new predictor variable is added, the new relationship between the criterion and predictor variables is reassessed to determine if there still is a significant contribution to the relationship with previous predictor variables and when new variables are added. The forward stepwise regression was also conducted with the Junescore as dependent variable, to determine the best predictor for academic success in the June examination. The independent variables used in this regression were the VLT, the WAT and gender.

The following guidelines, according to Cohen (1988), were used to evaluate the practical effects of the regression results:

Guidelines for R^2 – values, that is to what practical extent the regression model fits the data, are:

$R^2 \leq 0.3$ (small extent)

$0.13 < R^2 \leq 0.25$ (medium extent)

$R^2 > 0.25$ (practical significant extent).

Guidelines for f^2 –values, that is to what practical extent the single predictor is on the dependent variable, are:

$f^2 < 0.15$ (small impact)

$0.15 \leq f^2 \leq 0.35$ (medium impact)

$F^2 > 0.35$ (large and practical significant impact).

The data was analysed by means of the SAS statistical programme (SAS Institute Inc., 2011).The statistical analyses of the quantitative data were done by the Statistical Consultation Services Department of the North-West University.

3.9 Ethics

The Belmont report of the United States was compiled in 1979 to provide researchers with principles of and guidelines for research practices when human subjects are involved. The need for such a paper became crucial after malpractices in human experimentation of WWII were exposed, and later, in the USA in the 1960s, when the scientific environment was tainted with a series of ethical violations (Vollmer & Howard, 2010, p. 679). The core principles stated in the report are: respect for persons, beneficence and justice. The first principle refers to the autonomy of participants -- their consent, voluntariness and the protection of vulnerable individuals or groups. This implies that participants will be well-informed about all aspects of the study and that, once they have all the information, they have the right to withdraw from the study at any time, and without prejudice. The beneficence principle refers to the fact that risk to the participants will be minimised and participants will not come to harm, and that research will have “prospects for an on-balance benefit” (Vollmer & Howard, 2010, p. 679). The justice requirement refers to the fact that risk should be distributed fairly among groups and that not only a certain group should benefit from research.

The students who participated in this study received verbal information about the study and their prospective involvement in the study. They were also informed about probable and eventual benefits (which could take the form of intervention and instruction), that could ensue after the results of the study were obtained. A consent form (cf. Appendix A) was compiled by the researcher which had to be signed by the participants. The participants were assured that participation in the study was voluntary and that the results of the study would not influence their academic marks whatsoever.

The researcher adhered to the ethics procedures required by the university before the commencement of the test taking.

The study received approval from the North-West University in April 2013 (NWU-00070-13-A2).

3.10 Summary

In this chapter the research design and research approach were explained. Information about the sample was provided and background detail about the participants was included to elucidate

future discussion of the results (cf. chapter 4). The various measuring instruments that were used in this study were discussed in this chapter. The reliability and validity of these tests were also added. The statistical techniques applicable to this study were explained to assist in the comprehension of the results which follow in chapter 4.

CHAPTER 4: RESULTS AND INTERPRETATION

4.1 Introduction

The results emanating from the research are presented in this chapter. The purpose of this chapter is to address the research questions as stated in chapter 1:

- What do the reading literacy profiles of the B.Ed. first-year students (majoring in English) look like?
- How do the vocabulary levels of first year B.Ed. students compare with those of fourth year B.Ed. students majoring in English?
- How do scores of the first year study population on vocabulary size, depth of vocabulary and reading comprehension correlate with each other?
- To what extent does depth of vocabulary knowledge add to the prediction of reading comprehension over and above the prediction afforded by vocabulary size of the first year study population?
- Which of these variables will be the best predictor for academic success in the June examination of first year students taking ENGE111 as major subject?
- How does gender impact on the results of the reading literacy profiles of the first year study population?

The following hypotheses are proposed for this study:

- H_0: There is no relationship among vocabulary breadth and vocabulary depth and reading comprehension.
- H_1: There is a relationship among vocabulary breadth and depth and reading comprehension.

4.2 Reading literacy profiles of the first year study population

In order to determine the reading literacy profiles of the first year study population, the results of the questionnaire were analysed and are reported here. Then follows the descriptive statistics of the variables of the study

4.2.1 Results of the questionnaire

4.2.1.1 English proficiency of the first year study population

In order to compile a self-report profile of the participants the mean and standard deviation statistics were obtained in terms of averages and spread of the data from an analysis of the questionnaire. In the first section, the participants had to rate their English proficiency on a Lickert scale of 1 – 4 where 1 is Poor, 2 is Moderately, 3 is Acceptable, and 4 is Extremely well (cf. Table 4.1):

Table 4.1: English proficiency of the first year sample

	N	mean	std dev
Expression in written English	103	3.07	0.57
Expression in spoken English	102	3.21	0.57
Follow instructions	103	3.48	0.53
Understand written English	102	3.43	0.58
Understand spoken English	103	3.58	0.53

Legend:
N = Number of participants
mean = average of results on Lickert scale of 4 points
std dev = standard deviation

When taking into consideration that the mid-point of a four point scale is 2.5, the results presented in the table shows that participants rated themselves as above average in all these abilities.

4.2.1.2 Previous exposure to English of the first year study population

The section about exposure to English before attending university was answered according to the following scale: 1 is Never or almost never, 2 is Once or twice per month, 3 is Once or twice per week, and 4 is Every day or almost every day (cf. Table 4.2):

Table 4.2: Previous exposure to English of the first year sample

	N	mean	std dev
Pre-school exposure to English	103	3.2	1.0
Reading story books, novels	103	3.1	0.8
Reading magazines, comic/graphic books	103	3.0	0.9
Conversations in English	102	3.6	0.9
English TV, films	102	3.9	0.3

The results of this section show that participants were exposed to English at least once or twice per week in the period before attending University. It seems as if the watching of English television occurred frequently and reached an almost-every-day level. This indicates a familiarity, at least, with English and reveals regular exposure to English, but does not really indicate proficiency. Exposure of this nature might not have been challenging in terms of vocabulary levels as the categories mentioned in the questionnaire imply exposure on a social level rather than exposure with the intention to improve the second language levels.

4.2.1.3 Current habits concerning English usage of the first year study population

The section on the current habits of the participants was answered using the following scale: 1 is Less than one hour per week, 2 is One to five hours per week, 3 is Six to ten hours per week, and 4 is More than ten hours (cf. Table 4.3):

Table 4.3: Current reading habits of the first year study population

	N	mean	std dev
How often do you read English?	101	2.4	0.9
How often do you read English to study?	101	2.6	0.8
How often do you read for enjoyment?	101	2.5	0.9

The results pertaining to this section reveal that participants are exposed to English reading on a fairly regular basis of more than five hours per week and that more time is spent on reading for studying purposes (about eight hours per week) than on reading for enjoyment/entertainment (roughly five hours per week). It is possible that the type of text, or academic level of the text might have an influence on the breadth and size of vocabulary knowledge.

The next question revealed information regarding preferences in English reading (cf. Table 4.4). The four point scale poses the following options: 1 is Never or almost never, 2 is Once or twice a month, 3 is Once or twice a week, and 4 is Every day or almost every day.

Table 4.4: Preferences in English reading

	N	mean	std deviation
How often do you read …			
English comic/graphic books	101	1.8	0.9
English novels	101	2.5	0.9
Magazines	100	2.9	0.9
Newspaper	100	2.1	1.0
Text books	100	3.1	0.9

None of the categories revealed a frequency of 4, which points at daily reading of English. The reading of textbooks achieved the highest frequency of once or twice a week. This points towards the importance of proficiency in academic reading and comprehension.

The same scale was used to determine how often the participants *use* English to perform certain tasks at university level (cf. Table 4.5):

Table 4.5: Frequency of using English

	N	mean	std deviation
How often do you use English to			
Discuss what you are reading	101	2.3	0.9
Find information	101	2.9	0.8
Read to study	101	3.2	0.8
Read for enjoyment	101	2.9	0.9

The table indicates that the participants use English mostly in their studies to read.

4.2.1.4 Number of books per home of the first year study population

The participants had to estimate the number of books available in the homes in which they were raised. This was rated on a 5-point scale (cf. Table 4.6):

Table 4.6: Number of books per home of the first year study population

Books per home	frequency	%
0 – 10	15	14.85
11 – 25	27	26.73
26 – 100	38	37.62
101 – 200	12	11.88
>200	9	8.91

The information regarding the number of books points, at least, towards an awareness about books in the homes of the study population.

4.2.2 Descriptive statistics

The results of the following variables were analysed: the VLT (three levels) to determine vocabulary size, the WAT to determine vocabulary depth and RC to determine reading comprehension. These results were used to compile literacy profiles of the first year study population and addressed the first research question. The results are presented (in percentages) in Table 4.7:

Table 4.7: Descriptive statistics of the variables for first year study population

Variables	N	mean	std dev	min	max
5 000W	103	89.11	8.87	63.30	100.00
10 000W	102	57.76	17.74	11.11	96.66
AWL	103	88.30	9.72	60.00	100.00
WAT	97	70.94	8.16	48.70	84.61
RC	103	71.03	15.77	20.00	95.00
Grade12	105	72.54	6.59	55.00	90.00
Junescore	83	51.11	10.66	29.00	75.00

Legend:
N = number of participants
Mean = average percentage
std dev = standard deviation
min = minimum score achieved
max = maximum score achieved

The differences occurring in Table 4.1, describing N, point towards some of the participants who did not complete all of the tests and therefore there was a variation in N.

At the 5 000 word level the mean score was 89.11 which was anticipated and acceptable as this level consists of words which are between low and high frequency words and should be included in the vocabulary of a first year student (Nation, 1990; Chall, 1983).

The mean of the 10 000 word level, which covers the "more familiar low frequency words" of English (Nation, 1990) is 57.76. This level contains words like *flurry, truce, nurture, morose* and *dubious*. There is a definite deficit at this level and the mean points towards a lack of vocabulary size of the study population at this specific level. This strong indication that the vocabulary breadth/size is insufficient, is in contrast with the fact that the first year study population indicated in the questionnaire that they rate themselves as *above* average in their understanding of texts (cf. Table 3.6). The current reading habits of this group reveal that they spend almost eight hours per week on the reading of English texts mainly for studying purposes (cf. Table 3.8), but the low score in this level test is perturbing as it might have an impact on reading comprehension and learning in general. This low mean might influence reading comprehension negatively. This corresponds with Qian's model (cf. section 2.6) and the Instrumental and Reciprocal hypotheses (cf. section 2.5.1) which all pose that vocabulary breadth and depth and reading comprehension are correlated.

The mean of the AWL at 88.3, is not that low, although Nation (1990) states that a 90% score at a level is indicative of mastery of that level. This level contains vocabulary particular to the academic environment and contains words like *inclination*, *principle, random* and *incidence*. Knowledge of this level is a pre-requisite for university studies in general.

The mean of the WAT is 70.94. The result on the depth of vocabulary test (WAT) indicates a lack of in-depth word knowledge regarding synonymy, polysemy and collocations.

Reading comprehension (RC) reveals a mean of 71.03 which suggests that there is room for improvement in reading comprehension. The required level for reading comprehension in the AGLE course at the North West University (a course in Academic Literacy in English required by the university for first year students) is 80%.

The mean of the grade 12 results (72.54) is far higher than the mean of the results of the June examination (51.11). This, of course, can be attributed to a number of reasons such as adjustment to university academic level and different subject content matter. One of the objectives of this research is indeed to determine if there are correlations between the June

examination results, vocabulary knowledge and the Grade12 mark (discussion follows, cf. section 4.4).

In conclusion, the general reading profile of the first year sample reveals an acceptable initial general proficiency level in English (grade 12 results), almost competency[11] at the 5 000 word level and the AWL, but a serious shortfall in the 10 000 word level. The scores on the RC (71%) and the WAT (70%) are not acceptable at this academic level. The first year study population is not at the expected and required level with reading comprehension or vocabulary depth.

When comparing the overall results of the vocabulary tests with how the study population rated themselves regarding their proficiency in English (according to the results of the questionnaire), there is a definite discrepancy. The students rated themselves as quite proficient in reading and speaking (cf. Table 4.1). This is disquieting and could indicate a naivety of perceived ability contrasted with the harsh reality, or on the other hand, the elevated required reading level at university level is not fully comprehended.

4.3 Comparison between first year and fourth year study populations

Cohen's effect size d was used to determine if there was a practically significant difference between the means of the constructs of the first year study population and the means of the constructs of the fourth year study population. This computation relates to the second research question of how the literacy profiles of the first year and fourth year groups compare with each other. The variables included the 10 000 word level, the AWL, and the WAT. In order to do these comparisons the Grade12 marks of both the study populations were compared at the outset.

Table 4.8: Variable: Grade12

	N	mean	std dev	Min	Max	p-value (when random sampling was assumed)	d- value
First year	105	72.54	6.59	55.00	90.00	0.8	0.03
Fourth year	69	72.84	8.06	55.00	90.00		

The d-value of 0.03 confirms that there was no practically significant difference between the means of the Grade 12 marks of both groups. This is an important outcome that shows that the

[11] A score of at least 90% (27 out of 30) will prove adequate knowledge of a level (Nation, 2008).

two groups were initially (at the beginning of their studies) more or less equal on an academic level and can thus be fairly compared.

The first variable was the 10 000 word level in which a significant difference is noted between the first and fourth year groups of the study population (cf. Table 4.9).

Table 4.9: Variable: 10 000 word level

sample	N	mean	std dev	min	max	p-value (when random sampling was assumed)	d-value
First year	102	57.76	17.74	11.11	96.66	<0.05 *	0.80▲
Fourth year	61	71.58	15.37	26.66	93.33		

* Statistically significant at 0.05 level according to t-test results for independent groups
▲ Large effect and also practically significant

This difference between the two groups indicates a development in vocabulary size by the participants in the fourth year group as they have knowledge of more than 70% of the words at the 10 000 word level (which is still not at the required 90% level), while the first year group only exhibits knowledge of 57% of the words at this level, which is far below adequate knowledge of any word level. Thus, the mean score of the first year and fourth year students is practically significantly different, indicating that the fourth year students' vocabulary size (mean = 71.58), is practically significantly better than that of the first year students (mean = 57.76). It is, however, perturbing, that the fourth year study sample, in their final year of studies, has still not achieved mastery at this level. This will have a serious impact on future intervention.

The results of the next variable, the AWL, are presented in Table 4.10:

Table 4.10: Variable: AWL

Sample	N	mean	std dev	min	max	p-value (when random sampling was assumed)	d-value
First year	103	88.31	9.72	60.00	100.00	<0.05*	0.7Δ
Fourth year	61	95.35	4.31	80.00	100.00		

* Statistically significant at 0.05 level according to t-test results for independent groups
Δ Medium practical effect

The difference of 0.05 is of medium practical significance (noticeable with the naked eye). The difference between the two groups regarding the AWL variable is not as considerable as with the previous variable, and the 95.35 mean achieved by the fourth year group is plausible, since the AWL consists of words specifically aimed at the university level (Coxhead, 2002) and, considering that the studies of the fourth years were nearly completed, it was anticipated that they would have mastered this level completely. It is also encouraging to note that a mean of 88.31 for the first year study population indicates (at least) familiarity with most of the academic words appearing in texts and learning material of the first year studies (cf. Table 10).

The results of the following variable, the WAT, are presented in Table 4.11:

Table 4.11: Variable: WAT

Sample	N	mean	std dev	min	max	p-value (when random sampling was assumed)	d-value
First year	97	70.94	8.16	48.71	84.61	<0.05*	0.5$^{\Delta}$
Fourth year	60	76.16	10.69	41.02	91.66		

* Statistically significant at 0.05 level according to t-test results for independent groups
Δ Medium practical effect

The WAT measures depth of vocabulary knowledge or, how *well* the reader knows a word in its entirety. The fourth year study population scored higher than the first year study population (with a medium effect) on this variable. Although the score of the fourth year sample is higher, it is not sufficient to indicate competence in this test. To top the score of the first year study population with only 6% is disappointing as one would have surmised that they would have improved their depth of vocabulary knowledge significantly after three and a half years of study. In other words, the dimension of vocabulary depth is not well developed in both groups and, according to Qian's model (chapter 2, section 2.6) this can have a detrimental effect on reading comprehension.

The above mentioned results addressed the second research question of the study: how do the reading literacy profiles from the first year study population differ from the reading profiles of the fourth year study population. It is noteworthy that the grade 12 results of both groups are at the same level. Then it is also meaningful that the fourth year group reveals better results at the 10 000W, the AWL and the WAT tests. The noticeable difference at the 10 000 word level points towards a lack in vocabulary size of unfamiliar low frequency words which could be crucial to reading comprehension in the first year of studies, especially. It is also encouraging to note that the results of the fourth year study population revealed more aptitude at all the various

levels of vocabulary size and depth when compared to the first year study population results, but by no means have they reached competency in all levels. This might indicate incidental development regarding vocabulary levels from first year to fourth year level of students in this course, but explicit intervention might even have a more positive effect.

4.4 Correlations

In order to answer research questions three and four, the measured results of each test were correlated with each other to establish correlations between vocabulary size and depth and reading comprehension. Pearson product moment correlations were used to determine the strength of the relationships between the variables.

4.4.1 The correlation between variables

The correlation matrix provides a clear picture of the strength of the correlations among all the variables of the study and is presented in Table 4.12:

Table 4.12: Correlation matrix of variables

	5 000W	10 000W	AWL	WAT	RC	Junescore	Gr12mark
5 000W	1.00	0.65▲	0.61▲	0.59▲	0.50▲	0.36Δ	0.10
10 000W	0.65▲	1.00	0.68▲	0.57▲	0.42Δ	0.41Δ	0.30Δ
AWL	0.61▲	0.68▲	1.00	0.58▲	0.50▲	0.41Δ	0.20
WAT	0.59▲	0.57▲	0.58▲	1.00	0.30Δ	0.50▲	0.22
RC	0.50▲	0.42Δ	0.50▲	0.30Δ	1.00	0.30Δ	0.23
Junescore	0.36Δ	0.41Δ	0.41Δ	0.50▲	0.30Δ	1.00	0.34Δ
Gr12mark	0.10	0.30Δ	0.20	0.22	0.23	0.34Δ	1.00

▲ large effect size
Δ medium effect size

The first correlations reported are between the 5 000W and the 10 000W (r =0.65), the AWL (r =0.61), the WAT (r =0.59) and the RC (r =0.50). They all revealed large effect sizes of $r \geq 0.50$. This indicates that the different levels of the VLT, the WAT and the RC are all positively correlated. The 5 000W revealed a medium effect size with the Junescore at r = 0.36.

The 10 000W level was correlated with the 5 000W (0.65), the AWL (0.68) and the WAT (0.57), which all revealed large effects This again reveals the positive correlation among the VLT, the

WAT and the RC. The correlations of the 10 000W with the RC and the Junescore yielded medium effects of $r = 0.42$ and $r = 0.41$.

The AWL was correlated with the WAT (r =0.58) and with the RC (r =0.50). Again, the correlations revealed large effect sizes which followed the same pattern as those already mentioned (cf. Table 4.6). The AWL showed a medium effect size with the Junescore.

The WAT yielded a medium effect size correlation of $r = 0.30$ with reading comprehension (RC). Furthermore, the WAT correlated practically significant, $r = 0.5$ (large effect) with the Junescore which implies that the higher the WAT score, the higher the Junescore. On the other hand, this practical significant correlation would then also imply that the lower the Junescore the lower the score on the WAT. This result will be of critical consequence once the current research is completed and the planning of intervention measures to improve the results of future first year groups in the June examination can commence.

The RC (reading comprehension) correlated with large effect sizes with the 5 000W and the AWL (both at $r = 0.50$), and with medium effect sizes with the 10 000W ($r = 0.42$) and the WAT (r =0.30). This indicates a correlation among vocabulary breadth and vocabulary depth and reading comprehension, as was proven by researchers like Mehrpour et al. (2011), Eyckmans (2004), Nation (1990) and De Bot, Paribahkt and Wesche (1997). Based on the results of the questionnaire, the first year study population regarded themselves as (almost) excellent readers of English (cf. Table 3.6). This evaluation might be because of inflated egos but could also be an indication that while they are conversant and good readers of English on a social level, the academic level of reading and understanding is beyond their current abilities and this might be related to the inadequate vocabulary knowledge level (as indicated by the results of the study). These correlations among the VLT, the WAT and the RC support the relationships theorised in Qian's model (cf. section 2.6).

The Junescore correlated with a medium effect with the 5 000W (r =0.36), the 10 000W (r = 0.41), the AWL (r = 0.41) and the RC (r = 0.30). The correlation between the Junescore and the WAT, $r = 0.50$, is practically significant. As stated above, this correlation points towards students' knowledge of vocabulary depth and how well they know a word, its synonyms and collocations and that this might have an influence on their academic success. While it is conjecture to assume that lack of knowledge of vocabulary depth might be an indicator of failure in this module, the correlation is a prompt to investigate the issue more extensively.

The correlations among the VLT (three levels: 5 000W, 10 000W and the AWL) and the WAT indicate a large effect of between 0.57 to 0.68 (cf. Table 4.6). This reveals a practically

significant correlation between the results of the different vocabulary tests. This is consistent with results of researchers like Qian (2002), Ho and Lien (2009) and Mehrpour et al. (2011). One cannot assume that *only* the VLT and the WAT results influence success in the first year June examination but it might be a factor influencing reading comprehension.

From the above correlation matrix it is clear that there is no correlation between the Grade12 mark and the 5 000W, the 10 000W and the AWL. The correlation of the Grade12 mark with the WAT, however, yielded a medium effect size of r = 0.30, indicating a correlation between the Grade12 mark and depth of vocabulary. The Grade12 mark also yielded a medium effect size of r = 0.34 with the Junescore. This indicates that, to a certain extent, the grade 12 marks of the students can still be regarded as noteworthy in an academic context like this. In other words, there is a correlation between the Grade12 mark of a student and his/her June examination mark.

4.5 Regressions

In order to determine the most effective predictor(s) of reading comprehension and the Junescore, forward stepwise regressions were conducted.

4.5.1 Regression on reading comprehension (RC)

The fourth research question, how does depth of vocabulary knowledge add to the prediction of reading comprehension over and above the prediction afforded by vocabulary size, was addressed by conducting a stepwise multiple regression analysis (cf. section 3.8) with the RC as dependent variable and the 5 000W, the 10 000W, the AWL, the WAT, as well as gender, as independent variables. In this particular regression model, the results revealed that gender (as an independent variable) did not have a practically significant effect on the model, thus a model for both genders were selected and are presented in Table 4.13:

p-value <0.05
Adjusted R^2 = 0.21
R^2 = 0.24$^{\Delta}$
N = 95

Table 4.13: RC as dependent variable

Variables selected	Parameter estimate	p-value	f^2
5 000W	0.44	0.03*	0.04
AWL	0.47	0.01*	0.05

Regression model: $Y' = 9.01 + 0.44 \text{ X } 5\ 000W + 0.47 \text{ X } 0.47 \text{ X AWL}$
* Statistically significant at 0.05 level

The model fits with a medium effect: the results are statistically significant but not practically significant for the 5000w level and the AWL. What is noteworthy, however, is the fact that the WAT (measuring vocabulary depth) was not identified by the multiple regression procedures as a predictor of reading comprehension (RC) as dependent variable. This is in contrast with Qian's research of 1999. Thus, in this study, vocabulary size is a predictor of reading comprehension, although not practically significant. Furthermore, the results revealed that the 10 000W, the WAT and gender (as independent variables) were not identified as by the model as predictors of reading comprehension.

4.5.2 Regressions on Junescore

The stepwise multiple regression method was implemented in order to determine which of the variables would be the best predictor for academic success in the June examination (cf. Table 4.8). A stepwise multiple regression analysis was done with gender, the VLT, the WAT, the RC and the Gr12mark as independent variables and the Junescore as dependent variable, to determine which of the variables would have a practically significant effect on the Junescore. In the end, a stepwise multiple regression analysis incorporating *all* the predictor variables and the Junescore as the criterion measure, were done. This entailed that a new variable was added at each step after which the new relationship between the criterion and the predictor variables was re-evaluated to establish if the predictor variable(s) already selected, still contributed significantly to the relationship when later variables were added. This statistical procedure starts with the predictor, which in this case is the 10 000 word level, that has the largest correlation with the criterion, the Junescore. This predictor (10 000W level) is then included in the equation and, in turn, each of the remaining predictors is then added to obtain the multiple regressions with two predictors. The chosen predictor is one that, put together with the already chosen predictors, achieves the largest R^2. The next step is undertaken with three predictors (etc.) until the R^2 value does no longer increase significantly.

It was revealed by the multiple regression analysis that gender as an independent variable, was of practical importance. The decision was made to fit models separately for males and females. The results are presented in Table 4.14 for females:

Table 4.14: Junescore predictions: females

p-value <0.05*
Adjusted R^2 = 0.34
R^2 = 0.36▲
N = 65

Variables selected	Parameter estimates	p-value (when random sampling was assumed)	f^2
AWL	0.46	<0.05*	1.32▲
Grade12	0.37	0.01*	0.11*

* Statistical significant at 0.05 level
▲Practical significant
Regression model: Y' = -14.55+0.46 x AWL + 0.37 x Grade12mark

From the regression it is evident that the AWL and the Grade 12 marks are the best predictors of success in the June examination for the female first year sample. The AWL is practically significant in this prediction of success in the June examination.

The same procedure was followed to determine the best predictor for the June examination for males and the results are presented in Table 4.15:

Table 4.15: Junescore predictions: males

p-value = 0.01*
Adjusted R^2 = 0.48
R^2 = 0.53▲
N = 11

Variables Selected	Parameter estimates	p-value (when random sampling is assumed)	f^2
10 000W	0.61	0.05*	0.44▲

* Statistical significant at 0.05 level
▲ Practical significant
Regression model: Y'= 1.86 + 0.61 x 10 000W

The male regressions yielded a statistical significant score on the 10 000W test. This section of the VLT then can be regarded as a predictor for success in the June examination for the male study population.

It is noteworthy that for both groups, vocabulary size (the AWL and the 10 000W respectively) was identified as predictors for success in the June examination. Thus, it seems as if vocabulary size seems to be an important factor to obtain success in the examination.

4.6 Summary

In this chapter the results of the study were discussed. The results relate to the research questions posed in chapter 1. The reading literacy profiles of the first year study population disclosed a shortfall in the 10 000 word level, almost competency in the AWL and underperformances in the WAT and the reading comprehension test. The comparison between the first year and fourth year study populations conveyed marked differences in the results of the 5 000W, the 10 000W, the AWL and the WAT, but also indicated at least *some* development in vocabulary knowledge of the fourth year group in spite of the fact that even with the fourth year study population, the 10 000W level and the WAT were not on the required levels. The correlations among vocabulary breadth and depth and reading comprehension were significant and correspond with existing research. The regressions provided information regarding prediction variables of academic success which prove to be the 10 000W level for males and the WAT and the grade12 mark for females.

CHAPTER 5: CONCLUSION

5.1 Introduction

In this chapter an overall summary of the research is presented. Firstly, a synopsis of the research (which comprises of an outline of the literature review and the theoretical conceptual framework of the study) is provided, secondly, an overview of the results is presented, and thirdly, recommendations and limitations of the study are provided.

5.2 Literature review

The literature review was critically done to highlight the relationships among vocabulary breadth and depth and reading comprehension. The theoretical and conceptual framework for this study was based on Qian's model (1998) which presents the intricate relationships among aspects of vocabulary breadth and depth and reading comprehension. The model poses that vocabulary depth and breadth are interrelated and interactive and equally important and are linked to other linguistic knowledge (e.g., syntax) in the reading comprehension process. World knowledge and automaticity of access are also linked to both aspects of vocabulary knowledge. Qian (1998) emphasises the reciprocal causal relationship between vocabulary knowledge and reading comprehension.

Since two decades ago, research in this field determined that two dimensions of vocabulary, namely breadth and depth, are acknowledged. Laufer (1989, 1992a) established that the principles in vocabulary knowledge and reading comprehension in L1 also apply to L2. Laufer (1989) and Hirsch and Nation (1992) showed that an unfamiliar word density of 80% is an unreliable basis for reading comprehension. This research was developed and resulted in Nation's (2006) suggestion that 98% word coverage (a knowledge of 8 000 – 9 000 word families) would enable wide reading – research that also was supported by the findings of Laufer and Ravenhorst-Kalofski (2010). However, Hazenberg and Hulstein (1996) proposed a vocabulary size of 10 000 words for academic reading at university level, which still falls short of the 15 000 – 20 000 words the native speaker is supposed to have at this level.

Although reading comprehension is an intricate, unique and highly cognitive skill, various studies support the fact that the two dimensions of vocabulary impact on reading comprehension. The different hypotheses describing the relationship between vocabulary and reading comprehension have been discussed and, without disregarding the influence and validity of the rest of the hypotheses (cf. section 2.5) linked to vocabulary knowledge and reading comprehension, the following two hypotheses have direct bearing on this study: the

instrumentalist hypothesis which proposes that vocabulary knowledge determines reading comprehension, and the reciprocal hypothesis which stresses the causal relationship between vocabulary and reading comprehension. The results in this study confirm these relationships (cf. section 4.4.1).

5.3 Results of the study

The literacy profile of the first year sample revealed poor performances at the 10 000 word level and the WAT especially, and the results on the 5 000 word level and the AWL are both indicating a shortfall in competency. This suggests that the 10 000 word level especially, consisting of low frequency words, needs to be addressed at first year level because of the low scores obtained by the study population.

The comparison between the first and fourth year study populations (the second research question), revealed anticipated differences in the results of the VLT and showed also a below achievement level in the WAT for both the study populations. This means that vocabulary depth is a dimension of vocabulary knowledge that needs to be addressed during the four year course of the students' studies. In comparing the two population groups, first years and fourth years, it is encouraging to notice higher scores in the results of the fourth year sample which indicates at least some vocabulary development over the study period of four years.

The third research question is addressed by the established correlations among the variables of the study: there is a relationship between vocabulary breadth and depth and reading comprehension and that the aspects are interrelated. This can be linked to Qian's model (cf. Figure 2.3) which demonstrates these relationships. Contrary to the research of Qian (2002) and Mehrpour et al. (2011), there was no conclusive result to establish vocabulary depth, rather than vocabulary breadth, as a better predictor of reading comprehension.

Stepwise multiple regressions indicate that the results on the WAT and the VLT are predictors for academic success in the June examination and these results addressed the fifth research question.

The questionnaire that was used in the study provided background information of the study population. It was determined that 92% of the first year sample is Afrikaans speaking and that 95.15% of the sample regards English as their L2. This indicates that the students of the ENGE111 module are mostly L2 speakers and generally, would not possess the vocabulary knowledge expected of L1 speakers. The results on the vocabulary tests are somewhat in contrast with what the first year study population personally revealed in the questionnaire about

their regular exposure to English and their current reading habits (see sections 4.2.1.2 and 4.2.1.3).

With regard to the hypotheses posed in Chapter 1, section 1.5, the following conclusions can be drawn:

The results of this study indicate that there is a practically significant relationship between vocabulary breadth and depth and reading comprehension. The correlation between reading comprehension and vocabulary breadth points to a large effect r = 0.50, and the correlation between reading comprehension and vocabulary depth reveals a medium effect of r = 0.30. It is therefore possible to reject the H_0 hypothesis and accept the H_1 hypothesis posed in section 1.5 that a relationship exists between vocabulary breadth and depth and reading comprehension.

5.4 Limitations of the study

The instruments of the study - the vocabulary tests – are international tests and this fact may influence the results of the study in South Africa as different countries and education systems place different points of emphasis on language and the development thereof, including for example, low frequency vocabulary, which applies to the 10 000 word level.

The Word Associates Test (WAT), tests only certain aspects of vocabulary depth namely, synonymy, polysemy and collocations. This is also true of the Depth-of-vocabulary-knowledge test (DVK) of Qian (1998), although Qian has adapted the WAT to address vocabulary applicable to the domain of his study population. These two tests are the internationally accepted tests to measure vocabulary depth. In order to measure *all* the levels of vocabulary depth a new test will have to be developed which might pose new challenges, as in the designing of a new test, and selecting relevant vocabulary. A longitudinal study is then appropriate.

The fact that reliability could only be established on one of the four reading comprehension test was also a limitation which suggests that the reading comprehension tests should be evaluated to determine the types of questions with which to test reading comprehension and not grammar and vocabulary.

5.5 Recommendations for future research

It would be naive to think that vocabulary instruction could solve *all* reading comprehension problems. Research has also proven that the studying of lists of words is not conducive to improved reading. The challenge then would be to determine intervention methods that would address breadth and depth of vocabulary knowledge at university level in order for students to

reach the 98% vocabulary threshold required for reading comprehension on an academic university level. Intervention strategies addressing depth of vocabulary in particular, need to be investigated as students need *quality* of language to express and understand higher level concepts and evaluate sophisticated content. Thus, with depth of vocabulary, the focus would have to be on syntax, morphology, sociolinguistic aspects, register, strategies for approaching unknown words and special attention should be paid to collocational relations of words since these, may influence reading comprehension.

If the first year students could receive vocabulary instruction earlier in their studies, higher scores on the vocabulary tests could be achieved earlier and this may impact positively on their academic success as vocabulary depth and size could improve reading comprehension which is necessary for learning in general.

Longitudinal research would be an appropriate action with this study population to track their vocabulary development. This could be directly linked to intervention strategies addressing vocabulary and reading comprehension.

The development of vocabulary tests and reading comprehension tests particular to the South African environment and with indigenous components is advisable. Questions testing mainly reading comprehension and *not* grammar and vocabulary, could also contribute in compiling a more accurate reading literacy profile of the students.

It would also be noteworthy to conduct this research at several South African universities offering English modules and to then compare the results. This then, could be used to determine if there is a shortfall in the teaching of vocabulary during the preceding high school training.

5.6 Conclusion

The relationship between vocabulary and reading comprehension has now been accepted for decades (Anderson & Freebody, 1981; Mezynski, 1983; Read, 2000). It is also evident that a reader often needs only partial knowledge of a word to understand text but it becomes a crucial matter at university when, in the academic domain, precise knowledge of a word is required. While vocabulary *size* assists the reader in automaticity, it is often vocabulary *depth* that assists the reader in understanding nuances and the finer features of a language which are necessary to arrive at a complete understanding of text. The importance of vocabulary knowledge at university level cannot be disregarded (Hazenberg & Hulstijn, 1996) and this study will support future intervention to amend shortcomings in vocabulary knowledge. This study then supports the fact that there is a relationship between vocabulary knowledge and reading comprehension.

Furthermore, the contribution of the different variables included in the study, added valuable information regarding predictors for academic success which will direct future intervention so that gains in vocabulary knowledge can become realisable.

In conclusion, the study revealed that reading comprehension is influenced by vocabulary knowledge. This implies that an extensive and quality knowledge of vocabulary can improve the understanding of texts and could have an impact on the pass rate of the module ENGE111.

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Appendix A: Consent form

Consent form to be completed by B.Ed students majoring in English:

Title of the research: An analysis of the vocabulary and reading comprehension challenges faced by first year B.Ed students.

METHODOLOGY: Participants will complete two different vocabulary tests, a reading comprehension tests and a questionnaire to determine exposure to English.

Time: Three time periods of 30 minutes each

Researcher: Me K Martens
Room 203 C6
North West University
Potchefstroom Campus

Please read the following carefully:

1. Participation in the project is voluntary and no pressure will be placed on a participant to take part.

2. Participants are free to withdraw from the project at any time without stating reasons in doing so, and they will come to no harm when and if they withdraw.

3. By agreeing to take part in the project, participants are agreeing that the relevant data collected in the research may be used by the researcher for scientific purposes with the caveat that data will be regarded as confidential and no name will be connected to specific data without the consent of the participant.

4. No benefit is to be gained by participation in the research although knowledge derived from the research may benefit future students.

5. Participants can have access to their own data upon request.

6. The objectives of the research are always secondary to the well-being of the participant.

7. Participants may discuss their participation with the researcher at any convenient time if more information is required.

8. The NWU Ethics committee may require access to data to inspect the ethical responsibility of practices by the researcher, in the interest of the participants.

Name:_____ Student nr:_____

Signed: _____

Appendix B: Version 1 The 5,000 word level

1 balloon
2 federation
3 novelty
4 pail
5 veteran
6 ward

_____ bucket
_____ unusual interesting thing
_____ rubber bag that is filled with air

1 alcohol
2 apron
3 hip
4 lure
5 mess
6 phase

_____ stage of development
_____ state of untidiness of dirtiness
_____ cloth worn in front to protect your clothes

1 apparatus
2 compliment
3 ledge
4 revenue
5 scrap
6 tile

_____ expression of admiration
_____ set of instruments or machinery
_____ money received by the government

1 bulb
2 document
3 legion
4 mare
5 pulse
6 tub

_____ female horse
_____ large group of soldiers or people
_____ a paper that provides information

1 concrete
2 era
3 fibre
4 loop
5 plank
6 summit

_____ circular shape
_____ top of a mountain
_____ a long period of time

1 blend
2 devise
3 hug
4 lease
5 plague
6 reject

_____ mix together
_____ plan of invent
_____ hold tightly in your arms

1 abolish
2 drip
3 insert
4 predict
5 soothe
6 thrive

_____ bring to an end by law
_____ guess about the future
_____ calm or comfort someone

1 bleed
2 collapse
3 precede
4 reject
5 skip
6 tease

_____ come before
_____ fall down suddenly
_____ move with quick steps and jumps

1 casual
2 desolate
3 fragrant
4 radical
5 unique
6 wholesome

_____ sweet-smelling
_____ only one of its kind
_____ good for your health

1 gloomy
2 gross
3 infinite
4 limp
5 slim
6 vacant

_____ empty
_____ dark of sad
_____ without end

Appendix C: Version 1 Academic Vocabulary

1 benefit
2 labour _____ work
3 percent _____ part of 100
4 principle _____ general idea used to guide one's actions
5 source
6 survey

1 element
2 fund _____ money for a special purpose
3 layer _____ skilled way of doing something
4 philosophy _____ study of the meaning of life
5 proportion
6 technique

1 consent
2 enforcement _____ total
3 investigation _____ agreement or permission
4 parameter _____ trying to find information about something
5 sum
6 trend

1 decade
2 fee _____ 10 years
3 file _____ subject of a discussion
4 incidence _____ money paid for services
5 perspective
6 topic

1 colleague
2 erosion _____ action against the law
3 format _____ wearing away gradually
4 inclination _____ shape or size of something
5 panel
6 violation

1 achieve
2 conceive _____ change
3 grant _____ connect together
4 link _____ finish successfully
5 modify
6 offset

1 convert
2 design _____ keep out
3 exclude _____ stay alive
4 facilitate _____ change from one thing into another
5 indicate
6 survive

1 anticipate
2 compile _____ control something skilfully
3 convince _____ expect something will happen
4 denote _____ produce books and newspapers
5 manipulate
6 publish

1 equivalent
2 financial _____ most important
3 forthcoming _____ concerning sight
4 primary _____ concerning money
5 random
6 visual

1 alternative
2 ambiguous _____ last or most important
3 empirical _____ something different that can be chosen
4 ethnic _____ concerning people form a certain nation
5 mutual
6 ultimate

Appendix D: Version 1 10,000 word level

1 antics		
2 batch	_____	foolish behaviour
3 connoisseur	_____	a group of things
4 foreboding	_____	person with a good knowledge of art or music
5 haunch		
6 scaffold		

1 auspices		
2 dregs	_____	confused mixture
3 hostage	_____	natural liquid present in the mouth
4 jumble	_____	worst and most useless parts of anything
5 saliva		
6 truce		

1 casualty		
2 flurry	_____	someone killed or hurt
3 froth	_____	being away from other people
4 revelry	_____	noisy and happy celebration
5 rut		
6 seclusion		

1 apparition		
2 botany	_____	ghost
3 expulsion	_____	study of plants
4 insolence	_____	small pool of water
5 leash		
6 puddle		

1 arsenal		
2 barracks	_____	happiness
3 deacon	_____	difficult situation
4 felicity	_____	minister in a church
5 predicament		
6 spore		

1 acquiesce		
2 bask	_____	to accept without protest
3 crease	_____	sit or lie enjoying warmth
4 demolish	_____	make a fold on cloth or paper
5 overhaul		
6 rape		

1 blaspheme		
2 endorse	_____	slip or slide
3 nurture	_____	give care and food to
4 skid	_____	speak badly about God
5 squint		
6 straggle		

1 clinch		
2 jot	_____	move very fast
3 mutilate	_____	injure or damage
4 smoulder	_____	burn slowly without flame
5 topple		
6 whiz		

1 auxiliary		
2 candid	_____	bad-tempered
3 luscious	_____	full of self-importance
4 morose	_____	helping, adding support
5 pallid		
6 pompous		

1 dubious		
2 impudent	_____	rude
3 languid	_____	very ancient
4 motley	_____	of many different kinds
5 opaque		
6 primeval		

Appendix E: Word Associates Test – 40 items – choose four per set (both boxes)

1. beautiful

□ enjoyable	□ expensive	□ free	□ education	□ face	□ music
□ loud			□ weather		

2. bright

□ clever	□ famous	□ happy	□ colour	□ hand	□ poem
□ shining			□ taste		

3. calm

□ open	□ quiet	□ smooth□	□ cloth	□ day	□ light
tired			□ person		

4. natural

□ expected	□ helpful	□ real	□ foods	□ neighbours	□ parents
□ short			□ songs		

5. fresh

□ another	□ cool	□ easy	□ cotton	□ heat	□ language
□ raw			□ water		

6. general

□ closed	□ different	□ usual	□ country	□ idea	□ reader
□ whole			□ street		

7. bare

□ empty	□ heavy	□ uncovered	□ cupboard	□ feet	□ school
□ useful			□ tool		

8. acute

□ hidden	□ often	□ rich	□ angle	□ hearing	□ illness
□ sharp			□ stones		

9. common

□ complete	□ light	□ ordinary	□ boundary	□ circle	□ name
□ shared			□ party		

10. complex

□ angry	□ difficult	□ necessary	□ argument	□ passengers	□ patterns
□ sudden			□ problem		

11. broad

□ full	□ moving	□ quiet	□ night	□ river	□ shoulders
□ wide			□ smile		

12. conscious

□ awake	□ healthy	□ knowing	□ face	□ decision	□ effort
□ laughing			□ student		

13. convenient

□ easy	□ fresh	□ near	□ experience	□ sound	□ time
□ suitable			□ vegetable		

14. dense

□ crowded	□ hot	□ noisy	□ forest	□ handle	□ smoke
□ thick			□ weather		

15. curious

□ helpful	□ interested	□ missing	□ accident	□ child	□ computer
□ strange			□ steel		

16. distinct

□ clear	□ famous	□ separate	□ advantage	□ meanings	□ news
□ true			□ parents		

17. dull

□ cloudy	□ loud	□ nice	□ colour	□ knife	□ place
□ secret			□ rock		

18. direct

□ honest	□ main	□ straight	□ fence	□ flight	□ heat
□ wide			□ river		

19. favorable

□ helpful	□ legal	□ possible	□ habit	□ response	□ teacher
□ positive			□ weather		

20. secure

□ confident	□ enjoyable	□ fixed	□ game	□ job	□ meal
□ safe			□ visitor		

21. tight

□ close	□ rough	□ uncomfortable	□ bend	□ pants	□ surface
□ wet			□ wood		

22. violent

□ expected	□ smelly	□ strong	□ anger	□ death	□ rubbish
□ unlucky			□ storm		

23. chronic

□ continuing	□ local	□ serious	□ accident	□ examination	□ illness
□ unplanned			□ shortage		

24. compact

□ effective	□ small	□ solid	□ group	□ kitchen	□ medicine
□ useful			□ string		

25. crude

□ clever	□ fair	□ rough	□ behaviour	□ drawing	□ oil
□ valuable			□ trade		

26. domestic

□ home	□ national	□ regular	□ animal	□ movement	□ policy
□ smooth			□ speed		

27. profound

□ bright	□ deep	□ exact	□ effect	□ machine	□ taste
□ great			□ thought		

28. fertile

□ dark	□ growing	□ private	□ business	□ egg	□ mind
□ special			□ soil		

29. formal

□ fast	□ loud	□ organised	□ bomb	□ education	□ growth
□ serious			□ statement		

30. independent

□ changed	□ equal	□ important	□ child	□ country	□ ideas
□ separate			□ prices		

31. original

□ careful	□ closed	□ fist	□ condition	□ mind	□ plan
□ proud			□ sister		

32. sensitive

□ feeling	□ interesting	□ sharp	□ clothes	□ instrument	□ skin
□ thick			□ topic		

33. professional

□ paid	□ public	□ regular	□ advice	□ manner	□ musician
□ religious			□ transport		

34. critical

□ clear	□ dangerous	□ important	□ festival	□ illness	□ time
□ rough			□ water		

35. synthetic

□ artificial	□ electronic	□ expensive	□ drug	□ meal	□ radio
□ simple			□ sound		

36. liberal

□ free	□ moderate	□ plenty	□ crops	□ furniture	□ parents
□ valuable			□ transport		

37. dramatic

□ exciting	□ official	□ surprising	□ adventure	□ change	□ patient
□ worried			□ salary		

38. conservative

□ cautious	□ hopeful	□ traditional	□ clothes	□ estimate	□ meeting
□ warm			□ signal		

39. coherent

□ clear	□ normal	□ recent	□ crime	□ health	□ speech
□ together			□ theory		

40. ample

□ heavy	□ large	□ plentiful	□ amount	□ climate	□ feelings
□ windy			□ time		

Appendix F: Reading Comprehension test: *Looking at art* (RC)

Looking at Art

[1]Art communicates to us primarily through our eyes. We look at art, and we try to find some meaning in the experience. If we are to begin think about art more seriously, we might do well to become more aware of the process of seeing itself. What is it to look?

[2]Science tells us that seeing is a mode of perception, which is the recognition and interpretation of sensory data – in other words, how information comes in our eyes (ears, nose, taste buds, fingertips), and what we make of it. In visual perception our eyes take in information in the form of light patterns; the brain processes these patterns to give them meaning. [A]The mechanics of perception work much the same way for everyone, yet in a given situation we do not all see the same things.[B]

[3]We can take great pleasure in merely looking at art, just as we take pleasure in the view of a distant mountain range or watching the sun set over the ocean. [C]But art, unlike nature, is a human creation. It is one of the many ways we express ourselves and attempt to communicate. [D]A work of art is the product of human intelligence, and we can meet it with our own intelligence on equal footing. This is where study comes in.

[4]The understanding of process – the how – often contributes quite a lot to our appreciation of art. If you understand why painting in watercolour may be different from painting in oil, why clay responds differently to the artist's hands than does wood or glass, why a stone building has different structural needs than one made of poured concrete – you will have a richer appreciation of the artist's expression.

[5]Knowing the place of a work of art in history – what went before and came after – can also deepen you understanding. Artists learn to make art by studying the achievements of the past and observing the efforts of their contemporaries. They adapt ideas to serve their own needs and then bequeath those ideas to future generations of artists. The more you know about this living current of artistic energy, the more interesting each work of art will become. For example, Matisse assumed that his audience would know that Venus was the ancient Roman goddess of love. But he also hoped that they would be familiar with one Venus in particular, a famous Greek statue known as the *Venus de Milo*. Knowing the Greek work deepens our pleasure in Matisse's version, for we see that in "carving" his Venus out of a sheet of white paper, he evokes the way a long-ago sculptor carved her out of a block of white marble.

[6]An artist may create a specific work for any of a thousand reasons. An awareness of the *why* may give some insight as well. Looking at Van Gogh's *The Starry Night*, it might help you to know that Van Gogh was intrigued by the belief that people journeyed to a star after their death, and that there they continued their lives. "Just as we take the train to get to Tarascon or Rouen," he wrote in a letter, "we

take death to reach a star." The tree that rises so dramatically in the foreground of the painting is a cypress, which has often served as a symbol of both death and eternal life. This knowledge might help you to understand why Van Gogh felt so strongly about the night sky, and what his painting might have meant to him.

[7]But no matter how much you study, Van Gogh's painting will never mean for you exactly what it meant for him, nor should it. An artist's work grows from a lifetime of experiences, thoughts, and emotions; no one else can duplicate them exactly. Great works of art hold many meanings. The greatest of them seem to speak anew to each generation and to teach attentive observer. The most important thing is that some works of art come to mean something for you, that your own experiences, thoughts, and emotions find a place in them, for then you will have made them live.

1. What is the main topic of this passage?
   A Visual perception of sensory material
   B The historical context for artistic expression
   C Studying Van Gogh's *The Starry Night*
   D The appreciation of works of art

1. What did Matisse reinterpret?
   A A story from mythology
   B A painting by another artists
   C An ancient sculpture
   D A woman in history

2. The word bequeath in the passage is closest in meaning to
   A make out
   B pass on
   C look over
   D take in

3. The word intrigued in the passage is closest in meaning to
   A very pleased
   B very confused
   C very interested
   D very surprised

4. The word them in the passage is closest in meaning to?
   A each attentive observer
   B thoughts and emotions
   C a lifetime of experiences
   D great works of art

5. According to paragraph 2, the process of visual perception
   A is not the same for all people
   B begins with patterns of light
   C is not very scientific
   D requires other senses to function

6. Which of the sentences below best expresses the information in the highlighted statement in the passage? The other choices change the meaning or leave out important information?
   A We see images differently because of the mode of perception.
   B Although we see images differently, the mode of perception is similar.
   C Since the mode of perception is similar, we see images in the same way.
   D When the mode of perception is the same, we see the same images.

7. The author mentions all of the following ways to enhance the appreciation of art EXCEPT
   A understanding the artistic process
   B becoming familiar with the history
   C experiencing the art by copying
   D knowing about the life of artist

8. Why might Van Gogh have painted a cypress in *The Starry Night*?
   A To symbolize the journey of life after death
   B To create a dramatic contrast with the sky
   C To place a strong image in the foreground
   D To include nature from his early experience

9. A,B,C,D in the passage indicate where the following sentence, can be added to the passage:
   For example, one person may focus on the image while another person may experience the colour.
   A
   B
   C
   D

10. Complete the table below by classifying each of the answer choices under one of the ways to appreciate art. Two of the answer choices will NOT be used.
   A Knowing Van Gogh's belief in life among the stars
   B Identifying brain functions that process patterns of light
   C Understanding the difference between oil and watercolour
   D Adapting classical art to contemporary expression
   E Using the ears, nose, taste bud, and fingertips to perceive
   F Passing on ideas to the next generation of artists
   G Studying why there is a preference for building materials

Biography	History	Media
*	*	*
	*	*

12. Complete a summary of the passage by selecting THREE answer choices that express the most important ideas. The other three sentences do not belong in the summary because they express ideas that are not in passage or

they do not refer to the major ideas. *This question is worth 2points*.

Art can be appreciated in various ways.

A Van Gogh believed that people travelled to a star after death to continue living there.
B Studying the historical context of the artist's life may contribute to art appreciation.
C Works of art have many meanings that every individual interprets on a personal level.
D Science defines perception as the recognition and interpretation of sensory data.
E Sensory perception allows us to see art, but different people may see different things.
F The title of a work of art can be the first clue to the artist's purpose

Appendix G: The self-compiled questionnaire

Questionnaire: Survey on previous exposure to English

Name: Student nr

Male	Female

SECTION A
Please supply the following information, mark with an X on the correct number:

1. What is your age (at last birthday)?

2. In what year did you complete school?

2012	1
2011	2
2010	3
2009	4
2008	5
2007	6
2006	7
Before	…….

3. What is your Home (First) language?

Afrikaans	1
English	2
Setswana	3
isiSotho	4
siZulu	5
isiXhosa	6
Other	7

4. What was your medium of instruction at school?

Afrikaans	1
English	2
Setswana	3
isiSotho	4
siZulu	5
isiXhosa	6
Other	7

5. Which language would you regard as your second language?

Afrikaans	1
English	2
Setswana	3
isiSotho	4
siZulu	5
isiXhosa	6
Other	7

6. Can you express yourself in a third language? Which one?

Afrikaans	1
English	2
Setswana	3
isiSotho	4
siZulu	5
isiXhosa	6
Other	7

7. Is this your first year of doing ENGE 111?

YES	NO

8. What is your proficiency in speaking English now? Indicate your choice with an X:

   a. I express myself in written English
   b. I express myself when speaking English.
   c. What is your level of understanding English? (for example, reacting to instructions)
   d. Understanding written English
   e. Understanding spoken English

	Poorly	Moderately	Acceptably	Extremely well
a	**1**	**2**	**3**	**4**
b	**1**	**2**	**3**	**4**
c	**1**	**2**	**3**	**4**
d	**1**	**2**	**3**	**4**
e	**1**	**2**	**3**	**4**

SECTION B

The following questions relate to your previous exposure in English.

Use the following rating scale to indicate your answers. Indicate your choice with an X in the relevant block:

Never or almost never = 1
Once or twice a month = 2
Once or twice a week = 3
Every day, almost every day = 4

1. Were you exposed to English before you attended school?
2. Have you read English story books, novels in school?
3. Have you read English magazines in school?

4. Have you had conversations in English with friends/family when you were at school?

5. How often did you watch English programmes/films on TV during your school years?

	Never, almost never	Once or twice a month	Once or twice a week	Every day, almost every day
1	**1**	**2**	**3**	**4**
2	**1**	**2**	**3**	**4**
3	**1**	**2**	**3**	**4**
4	**1**	**2**	**3**	**4**
5	**1**	**2**	**3**	**4**

SECTION C

The following questions relate to your *current habits.*

Circle the number of your choice:

Less than 1 hour per week	1
1 – 5 hours per week	2
6 – 10 hours per week	3
More than 10 hours per week	4

1. In a typical week now, how often do you read English? (including books, magazines, NOT study material, etc.)
2. How often do you read English for studying purposes?
3. How often do you read for enjoyment?

	1	1-5	6-10	>10
1	**1**	**2**	**3**	**4**
2	**1**	**2**	**3**	**4**
3	**1**	**2**	**3**	**4**

4. About how many books are in your home? (not magazines or children's books).

0 - 10	1
11 - 25	2
26 - 100	3
101 - 200	4
>200	5

5. How often do you read the following *in English:*

Never or almost never = 1
Once or twice a month = 2
Once or twice a week = 3
Every day, almost every day = 4

i. Comic books/graphic novel
ii. Novels
iii. Magazines
iv. Newspaper
v. Text books

5	Never, almost never	Once or twice a month	Once or twice a week	Every day, almost everyday
i	**1**	**2**	**3**	**4**
ii	**1**	**2**	**3**	**4**
iii	**1**	**2**	**3**	**4**
iv	**1**	**2**	**3**	**4**
v	**1**	**2**	**3**	**4**

6. How often do you do these things in ENGLISH?
   i. I talk with friends or family about what I am reading
   ii. I read to find information about my studies
   iii. I read to study
   iv. I read for enjoyment, entertainment

6	Never, almost never	Once or twice a month	Once or twice a week	Every day, almost everyday
i	**1**	**2**	**3**	**4**
ii	**1**	**2**	**3**	**4**
iii	**1**	**2**	**3**	**4**
iv	**1**	**2**	**3**	**4**

7. Please indicate how much you agree with the following statements:

Disagree completely = 1
Disagree somewhat = 2
Agree a little = 3
Agree completely = 4

i. I read only if I have to
ii. I like talking about books with other people
iii. I like to spend my spare time reading
iv. I read only if I need information
v. Reading is an important activity in my home

7	Disagree completely	Disagree somewhat	Agree a little	Agree completely
i	1	2	3	4
ii	1	2	3	4
iii	1	2	3	4
iv	1	2	3	4

8. Rate your prescribed books for 2013 :
   i. *Merchant of Venice*
   ii. *My Children! My Africa!*
   iii. *Things Fall Apart*
   iv. *To Kill a Mockingbird*

8	Least enjoyable			Most enjoyable
i	1	2	3	4
ii	1	2	3	4
iii	1	2	3	4
iv	1	2	3	4

9. Rate the *reading difficulty* of your prescribed works:
   Did not completely comprehend = 1
   Difficult = 2
   Manageable = 3
   Easily understood = 4

   i. *Merchant of Venice*
   ii. *My Children! My Africa!*
   iii. *Things Fall Apart*
   iv. *To Kill a Mockingbird*

9	Did not completely comprehend	Difficult	Manageable	Easily understood
i	1	2	3	4
ii	1	2	3	4
iii	1	2	3	4
iv	1	2	3	4