Lexical knowledge and reading comprehension skills in English as a foreign language

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1. INTRODUCTION

Applied Linguistics is an interdisciplinary field of research that developed in Europe in the 1950's. Its aim is to study various aspects of language, such as the relationship among psycholinguistic and sociolinguistic theory, together with social practice, and the acquisition and use of language in different contexts. It includes areas such as Second Language Acquisition (SLA) research and fields related to it such as first language acquisition and communication disorders, language and the media, discourse and conversational analysis, sign language research, etc.

This study is inserted in the field of SLA and Applied Linguistics. It intends to measure vocabulary knowledge and reading comprehension skills of learners of English as a second or foreign language (L2). For this purpose, post-intermediate and advanced students were assessed by applying three tests: the Receptive Vocabulary Levels Test, the Word Associates Test, and the Reading Comprehension Test.

The results obtained were described and analyzed quantitatively in order to prove the hypothesis that the higher the level of lexical knowledge, the higher the level of reading comprehension skills. Finally, after discussing the results, different conclusions were drawn and limitations were identified.

In relation to the formal arrangement of the present report, it consists of seven sections: The present section, introduction, is followed by a background to the study, in which a presentation of the fields of SLA and Applied Linguistics is included, followed by a brief overview of research on the assessment of vocabulary knowledge of L2 learners. Next, the section on the study itself is subdivided into theoretical and descriptive framework, objectives and research questions, hypothesis, and methodology. Then, the discussion of the results is presented, followed by the conclusions of the research study. The last two sections correspond to the bibliographical references and the appendices.

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2. BACKGROUND TO THE STUDY

2.1. SECOND LANGUAGE ACQUISITION RESEARCH.

Since the field of SLA research is so wide, it is necessary to revise a variety of proposals that can be found in the literature of the field in order to clarify it. For this purpose, a review of the main proposals made by Rod Ellis (1994) and Claire Kramsch (2000) will be presented.

According to Ellis (1994), the field of SLA research has had different developments and thus, it has drawn from other disciplines such as linguistics, cognitive psychology, psycholinguistics, sociolinguistics, and education. Since SLA research is related to a wide range of fields, applied linguists have found difficult to clearly specify what belongs to it and what does not. There is also awareness of the fact that "the extent to which SLA research can claim to constitute a discipline in its own right depends on whether it is possible to identify a defined field of enquiry and a body of knowledge relating to it" (Ellis 1994: 3).

Considering that the field of SLA research is not completely developed, that there is no comprehensive theory about L2 acquisition, and that researchers do not all agree on what constitutes L2 acquisition, according to Ellis, SLA research information should be used by teachers only as a basis to build their own theory.

A precise definition of the aim of SLA research needs to be specified. In order to do this, Ellis primarily claims that the study of second language acquisition requires both the description of learner language as it develops over time, and the explanation of its characteristics. In order to define the object of enquiry of SLA studies, it is necessary to take into account different concepts that have been used in SLA research: second language acquisition, second and foreign language acquisition, naturalistic and instructed second language acquisition, competence and performance, and usage and use. These will be briefly described below.

Concerning 'second language acquisition', there is general agreement on the proposal that this term refers to any language learnt that is different from the first language or mother tongue. When applied linguists make a distinction between second and foreign language acquisition, a 'second language' is defined as a language that plays a role in the community where it is learnt whereas 'foreign language' learning takes place in communities where the language learnt does not play a role in society, and is mainly taught in classrooms. This distinction may be significant in that it is possible to find important differences in both what is learnt and how it is learnt. However, according to many applied linguists, the term 'second language acquisition' can be used for both types of learning.

With relation to naturalistic versus instructed second language acquisition, it can be pointed out that in a 'naturalistic' setting a learner acquires the language through communication in a natural context or in social situations, whereas in an 'instructed' environment the learner acquires it through study with the guidance of books and/or classroom instruction.

Concerning the distinction between 'competence' and 'performance', the term '**c**ompetence' is used to refer to "the mental representations of linguistic rules that constitute the speaker-hearer's internal grammar." In contrast, 'performance' is conceived as "the use

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of this grammar in the comprehension and production of language" (Chomsky 1965 in Ellis 1994: 12). This distinction has been extended to cover communicative aspects of language. Thus, Hymes (1971) proposed the concept of 'communicative competence', which includes sociolinguistic and pragmatic knowledge. Besides, Hymes proposed that 'communicative performance' involves the actual use of these two types of knowledge. In relation to these two concepts, the aim of SLA research is to characterize learners' competence, which can only be observed through examples of performance.

Finally, the concepts of 'usage' versus 'use' will be defined. **'**Usage' is "that aspect of performance which makes evident the extent to which the language user demonstrates his knowledge of linguistic rules" (Widdowson 1978 in Ellis 1994: 13).In contrast, 'use' is that aspect of performance which "makes evident the extent to which the language user demonstrates his ability to use his knowledge of linguistic rules for effective communication" (Widdowson 1978 in Ellis 1994: 13). Concerning the distinction between these two concepts, SLA research has been mainly concerned with the study of usage, although now it is paying more attention to use. Thus, analyses based on 'form' have increasingly given way to analyses of 'form-function' and 'function-form' correspondences.

Concerning SLA, researchers have been unable to agree on a definition for 'acquisition'. To illustrate this issue, some researchers distinguish between 'acquisition' and 'learning', 'acquisition' referring to the subconscious process of 'picking up' a language through exposure, whereas 'learning' to the conscious process of studying it. Other researchers disagree on what kind of performance they think provides the best evidence of acquisition depending on whether they consider a feature as acquired when it appears for the first time or if they require the learner to use that feature to some predetermined criterion level of accuracy. Thus, a distinction can be made between acquisition as 'emergence' or 'onset' and acquisition as 'accurate use'.

It is important to consider some of the different areas that Ellis (1994) has proposed as a way of organizing SLA research. The first area of research work refers to the description of the characteristics of the language acquired by learners; the second one concerns learner external factors, which are related to the social context of acquisition, including input and interaction. The third area concerns learner-internal mechanisms, and it includes L1 transfer, learning processes, cognitive accounts of SLA, and knowledge of linguistic universals. Finally, the fourth area is related to the problem of individual learner differences.

The first area of SLA research, learner language, is an important subject of study in the first area of research of SLA as it provides the data to contrast and test theories of L2 acquisition. It includes four aspects of SLA: errors, acquisition orders and developmental sequences, variability, and pragmatic features.

Researchers have tried to investigate L2 acquisition by analyzing learner errors. Much of this work has focused on determining to which extent L2 acquisition is a result of L1 transfer or creative construction. 'L1 transfer'refers to "errors that mirrored L1 structures" (interlingual errors) while 'creative construction'relates to errors similar to those observed in L1 acquisition (intralingual errors.) The study of learner errors has shown that not all of these are caused by the transference of L1 habits; generally learners contribute creatively to the learning process. This study has also revealed the existence of "stages of acquisition" which learners go through, since their level of development determines the different origins of the errors they make.

Concerning acquisition order and developmental sequences, evidence from learner language shows that learners acquire different morphological features in a fixed order. In

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addition, evidence also supports the existence of a general "pattern of development". Many of the utterances produced by learners at earlier stages are formulas. As time goes by, learners start producing more creative utterances but, at first, these are propositionally reduced and morphologically simple. Learners work on the formulas to build complex constructions through the substitution of elements. Gradually, learners manage the basic syntax of the L2 learning the main transformations in word order. Some morphological features are also acquired, but many of them appear much later. Longitudinal studies also reveal the existence of developmental sequences. Apparently, learners construct "a series of transitional rules before they master the target language" (Ellis 1994: 21). One of the most relevant findings of SLA research is the presence of these developmental sequences.

Within the learner language field, we also find the concept of 'variability', which explains the decisions that learners make in order to use a certain linguistic form depending on linguistic and situational contexts. There is also a stylistic continuum, similar to the one present in native speaker speech, i.e. learners tend to use correct forms in contexts that require a careful style, and transitional forms in a vernacular style.

Concerning the second area of SLA research, learning external factors, Ellis states that outcomes are determined by the attitudes of the learner, which are shaped by social factors. These factors are liable to vary depending on social context. At this point, it is important to distinguish between natural and educational contexts for second language acquisition. Natural settings can be separated according to whether the L2 is used as a native language by most of the speakers, whether it functions as an official language when the majority speaks another language, or whether it is used by linguistically heterogeneous groups in international community. In turn, educational settings can be classified into: 'segregation', where learners are taught the L2 separately from the majority group; 'mother', in which the L1 of a minority group is taught and used in education; 'submersion', where L2 learners are taught in classes where the majority are L1 speakers; 'immersion', in contexts where L2 learners are taught through the L2 in classes having only L1 speakers, usually by bilingual teachers; and 'foreign language classroom', as the case of English classes in Chile.

A few studies have been carried out in relation to sociolinguistic variables like age, sex, social class, and ethnic membership. The general findings are that younger learners are more successful than older ones, that women perform better than men, that middle class learners achieve a higher level of proficiency than working class learners, and that learners whose ethnic group is similar in culture to the target language tend to be more successful than those who are culturally distant. The level of acculturation also varies among learners; some keep a social distance from the L2 culture so they tend to 'pidginize', while others adapt themselves and develop a high level of proficiency. The contact an individual learner has with the L2 depends on social factors; if learners perceive their culture to be similar or superior in status to that of the L2, they are more likely to assimilate the target language.

With relation to input and interaction, it is clear that L2 acquisition can take place when the learner has access to input in the L2, which can be written or spoken. However, there is little agreement of the role that input plays in L2 acquisition. There is a debate between those who argue that input functions only as a "trigger that sets off some internal language acquisition device" (White 1987a in Ellis 1994: 27) and those who argue that "input shaped through interaction contributes directly and powerfully to acquisition" (Long 1981a in Ellis 1994: 27).

The third area of SLA research, learning internal factors, is related to L1 transfer. Ellis states that "L1 transfer usually refers to the incorporation of features of the L1 into the knowledge systems of the L2 which the learner is trying to build" (Ellis 1994: 28). According

to this, language transfer is considered as a learning process that has to be compared to other processes which involve the use of the L1 for communication transfer. Some examples of these are translation and borrowing as well as code-mixing and code-switching. There are several views about language transfer. One of these has a behaviorist framework of learning, which assumes that habits would be taken from L1 and transferred to the L2. From this point of view, there are 2 cases: 'interference' or 'negative transfer', that occurs when the target language differs from the L1; and 'positive transfer', which occurs when the patterns (or vocabulary, morphology, etc.) of the L1 and the target language do not cause errors when they are transferred to the L2. Therefore, L1 can obstruct or facilitate the acquisition of the L2.

The findings of some studies have shown that transfer does not often occur when there are differences between the target language and the mother tongue. What is more, many of the errors were a reflection of intralingual processes rather than interference. Currently there is plenty of evidence that allows us to recognize that transfer may not always manifest itself as errors, but as 'avoidance', 'overuse', and 'facilitation'. It is also admitted that transfer constitutes one of the processes of L2 acquisition and it operates in complex ways.

With relation to cognitive accounts of SLA, it can be stated that there are several cognitive processes that learners use to acquire an L2, studied in the third area of work. There are some cognitive theories that try to identify the mental processes that permit learners to work on input and the knowledge systems they construct and then show in output. One of these theories, the Interlanguage Theory, refers to the temporary grammars that learners construct when they are acquiring their target language competence.

Researchers have identified some operating principles which learners use to modify input into a form they can store. These principles are present in the L1 acquisition of different languages. Within another scope, researchers have tried to identify the operating principles present in the L1 acquisition of different languages which learners use to transform input into a form that they can store, e.g. "pay attention to the ends of words" and "avoid interruption and rearrangement of linguistic units". (Slobin 1973, 1985b in Ellis 1994: 32)

Other cognitive models have sought to explain L2 acquisition in terms of a general theory of skill learning. Andersen's Model, the Active Control of Thought, sees language acquisition as a process of proceduralizing "declarative knowledge" (Andersen 1984 in Ellis 1994: 32). In turn, McLaughlin (1987) proposes a cognitive theory based on information processing. All these theories are based on the assumption that learners form mental representations of 'rules'. These rules guide the learner in using the L2 in actual performance.

According to the Parallel Distributed Processing Model, proposed by Rumelhart and McClelland (1986), knowledge takes the form of a network of connections between 'units' that do not go hand in hand with any particular linguistic construct. Learning consists of the modification of the strengths of these connections as a response to input stimuli and is complete when the network is the one found in native speakers.

Besides the study of cognitive accounts of SLA in the third area of work, there is the study of linguistic universals. The role of innate knowledge is emphasized by mentalist theories of L2 acquisition. It is similar to a language acquisition device, containing knowledge of linguistic universals that help learners to discover the rules of the target language grammar. There are two approaches to the study of how linguistic universals contribute to L2 acquisition. Structuralist linguists, on the one hand, have identified 'typological universals' through the study of many languages. They have proposed possible explanations

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for the existence of these universals. Generativists, on the other hand, have studied individual languages in order to identify the grammar's principles which underlie certain rules (Universal Grammar).

The logical problem of acquisition is one of the key arguments stated by those claiming a role for linguistic universals. This means that "the input to which the learner is exposed underdetermines linguistic competence, i.e. learners can not discover some rules of the target language purely on the basis of input because it does not supply them with all the information they need" (White 1989a in Ellis 1994: 34). They must rely on additional sources. These sources are knowledge of linguistic universals(in the case of L2 learners, it is their knowledge of their L1). The second argument has to do with the 'unlearning' of a wrongly formulated rule. In some cases, unlearning can only take place if the learner is supplied with negative feedback in the form of corrections, especially in classrooms. Consequently, L2 learners may be more prepared to abandon learnt rules than L1 learners. This knowledge of linguistic universals may help to shape L2 acquisition in several ways. First, it can explain developmental sequences. Second, knowledge of linguistic universals may enable the learner to go beyond the input. In addition to this, knowledge of linguistic universals may provide the learner with a projection capacity. Third, this knowledge may also be involved in transfer. Besides learners may be more prepared to transfer L1 features if these correspond to universal principles. In general terms, the study of linguistic universals in L2 acquisition has been very important in recent years. It has provided a perspective on which the interests of researchers in the linguistic and SLA field can converge. (Ellis 1994: 34, 35)

The fourth area of work suggested by Ellis emphasizes the role of the language learner. Several studies on SLA are focused on the learners' individual differences when learning a language. It is important to point out that there is a difference between the ones related to general factors and others that are concerned about the strategies used by learners to improve the learning of the L2.   The learning process is affected by multiple differences that exist in each learner; and the factors that influence these differences can be from various types, such as cognitive, affective, and social aspects, just to mention a few. These factors can be divided into fixed and immutable, and variable factors. They are influenced by social settings and the actual development of the L2 acquisition. This division can also be seen in a continuum as mutable and immutable. An example of a fixed factor is age, since it is out of external control. Age is also controversial because there is no agreement on whether there is a 'critical period' for L2 acquisition or not, and if there is one, when does this critical period end? Some researchers, for example, have suggested that learners who are over six years old cannot acquire a native-like pronunciation, and it is difficult to acquire a native-like grammatical competence for those who begin to study after puberty. Some researchers, on the other hand, have claimed that the critical period is at the age of 12. Language learning aptitude has also been claimed to be an immutable factor which refers to the ability of the learner to learn a language.

An example of a variable factor is motivation. It can change in time and be influenced by social factors. There is agreement on the importance it has on L2 acquisition, but there is no agreement on what motivation actually involves. Motivation can have effects on learning, be influenced by learning, come from personal interests and needs, and external factors. It affects the extent to which individual learners persevere in the study and acquisition of an L2, and also the kinds of behaviour learners have, their participation in classes, and their achievement.

Another kind of individual factor is the cognitive style, which includes the way people perceive, conceptualize, organize and recall information. SLA research has linked cognitive

style to the use of learning strategies used by language learners. Learner strategies can be conscious or potentially conscious. They represent a learner's deliberate attempt to learn. According to Oxford a strategy can be defined as "behaviour or action which learners use to make language learning process more successful, self-directed and enjoyable" (Oxford 1989 in Ellis 1994: 37) but the problem is how to identify, describe, and clarify behaviours and actions.

There is a distinction made between learning strategies that are cognitive, e.g. relating new concepts to other information in memory; metacognitive, e.g. organizing personal timetable to facilitate effective study; and social, for example, talking to native speakers. It is important to point out that the study of learner strategies is one of the main areas that has interested researchers in L2 acquisition. Several attempts have been made to establish which learner strategies facilitate L2 acquisition and, therefore, can be considered as successful learning. (Ellis 1994: 37)

The second author who refers to SLA considered in this research isClaire Kramsch (2000). According to her, SLA has been influenced by psychology through 'psycholinguistics' and sociology through 'sociolinguistics'. These influences are reflected in the importance given to the way in which languages are taught in educational environments. Thus, in order to explain this fact, the author compares three different definitions of SLA:

The first definition of SLA refers to how a language other than the first is learned depending on the context in which it takes place, 'an internally driven, individual phenomenon.' From this, SLA pays attention to both the processes and products and appeals to disciplines of linguistics, cognitive psychology and psycholinguistics, and educational psychology. (Van Patten 1999 in Kramsch 2000: 313)

The second definition refers to the fact that "the field of SLA encompasses research on basic and applied aspects of non-primary language acquisition and use. Basic SLA focuses on the discovery of the general principles and processes that underlie knowledge of a second language and seeks to relate these findings to our broader understanding of cognition and behaviour". (Carnegie Mellon University 1994 in Kramsch 2000: 314)

The third definition of SLA states that SLA does not merely involve a comparison between linguistic structures of two different languages, like the mother tongue and a second language, but it is an organized study of multilingualism which pays remarkable attention to the relationship between education and multilingualism. The study of multilingualism focuses on individual aspects such as competence and on social aspects such as formal and informal contexts of acquisition of a second language. (University of Wisconsin, Madison Committee on Second Language Acquisition 1999)

In turn, Kramsch states that "SLA research is concerned with the process by which children and adults acquire (learn) second (third of fourth) languages in addition to their native language (…) in transactions of everyday life, whether they acquire these abilities in natural settings (by living in the country in which the language is spoken) or in instructional settings (classrooms or individual tutoring of various kinds, including virtual environments." (Kramsch 2000: 315). SLA research has to do, particularly, with the definition of features and characteristics which can be observed in the process of acquisitions and other phenomena such as 'bilingualism', 'language attrition' and 'loss'. Generally, SLA research deals with such subjects as the relations between what is learned by formal instruction and what is acquired by means of Universal Grammar and the role of facilitation, transfer, input and interaction, and sociocultural, linguistic and cognitive factors in acquisition.

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2.2. VOCABULARY RESEARCH

Within vocabulary research, an important issue has been that of vocabulary ability. According to Chapelle (1994), vocabulary ability includes "both knowledge of language and the ability to put language to use in context" (p. 163). According to Chapelle's proposals, this ability has three components: The context of vocabulary use, Vocabulary knowledge and fundamental processes, and Metacognitive strategies for vocabulary use.

The first component, the context of vocabulary use, refers to the sentence or utterance in which the target word occurs is known as the context. Nevertheless, context is more than just a linguistic phenomenon when speaking communicatively. The social and cultural situations in which lexical items are used significantly influence their meaning.

Concerning the second component, vocabulary knowledge and fundamental processes, Chapelle outlines four dimensions of it: vocabulary size, knowledge of word characteristics, lexicon organization, and fundamental vocabulary processes. Vocabulary sizerefers to the number of words a person knows. Knowledge of word characteristicsrefers to the quality of knowledge or understanding a native speaker has concerning particular lexical items, ranging from vague to more precise knowledge. Lexicon organization refers to the way in which words and other lexical items are stored in the brain. Fundamental vocabulary processes are those that language users apply to gain access to their knowledge of vocabulary, first for understanding, and second for speaking and writing.

The third component, metacognitive strategies for vocabulary use, is what Bachman (1990) refers to as 'strategic competence'. Every language user employs strategies to manage the ways in which they use their vocabulary knowledge in communication. On receptive cases, learners need to apply metacognitive strategies when they encounter words they have never seen before in their reading. They can read on without trying to understand the word, look it up in a dictionary or a glossary, ask the teacher or some other proficient person what it means, or try to guess the meaning using contextual clues, being this last one often recommended to be explicitly taught to learners.

Another important issue within vocabulary research has been the measurement of the levels of vocabulary knowledge and abilities of a learner (assessment in general), leaving aside the process of learning vocabulary itself. The assessment of learners has different purposes, which serve for placement, diagnosis and measurement of learners' proficiency. Second language acquisition assessment and research go hand in hand, because the important developments on how to measure vocabulary knowledge have been produced by vocabulary acquisition researchers, while language testers are more interested in integrative and communicative measures of language proficiency. There is also a well-documented association between good vocabulary knowledge and the ability to read well.

A way of assessing vocabulary is the 'objective testing'. This term describes "a way of testing in which the learning material is divided into small units that can be assessed by means of a test item with a single correct answer that can be specified in advance" (Read 2000: 75). For instance, multiple-choice tests are neutral towards the learner's answers as the judgement of the scorer is not involved in the consideration of those answers as correct or wrong. In the field of objective testing, vocabulary is a popular component of objective language for the following reasons: first, the possibility of considering words as independent linguistic units whose meaning can be found in different expressions like synonyms, short defining phrases or equivalent translations. In addition, those independent linguistic units can be matched with the target words for assessing purposes. And second, the possibility

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of using lists of the most frequent English words to decide which items would be the target ones.

Objective vocabulary tests seemed to be valid indicators of language ability in a broad sense. According to Wesche and Paribakht (1996), even though multiple-choice vocabulary tests have their limitations related to the few items that can be assessed in each attempt because of format and economy, they have their advantages as they are easy to administrate and there are well-established procedures for their analysis.

The identification of variables that influence the difficulty of the items for second language learners has two foci: on the distractors, like 'effective distractors' (words used as options in a multiple-choice test that could fit by collocation or similar spelling), and on the target items (the influence of the target words on the difficulty of multiple-choice vocabulary items).

Measuring Vocabulary Size

The importance of carrying out research to estimate the number of words that is known by a native speaker lies in the fact that such estimation will be relevant when designing different reading programmes to know how many words should be taught to children or adults. Also, it has implications for the teaching of foreign languages at universities: it is necessary to identify the real minimum vocabulary size a foreign student needs to know in order to understand a text which is not delivered in his L1. Considering this, adequate knowledge of words is a pre-requisite for effective language use. Nevertheless, other skills are always needed in order to understand a text.

Measuring vocabulary size has its problems, mainly derived from the questioning of the basic concepts that it involves. The first question is the decision of what counts as a word, because that will be needed for the counting of units. How to deal with homographs, abbreviations, proper nouns, compound words, idioms and other multi-word units is a key subject matter in this field. The second question is related to the choice of items to be tested: for practical reasons, it is impossible to test all the items that a native speaker knows in his mother tongue, so only small samples can be used to try to estimate an indefinitely large quantity of items. The third question has to do with the testing of the chosen samples to find out if they are known. This can be carried out by means of different tests such as: multiple-choice items of various types, matching of words with synonyms or definitions, supplementation of an L1 equivalent for a L2 target word, and the checklist tests. Summing up, the task of getting to a good estimation of vocabulary size is complex as it presents many technical difficulties for which researchers must try to find solutions.

Assessing Quality of Vocabulary Knowledge

The assessment of the quality of vocabulary knowledge has its limitations as vocabulary size tests can only give a superficial indication of how well any particular word is known, and also research on vocabulary depth is restricted. The value of the study of vocabulary quality lies in that it is necessary to assess students of English to find out whether they have or not a deep knowledge of meanings.

In the conceptualization of vocabulary knowledge, range of meaning and precision of meaning are complementary concepts. According to Henriksen (1999), three distinct

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dimensions of vocabulary knowledge should be recognized: partial-precise knowledge, depth of knowledge, and receptive-productive.

In the measurement of vocabulary knowledge, individual interviews are the mostly used procedures, but for practical purposes it is necessary to explore alternatives to the interview.

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3. THE STUDY

3.1 THEORETICAL AND DESCRIPTIVE FRAMEWORK OF THE STUDY

3.1.1. Model of Three Dimensions of Vocabulary Development Proposed by Henriksen (1999)

During the 1980's and 1990's, different researches added new insights to vocabulary development. In that respect, describing central processes in vocabulary learning and use was the main focus of the vocabulary acquisition studies. Although there were many overviews concerning what we understand by vocabulary use and language acquisition, receptive versus productive vocabulary, and breadth and depth of vocabulary knowledge, there was a necessity to design a unified theoretical construct of lexical competence and a model of vocabulary development.

Considering that there were several traits to take into account when designing a model for word knowledge, and also attempting to be specific, Henriksen (1999) suggested three vocabulary dimensions for the construct of lexical competence. These are separate but related dimensions: a 'partial-precise knowledge' dimension, a 'depth of knowledge' dimension, and a 'receptive-productive' dimension. Below, there is a description of each of the dimensions and of the different instruments that have been used to assess vocabulary knowledge.

The first dimension, the Partial-Precise Knowledge Dimension, refers to vocabulary size or breadth of vocabulary knowledge. Many quantitative studies on vocabulary size or breadth and also achievement tests have defined vocabulary knowledge as 'precise comprehension'. For these researchers, vocabulary knowledge is achieved by the test-takers if they are able to do different tasks, for example, to translate the lexical item into the mother tongue, to match the right definition in a multiple-choice task, or to paraphrase in the L2. According to Henriksen, these kinds of lexical-decision tasks only indicate whether or not a word is recognized as part of the learner's vocabulary. This word recognition may or may not demonstrate knowledge of meaning. Moreover, these test formats will not make a difference between words of which the learner has a vague or a precise knowledge.

The second dimension, the Depth of Knowledge Dimension, can be defined as "the quality of the learner's vocabulary knowledge". (Read 2000: 357) Different researchers (e.g. Ellis 1995, Harley 1995, Nation 1990, Richards 1976) have acknowledged the complexity of vocabulary knowledge and the different types of knowledge that involve full understanding or rich meaning representation of a word. To illustrate this, for example, Cronbach (Cronbach 1942 in Henriksen 1999: 305) said that for getting to know a word completely, not only one has to learn its meaning, but also its sense relations to other words (e.g. antonymy, hyponymy, gradation). In addition, learners must acquire syntactic and morphological features of the lexical item. In turn, Dolch and Leeds (Dolch and Leeds 1953 in Henriksen 1999: 306) have discussed the limitations of vocabulary tests and pointed out the need for developing new types of tests. New formats have been created from the Association Tests

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developed by Meara (1983) in order to accurately assess the quality of learners' lexical knowledge. Examples of these tests are multiword association tests, word definition tasks, and use of collocations in a written task.

On the other hand, Wesche and Paribakht (1996) used a 'vocabulary knowledge scale' to measure different levels of lexical knowledge. Those levels are divided into 'complete unfamiliarity', 'recognition of the word', 'some idea of its meaning', and 'the ability to use the word with grammatical and semantic accuracy in a sentence'. This test measures depth of vocabulary knowledge and also the learners' command of a word in relation to receptive versus productive ability. To describe the learners' competence in relation to depth of vocabulary knowledge, scholars must use a combination of test formats tackling different aspects of knowledge.

Examples of test formats are Read's Word Associates new version, and Schmitt's interview test, which includes word class specification, collocations questions, word association test, and questions about word meaning. Both tests attempt to measure the paradigmatic and syntagmatic understanding of the test items.

The third dimension corresponds to the Receptive-Productive Dimension. The distinction between receptive and productive vocabulary is accepted by most researchers. They also agree that there is "a substantial difference in how well different lexical items are mastered in relation to ability to use the words in comprehension and production" (Henriksen 1999: 307). What is still needed is a clear distinction between what productive and receptive vocabulary really involve. The majority of standard vocabulary tests assess either receptive knowledge or productive knowledge of vocabulary.

To describe the characteristics of learners' competence along the receptive-productive dimension, tests must obviously include both productive and receptive tasks assessing the same lexical items. Nevertheless, it has been pointed out that it may be extremely difficult to find tasks that are appropriate for testing both receptive and productive knowledge of vocabulary.

In addition, Henriksen states that it is necessary to discuss the relationships of the three dimensions within the development of lexical competence. In the path from partial to precise comprehension, the changes are in progression: a learner would not go from a stage where the meaning of a word is unknown to another stage where the meaning of the word is completely grasped. At the beginning, learners are vague about meaning, and precision comes as the result of progression in the lexical development from 'rough categorization' to 'finer shades of meaning'. Besides, some meanings of a word would never be completely mastered. Through the process of experience of the world and of language, understanding increases. However, a non-native speaker would never acquire a full knowledge of word meanings of the foreign language, even if his knowledge of lexical items would evolve from simple word recognition to different stages of knowledge. The term 'mature lexical entry' has been suggested by Wesche (Wesche 1996 in Henriksen 1999) to characterize the kind of mental representation that is gained through learning and experience and that is the reflection of an extended base of knowledge, like the one an adult native speaker has acquired.

Henriksen (1999) suggests that the semantization process involves a progression along both dimension 1, i.e. partial to precise knowledge, and dimension 2, that is, depth of knowledge. According to the author, the development along dimension 1 is related to the process of mapping, that is to say, the creation of extensional links via both labelling and packing, whereas dimension 2 is related to network building, i.e. creating intensional links.

In Henriksen's terms, in the process of acquiring the sense of a word and narrowing down the field of reference, the learner makes use of and develops knowledge of relations of a paradigmatic kind, creating both extensional and intensional relations. The development along dimension 2 is seen as an important issue for lexical development along dimension 1. In turn, in the process of general understanding of a word, the learner will mainly have to increase a connection between sign and referent. He has to make a difference between lexical items and also separate the intensional relations between the items in a lexical set. According to this, the comprehension of this relation is a requirement for a more exact understanding of each individual lexical item.

Finally, in her discussion on the relationship among the different dimensions, Henriksen states that dimension 1 and dimension 2 are knowledge continua in which levels of declarative word knowledge may be operationalised as levels of word comprehension. Dimension 3, i.e. receptive and productive knowledge, is a control continuum that describes levels of access or use ability, which may be operationalised through different types of receptive and productive tasks. Henriksen points out that there are strong interrelationships among the three vocabulary learning continua with an emphasis on the importance of network building.

3.1.2. The concept of 'word'

The word is not an easy concept to define, either in theoretical terms or for applied purposes. There are some basic points to consider. One is the distinction between types and tokens, which can be applied to any count of the words in a text. While the number of tokens in a text is the same as the total number of words forms in it (any single instance of a word), the number of types is the total number of the different word forms in a text, so that if a word is repeated in a text, it will be counted only once. Therefore, in a text there would be fewer types than tokens.

Another distinction is the one between content and function words. Content words are words like nouns, adjectives, full verbs and adverbs. In contrast, function words are words like articles, prepositions, pronouns, conjunctions, auxiliaries, etc. They are seen as belonging more to the grammar of the language than to its vocabulary. Unlike content words, they have little if any meaning in isolation and serve more to provide links within sentences, modify the meaning of content words and so on. Generally speaking, when testing vocabulary, the knowledge of content words is the focus of the test. In vocabulary studies, the base and inflected forms of a word are together known as a 'lemma'. However, base words not only take inflectional endings but also have a variety of derived forms, which often change the word class and add a new element of meaning. That set of word forms, sharing a common meaning, is known as a 'word family'.

One further complication in defining words is the existence of homographs, which are single word forms that have at least two meanings that are so different that they clearly belong to different word families. In dictionaries, they are generally recognised as such because they are given separate entries (rather than separate senses under a single entry). In the testing context, it cannot be assumed, just because learners demonstrate knowledge of one meaning, that they have learnt the others.

On the other hand, vocabulary consists of more than just single words, like phrasal verbs, compound nouns, and idioms. These are phrases and sentences that cause great difficulty for second language learners because the whole unit has a meaning that cannot be worked out just from knowing what the individual words mean. There are three features

that characterize longer sequences of words as lexical rather than grammatical: first, they are relatively fixed in form, although there may be some variation in the actual words used. Second, it may be difficult, if not impossible, to work out their meaning from just knowing the meanings of the individual words that make them up. And they typically have pragmatic functions that may be more significant than the semantic meanings. In vocabulary assessment, multi-word items have received much less attention than individual words. One reason is that conventional vocabulary tests have been of the discrete, selective kind, taking single words and short phrases (phrasal verbs, compound nouns) as their target items. These items have the advantage of being easy to distinguish and count, whether manually or by computer. Secondly, no matter how carefully they are defined, they represent an open-ended set of items, and the fact that they can vary in form makes it harder to locate them. Thirdly, multi-word items are likely to play more of a role in embedded, comprehensive and context-dependent vocabulary measures. Therefore, if the use of these phrases has to be judged in terms of their suitability for the social context, it makes little sense to assess them in the isolated, context-independent fashion in which individual words have traditionally been tested.

In terms of assessing the knowledge of words, it is difficult to decide when a word is actually known because there are several aspects that can contribute to the definition of 'knowing'a word. Nation (1990) has made a list of various characteristics that can play a role in trying to propose a definition of word knowledge. The first and most basic idea about what constitutes a learner's knowledge of a word is that the learner recognizes the form of a word, and that it is a word rather than a meaningless set of symbols. There are several tests which use this definition of 'knowing'.Most of the tests used to calculate size of vocabulary knowledge are based on the written form of lexical items, and they predict a range of reading-and-writing based language abilities too, but the ability to perceive or use the spoken form of a word is far less investigated. A second very common definition of 'knowing' a word is that a word is known if the learner can attach a meaning, such as an explanation or a translation of a L2 lexical item.

3.1.3. Reading comprehension

According to experts, reading involves two necessary elements: a reader and a text, and there is a third element which is also important: the writer (though this work will not focus on this last element). According to Alderson and Uquhart (1984), it is not clear to what extent reading in a foreign language is different from reading in a first language.

With relation to the reader, researchers have attempted to analyse the reading skill into a series of subskills that might relate to one another within a hierarchy of skills. This point has been supported by several authors like Barret (Barret 1968 in Alderson and Urquhart 1984: xvi), who distinguished five skills: literal comprehension, reorganization of the ideas in the text, inferential ability, evaluation, and appreciation. However, it is desirable for readers to read at different levels, and not just at the level of explicit understanding. That is why there are problems when trying to define reading as consisting of a series of subskills. First, research has failed to find evidence for the separate existence of these skills. The researchers failed to prove that the different questions called upon different subskills, because they did not find people able to answer just "word meaning" questions. Second, the skills approach usually proceeds by giving subjects tests on their understanding of passages, i.e. a comprehension test. Thus, comprehension of text and actual reading are probably not the same. Third, while establishing the level of understanding that a learner

has achieved may be a pertinent occupation for a tester, it is not obvious that such an activity is relevant to teaching: knowing what a student has understood does not provide information on how the learners might be helped to understand at a higher level. Fourth, these levels of understanding focus more on the reading product rather than on the process of understanding that goes with reading. The levels of meanings and comprehension as a product of reading could vary, but this does not mean that the various levels of comprehension show different skills. In order to have insights about how the reader arrived at a certain level of comprehension, some studies have been carried out to collect evidence of the nature of this process. Fifth, there is the problem of dealing with the product of reading according to the reader, because it will vary depending on the different readers. Many factors can influence the product of comprehension, such as the effect of cultural knowledge. Other researchers focused on the processes of distortion and elaboration in order to explain the differences between the recall of a text and the original text.

Another important problem is the influence of the reader's purpose and motivation on the product of reading. Some studies have attempted to manipulate the purpose of the reader to influence what he learns in order to prove that the purpose of the reader affects the understanding, and, thus, the product. Other studies state that the motivation of the reader affects not only the product of comprehension, but also the process of understanding.

One final remark is that for traditional research, the term 'skills' is grounded on the assumption that texts have predictable meanings, that can be interpreted only if the reader is skilful enough. On the contrary, Widdowson (1979) states that a text does not have a meaning, but potential for meaning. From this perspective, it is the reader who creates meaning through the interaction with the text. To sum up, it is possible to consider reading as a process but also as a product.

Alderson and Urquhart (1984) state that it is important to focus on the process mainly because the product is immersed within it. Moreover, the purpose of doing research on the process of reading is to be able to characterize it. With the results at hand, it will be possible to teach the best strategies in order to improve the learners' reading skills. The difficulty with research on the process is that reading in itself is problematic, especially because it is mainly a private and silent activity and, therefore, really difficult to analyse or study.

In any reading process, the reader must engage with the text, the second element in the interaction or activity. A considerable body of research exists that examines the text in detail and relates its nature to the process of reading. Particular attention has focused upon those features of text that cause difficulty to readers. Among these, text readability research has a considerable history. An area connected with readability is that of simplification: if a text is considered not to be readable, it may be altered in order to make it readable, or simpler. The typical readability study takes a series of passages to determine their 'difficulty' for certain readers by means of either multiple choice questions or cloze tests, and then to attempt to find the best predictor or group of predictors of text difficulty, by statistical means. Alderson and Urquhart (1984) review studies with foreign language readers that suggest that the lexical and conceptual difficulties of texts are greater than the syntactic difficulties. Alderson and Richards (1977) have shown that vocabulary problems are the most important ones to cause difficulties in a text, but they also found that there were many foreign language readers who did not have problems with vocabulary, but who still found the text difficult to understand.

On the other hand, Widdowson defines reading as "the process of getting linguistic information via print" (Widdowson 1979 in Alderson and Urquhart 1984: xxv), but this definition lacks practical value as it is vague: an overall definition of reading should take into

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consideration aspects such as the purpose of reading and the kinds of information encoded, "what particular mental operations we are talking about, and how they are carried out in particular reading situations" (Alderson and Urquhart 1984: xxvii)

Finally, to sum up, reading comprehension can be defined as "the process of simultaneously extracting and constructing meaning through interaction and involvement with written language" (National Reading Panel Report 2002: 11).

Reading in a foreign language: a reading problem or a language problem?

The reading knowledge of a foreign language is relevant to academic, professional and personal areas. It is common that most students fail to learn to read adequately in the foreign language. L2 learners seem to read with less understanding that one might expect them to have, and to read much slower than they read in their first language.

Results of research support the view that reading in a language which is not the learner's first language is a source of difficulty. On the one hand, subjects may have problems in understanding a text even though they may know the words and structures. On the other hand, the interpretation of words and syntactic structures -grammar and vocabulary- seems to be the central factor in poorer reading comprehension in the L2 compared to reading in the L1. The question seems to be whether the difficulties when reading in a foreign language are just a problem of knowing the words and the grammar of the language, or if there are other causes.

Some researchers have claimed that success in reading in a foreign language depends mainly upon one's first-language reading ability rather than upon the student's level of English. Thus, reading in a foreign language requires "the transference of old skills, not the learning of new ones" (Jolly 1978 in Alderson and Urquhart 1984: 2). Therefore, students who fail to read adequately in the foreign language fail because they do not possess the 'old skills', or because they have failed to transfer them.

Contrary to the view just mentioned, other researchers such as Yorio (1971) stated that "the reading problems of foreign language learners largely are due largely to imperfect knowledge of the language, and to native language interference in the reading process" (Yorio 1971 in Alderson and Urquhart 1984: 2). According to Yorio, there are four factors involved in reading: knowledge of the language, ability to predict or guess in order to make the correct choices, ability to remember the previous cues, and ability to make the necessary associations between the different cues that have been selected.

3.2. OBJECTIVES

3.2.1. General objectives

1. To describe the lexical knowledge of learners of English as a foreign language at two levels of communicative competence, post-intermediate and advanced.

2. To identify the relation between the lexical knowledge and the reading comprehension skill of post-intermediate and advanced students of English as a foreign language.

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3.2.2. Specific objectives

1. To assess the receptive breadth of lexical knowledge of post-intermediate and advanced learners.

2. To assess the depth of lexical knowledge of post-intermediate and advanced learners.

3. To assess the reading comprehension skill of post-intermediate and advanced learners.

4. To analyze the results of the assessment of receptive breadth, of depth of lexical knowledge, and of the reading skill of post-intermediate and advanced learners, in quantitative terms.

5. To compare the results of the assessment of receptive breadth, of depth of lexical knowledge, and of the reading skill of post-intermediate and advanced learners.

6. To identify the relationship between breadth of lexical knowledge, depth of lexical knowledge, and the reading skill of post-intermediate and advanced learners.

3.3. RESEARCH QUESTIONS

1. Do advanced students have a higher level of lexical competence than post-intermediate ones?

2. Do advanced students have a higher level of reading comprehension than post-intermediate ones?

3. Is there a relation between the students' level of lexical knowledge in terms of the receptive breadth dimension and their level of reading comprehension?

4. Is there a relation between the students' level of lexical knowledge in terms of the depth dimension and their level of reading comprehension?

3.4. HYPOTHESES

1. The higher the level of communicative competence, i.e. post-intermediate and advanced, the higher the receptive breadth dimension of lexical knowledge.

2. The higher the level of communicative competence, i.e. post-intermediate and advanced, the higher the depth dimension of lexical knowledge.

3. The higher the level of communicative competence, i.e. post-intermediate and advanced, the higher the level of reading comprehension.

3.5. METHODOLOGY

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3.5.1. Subjects

The subjects that took part in this study were post-intermediate and advanced students of the third and fourth years, respectively, of the academic undergraduate programme of "Licenciatura en Lengua y Literatura Inglesas" at the Department of Linguistics, Facultad de Filosofía y Humanidades, Universidad de Chile.

This programme includes four years of English language courses which focus on the four language skills (listening,speaking, reading, and writing). The curriculum also consists of courses such as Structural Linguistics, Text Grammar, English Morphosyntax, Generative Linguistics, Sociolinguistics, Psycholinguistics, Culture and Civilization of English Speaking Countries (I, II), English Phonology (I, II), Semantics and Pragmatics, English Literature (I, II, III, IV, V), Discourse Analysis, Applied Linguistics, and History of the English Language.

The total number of subjects in the study was 43: 24 post-intermediate students (third year), and 19 advanced learners (fourth year). The group of students consisted of both male and female learners, and their age ranged from twenty to twenty-six. The tests were given during students' regular English language classes.

3.5.2. Data

With the purpose of eliciting the data, i.e. of assessing receptive breadth of vocabulary knowledge, depth of vocabulary knowledge, and reading comprehension skills, three different tests were given: the Vocabulary Levels Test, the Word Associates Test, and a Reading Comprehension Test, respectively.

3.5.2.1. Receptive Breadth of Vocabulary Knowledge:

The Vocabulary Levels Test, designed by Paul Nation (1983, 1990), was used to measure breadth of vocabulary knowledge. The rationale for the test stems from research, research which has shown that vocabulary size is directly related to the ability to use English in various ways. The test is consists of separate sections which measure learners' lexical knowledge from a number of distinct word frequency levels. In this way, it can provide a profile of a learner's vocabulary, rather than just a single-figure estimate of overall vocabulary size.The levels addressed are: 2000 Word Level (the bulk of the lexical resources required for basic everyday oral communication), 3000 Word Level (the threshold which should allow learners to begin to read authentic texts), 5000 Word Level (enough vocabulary to enable learners to read authentic texts), and 10,000 Word Level (vocabulary required to cope with the challenges of university study in an L2). In addition, the 10,000 Word Level of knowledge should allow learners to infer the meaning of many of the novel words from context, and to understand most of the communicative content of a text. Besides the levels previously described, there is a University Word Level,which is associated to academic vocabulary in pedagogical contexts. (Schmitt et al. 2001, Schonell et al. 1956, Hazenberg and Hulstijn 1996, Read 2000)

The Receptive Breadth format of the Levels Test involves a total of thirty-six words and eighteen definitions in groups of six words and three definitions. Here is an example of this test format taken from the 2000 Word Level:

1 apply

2 elect _____ choose by voting

3 jump _____ become like water

4 manufacture _____ make

5 melt

6 threaten

Reflecting the distribution of word classes in English, the words from the stratified sample used to design the test tend to fall into a 3 (noun) : 2 (verb) : 1 (adjective) ratio. This ratio was maintained in the test, with each level containing three noun clusters, two verb clusters and one adjective cluster.

Each cluster was written with the following considerations in mind:

1) The options in this format are words instead of definitions.

2) The definitions are kept short, so that there is a minimum of reading, allowing for more items to be taken within a given period of time.

3) Words are learned incrementally, and tests should aim to tap into partial lexical knowledge (Nagy et al. 1985). The Levels Test was designed to do this. The option words in each cluster are chosen so that they have very different meanings. Thus, even if learners have only a minimal impression of a target word's meaning, they should be able to make the correct match.

4) The clusters are designed to minimize aids to guessing. The target words are in alphabetical order, and the definitions are in order of length. In addition, the target words to be defined were selected randomly.

5) The words used in the definitions are always more frequent than the target words. The 2000 level words are defined with 1000 level words and, wherever possible, the target words at other levels are defined with words from the General Service List (essentially the 2000 level) (for more details, see Nation 1990: 264). This is important as it is necessary to ensure that the ability to demonstrate knowledge of the target words is not hindered by a lack of knowledge of the defining words.

6) The word counts from which the target words were sampled typically give base forms. However, derived forms are sometimes the most frequent members of a word family. Therefore, the frequency of the members of each target word family was checked, and the most frequent one attached to the test. In the case of derivatives, affixes up to and including Level 5 of Bauer and Nation's (1993) hierarchy were allowed.

7) As much as possible, target words in each cluster begin with different letters and do not have similar orthographic forms. Likewise, similarities between the target words and words in their respective definitions were avoided whenever possible. (Schmitt et al. 2001)

3.5.2.2. Depth of Vocabulary Knowledge:

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In order to measure vocabulary depth, the Word Associates Test was used. This test was originally designed by Meara (1983) and afterwards edited by Read (1993). However, the Word Associates Test used in this research was the modified version designed and developed by Qian (2004) and a group of 'The Test of English as a Foreign Language' (TOEFL) test-developers at the Educational Testing Service, Princeton, New Jersey. The purpose of the test is to measure two aspects of depth of vocabulary knowledge:

1) word meaning, specifically polysemy and synonymy, and

2) word collocation

This version made use of the stimulus word in the TOEFL Vocabulary Measure as the headwords (Qian 2004).

The test contains 40 items. Each item consists of one stimulus word, which is an adjective, and two boxes, each containing four words. Among the four words in the left box, one to three of them can be synonymous to one aspect of or the whole meaning of the stimulus word, while among the four words in the right box, there can be one to three that collocate(s) with the stimulus word. Each item always has four correct choices. However, these choices are not evenly spread. There are three possible situations:

The left and right boxes both contain two correct answers.

The left box contains one correct choice, while the right box contains three correct answers; and

The left box contains three correct answers, while the right box contains only one correct choice. (Qian 2004: 37)

Here is an example of this test format:

Sudden

	X	X		X		X	
beautiful	quick	surprising	thirsty	change	doctor	noise	school

Note: In this example, there are two correct answers on the left and two on the right, but this is just an example. It shouldn't be assumed there is a consistent number of correct answers on the left or on the right.

3.5.2.3. Reading Comprehension Skills:

The reading comprehension test was taken from one section of the TOEFL. This test has been designed by the Educational Testing Service of Princeton, New Jersey. Statistical analyses and testing technology assure the validity of the test as a measuring instrument. This also assures its efficiency when given to such a large population of test-takers. The main items used in the test are multiple-choice items.

The principal aim of this test is to measure if foreign students who are planning to attend another institution where English is the medium of instruction are able to undertake their studies without any language-based difficulties. Moreover, the results that a student gets in this test can decide whether he is accepted in the institution he is applying to. In this respect, TOEFL influences, positively or negatively, the educational and professional future of the test-takers, depending on the results they get.

More specifically, the test used in the study was taken from the 1995 version of the TOEFL. Previous to the design of this test version, the TOEFL Committee of Examiners

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decided that the vocabulary part of the test should be assessed in a more integrative way. Therefore, the isolated vocabulary section was changed into an integral part of the reading comprehension part. They created a generic stem which was:

'the word "---" in line ( ) is closest in meaning to...'

Within this new format, all the options were possible answers; there were clues in the context, and there was also a context dependency necessary to answer the item. Here, there is an example:

1	In a democratic society suspected persons are presumed innocent until proven guilty
	The establishment of guilty is often a difficult task. One consideration is whether
	or not there remains a reasonable doubt that the suspected persons committed the
	acts in questions. Another consideration is whether or not the acts were committed
5	deliberately

-The word "deliberately" in line 5 is closest in meaning to:

A) both

B) noticeable

C) intentionally

D) absolutely

3.5.3. Data collection

The three different tests were given in two sessions for the post-intermediate students, and two different sessions for the advanced students. In the first session, the students were asked to answer the Word Associates Test. In the second session, conducted a week later, they were first asked to take the Levels Test and then the Reading Comprehension one.

The first session for each group started with the explanation of the tests but their purpose was never informed to the students in order to avoid the predisposition they could have had towards the questions. Then a member of the research group handed in the first test (Word Associates Test). The instructions, which were on the front page of each test, were read aloud to the students to clarify any possible doubts. Apart from that, one example of the test was written on the board. The students were asked not to use English dictionaries. Besides, the students were informed about the maximum time of forty minutes for the completion of this test. This given time ensured that no blank answer was due to lack of time on the part of the students to complete the test. In fact, most of them handed in the tests before the limit of forty minutes had been reached.At the end of the first session, the students were not told that two other tests were programmed for a second session, in order to avoid absenteeism as these activities were not part of the regular class requirements.

In the second session, the procedure was similar to the one mentioned above. The Levels Test and its instructions were given to the students and an example was written on the board. This time, the students were given a maximum of twenty minutes for the completion of the test. After the time assigned was over, the tests were handed in by the students and the Reading Comprehension Test was given. The instructions were read aloud. The students were told that the time limit for the completion of this test was of twenty minutes.

It is important to point out that not all the subjects who took the first test in the first session attended the second one, and also not all the subjects who took the second and

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third tests in the second session attended the first one. Since each student needed to take the three tests in order to be considered a subject of the study, it was necessary for the research team to look for extra periods of time to test those students.

3.5.4. Criterion for the scoring of the tests

The three tests used in the study were scored in the same way. Following Qian's suggestions, each correct response was awarded one point. (Qian 2004: 38). Therefore, the total scores for the tests were 150 points for the Vocabulary Levels Test, 160 points for the Word Associates Test, and 20 points for the Reading Comprehension Test. The number of wrong and omitted answers was not subtracted from the total score.

3.5.5. Procedure for data analysis

The following steps were taken in the data analysis:

- Mark the responses to the Word Associates Test, assigning one point to each correct answer.

- Mark the responses to the Vocabulary Levels Test, assigning one point to each correct answer.

- Mark the responses to the Reading Comprehension Test, assigning one point to each correct answer.

- Quantitative analysis of the results in the three tests using tables and charts

- Establish relationships between the depth of vocabulary knowledge and Reading Comprehension skills in the post-intermediate and advanced learners of English as a foreign language through statistics.

- Establish relationships between the breadth of vocabulary knowledge and Reading Comprehension skills in the post-intermediate and advanced learners of English as a foreign language through statistics.

4. DISCUSSION OF THE RESULTS

In this section, the results of the Vocabulary Levels Test, Word Associates Test and Reading Comprehension Test will be presented and discussed in quantitative terms. In addition, a statistical analysis based on the results of the tests is provided.

4.1. TEST RESULTS

4.1.1. Breadth of Vocabulary Knowledge

The results of the Receptive Breadth of Vocabulary Knowledge for both groups of subjects are presented below.

Table 1: Vocabulary Levels Test results per group of students

Level	Total score	Average	Percentage
Post-intermediate	150	130	86.7%
Advanced	150	129	86.3%

In Table 1, the figures show a very small difference, 0.4, between the receptive breadth of vocabulary knowledge of the subjects of each group. Post-intermediate students obtained slightly higher scores than advanced ones. These results were not expected by the research group since the advanced students were supposed to have a higher level of receptive vocabulary knowledge, and therefore, they should have got higher scores in the test. However, the difference between the groups is not significant. In the chart below, the results are presented in a graph.

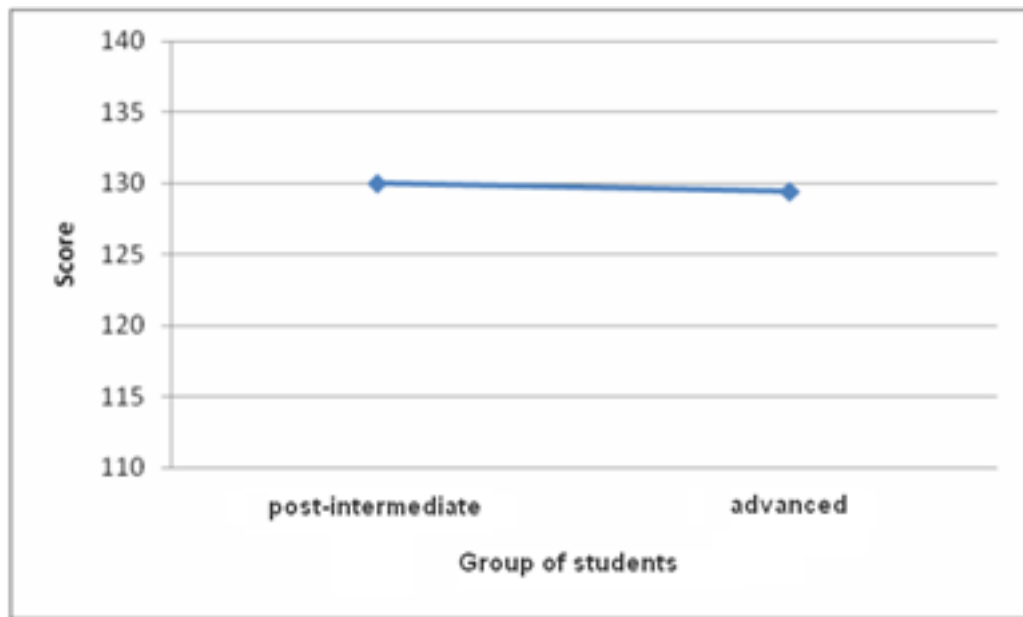The same results can be graphically observed in the chart below.

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Chart 1:Vocabulary Levels Test results per group of students

4.1.2. Depth of Vocabulary Knowledge

The results of the depth of Vocabulary Knowledge for both groups of subjects are presented below.

Table 2: Word Associates Test scores average per group of students

Levels	Total score	Average	Percentage
Post-intermediate	160	111	69.3%
Advanced	160	116	72.4%

Table 2 shows a considerable difference in the scores of the subjects of both groups. Advanced subjects obtained higher scores than post-intermediate ones in the test that measured depth of vocabulary knowledge. The results show a variation of 3.1% between both groups, which is significant since this percentage reflects a higher level of depth of vocabulary knowledge on the part of advanced students. The variation in the advanced students' scores implies a higher ability on the part of these subjects to establish both syntagmatic and paradigmatic relations between words. In the chart below, the results are presented in a graph.
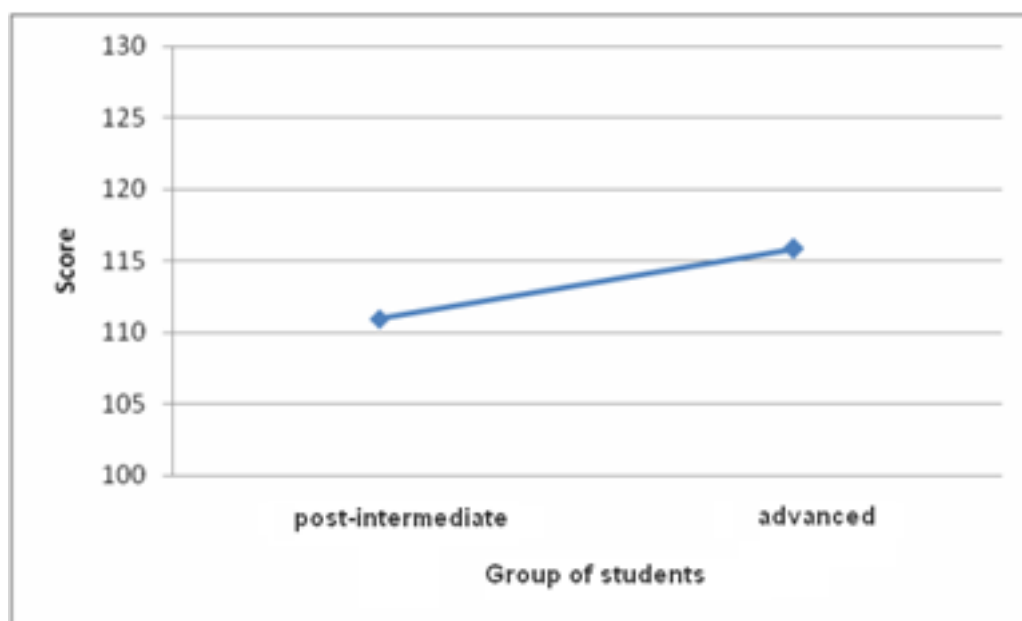
Chart 2: Word Associates Test results per group of students

4.1.3. Reading comprehension

The results of the Reading Comprehension Test in both post-intermediate and advanced students are presented below.

Table 3: Reading Comprehension Test results per group of students

Levels	Total score	Average	Percentage
Post-intermediate	20	12.4	62.1%
Advanced	20	13.9	69.5%

In Table 3 we can observe a difference of 7.4% in the reading test scores of the subjects of both groups. Advanced subjects reached higher scores than post-intermediate ones. A possible explanation for this may be that advanced students have been trained in different skills in the foreign language, including reading comprehension, for a longer period of time than post-intermediate learners. In the chart below, the results are presented in a graph.
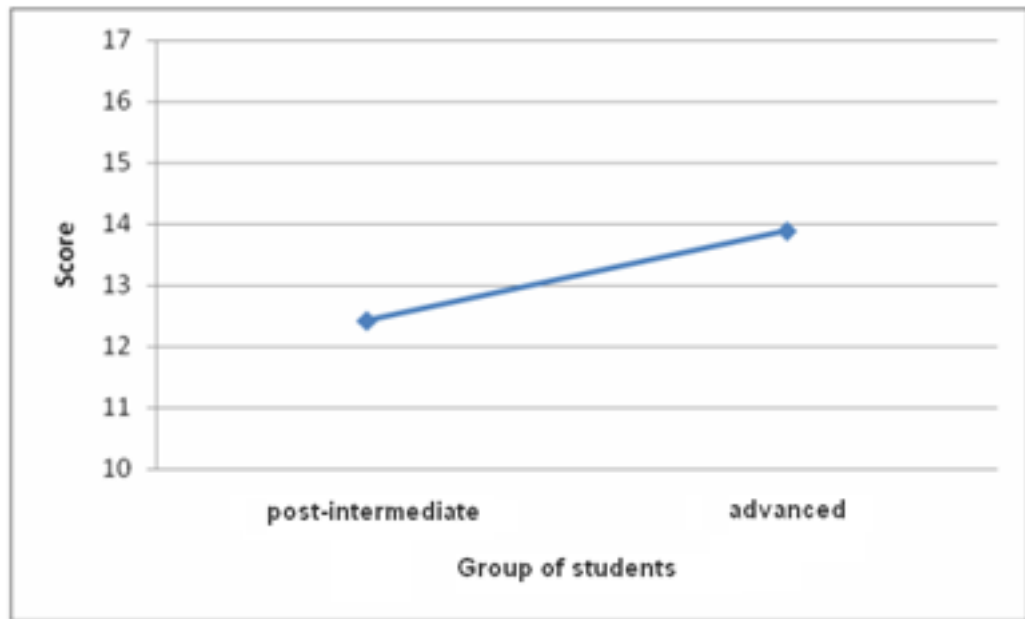
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Chart 3: Reading Comprehension Test results per group of students

4.2 STATISTICAL RESULTS

4.2.1 Breadth of Vocabulary Knowledge

Table 4: Mean and Standard Deviation of the Vocabulary Levels Test

Level	N	Minimum Score	Maximum Score	Mean	Standard Deviation
Post-intermediate	24	111	142	130.00	7.604
Advanced	19	101	145	129.42	11.553

Total score of the test= 150.

N= number of subjects.

As seen in Table 4, the 24 post-intermediate students obtained a minimum score of 111 and a maximum score of 142. Thus, the mean of these scores is 130. Given these figures, the standard deviation for this group is 7.604. In turn, the 19 advanced students got a minimum score of 101 and a maximum score of 145. The mean for this group is 129.42 and the standard deviation is 11.553. The mean of the advanced students is slightly lower than the mean of post-intermediate students. However, for the purposes of this research, and taking into account the total score of 150 points, this difference of less than one point (0.58) is not considered as significant. In addition, the standard deviation of the post-intermediate group is lower (7.604) than the one obtained by the advanced students (11.553). Thus, it can be claimed that post-intermediate subjects got more homogeneous scores than advanced ones.

4.2.2 Depth of Vocabulary Knowledge

Table 5: Mean and Standard Deviation of the Word Associates Test

Level	N	Minimum Score	Maximum Score	Mean	Standard Deviation
Post-intermediate	24	84	137	110.96	12.678
Advanced	19	88	138	115.84	12.967

Total score of the test= 160.

N= number of subjects.

As seen in Table 5, the 24 post-intermediate students obtained a minimum score of 84 and a maximum score of 137. The mean of this group is 110.96 and the standard deviation is 12.678. In turn, the group of advanced students got a minimum score of 88 and a maximum score of 138. The mean of these subjects is 115.84 and the standard deviation is 12.967. In contrast to the mean of advanced students in the test that measured breadth of vocabulary knowledge, the mean of advanced students in the depth of vocabulary knowledge test is higher than the mean of post-intermediate students. Bearing in mind the total score of 160 points in this test, the difference between the two groups of subjects can be considered as significant, since it corresponds to more than 1 point (4.88). Concerning the standard deviation, the results for the depth of vocabulary knowledge test show that scores are relatively homogeneous for both groups of students.

4.2.3 Reading Comprehension

Table 6: Mean and Standard Deviation of the Reading Comprehension Test

Level	N	Minimum Score	Maximum Score	Mean	Standard Deviation
Post-intermediate	24	8	17	12.42	2.320
Advanced	19	11	17	13.89	2.158

Total score of the test= 20.

N= number of subjects.

As can be seen in Table 6, the group of post-intermediate students obtained a minimum score of 8 and a maximum score of 17. The mean of this group, thus, 12.42 and the standard deviation is 2.320. In turn, the advanced subjects got a minimum score of 11 and a maximum score of 17. The mean of this group is 13.89 and the standard deviation is 2.158. The mean results show a difference of 1.47 between the post-intermediate and the advanced students, being the last group the one that got the higher mean. From the total score of 20 points, this difference is considered significant. In addition, even though the standard deviations shown in Table 6 are rather similar (2.320 versus 2.158, i.e. a difference of 0.162), the total score of this test (only 20 points) makes the issue of homogeneity and heterogeneity relevant to be dealt with. Then, it can be said that advanced students are more homogeneous than post-intermediate students. This phenomenon may occur because advanced students have had a longer training in reading comprehension.

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4.3 CORRELATIONS

Table 7:Correlations for Breadth of Vocabulary Knowledge (Vocabulary Levels Test), Reading Comprehension, and Depth of Vocabulary Knowledge (Word Associates Test) of Post-intermediate Students

		Breadth of Vocabulary Knowledge (Vocabulary Levels Test)	Reading Comprehension Test	Depth of Vocabulary Knowledge (Word Associates Test)
Breadth of Vocabulary Knowledge (Vocabulary Levels Test)	Pearson Correlation	1	.604(*)	**.703(**)**
	Sig. (bilateral)		.002	.000
	N	24	24	24
Reading Comprehension Test	Pearson Correlation	.604(*)	1	**.707(**)**
	Sig. (bilateral)	.002		.000
	N	24	24	24
Depth of Vocabulary Knowledge (Word Associates Test)	Pearson Correlation	.703(**)	.707(**)	1
	Sig. (bilateral)	.000	.000	
	N	24	24	24

** Correlation is significant at level >0.7

* Correlation is direct at level <0.7

Table 7 shows that correlation coefficients range between 0.604 and 0.707. The reading comprehension skill and the depth of vocabulary knowledge have the highest correlation coefficient, 0.707. This figure implies a significant correlation, which can be explained by the fact that the Word Associates Test -used to assess depth- measures the learners' knowledge of synonymy and collocations, and this knowledge enables them to select the specific meaning of a word in different contexts. This ability that learners develop may be useful for successfully performing reading comprehension tasks.

The next significant correlation (0.703) is held between breadth (measured by the Vocabulary Levels Test) and depth of vocabulary knowledge (assessed through the Word Associates Test). As mentioned above, the Word Associates Test assesses synonymy and collocations of different words. It can be claimed that a learner who performs successfully in this test is likely to get also a high score in the Vocabulary Levels Test. Thus, if the test taker has the ability of recognizing thedifferent relations that several words may hold (8 for each item) in the Word Associates Test, he will be able to carry out a less complex task, that of matching six words with three correct definitions in the Vocabulary Levels Test.

In turn, the correlation held between reading comprehension and breadth of vocabulary knowledge, 0.604, corresponds to a direct correlation, i.e. it is not a significant one. This rather low correlation, compared to the other correlations, may be caused by the different nature of the tests used to measure reading comprehension and breadth of vocabulary knowledge. That is, while in the Vocabulary Levels Test the only way for the test takers to provide a correct response is through their previous knowledge of the target word and of the words used in the definitions provided for each item, in the Reading Comprehension Test

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the words are embedded in a linguistic context, which constitutes a resource that learners may use to infer the meanings of words.

In Chart 4 below the correlations between the (Word Associates Test) and the reading comprehension of post-intermediate students can be observed in a graph form.
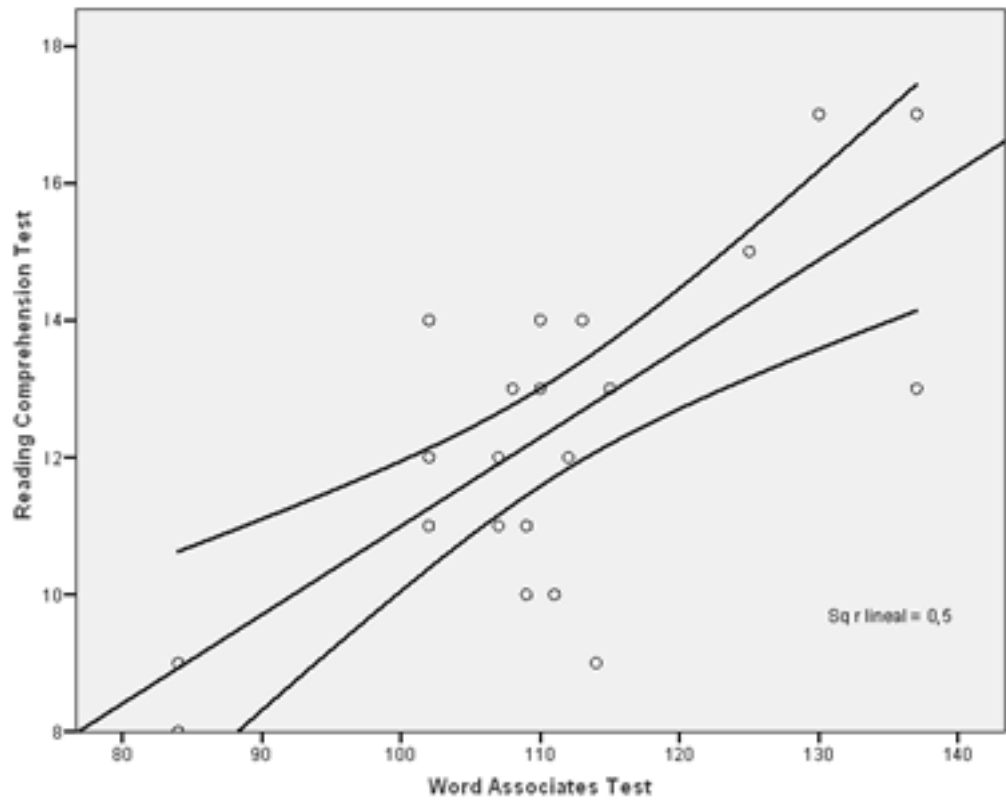
Chart 4: Correlation between the Word Associates Test and the Reading Comprehension Test in the post-intermediate level.

Table 8: Correlations for Breadth of Vocabulary Knowledge (Vocabulary Levels Test), Reading Comprehension, and Depth of Vocabulary Knowledge (Word Associates Test) of Advanced Students

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		Breadth of Vocabulary Knowledge (Vocabulary Levels Test)	Reading Comprehension Test	Depth of Vocabulary Knowledge (Word Associates Test)
Breadth of Vocabulary Knowledge (Vocabulary Levels Test)	Pearson Correlation	1	.465(*)	.450
	Sig. (bilateral)		.045	.053
	N	19	19	19
Reading Comprehension Test	Pearson Correlation	.465(*)	1	.490(*)
	Sig. (bilateral)	.045		.033
	N	19	19	19
Depth of Vocabulary Knowledge (Word Associates Test)	Pearson Correlation	.450	.490(*)	1
	Sig. (bilateral)	.053	.033	
	N	19	19	19

** Correlation is significant at level >0.7

* Correlation is direct at level <0.7

As seen in Table 8, correlation coefficients range between 0.450 and 0.490, that is, they are all non-significant. The highest correlation coefficient, 0.490, is held between reading comprehension and depth of vocabulary knowledge (Word Associates Test); the next correlation coefficient is between breadth of vocabulary knowledge (Vocabulary Levels Test) and reading comprehension (.465). Therefore, in contrast to the post-intermediate subjects, in the advanced students' group, significant correlations do not occur.

In Chart 5 below the correlation between the depth of vocabulary knowledge (Word Associates Test) and the reading comprehension of advanced students can be observed in a graph form.

Chart 5: Correlation between the Depth of Vocabulary Knowledge (Word Associates Test) and the Reading Comprehension of Advanced Students

In Chart 6 below the correlation between the breadth of vocabulary knowledge (Vocabulary Levels Test) and the reading comprehension of advanced students can be seen in a graph.
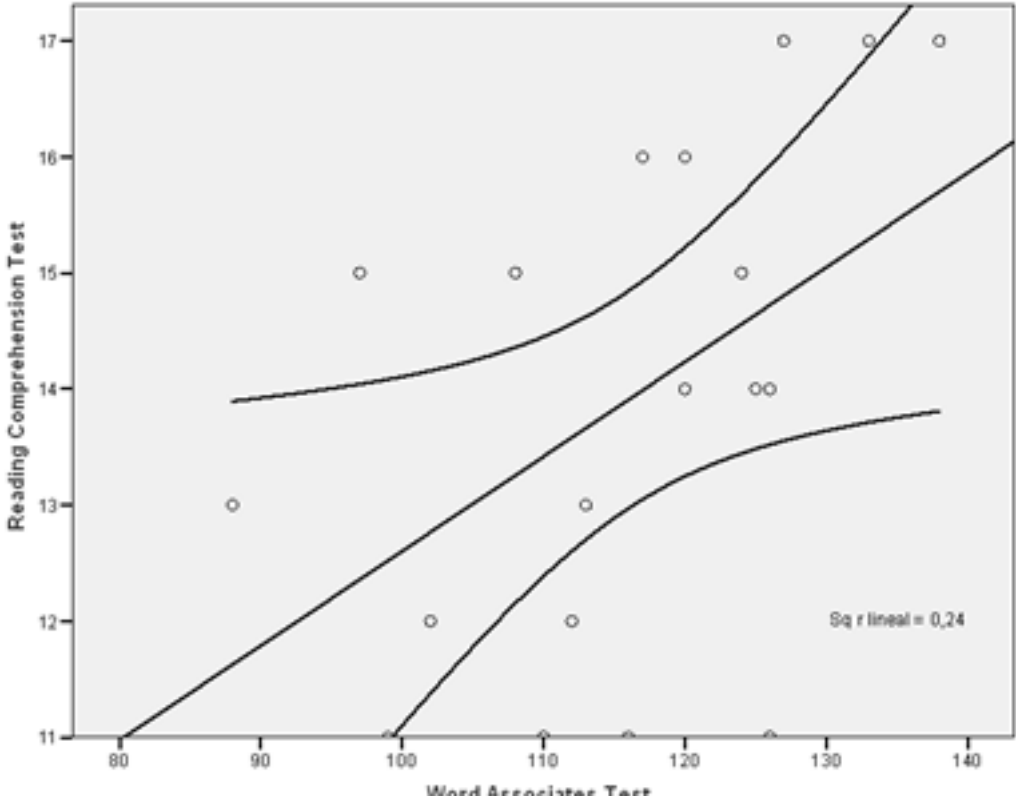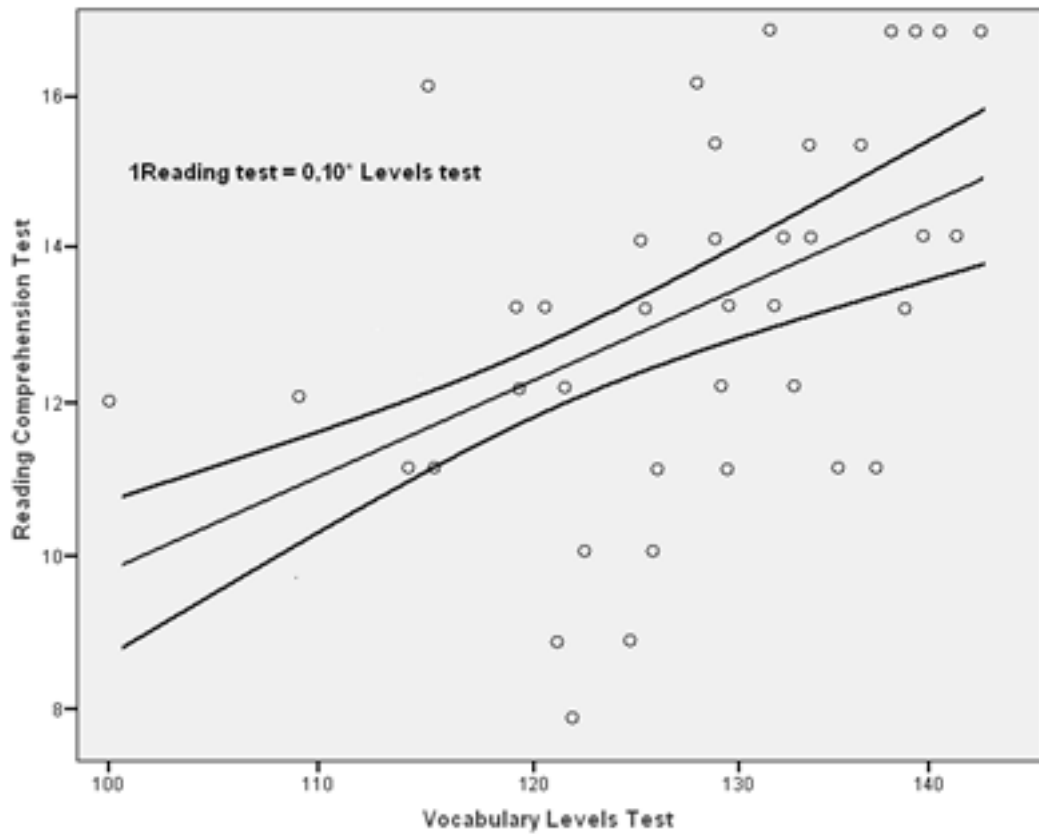
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1Reading test = 0,10* Levels test

*Chart 6:Correlation between the Breadth of Vocabulary Knowledge
(Vocabulary Levels Test) and the Reading Comprehension of Advanced students*

Table 9: Correlations for the Breadth of Vocabulary Knowledge (Vocabulary Levels Test), the Reading Comprehension and the Depth of Vocabulary Knowledge (Word Associates Test) of Post-intermediate and Advanced Students

		Breadth of Vocabulary Knowledge (Vocabulary Levels Test)	Reading Comprehension Test	Depth of Vocabulary Knowledge (Word Associates Test)
Breadth of Vocabulary Knowledge (Vocabulary Levels Test)	Pearson Correlation	1	.479(*)	.537(*)
	Sig. (bilateral)		.001	.000
	N	43	43	43
Reading Comprehension Test	Pearson Correlation	.479(*)	1	**.632**(*)
	Sig. (bilateral)	.001		.000
	N	43	43	43
Depth of Vocabulary Knowledge (Word Associates Test)	Pearson Correlation	.537(*)	.632(*)	1
	Sig. (bilateral)	.000	.000	
	N	43	43	43

** Correlation is significant at level >0.7

* Correlation is direct at level <0.7

As seen in Table 9, correlation coefficients of the two groups of subjects considered as only one group vary in a range between 0.479 and 0.632. The reading comprehension and the depth of vocabulary knowledge (Word Associates Test) show the highest correlation coefficient (0.632).

Although this correlation is of a direct kind, it reveals that the depth of vocabulary knowledge has a closer relation to the reading comprehension of both groups when compared to the relation between breadth of vocabulary knowledge and the reading comprehension skill.

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5. CONCLUSIONS

"Since 'vocabulary knowledge is heavily implicated in all practical language skills' (Meara and Jones 1988: 80), learners with superior vocabulary knowledge should perform better in other language modalities than learners with limited vocabulary knowledge. This theoretical assumption is worth testing." (Qian 1999: 16) Taking into account Qian's research concerning the relationship between vocabulary knowledge (breadth and depth) and language skills such as reading comprehension, the present study attempted to focus on two aspects of this relation. Firstly, the lexical knowledge and the reading comprehension of post-intermediate and advanced learners were assessed. With relation to this aspect of the study, the research group stated three hypotheses: i) that advanced students would have a higher level of lexical competence in terms of receptive breadth of vocabulary knowledge than post-intermediate learners. ii) In a similar way, the second hypothesis formulated assumed that advanced students would have a higher level of lexical competence in terms of depth of vocabulary knowledge than post-intermediate learners. iii) In addition, with relation to the assessment of the reading comprehension skill, the relevant hypothesis stated that advanced learners would be more skilful than post-intermediate students. Secondly, the study also aimed at identifying relationships between breadth of lexical knowledge, depth of lexical competence and the reading skill of post-intermediate and advanced learners.

The conclusions drawn from the study have been organized according to the two aspects mentioned above, which are, in turn, related to the two general objectives of the study.

5.1 DESCRIPTION OF THE LEXICAL KNOWLEDGE OF LEARNERS OF ENGLISH AS A FOREIGN LANGUAGE AT TWO LEVELS OF COMMUNICATIVE COMPETENCE, POST-INTERMEDIATE AND ADVANCED.

5.1.1 Receptive breadth dimension of vocabulary knowledge

Concerning this variable, the analysis of the results shows that post-intermediate students obtained slightly higher scores than advanced ones. These results were not expected by the research group since the advanced students were supposed to have a higher level of receptive breadth of vocabulary knowledge. Therefore, the first hypothesis, i.e. the higher the level of communicative competence, i.e. post-intermediate and advanced, the higher the receptive breadth dimension of lexical knowledge, is refuted. However, it must be pointed out that the difference between the two groups of learners is not significant (post-intermediate level, 86.7%, whereas advanced level, 86.3%).

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5.1.2 Depth dimension of vocabulary knowledge

With relation to the variable of depth of lexical competence, the results confirm the second hypothesis, which is, the higher the level of communicative competence, i.e. post-intermediate and advanced, the higher the depth dimension of lexical knowledge. As stated in the discussion of results, there is a considerable difference in the scores of the subjects of both groups. Thus, advanced subjects obtained higher scores than post-intermediate ones. The percentage corresponding to advanced learners is 72.4% while post-intermediate ones got 69.3%. These results can be explained by the fact that advanced students have been learning the target language systematically for a longer period of time.

5.1.3 Reading comprehension

Concerning the third hypothesis, which is, the higher the level of communicative competence, i.e. post-intermediate and advanced, the higher the level of reading comprehension, the analysis of the results shows that it is confirmed. Indeed, advanced subjects reached higher scores (69.5%) than post-intermediate ones (62.1%). A possible explanation for this may be that advanced students have been trained in different skills in the foreign language, including reading comprehension, for a longer period of time than post-intermediate learners.

To sum up the conclusions in this section of the study, it can be stated that:

i) The higher the level of communicative competence, the higher the depth dimension of lexical knowledge. (Hypothesis 1 confirmed)

ii) The higher the level of communicative competence, the higher the level of reading comprehension. (Hypothesis 2 confirmed)

iii) Conversely, concerning breadth of vocabulary knowledge, it is the lower level of communicative competence, i.e. post-intermediate students, the group that has the higher level of this vocabulary knowledge dimension.   (Hypothesis 3 refuted)

5.2 DESCRIPTION OF THE RELATIONSHIP BETWEEN BREADTH OF LEXICAL KNOWLEDGE, DEPTH OF LEXICAL KNOWLEDGE, AND THE READING SKILL OF POST-INTERMEDIATE AND ADVANCED LEARNERS.

5.2.1 Correlations between breadth of vocabulary knowledge, reading comprehension, and depth of vocabulary knowledge of post-intermediate students

The results obtained for post-intermediate learners show that there is a significant correlation between depth of vocabulary knowledge and reading comprehension (.707). In addition, there is a significant correlation coefficient between breadth and depth of lexical knowledge in this group of subjects (.703). Conversely, the correlation between breadth of lexical competence and reading comprehension is not significant (.604).

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5.2.2 Correlations between breadth of vocabulary knowledge, reading comprehension, and depth of vocabulary knowledge of advanced students

In contrast to the correlations of post-intermediate learners, in the advanced group all correlation coefficients are non-significant. However, it is worth pointing out that there is one similarity between the two groups of subjects, since in these advanced students the highest correlation coefficient also occurs between depth of vocabulary knowledge and reading comprehension (.490). The order of the other coefficients is different in this group when compared to the post-intermediate one. Thus, the next correlation in descending order is the one between breadth of lexical competence and reading comprehension (.465); and, finally, the lowest correlation coefficient is the one between breadth and depth of lexical knowledge in this group of subjects (.450). The lack of significant correlations in the advanced group may have occurred because these advanced users of the target language have probably developed and used language learning strategies such as inferencing, monitoring, planning, self-management, etc. The use of such strategies may have enabled them to cope with specific language difficulties, e.g. the lack of knowledge of particular words in the reading comprehension task. These metacognitive and cognitive resources may have enabled the advanced learners of the study to perform the reading task more efficiently than the post-intermediate students.

As a summary of this section of the conclusions, it can be stated that:

i) There is a strong relation between the students' depth of lexical knowledge and their reading comprehension skill, independent of the level of communicative competence of foreign language learners. Both the Reading Comprehension Test and the Word Associates Test, which were applied to assess reading comprehension and depth of word knowledge, respectively, share some features in terms of the abilities required to fulfil both tasks, i.e. knowledge of the different sense relations that a word may hold with other words, e.g. paradigmatic (antonymy, synonymy, hyponymy) and syntagmatic (collocational restrictions). Previous research on the relationship between vocabulary knowledge and reading has reported similar results (Qian 1999, 2002). As an example, Qian and Schedl (2004) report their research in which the analysis of the results has shown that "the scores on both the DVK (Depth of Vocabulary Knowledge) and on the TOEFL-VOC (Vocabulary) have very similar correlations with the scores on the TOEFL-RBC (Reading for Basic Comprehension). Since vocabulary items correlate highly with comprehension questions, they are not only a valuable way to add variety to a set of reading comprehension questions but also a practical and efficient measure of comprehension." (p. 46)

ii) There is also a significant relation between the post-intermediate students' breadth and depth of lexical knowledge. This indicates that there is a strong association, as suggested by Henriksen (1999), Qian (1999) and other applied linguists, between these two dimensions of lexical knowledge.

Finally, some reflections made by the research group are presented here. One aspect of the results of the present study relates to the issue of homogeneity and heterogeneity in both groups of learners. As mentioned in the discussion of results, it can be noticed that in the Vocabulary Levels Test there is a tendency for the post-intermediate level to be more homogeneous than the advanced level while in the Reading Comprehension Test, advanced students are more homogeneous than post-intermediate students. Additionally, in the Word Associates Test it is not possible to establish whether there is homogeneity or heterogeneity since both groups present a rather similar standard deviation in their results.

The present study applied the theoretical framework of the three-dimensional model of lexical knowledge proposed by Henriksen (1999). The research focused on depth and breadth of vocabulary knowledge, and the receptive dimensions. The framework was adequate for the objectives set because it has been useful for the identification of differences in the vocabulary knowledge of the two groups of subjects, post-intermediate and advanced learners of English as a foreign language.

On the other hand, one of the limitations of the study is the reduced number of subjects, which prevents us from generalizing the research findings. Nevertheless, as mentioned above, the findings are in agreement with those of applied linguists' research into the field of vocabulary knowledge of second language learners.

Concerning suggestions for future research, it would be interesting to attempt to answer questions such as how and to what extent depth of vocabulary knowledge contributes to reading comprehension, because they are complex and, therefore, still remain unanswered, as some experts have pointed out. In addition, future studies could deal with the role that lexical knowledge may play in other language skills, such as listening and writing.

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Anexos

Ver anexos en: www.cybertesis.cl/tesis/uchile/2008/cavieres_li/sources/
cavieres_li_anexo1.pdf

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