

**TEACHING POLYSEMIOUS WORDS TO
ARAB LEARNERS: A COGNITIVE
LINGUISTICS APPROACH**

FAWZI MAKNI

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LINGUISTICS APPROACH**

FAWZI MAKNI

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ABSTRACT

The purpose of this study is to compare the pedagogic efficiency of two methods for teaching polysemous vocabulary – the *image-schema-based vocabulary instruction method* (ISBM) and the *translation-based vocabulary instruction method* (TBM). While ISBM is inspired by cognitive linguistics, and represents a new trend in teaching polysemous vocabulary, TBM embodies a traditional and well established way of teaching polysemous vocabulary in EFL contexts.

Additionally, this study aims to evaluate the way in which three learner characteristics - *learning styles, vocabulary learning strategies, language proficiency* - contribute to individual differences in acquiring polysemous words.

The subjects of this study, 40 female students studying at an intensive English program at the University of Sharjah, UAE, were placed in two groups and were taught a range of metaphorical meanings of polysemous words, in accordance with the cognitive linguistics ISBM and the mainstream TBM. In order to assess the pedagogical value of both methods, a polysemous word knowledge test (PWKT) was used as a pre and post-test. Also, a strategy assessment test (SAT) was employed to gauge the effectiveness of the strategic teaching method in accordance with which the polysemous words were instructed. Furthermore, in an attempt to explore the nature of the relationships between some of the learner characteristics and the acquisition of polysemous vocabulary, a vocabulary learning questionnaire and a style of processing scale were given to the learners.

The results of the immediate post PWKT suggest that the ISBM is more effective in teaching and learning polysemous vocabulary in this setting than the TBM. In the long term, however, both of the techniques adopted in teaching polysemous words proved beneficial in long-term recall. Also, teaching polysemous vocabulary strategically – showing learners how to work out the metaphorical meanings of some polysemous words through their literal meanings - paid off in that learners were more readily able to understand metaphorical senses of new polysemous words they encountered in the SAT. Altogether, three variables seem to come into play when dealing with the acquisition of polysemous words in the framework of cognitive linguistics - *learning styles, vocabulary learning strategies, language proficiency*. In light of these findings, I give a number of recommendations to teachers, material developers and lexicographers.

As far as the contribution to field of vocabulary acquisition is concerned, this study attempts to shed light on the teaching of polysemous words in an Arab context (a so far an unmapped territory). In that, it tries to show how polysemous words have been treated in the English syllabuses directed to UAE learners, to equip English teachers with feasible ways to teach polysemous words more efficiently, and thereby to improve the learners' ability to comprehend some new concepts more easily. Finally, this study addresses some of the pitfalls of previous studies on teaching polysemous words within the framework of cognitive linguistics.

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LIST OF ABBREVIATIONS

- PWKT** = Polysemous Word Knowledge Test
- SAT** = Strategy Assessment Test
- TL** = Target language
- ISBM** = Image-Schema Based Method
- TBM** = Translation Based Method
- VLT** = Vocabulary Level Tests
- VLSs** = Vocabulary Learning Strategies
- EFL** = English as a Foreign Language
- TOEFL** = Test of English as a Foreign Language
- IELTS** = International English Language Testing System
- UAE** = United Arab Emirates
- Exp. G** = Experimental Group
- Ctrl. G** = Control Group
- VKS** = Vocabulary Knowledge Scale
- WAT** = Word Associates Test

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CHAPTER 1 INTRODUCTION

1.1 Problem Statement

Polysemous words are ubiquitous in written and spoken English. This is a phenomenon whereby a word has different, but related senses with respect to the contexts in which it is used. Most of these words are of high frequency in English, belonging to the three thousand most frequent words in the language. For this reason, ¹knowledge of these words is prerequisite for forming a substantial vocabulary base (Nation, 1990, 2001, 2008; Cobb, 2006, Hamilton, 2010, 2011). Nation (2001, 2008) convincingly argues that profound knowledge of high frequency words can help English as a Foreign Language (EFL) learners understand around 80% of most of English texts. Nonetheless, polysemous words have been neglected in many EFL contexts. The reasons for this are manifold.

These multi-meanings words are frequently described as a “complete headache for learners” (Thornbury, 2002, p. 8). Likewise, Csábi (2004), who tried to teach polysemous words to Hungarian learners, argues that polysemes are often seen by many teachers and learners of English as problematic and troublesome. These attitudes can reveal underlying problems with the teaching and learning of polysemous words. For example, Danesi (1992) and Mohammed (2002) attribute EFL learners’ poor metaphorical proficiencies to the inadequate teaching of polysemous words. They argue that language courses aim at developing the students’ linguistic and communicative competencies and not their metaphorical proficiencies. Often, advanced L2 learners reach a stage where their discourse shows a high degree of verbal proficiency; however, it seems to be void of conceptual appropriateness that characterizes native speakers’ discourse. In other words, the learners’ discourse becomes characterized by, as Danesi (1992) put it, “an unusual degree of literalness” (p. 189).

Equally critical, attempts to teach polysemous words are sometimes doomed to failure (Tyler and Evans, 2004) as the different meanings are treated as *homophones* - an

¹ According to Nation (1990, 2001), deep knowledge involves knowing the word’s literal and metaphorical meanings, part of speech etc....

“unorganized list of unrelated meanings that are accidentally coded by the same phonological form” (p. 152). To illustrate this point, they give the following example of *over*:

- a. *The picture is **over** the mantle.*
- b. *The teller at the central bank switched the account **over** to a local branch.*
- c. *The film is **over**.*
- d. *Arlington is **over** the river from Georgetown.*

Tyler and Evans (2004, p. 152)

According to these researchers, modern foreign language teaching books and materials have failed to explain why the four different meanings found in the above sentences (a-d) are all associated with the form *over*. These meanings are usually taught in a *piecemeal fashion*, thus leaving the learners with a *fragmented picture* of a set of English vocabulary, feeling that the various uses of polysemous words meanings are arbitrary and idiosyncratic. Such a failure can be attributed to the adoption of traditional approaches of teaching polysemous words such as translation and memorization instead of the use of insights from cognitive linguistics.

Polysemous words teaching and learning in the UAE, the focus of the current study is not significantly different from other EFL contexts. English language learners in the UAE only seem to have a superficial knowledge of the senses of polysemous words as an interrelated set of meanings (see section 3.2.3 for a critical evaluation of course materials used in state-sector schools in the UAE).

In an attempt to help EFL learners become aware of the mechanism underlying the meaning extensions of polysemous words, and to acquire the different senses of these words as an interrelated set, researchers and teachers have attempted, since 2004, to apply insights from cognitive linguistics. This paradigm has theoretically advanced accounts of the semantics of polysemous words (e.g., Johnson, 1987; Lakoff, 1987; Evans and Green, 2006), which can be used in the teaching of these words. In this context, few small-scale studies have used

conceptual metaphor and ²image schemas to help learners view the different peripheral meanings of a polyseme as motivated extensions derived from a core member (Csábi, 2004; Touplikioti, 2007; Morimoto and Loewen, 2007). These studies have tried to compare the effectiveness of the CL techniques with traditional approaches based on translation and memorization used in teaching polysemous words. While Csábi (2004) and Touplikioti (2007) found that the cognitive linguistics-based approach helped their experimental participants to assimilate polysemous words better than their control peers, who used a translation based and memorization approach, Morimoto and Loewen (2007) failed to find significant differences between both approaches. Also, while the data of her study confirms the beneficial influence of the cognitive linguistics pedagogy, Touplikioti (2007) could not offer conclusive evidence as to the primacy of this approach because other variables (which were not controlled) might have helped her experimental participants outperform their control peers. In fact, these studies neglect some of the learners' characteristics, which may have a big influence on vocabulary acquisition in general and polysemous words in ³particular. In this respect, Kojic-Sabo and Lightbrown (1999, p. 99), argue that "lexical learning is an on-going, life-long process" which is influenced by a number of variables including individual preferences, personality differences and motivational factors (Touplikioti, 2007, Boers and Lindstromberg, 2008).

The present research aims to apply insights from cognitive linguistics in learning polysemous words. In particular, to my best knowledge, this study is the first to use the insights of cognitive linguistics in an Arab EFL context. In order to help the experimental participants understand the underlying mechanism underlying the extension of polysemous words' meanings, the instructional treatment will heavily rely on image schemas and to a lesser extent on conceptual metaphors. I will also address some of the pitfalls of previous studies such as their small-scale nature and the ignorance of some of the learner characteristics (for a survey of these studies, see chapter 3).

In the study, I teach polysemous words strategically over a period of two months, taking into account the participants' cognitive approach to carrying out different mental tasks,

²Apart from Morimoto and Loewen (2007), the other researchers used graphic illustrations to help their learners better understand the relationships between the core, literal meaning of a polyseme and its derived metaphorical senses.

³ Cognitive linguistics pedagogy relies heavily on image schemas, a dimension that may require learners to be good at thinking in pictures instead of words.

as well as their vocabulary learning strategies. This will, I hope, be an improvement to the previous studies and make my findings applicable to teaching polysemous words both in Arab, as well as general, EFL contexts.

1.2 Significance of the study

By researching the applicability and the effectiveness of the insights of cognitive linguistics in teaching polysemous words and by verifying the hypotheses and answering the questions of the thesis, this study will try to help teachers and Arab EFL learners (and learners in comparable situations) better deal with polysemous words, and thereby improve the learners' overall language proficiency.

First, it will attempt to provide teachers with pedagogical methods that can be used in the instruction of a set of high frequency lexical items which were previously assumed too complicated to teach. Second, it is an attempt to show that polysemous words, previously considered too difficult to understand, can in fact be easy to comprehend and retain. Also, the intended treatment attempts to engage learners in deciphering and retaining a wide array of meanings related to polysemous word prototypes. This helps the learners capture a unified picture of some of the pivotal elements of the English language. The anticipated findings of the research may lead to the inclusion of activities based on cognitive linguistics relevant to the teaching of polysemy in new teaching materials in the UAE and in other comparable EFL contexts.

1.3 Overview of the chapters

The study consists of seven chapters, divided into two main parts. The first is about the theoretical base of the thesis (chapters 2 and 3) and the second is concerned with the experimental study (chapters 4 to 7).

In **chapter 2**, I will look at some of the theoretical aspects of the thesis. In the first section, my focus is on the key concepts of Second Language Acquisition (SLA) and the central issues pertinent to vocabulary teaching and learning. Section 2 will address approaches to the teaching of polysemous words. Initially, I will elaborate on the main assumptions cognitive linguists offer about language and its relations to the mind and the physical world. Subsequently, I will go into greater details with the theories of cognitive linguistics and explore the possible pedagogical applications these insights might have for vocabulary learning and teaching in general and for polysemous words in particular.

In **chapter 3**, I will show in section 1 how research into polysemy has witnessed a new era with the advent of cognitive linguistics in the 1980s. Additionally, I will review a number of different approaches to polysemy proposed by structural linguists, lexical semanticists and cognitive linguists. Section 2 deals with vocabulary teaching and testing in EFL contexts in general and polysemous words in particular. More specifically, I will explore the teaching of polysemous words in EFL contexts in general, and the context of the UAE in particular. I will also survey some of the studies that have applied insights from cognitive linguistics in the teaching of polysemous words. Last, I will look briefly at how vocabulary can be assessed. In doing so, the criteria necessary for test validity and reliability will be discussed, and the different vocabulary testing instruments will be investigated. Also, I will pay special attention to the measures used in assessing learners' depth of vocabulary knowledge. Additionally, I will report the findings of two widely-used testing books on standardized tests, TOEFL and IELTS, with the goal of showing how polysemous words are assessed in EFL contexts.

Chapter 4 deals with matters related to the participants and setting of the study and gives a detailed account of the instructional treatment. More specifically, I will define the treatment and elaborate on the two methods of instruction in accordance with which the polysemous words were delivered to the experimental and control groups. I will also elaborate on the sample lessons designed for the treatment. Subsequently, I will discuss the study pre- and post-treatment instruments and other issues pertinent to the study. Finally, I will explain the study stages and explore the methods of data analysis.

Chapter 5 examines the study results which are drawn from the statistically computed tests and questionnaires of the study. More specifically, I will analyze the data collected from the study tests and questionnaires, report the main results and compare the figures obtained by the experimental and control groups.

Chapter 6 is concerned with the discussion of the main research hypotheses and questions of the study in light of my findings. More specifically, I will check if my data confirm or refute the hypotheses, and I will consider the additional research questions of my study. In this respect, I will try to see the extent to which the experimental learners succeeded in implementing the taught strategy of inferring the meanings of polysemous words, and check whether there are any correlations between the effectiveness of the pedagogy of cognitive linguistics and the three of the learners' characteristics.

Chapter 7 is a conclusion to the thesis, where the main findings are highlighted and the pedagogical implications are proposed. Also, the limitations of the study will be discussed.

CHAPTER 2 KEY CONCEPTS IN L2 ACQUISITION AND COGNITIVELINGUISTICS

This chapter deals with the literature pertinent to the theoretical aspects of my study. Section 1 will be about the key concepts and central issues of second language acquisition (SLA) and section 2 will investigate the main tenets of cognitive linguistics and their pedagogical implications in teaching polysemous vocabulary.

2.1 Second Language Acquisition: Key Concepts and Central Issues

Introduction

This section focuses primarily upon SLA key concepts and central issues pertinent to the interests of this research project.

The discussion of the first key concept, vocabulary knowledge construct, in the first part of this section, is mainly based on the four-dimension framework suggested by Chapelle (1994) and on Nation's (1990, 2001) work. Acquisition and learning would make the second key concept where I discuss the notions of acquisition and learning, as well as those of direct and indirect vocabulary learning. Following this, I go through the most current theories on cross-linguistic influence/transfer in an attempt to find out how the linguistic and/or cultural differences between L1 and L2 languages make certain polysemous words more/less difficult to learn and retain. In the second part of this section, I dwell upon language-based as well as cognitive accounts of SLA, and show how tenets of the cognitive linguistics paradigm, employed in this study, mark a departure from behavioral accounts of language acquisition and traditional formal linguistics.

2.1.1 Key Concepts in SLA

A. Vocabulary Knowledge Construct

There seems to be a resurgence interest in vocabulary research in the last two decades. Advocates of this new wave argue that if learners want to attain a high level of proficiency, they should have a good command of the vocabulary, in the expanded sense of words and

phrases, a pivotal construct of language proficiency (Boers and Lindstromberg, 2008). Such a renewed interest is clearly manifested in the plethora of articles and studies oriented towards exploring the different facets of vocabulary knowledge of native speakers and English language learners.

A range of researchers and theorists (Anderson and Freebody, 1981; Chapelle, 1994; Read, 2000, 2004 & Staehr, 2009) argue that vocabulary knowledge is a complex and multifaceted phenomenon. This complexity is echoed in, quoting Staehr (2009), “the lack of consensus on the manner by which to capture the multidimensional nature of vocabulary knowledge” (p. 579). Chapelle (1994), for instance, suggested a four- dimension vocabulary knowledge frame as part of a larger three-component model of vocabulary ability. This model has, as Read (2000) put it, “received the most attention from applied linguists and second language teachers” (p. 31), so I find it important to go into greater detail with Chapelle’s dimensions in what follows.

Chapelle’s definition of vocabulary knowledge and fundamental processes is multifaceted as it includes four dimensions: (1) vocabulary size, (2) knowledge of word characteristics, (3) lexical organization, and (4) fundamental processes.

The first dimension, vocabulary size or breadth of knowledge as is commonly referred to in the field of vocabulary research, is defined as “the number of words for which the person knows at least some of the significant aspects of meaning” (Anderson and Freebody, 1981, pp. 92-93). This, as Daller, Milton and Treffers-Daller (2008) point out, “would include the *Form* and the *form and meaning* elements of Nation’s table” (p. 7).

The number of individual words a learner has is significant in the sense that the larger the learner’s vocabulary size is, the more proficient he or she will be. Large vocabulary size is a prerequisite for lexically competent learners (Meara, 1996). Given its importance, researchers have designed different tests to assess the learners’ vocabulary breadth (e.g., the Vocabulary Levels Test (Nation and Laufer, 1990) and the Eurocentres Vocabulary Size Test (Meara and Jones, 1990)). In this context, while Nation (90) thinks it is possible to estimate the learner’s vocabulary size in an absolute sense, Chapelle (1994), abiding by an interactionalist definition of vocabulary, suggest that “vocabulary should be defined (and assessed) with reference to particular contexts of vocabulary use” (p.165).

Although tests of vocabulary breadth can estimate the learner's vocabulary size, they fall short of determining how well he or she knows individual words. Such a pitfall is tackled by tests addressing the depth of vocabulary knowledge.

The second dimension, knowledge of word characteristics (Chapelle, 94), is defined as the quality or depth of understanding individual words or, as some researchers put it (e.g., Nation, 2001, p.354), how well particular words are known (Read, 2004). This aspect of vocabulary knowledge can be assessed through testing the learners on the elements of *concepts and referents, associations, grammatical functions, collocations and use* from Nation's table (Nation, 2001, table 4.1, section 4 of this chapter).

Vocabulary knowledge Chapelle's third dimension is the lexical organization which refers to "The way morphemes and words are represented in the mental lexicon, as well as the way they are connected to one another by, for example, semantic and phonological features" (Chapelle, 1994, p. 165).

While the previous dimensions are concerned with the acquisition of individual words, this construct looks into associations and referential links between the to-be-learned words and old words in the mental lexicon (Read, 2004). Chapelle (1994) suggests that vocabulary organization would be subject to change during the learner's vocabulary development.

The fourth and last facet of vocabulary knowledge in Chapelle's framework (1994) refers to a set of fundamental processes learners apply to have access to their knowledge when they speak, write, and understand English. According to Chapelle (2004) these processes include

attending to relevant vocabulary feature in written or spoken input, encoding phonological and orthographic information into short memory, accessing structural and semantic properties from the lexicon, integrating the semantic content of the word with the emergent semantic representation of the input text, and parsing words into their morphological components and composing words morphologically(p. 166).

According to Read (2000), unlike native speakers, who show fastness and automaticity in word recognition and use when applying these fundamental processes, EFL learners are

slower and less fluent due to gaps into their vocabulary knowledge and insufficiently-organized mental lexicon.

Examining the ways vocabulary is gauged these days (compared with the traditional tests of the 1980's), the aspects of vocabulary knowledge explored by Nation (1990), Chapelle (1994) and others have spurred teachers and vocabulary researchers to go beyond the conventional vocabulary tests in an attempt to come up with assessment measures that can test not only the size of vocabulary knowledge learners have, but also the quality and the depth of this knowledge (see chapter 3 on vocabulary and polysemous words teaching and testing).

B. Acquisition and Learning

Acquisition and learning are best discussed in relation to Krashen's Input Hypothesis Model (1985). Krashen's theory consists of five interrelated hypotheses: input, acquisition-learning, monitor, natural order, and affective filter (Krashen, 1985). According to the acquisition-learning hypothesis, adult second language learners develop second language knowledge in two ways: 'acquisition' and 'learning'. According to Krashen (1985), learners *acquire* as they are exposed to understandable samples of target language or what he calls *comprehensible input* without paying attention to language form in the same way children pick up their first language. However, second language learners *learn* by attending to form, figuring out rules, and being aware of their learning process.

Krashen (1985) claims that those who gain knowledge about the target language via 'acquisition' outperform those who internalize the target language through 'learning'. In his view, learning cannot be converted to acquisition (a position known as the *non-interface position*); however, knowing the rules of the target language helps the learner supplement what has been internalized via acquisition. For this reason, the emphasis of second language teaching should be on creating conditions for 'acquisition' rather than 'learning'.

While Krashen's claim about the existence of acquired knowledge and learned knowledge is not an issue of dispute among researchers, his insistence on the separation of these two types of knowledge and his claim that "learned" knowledge cannot be converted into "acquired" knowledge is controversial (Ellis, 1994). Bialystok's (1978) theory of L2 learning, for instance, allows for an interface between both types of knowledge in that what is

learned explicitly can be converted into implicit knowledge via formal practicing (Bialystok, 1978).

C. Direct and Indirect Vocabulary Learning

Direct and indirect vocabulary learning have been at the centre of a fierce debate across different theories of second language instruction (discussed in detail by Zimmerman, 1997) ranging from ardent supporters of direct method to fervent advocates of indirect vocabulary learning. These two extreme views are compromised by a third view claiming that, quoting Nation (1990), “there is a place for both direct and indirect vocabulary learning” (p. 3).

Indirect vocabulary learning, as being advocated by The Natural Approach developed by Krashen and Terrell (1983), is a method where the learner’s attention is focused on comprehensible, meaning-focused input that should be interesting and relevant. Krashen and Terrell (1983) argued that vocabulary teaching activities “are not necessarily vocabulary builders. Students’ attention is not on vocabulary learning per se but on communication, on the goal of an activity. In this way we encourage true vocabulary acquisition” (1983, p. 156). This communicative, meaning-centered approach can reach its optimal value if learners are engaged into extensive reading. This view, where learners should not worry about vocabulary because it will take care of itself, was challenged on many fronts paving the way to the direct vocabulary learning method.

In the direct method, learners’ attention is directed towards activities that focus on vocabulary building, guessing words from context, and learning words in lists. This approach is advocated by Nation (2001) and Laufer (2005) who believe that vocabulary should be deliberately targeted for instruction (Boers and Lindstromberg, 2008).

Nation (2001) argues that there is growing evidence that learners benefit if there is an “appropriate amount of usefully-focused deliberate teaching and learning of language items.[...] This means that a course should involve the indirect teaching of vocabulary and the direct learning and study of vocabulary” (p. 2). In other words, after the initial encounter with the targeted word, teachers should provide opportunities for their learners to repeatedly meet it in use in different contexts, which makes the process of learning any word gradual and cumulative (Nation, 2001).

Working from a similar point of view, and in order to account for her viewpoint, Laufer (2005) surveyed a series of empirical investigations in favour of teaching vocabulary implicitly and showed that not one of their assumptions is reliable. She found out, for instance, that guessing word meanings from context becomes difficult, if not impossible, if learners do not have certain level of proficiency. More importantly, to attain good proficiency, learners should have knowledge of low frequency words which “by definition unlikely to recur often enough in an entirely communicative, task-based setting for adequate incidental learning to take place” (Boers and Lindstromberg, 2008, p. 5).

D. Language Transfer

As the main intent of the present study is to discuss vocabulary issues and particularly polysemous words instruction, I will investigate the degree to which the L1 lexicon influences L2 learning. This is generally referred to as *lexical transfer* (Lado, 1957; Odlin, 1989; Swan, 1997, Arabski, 2006). In this section, I define language transfer, review the most common types of errors resulting from this phenomenon, and highlight the *language-related* as well as the *non-structural factors* affecting the intensity of lexical transfer (Gabrys-Barker, 2006, p. 144).

Odlin defines language transfer as “the influence resulting from similarities and differences between the target language and any other language that has been previously (and perhaps imperfectly) acquired” (1989, p. 27).

Researchers have identified two types of transfer, positive and negative transfer. Odlin (1989) states that comparisons of the learner’s L1 and L2 often yield cross-linguistic similarities that can produce positive transfer in many ways. As far as vocabulary is concerned, he argues that “similarities between native language and target language vocabulary can reduce the time needed to develop good reading comprehension” (1989, p. 36). For example, a French-speaking English learner will find it easy to learn the words ‘justify’ in English as the form of French *justifier* and English *justify* are considered as vocabulary cognates. Other researchers echoed this positive effect of lexical similarity on the vocabulary acquisition and use. For instance, in comparison of the success of Arabic- and Spanish-speaking students on an ESL test, Ard and Homburg (1983) found that the former group did not do as well as the latter because Arabic does not share nearly as many cognates with English as Spanish does.

Contrary to this, findings from studies conducted by Kellerman (1978, 1984, 1986) show that sometimes native speakers are reluctant to transfer their L1 knowledge even when the two languages are very similar.

In 1978, Kellerman studied the polysemous Dutch word *breken* (to break) with an aim to examining (1) the way the primary and derived senses making the *breken* category are ordered in the native speaker's mental lexicon and (2) the relationships between these senses and their potential transfer to English and German. By *transferability* Kellerman (1986) means "the probability assigned by each of these senses [making up the category of *breken*] that they could be presented in English (or German) by the primary counterpart of *breken*, namely *to break* (or [zer] *brechen*)" (1986, p. 37)". It was postulated that the senses of *breken/break* as contained in (a) and (b) are more related to the primary sense than other concrete and metaphorical senses as represented by (c) and (d) and therefore are more transferable.

- (a). *She broke his leg.* (prototypical, literal)
- (b). *The accident left him broke.* (metaphorical)
- (c). *The waves broke on the shore.* (prototypical, literal)
- (d). *The tree broke his fall.* (metaphorical)

Kellerman (1986, p. 38)

However, it was found that "the arrangement of senses along the 'concreteness' or 'imagery' dimension showed virtually no correlation with the transferability judgements" (Kellerman, 1986, p. 38). As a result similarity, i.e. the existence of equidistant meanings from the prototypical sense according to some attributes (e.g. shape or function) was shown to be insufficient in predicting transferability.

In subsequent studies (1984, 1986), Kellerman shows that two major factors interact in the determination of transferable elements: learner's perception of *L1-L2 distance* and the degree of *markedness* of an L1 structure. In Kellerman's framework, the parts of one's language that native speakers consider "irregular, infrequent, or semantically opaque" (Gass, 1996, p. 325) are *highly marked* and have slim chances of being transferred to L2. In the 'eye' experiment, Kellerman (1986) found that the sense of *eye* contained in (e) has more chances of being transferred to L2 than (f) because it is more frequent in everyday language.

- (e). *The eyes on the peacock's tail are beautiful.*
- (f). *The eye of the needle is difficult to see.*

Kellerman (1986, p. 38)

In Kellerman's framework, *frequency* should be taken into consideration, together with similarity, in determining the *transferability* potential of any lexical item or linguistic structure.

Concerning negative transfer, Odlin (1989) defines it as cross-linguistic influence bringing about production errors and "other effects that constitute a divergence between the behavior of native and non-native speakers" (p. 167). He classifies these production errors into four categories: *Underproduction, overproduction, production errors, and misinterpretation*.

Underproduction (1), according to Odlin (1989), occurs when learners produce very few examples of a target language structure. Avoidance (where learners avoid using certain structures specific to the target language) is a good example of this category. Researchers found that relative clause structures, for instance, are not popular among Chinese and Japanese students' English speech and writing because they find them difficult to produce Schachter (1974).

In a comparative study on the adequacy of contrastive analysis *a priori* and contrastive analysis *a posteriori* approaches in accounting for target language learning problems, Schachter (1974) found that the Chinese and the Japanese learners of English avoided using relative clauses because they had difficulties with them.

In her study, Schachter (1974) compared the major "restrictive relative clause formation (RCF)" (p. 207) of four different groups of foreign students, namely Arabic, Persian, Chinese, and Japanese. Schachter (1974) examined 50 compositions from each of these groups, and extracted all of the relative clauses and analyzed them with respect to these criteria:

Dimension 1: Position of relative clause with respect to the head noun.

Relative clauses in Chinese and Japanese occur to the left of the head NP, whereas in English, Persian and Arabic, they occur to the right of the NP.

Dimension 2: How relative clauses are marked.

Just like English, which uses *that*, three of the other four other languages involved in the study use subordination markers between the head NP and the relative clause. Persian uses *ke*, Arabic uses *alladhi/allati* and Chinese *de*. However, English differs from these languages in the use of the pronominal article *who, whom, which, whose*.

Dimension 3: the occurrence of pronominal reflex. While English does not have these pronouns, the other four languages have. For example, in Arabic, we can say *the boy I sat near him was my cousin*.

After analyzing the learners' errors with respect to these dimensions, Schachter (1974) found that the Chinese and Japanese learners generated fewer relative clauses in English, 76 and 63 respectively, compared with Arab and Persian learners, 154 and 174 respectively. Schachter (1974) explained that this happened because the Chinese and Japanese learners "are trying to avoid them [relative clauses], and that they only produce them in English when they are relatively sure that they are correct" (p. 210). This avoidance phenomenon was not seen in the case of Arab and Persian learners because they found the RCF in English to be similar to that of Arabic and Persian languages, especially at the levels of the position of the relative clause and the use of subordination markers.

According to the researcher the Japanese and Chinese learners resorted to avoidance because the construction of relative clauses in their native languages is different from that of English especially at the level of the first and third dimensions, and this created a source of difficulty for them. Schachter (1974) concluded that "if a student finds a particular construction in the target language difficult to comprehend it is very likely that he will try to avoid producing it" (p. 213).

While Odlin (1989) attributes this sort of error to language *distance only* (the degree of similarity between two languages at the level of words and structures), others have found that cultural distance (the degree of similarity between two languages at the level of semantic concepts) plays a significant role as well. Swan (1997) argues that language distance and cultural distance can greatly affect target language learning of new words and the semantic concepts embodying them, especially if the learner's L1 is culturally different from the target language. As a way of example, a Hungarian learner will find it more difficult to learn Chinese as his/her mother tongue and the target language are quite different at the level of the writing system and some of the concepts that are specific to the Chinese language and culture (Swan, 1997, p. 164). At this level, learners may avoid using the new words embodying the different concepts that do not exist in their L1.

Overproduction (2) is situated at the other extreme of the transfer error continuum and is sometimes seen as the consequence of underproduction. For example, in their attempt to avoid relative clause structures, Japanese and Chinese students may overuse the use of simple sentences (Odlin, 1989). As a result they produce an unordinary style of expression, incongruent with the norms of the written prose in English.

Production errors (3) are found in speech and writing and are caused by the existence of similarities and differences in the native and target languages. A notorious example of such are ‘calques’ which Gabrys-Barker (2006, p. 145) defines as, the “literal translations of complex words or phrases”. In their studies on lexical transfer, Ringbom (2001) and Gabrys-Barker (2006) observed this type of error in their participants’ writings. Likewise, Fantini (1985, cited in Odlin, 1989, p.37) noticed this type of production error in speaking. The following sentence was spoken by a Spanish-English bilingual child:

- (1) *Vamosrapido a poner el fuegoafuera.*
Let us quickly to put the fire to outside.
“let us quickly put the fire outside (the house).”

The error stems from the child’s literal translation of the English expression *put the fire out*, which normally translates into Spanish as *extinguir el fuego*.

Ringbom (2001) and Gabrys-Barker (2006) observed other form-related production error types such coinages and deceptive cognates. According to Ringbom, coinages arise from “insufficient awareness of intended linguistic form, instead of which (a modified form of) an L2 word is used” (2001, p. 65). As a result, non-existent (*foreignised*) words in the target language are created. Deceptive cognates, however, stem from the existence of the “faux amis”, the “false friends” in the learner’s mother tongue and the TL. The forms of French *prévenir* ‘to warn’ and English *prevent* is a good instance of deceptive cognate relation.

Misinterpretation (4) arises from differences in the native and target languages word-order patterns, grammatical structures, and cultural assumptions. Research shows that different cultures have different ways of expressing politeness and different levels of directness in their requests (Odlin, 1989). German native speakers, for instance, are found to be more direct in requests than the British. They, according to Odlin (1989, p. 51), “show a strong preference for modal forms suggesting a sense of obligation, as in *Du solltest das Fensterzumachen* (“You should close the window”), whereas English speakers prefer modal forms with a weaker force, as in *Can you close the window?*”. So, misinterpretation may occur if a German learner transfers his/her politeness norms to the target language, and “what constitutes a proper request in one culture may seem very rude in another” (1989, p. 49).

As it is beyond the scope of this literature review to provide a detailed account and examples of the errors resulting from these variations, I will focus on the third category

(production errors) as it might help me give explanations for the errors occurring in the data I have collected. According to Odlin (1989), culturally specific knowledge can affect not only the comprehension, but also the production of discourse” (p. 61). When American and Indian students were asked to read English passages about two wedding parties, one in the USA and the other in India, researchers found that the subjects spent less time to read about the wedding that was more familiar to them and proved to be more able to recall the gist of the wedding they know best (Odlin, 1989). At the level of production errors stemming from misinterpretations, researchers found that students can recollect and write more about a story they are familiar with than a story that is about events happening in a different culture (Odlin, 1989). Lado (1957, p. 2) argues that “individuals tend to transfer the forms and meanings, and the distribution of forms and meanings of their native language and culture to the foreign language and culture”. Accordingly, language transfer involves a great deal of culture transfer, a phenomenon which is present in the learners’ speech and writing.

So far, the above discussion has provided examples of errors caused predominantly by *language-related factors* in the form of dissimilarities between the native and the target language (TL). However, for a clearer image of transfer errors, one has to consider *non-structural-factors* on which the intensity of transfer sometimes depends. The following factors are found to interact with transfer in many studies on lexical transfer: the stage of interlanguage development, the learner’s age, and the quality of input are examined here.

Starting with the stage of interlanguage development, Pienemann et al (2005) maintain that L1 grammar cannot be transferred entirely because of processing constraints. They assume that transfer is developmentally moderated, which means that it is sensitive to the developmental stage of the learner’s language, and accordingly not everything is transferred from the outset. This principle is best manifested in the case of Polish-English interlanguage where Arabski (2006) observed that:

Negative transfer does not occur at the beginning of the English learning process, at the stage of imitation. It then becomes frequent until at the advanced level it starts to decrease. It decreases when L2 structures are well established and have become resistant to L1 Influence (p. 14).

Secondly, the age of learners determines the intensity of transfer. Arabski (2006) argues that transfer doesn't abound in children as their fragile L1 system is too weak to have an impact on the new L2 structures, consequently "young learners, especially children before puberty, naturally acquire a second language without much influence from L1" (p.14).

Finally, the quality of the L2 input learners are exposed to determines transfer occurrence and frequency. In many EFL classrooms, L2 learners rely on transfer due to either the language-related and non-structural factors discussed above or the teachers' ignorance of transfer and the learners' cultural and educational backgrounds. Knowing the students' L1, the teacher can help them avoid many transfer errors, an opinion which is echoed in Odlin's seminal work *Language Transfer* (1989). For example, in Arabic we say *تونس فيكم رحبا* a word-for-word translation to which is "welcome *in* Tunisia", so, in this case, if the teacher does not draw the learners' attention to the differences in saying this in English in the English way "Welcome *to* Tunisia", the student will fall back on what he/she knows from his/her L1 and resorts to word-for-word translation and translates the phrase with *في* 'in' into English as *in* instead of *to* as this phrase necessitates.

Equally important, Danesi (1992) and Mohammed (2002) argue that transfer errors occur because language courses aim at developing the students' linguistic and communicative competencies and not their metaphorical proficiencies. Often, advanced L2 learners reach a stage where their discourse shows a high degree of verbal proficiency, however, it seems to be void of conceptual appropriateness that characterizes native speakers' discourse. In other words, the learners' discourse becomes characterized by, as Danesi (1992) puts it, "an unusual degree of literalness" (p. 189) or full of conceptual mistakes as L2 learners will think in their L1 conceptual system and speak or write using formal structures of the TL. As a way of example, writing an essay about friendship on the final exam, an Arabic-speaking female student wrote in her essay "Your fingers aren't of the same length" to show that not all her friends have the same value and importance and some friends are more faithful than others. However, the marker (an American native speaker) couldn't understand this saying as it is seemingly an Arabic-specific idiom, following the classification of Mohammed (2002). This transfer error is due to the fact that the student used the TL words as carriers of her own language-specific saying, resulting, thus, in a conceptual transfer error.

To sum up, while similarities between L1 and TL can sometimes facilitate L2 learners' journey towards the target language, the dissimilarities between these two can confuse L2

learners and push them to use transfer in speech and writing in a negative way and make mistakes such as those discussed above. However, the teachers' awareness of the language-related and non-structural factors related to these transfer errors may help L2 learners minimize the negative influence of their L1 on their L2 learning journey.

2.1.2 The Language-based and the Cognitive Accounts of SLA

This sub-section looks at some of the main assumptions underlying the language-based and the cognitive chief SLA issues. The applications of these theories' insights into vocabulary teaching in SLA will be exemplified in section 2.

A. The Language-based Account of SLA

The Language-based account of SLA is embodied most notably by Chomsky (e.g., 1965, 1981, and 1995). This approach is primarily concerned with human language in general and not second languages per se. Its main goals, as stated by Chomsky (1986), are to answer three basic questions about human language:

1. What constitutes knowledge of language?
2. How is knowledge of language acquired?
3. How is knowledge of language put to use?

The answers of these questions (see Chomsky, 1986) reveal that this language-based account of SLA, often referred to as Universal-Grammar based approach, puts the emphasis chiefly on the language dimension of second language learning. In so doing, it tries to depict the subconscious mental representation of language that underlies all language use. It aims, quoting Mitchell and Myles (2003), "to define what all human languages have in common, as well as the distinctive characteristics that make human language different from other systems of communication" (p. 54). Also, language-based account of SLA adopts a modular view of mind, in that it sees language faculty as an innate, separate endowment, distinct from other kind of cognition, which helps children, acquiring their first language, not only create a mental representation out of the input they are exposed to, but also go beyond it (Mitchell and Myles, 2003).

One more central issue is that the linguistic-based approaches to language study treat the components of the language faculty such as phonology, semantics, syntax, and others as distinct areas leaving little basis for generalization or interrelations between them. (Evans *et al* 2004).

When the linguistic-based approaches to language are applied to the context of SLA, learners are faced with the same problem of language learning in that they have to construct a grammar of the second language on the basis of limited sample of input. It's arguable, in this respect, that linguistic-based theorists were interested primarily in competence i.e., in the linguistic system underlying second language grammars and in its construction.

As for the language learner, this approach focuses only on the learner as the possessor of the mind that contains language and not as a social being. Again language is studied separately from a purely linguistic point of view where its sociolinguistic features are ignored (Mitchell and Myles, 2003).

This grammar-based approach is often criticized for focusing on competence and neglecting performance (e.g., the social aspect of interaction, etc...). Second language acquisition research adopting the Generative Grammar model is criticized for being "mainly syntactic in nature, abstracted from social and functional considerations." (Pütz 2007, 1141). Also, this approach does not give a convincing account of how learners access the linguistic knowledge or what they use as strategies when their incomplete linguistic system fails them. More importantly, the Universal theorists have not accounted for the superiority of some learners over others in learning languages though all of them are endowed with the same mechanism of language acquisition. These issues, among others of course, are at the core of the cognitive linguistic theories (Mitchell and Myles, 2003).

B. The Cognitive Account of SLA

The cognitive linguistics theorists draw their hypotheses from the study of the field of cognitive psychology and neurology and, contrary to Universal Grammar, from what is known about the acquisition of complex procedural skills in general.

The central issues discussed in this section come from cognitive theorists belonging to two approaches, processing and emergentist or constructionist approaches.

Processing approaches led by Pienemann (1998, 2005) are concerned with how second language learners process linguistic information and how their ability to process the second language grows over time. In this theory and model of SLA, Pienemann (1998) argues that language acquisition should be seen as the acquisition of procedural skills needed in the processing of the language, and the main aim of his theory is to show the order these “skills develop in the learner” Pienemann (1998, p. 5). The core of the Processability Theory is that these language-specific resources are interconnected in two ways. (1) “they feed into each other in the temporal event of language generation” (Pienemann, 2012, p. 12) i.e. they are organized according to their sequence of activation and one is used before the other. (2) They follow an “implicational pattern in which each procedure is a necessary pre-requisite for the following procedure” Pienemann (1998, p. 8). The processing procedures and routines below form the order that underlies Processability Theory.

1. Lemma access
2. The category procedure
3. The phrasal procedure
4. The S-procedure
5. The subordinate-clause procedure

Pienemann (1998, p. 7)

According to Processability Theory a lemma/word needs to be learnt before its grammatical category is allocated, and the grammatical category of a word is required before a category procedure can be assigned.

Since 1998, many theoretical changes have been suggested to improve the Processability Theory in response to critiques and requirements coming from the application of the framework to different languages (Pienemann, 2012, p. 1).

As far as emergentism is concerned, emergentist approaches to language stand in opposition to theories of language that suggest that language is driven by an innate faculty, and hold that language acquisition is a result of non-linguistic factors and their interactions (O’ Grady, 2012). Accordingly, a range of features come into play when language is acquired. These factors range “from features of physiology and perception, to processing and working memory, to pragmatic and social interaction, to properties of input” (O’ Grady 2012, p. 1). Emergentists view learning, quoting Mitchell and Myles (2003), as

the analysis of patterns in the language input, and language development is seen as resulting from the billions of associations which are made during language use, and which lead to regular patterns that might look rule-like, but in fact are merely associations (p. 98).

Learning happens when the learner makes associations, and associations are possible only via exposure to repeated patterns. Emergentists argue that the strength of associations depends on their occurrences.

According to Gass and Selinker (2008), the formation of new associations permits new links to be created between “larger and larger units until complexes of networks are formed” (p. 220). The knowledge that comes out of these associations is seen as “a network of interconnected exemplars and patterns, rather than abstract rules” (Gass and Selinker 2008, p. 220). N. C. Ellis (2003) argues that the processes of moving from unanalyzed exemplars (words, formulae, chunks) to abstract generalizations are at the core of SLA.

The nature of the resulting knowledge that comes out of the learner’s exposure to language, however, is still subject to disagreement among the emergentists. Also, what remains unresolved in this theory of language acquisition is “the variation with respect to the exact relationship that is assumed to hold between learning and relative frequency in the input” (O’ Grady 2012, p. 3).

Emergentist or constructionist as well as processing approaches paradigms have a common factor as they are both concerned with the way in which the brain’s processing mechanisms deal with the second language.

Within the framework of the processing paradigm, McLaughlin (1987) argues that:

second language learning is viewed as the acquisition of a complex cognitive skill. To learn a second language is to learn a *skill* because various aspects of the task must be practiced and integrated into fluent performance. This requires automatization of component sub-skills. Learning is a cognitive process, because it is thought to involve internal representations that regulate and guide performance.

(McLaughlin, 1987, pp. 133-4)

Learning in this view is that simple processes can lead to complex behavior via automatization- the movement from controlled to automatic processing via practice. This view is also advocated by Anderson's Adaptive Control Thought Model (ACT) (1985). He argues that *declarative knowledge*, which refers to the knowledge of facts and thoughts, transforms to *procedural knowledge* which refers to the knowledge of *how* to do something. The notion of step-by-step nature of learning expressed in McLaughlin and Anderson's model is a feature of Pienemann's (1998) Processability Theory discussed above.

It is worth noting that, unlike Chomsky's purely linguistic knowledge theory, Pienemann's (1998) paradigm necessitates a theory of grammar and a processing component for an understanding of SLA to take place.

Summary

In spite of the wealth of SLA studies carried out from the perspectives of these linguistic-based and cognitive approaches, these paradigms are criticized by cognitive linguists for their fragmentary views of language. Cognitive linguistics which is an innovative school of linguistic thought and practice, however, is comprehensive in that it is "concerned with investigating the relationship between human language, the mind, and socio-physical experience" (Evans, V. ; Bergen, B. K. ; and Zinken, J. , 2006, p. 1). In terms of language learning, cognitive linguistics attempts to afford a "satisfying conceptual integration of the structural and social aspects of language acquisition" (Achard 1997, p. 159). In what follows I will dwell upon cognitive linguistics tenets and their pedagogical implications.

2.2 Cognitive Linguistics and its Pedagogical Implications

The present section is central to my study as it addresses issues closely related to the approach I adopted in the teaching of the polysemous words for the experimental group (see Methodology Chapter 3 for treatment).

I begin by elaborating on three chief assumptions cognitive linguists propose about language and its relations to the mind and the physical world, and then I go into greater details about the cognitive linguistics theories based on them. After outlining the theoretical insights embraced by cognitive linguistics, I explore the possible pedagogical applications these insights might have for vocabulary learning and teaching in general and for polysemous words in particular.

2.2.1 Cognitive Linguistics

A. Key Claims

Cognitive linguistics is a relatively novel school of linguistics that appeared in the early 1970's, partly out of some linguists' dissatisfaction with the formal accounts of language and thought (Holme, 2009). It is also strongly grounded in work related to modern cognitive science such as *Human Categorization*, and in earlier traditions like *Gestalt psychology* of the 1970s and 1980s (Evans and Green, 2006, p. 3). With the appearance of the journal of *Cognitive Linguistics* in 1990, we witnessed, in the words of Langacker, "the birth of cognitive linguistics as a broadly grounded, self-conscious intellectual movement" (2002, p. xv).

Cognitive linguistics is often referred to as a *movement* or *enterprise* as it is a paradigm that has embraced a "common set of guiding principles, assumptions, and perspectives which have led to a diverse range of complementary, overlapping (and sometimes competing) theories" (Evans and Green, 2003, p. 3).

In order to understand the nature character of cognitive linguistics, I will go through the assumptions on which most of its complementary theories of language are based. In doing so, I will try to show how this framework departs from formal approaches to language and thought and how it breaks, at this level, with generative linguistics and other well-known models of language.

(1) No special-purpose Language Acquisition Device (LAD)

While generative linguistics led by Chomsky (1965) postulated that the human mind is endowed with a LAD which is *walled off from the rest of cognition*, cognitive linguistics "argues that cognitive processes governing language use and learning are essentially the same as those involved in all other types of knowledge processing" (Littlemore, 2009, p.1).

(2) Language knowledge and learning are usage-based

cognitive linguists argue that language acquisition should be understood from a usage-based perspective as, borrowing Evans and Green's words, "the extraction of linguistic units

or constructions from patterns in the usage events experienced by the child” (2006, p. 111). The idea of the extraction of language knowledge from language use is obvious in cognitive processing such as *construal and the construction of categories*.

According to Littlemore and Juchem-Grundmann (2010), *construal* “refers to the fact that we can perceive objects from different angles and in different ways” (p. 2). Languages use this process to describe different facets of the same phenomenon. Consider these two examples:

- a. In order to get to Austria from Belgium, we might drive *across* Germany.
- b. In order to get to Austria from Belgium, we might drive *through* Germany.

Littlemore and Juchem-Grundmann (2010, p. 2)

While these two sentences describe the same event, in (a) the focus is on the final destination of the journey, and in (b) the focus is on the journey itself.

The process of *construal* is also seen in the way we, sometimes, perceive and describe the same phenomenon in two different ways. For example, describing manner of motion differ from ‘satellite-framed’ languages to ‘verb-framed’ languages. In ‘satellite-framed’ languages such as English, the manner of motion is encoded in **the verb** (example 1), whereas, in ‘verb-framed’ languages such as Spanish, we focus more on the path of the movement and the manner is stated later (example 2).

1. We can *crawl* along the tunnel.
2. We move along the Tunnel in a *crawling* manner.

Littlemore and Juchem-Grundmann (2010, p. 2)

The way we perceive objects from different angles is also clear in the process of the construction of categories, which will be discussed later in this chapter.

(3) A set of cognitive processes are present in language learning and in other areas of cognition

This set of cognitive processes includes, according to Littlemore (2009), “comparison, categorization, pattern finding and blending” (p. 3).

(4) Universals in language are due to internal as well as external factors

Generative linguists argue that linguistic universals across languages exist because language is partly the product of internal abilities for grammar and semantic organization that are common to all human beings.

Cognitive linguists argue against this view and hold that universals in language stem from the perceptual and conceptualizing capacities humans share. More precisely, borrowing Evan and Green's words,

due to shared constraints, including environment, experience, embodiment, and perceptual apparatus, we can, and often do, conceptualize in fundamentally similar ways, regardless of language (2006, p. 98).

I will explore this in more detail later in "The embodiment mind thesis" sub-section.

(5) Language reflects some patterns of thought

Cognitive linguists argue that the *nature, structure and organization of thought* can be understood through the study of language (Evans and Green, 2006, p. 5). I will elaborate on this assumption in "The embodiment mind thesis" sub-section.

The above assumptions permitted cognitive linguists not only to come up with new concepts such as *embodiment* and *embodied schemas*, but also to revisit older concepts such as those of categorization, metaphor and metonymy. In what comes next, I will investigate these concepts, most of which cognitive linguists consider as the corner stones of cognitive linguistics.

B. Cornerstones of Cognitive Linguistics

There are many theoretical principles on which cognitive linguistics based its paradigm, but as some of these principles are out of the scope of my project, I will limit myself to the ones pertinent to my study (for all the principles, see Evans and Green (2006) and Littlemore (2009)).

(1) The Construction of Radial Categories

Polysemous words are treated in cognitive linguistics as radial categories with the most central meaning occupying the centre and more peripheral senses lying at the edge. Such centre-periphery relations are established thanks to the application of the concept of categorization, a concept which was newly revisited by cognitive linguists.

What is categorization?

Grouping things under specific categories is one of the first things we start doing since childhood in an attempt to make sense of and mentally organize the world around us. In Lakoff's words, "there is nothing more basic than categorization to our thought, perception, action, and speech" (1987, p.7).

According to the classical account of categorization, categories are rigid in the sense that all the properties defining a category must be shared by all the members, thus leading to the result that all the members are of equal status. In this way, most people would accept cats, dogs, and parrots as members belonging to the category of pets. However, this view was challenged by *the prototype theory* (will be explained later in more detail), which suggests that "categories are flexible and have fuzzy boundaries and some members are more prototypical/central than others" (Littlemore, 2009, p. 27). In this way some may consider the elephant as a pet, though it does not share many things with cats and dogs and is somehow less prototypical / central to pet category. According to the prototype theory, such a category, borrowing Littlemore's words "can be said to be a '*radial category*' as some of its members are somehow more central or prototypical than others" (2009, p. 27).

Also, while most of the research into categorization concerned itself with the domain of physical objects, cognitive linguistics geared it toward the world of spatial senses and their metaphorical extensions (Lakoff, 87), thus, allowing us to perceive certain lexical items as "natural categories of senses" (Lakoff, 1987, p. 418). Brugman's (1981) work on *over* is a fruitful applications of the notion of prototype theory into the treatment of polysemous words. I will dwell on this in more detail in the following subsections.

Categories can be viewed as integral parts of larger entities, which Gunter (2007) refers to as frames and domains.

Frames

As a definition, "frames are specific knowledge structures surrounding categories" (Gunter, 2007, p. 11). In categories, the parts of a thing are put next to each other because they cooperatively contribute to a whole well-structured entity. For example, the parts of a car such as the wheel, engine, body etc., are *conceptually integrated* with the body of the car, thus forming a *structured whole* (Gunter, 2007). When we think of a car category, pictures of other cars, belonging to the same category may come to our mind. Also, scenes pertinent to cars

such as driving and parking might be activated. Such a coherent *package of knowledge* that surrounds a category and is triggered by the word car makes the ‘car’ frame. The knowledge of a frame entails knowing the different parts that might constitute that frame, and shared knowledge of frames.

Domains

According to Gunter (2007, p. 11), “A conceptual domain is the general field to which a category or frame belongs in a given situation”. Often, conceptual domains allow frames to interact with each other via shared domains, as in the example below.

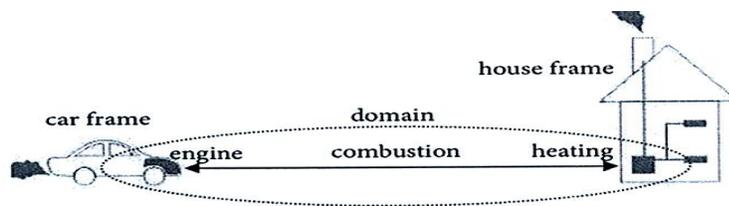


Figure 2. 1. Interaction of frames and domains (Gunter, 2007, p. 11)

Through the shared domain of combustion, both the car frame and the house frame are linked.

Lexical items as lexical categories

Unlike the classical approach to polysemy (see section 3 on polysemy) which failed to show that linguistic categories have prototype theory, the prototypical account led by Lakoff (1987) postulates that words can have one or more senses that are “central” or “more representative”. Consider the examples below:

1. The rocket went *up*. (spatial sense / at a higher level)
2. I’m feeling *up* today. (non-spatial / happy sense)
3. The bird flew *over* the yard. (spatial sense / above sense)
4. She has a strange power *over* him. (non-spatial / control sense)

The spatial senses are commonly considered as the more central, prototypical senses. The spatial *at a higher level* sense of *up* in sentence (1) for instance would be generally taken by most native speakers of English as the ‘better’ example of *up* than the *happy* sense in example (2). Based on these and other examples, Lakoff (1987) believes that less-prototypical, non-spatial senses (e.g. *happy and control*) are derived from more prototypical, spatial senses of polysemous words by virtue of various cognitive mechanisms that facilitate meaning extension, the most important of which are ⁴*image schema transformation* and ⁵*conceptual metaphor*. This explains how polysemy arises in the cognitive lexical semantics.

Like any conceptual category, the radial, linguistic category has structure. Borrowing Evan’s and Green’s words, “ more prototypical senses are ‘closer’ to the central prototype, while less prototypical senses are ‘further from’ the prototype” as shown in Figure 2.2 (Tyler and Evans, 2004, p. 272).

⁴Image schema transformations are cognitively founded operations changing the structure of the schema in a nonarbitrary way.

⁵Conceptual metaphors are part of the language system. They guide us in our understanding of complex concepts such as ‘love’. For example, our understanding of this concept is oriented by the conceptual metaphor LOVE IS A JOURNEY that assimilate the target concept “love” into the concrete source concept of “journey”.

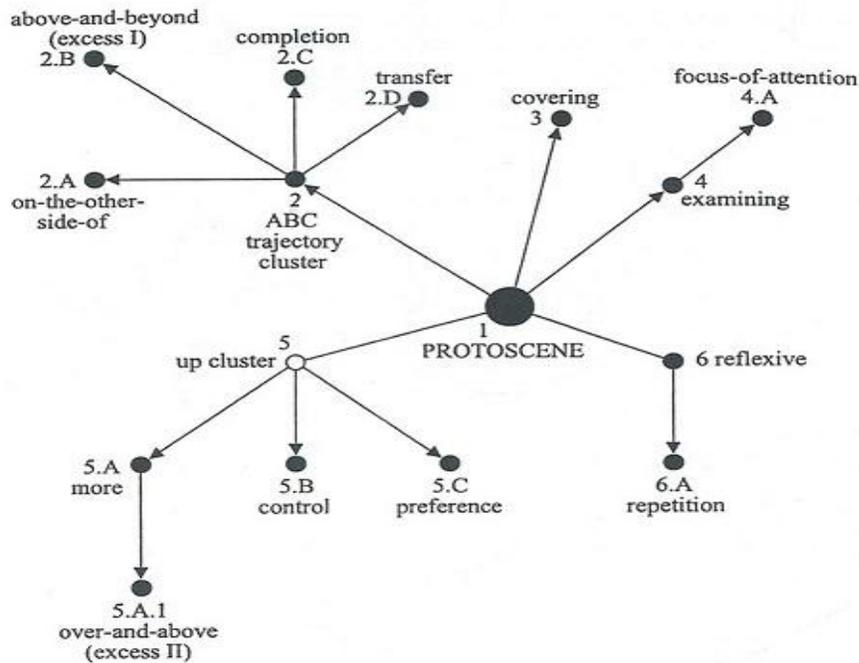


Figure 2.2. The semantic network for *over*

This diagram shows how distinct senses, represented by nodes, belong to the same conceptual category. Also, these nodes show how close / far a sense is from the central prototype. As for the arrows between nodes, they show that senses are related closely to each other. Such a diagram helps represent polysemous words' central and peripheral senses as a *semantic network*.

Central to cognitive lexical semantics also, is the assumption that the senses that make up radial categories are represented in the memory rather than produced *on-line*. This makes these meanings conventionalized and easy to retrieve when needed by most native speakers of English (Evans and Green, 2006, p. 332).

Perceiving words as radial categories was led by Lakoff who based his approach on insights suggested by Brugman (his former student) in her master's thesis, *The story of over*. In what follows, I explore in detail Lakoff's account of the semantics of *over*.

(2) The Full-specification Approach

The cornerstone of Lakoff's view of polysemous words as radial categories is based on the idea that the senses associated with prepositions such as *over* are presented in the mental lexicon in the forms of image schemas.

According to Lakoff (1987), the prototypical primary meaning of *over* combines elements of both *above* and *across*. In figure 4.3 two abbreviations are used - ⁶TR and LM. These reduced forms, which stand for *trajector* and *landmark* respectively, are derived from Langacker's theory of Cognitive Grammar (Langacker, 1986).

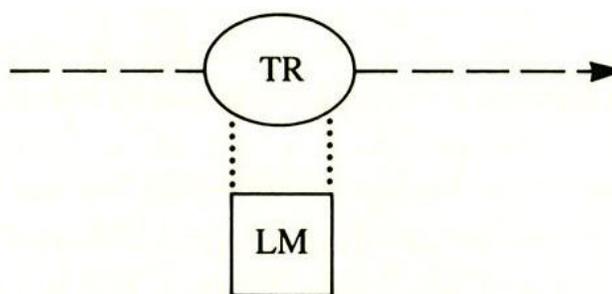


Figure 2.3. The plane flew over.

Schema 1 (Central Schema)
(Lakoff, 1987, p. 419)

While the LM is unspecified, the TR is specified as 'the plane'. The arrow indicates the PATH that the TR is moving along. The dotted lines show the extreme boundaries of the landmark and the absence of contact between the TR and the LM (Lakoff, 1987, p. 419).

As we can see, this figure is highly *schematic* as it lacks details about the LM, and is neutral on the issue of contact between the TR and the LM which exists in other instances of *over*. In other words, this is often described as *minimally specified schema*.

Lakoff argues that a number of meanings can be expressed through the use of *over* if further specifications are added to the LM. For example, landmarks can be a point, or an entity

⁶TR stands for trajector and relates to the entity in the scene that is smaller and that is typically capable of motion. LM stands for landmark and relates to the entity with respect to which the TR moves (Evans and Green, 2006, p. 334).

vertically extended, or horizontally and vertically extended. The following example illustrates the LM, 'the hill' as vertical and horizontal.

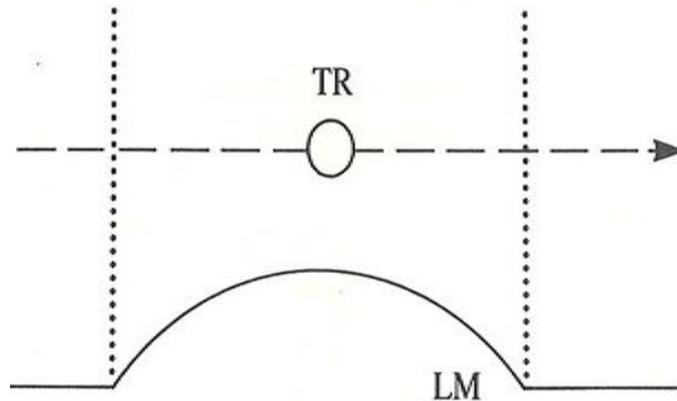


Figure 2.4. The bird flew over the hill (Lakoff, 1987, p. 421)

A further specification that can enrich the specified schema is the contact and the noncontact between the TR and the LM. Figure 2.4, for example, shows there is no contact between the TR and the LM. However, figure 2.7 shows the presence of contact. By enriching (adding further information) this primary schema, Lakoff came up with fully *specified schemas representing five distinct spatial senses of over*: above, cover, reflexiveness, excess, and repetition.

In what follows, I describe how two of these five spatial senses - *above* and *cover* senses - are arrived at by adding information to the landmark (LM) and showing whether or not there is contact.

- (1) The *above* meaning of *over*

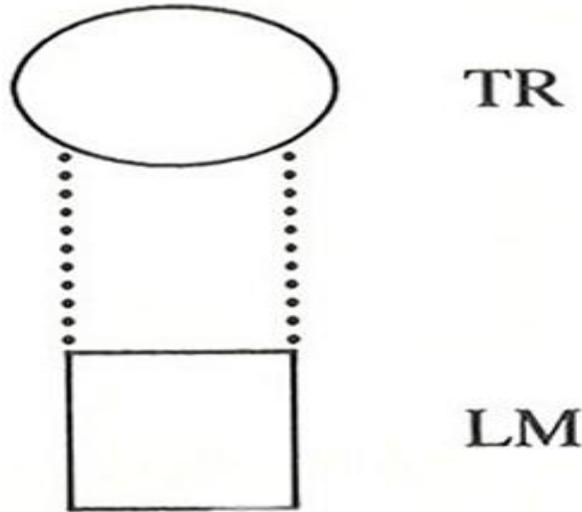


Figure 2.5. Hang the painting *over* the fire place.

Schema 2 (Lakoff, 1987, p. 425)

By further specifying the LM as '*the fire place*' and the TR as '*the painting*' and by being clear on the absence of contact, we get a *variant* of the central schema 1 (Figure. 2.3) representing the meaning of *above*. This schema is similar to the central schema in that the TR is above the LM. However, unlike schema 1, it does not have a PATH (*over* has a stative sense here) boundaries, which precludes the sense of across (Lakoff, 1987 p. 425). Also, it prevents contact between the TR and the LM.

(2) The *cover* meaning of *over*

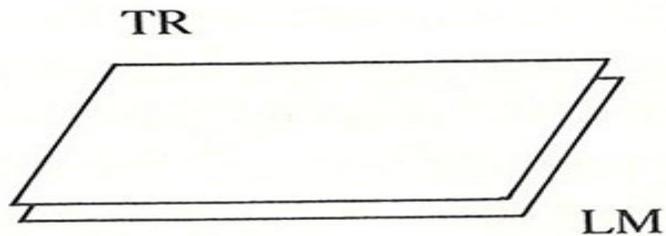


Figure 2.6. The board is *over* the hole.

schema 3

(Lakoff, 1987, p. 427)

The covering meaning here is linked to schema 2 (Figure 2.5) in that the TR, ‘the board’, extends across the boundaries of the LM, ‘the hole’. However, unlike schema 2 which requires noncontact, schema 3 is neutral with respect to contact.

As we have seen the minimally specified central schema (Figure 2.3) can generate distinct, but related senses if the LM and the contact notion are specified.

While all of the derived senses here are spatial, other non-spatial, metaphorical senses can be generated by virtue of cognitive mechanisms such as *image schema transformation* and *conceptual metaphors*.

Image Schema Transformation and Meanings Extensions

As we have seen, the various meanings of polysemous words such as *over* constitute a ‘category of senses’. Some of these senses are derived by virtue of image schema transformations.

According to Lakoff (1987), image schemas are related to each other. For example “*pathschemas* are clearly linked to *end point schemas* in the sense that “it is common for words that have an image schema with a path to have the corresponding image-schema with a focus on the end-point of the path” (p. 440), best illustrated in the following examples:

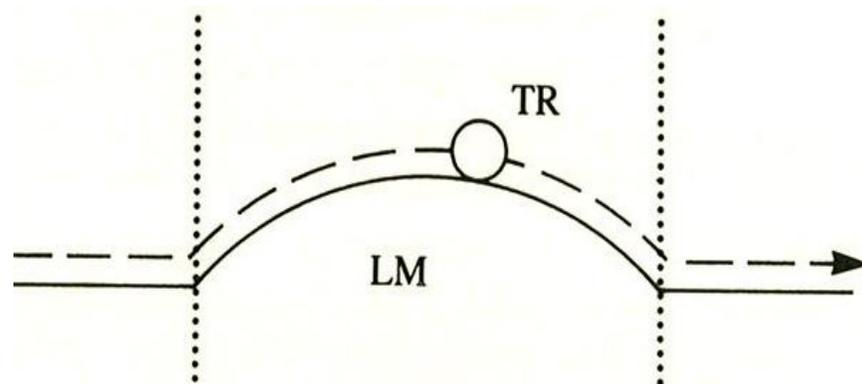


Figure 2.7. Sam walked over the hill. (Path schema)

(Adapted from Lakoff 1987, p. 422)

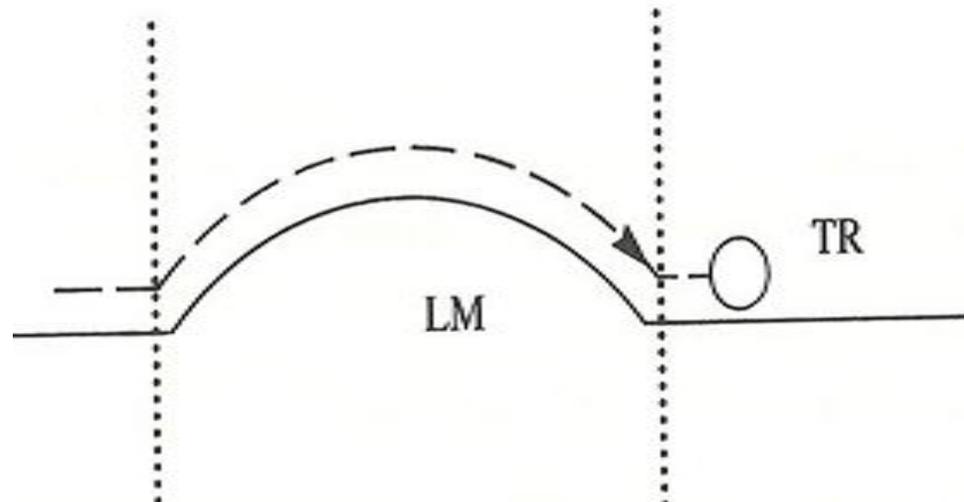


Figure 2.8 Sam lives over the hill. (End of path schema)
(Lakoff 1987, p. 423)

In figure 2.7, attention is focused on the path Sam is walking over and this gives rise to the *path* schema, however a shift of focus, where attention is paid to the end point of the path, gives rise to an additional *end of path* image schema. The transformation of the image schema results in an *on the other side of* additional meaning.

Pairs that illustrate the path and end point path schemas transformations are:

- Harry walked *through* that doorway. (Path)
- The passport office is *through* that doorway. (End of path)
- Sam walked *around* the corner. (Path)
- Sam lives *around* the corner. (End of path)
- Harriet walked *across* the street. (Path)
- Harriet lives *across* the street. (End of path)

(Lakoff, 1987, p. 440)

These natural image schema transformations also link *multiplex* and *mass schema*. This is often perceived when you move away from a group of things or individuals (multiplex). From a particular distance, these things or individuals begin to be viewed as one entity (mass) and vice versa. Consider the following examples.

- She bought *a lot of* earrings. (Multiplex)
- She bought *a lot of* jewelry. (Mass)
- He *poured* the juice through the sieve. (Mass)
- The fans *poured* through the gates. (Multiplex)

(Lakoff, 1987, p. 440)

Given their importance in meanings extension, image schema transformations are central to the formation of the radial categories of senses found throughout the lexicon.

Conceptual Metaphors and Metaphorical Extensions

According to Lakoff (1987), image schemas can be extended by virtue of *conceptual metaphors*. He argues that many “metaphorical models use a spatial domain as their source domain” (p. 435). Containers, orientations, journeys, and vertical impediments are some of the highest frequent source domains used by metaphorical models. Consider these two illustrative examples:

- a. She has a strange power *over* me.
- b. Harry still hasn’t gotten *over* his divorce.

(Lakoff, pp. 435, 439)

In example ‘a’, *over* is used metaphorically, and it has the meaning of *control*. This control sense is peripheral rather than central. In this respect, this sentence should not be interpreted literally where the TR (*she*) is literally moving above and across the LM (*me*). The conceptual metaphor involved here in this example is CONTROL IS UP; LACK OF CONTROL IS DOWN. As *over* has a conventional ABOVE variant schema (see figure 2.5), this conceptual metaphor helps it to be extended metaphorically to give rise to a new meaning: the control sense. This example shows that the source domains of many metaphors are image-schematic, a feature that is commonly shared by orientational metaphors. Just as example ‘a’ uses the ABOVE schema as its source domain, example ‘b’ uses the ABOVE and ACROSS image schema as its source domain (see figure 2.3).

In example ‘b’, *over* used with *get* is understood metaphorically as *recover from a bad experience*. The *recover* sense is based on the schema ABOVE and ACROSS and is licensed by

the use of two metaphors: in the first metaphor, obstacles are perceived as vertical landmarks. Such a metaphorical model is frequently used in expressions like *there is nothing standing in your way*. The second conceptual metaphor involved here is LIFE IS A JOURNEY. This metaphorical model is the basis for expressions such as *it's time to get on with your life* (Lakoff, 1987, p. 439). The ABOVE and ACROSS image schema which, literally, implies that the hill is a hindrance that should be overcome is the spatial source domain that is mapped on the target domain of 'divorce'. Following this, divorce is metaphorically understood as, borrowing Lakoff's words, "an obstacle on the path defined by life's journey". As we have seen, the emergence of the new meaning of "recover" is licensed by the use of the ABOVE and ACROSS schema and two metaphors.

Understanding abstract concepts like divorce in terms of concrete entities such as 'hill' is echoed by Gunter (2007) who argues that as the world around us changes and develops, we encounter new experiences which we need to "categorize conceptually and which we often express as linguistic categories" (p. 12). One way of doing so, is to utilize our "existing linguistic categories and extend their meanings" (p.12).

In spite of the huge body of evidence supporting the prototype theory, it was attacked on many fronts. While some polysemous words are clear examples of radial categories with interrelated identifiable prototypes and peripheral senses, some other polysemous words senses do not constitute a coherent category. Commenting on the word *cardinal*, for instance, Taylor (1995), shedding some doubt on the prototype theory, says that though it is easy to "track the polysemization of this word, from an original sense "principal" (retained in *cardinal* sins), through to a church official, to the color of his robe, then to the bird of that color, [its] disparate senses hardly constitute a coherent, even less useful category" (2008, p. 50). Taylor's worries should be taken into consideration in the sense that we should be aware of the ambiguity engulfing certain examples of polysemous words. Equally important, pedagogically, as will be explained later (see section 2.2.2 on pedagogical applications of the cognitive linguistics insights into polysemous words teaching), teachers interested in teaching polysemous words along the lines of cognitive linguistics had better avoid words like *cardinal*. Introducing polysemous words to students through *cardinal* may confuse learners and deprive them of clear links between the prototype meaning and its peripheral senses. Nevertheless, this example should be considered as an exception and not as a rule because a huge body of data on many other good examples of polysemous words has lent support to the validity of this

theory (e.g. *over*, Brugman 1981; *balance and stand*, Gibbs *et al* 1994; and *break*, Tanaka, 1987).

In addition, Lakoff's (1987) full specification approach and cognitive semantics in general have been criticized for the lack of consensus over the central senses of categories. For instance, while Lakoff (1987) considers *above-across* as the central meaning of *over*, Kreitzer (1997) suggests *above* as the central meaning of *over*. To address this problem, Tyler and Evans (2003) propose an approach labeled the *Principled Polysemy Approach* in which they developed *decision principles* which are meant to determine what can be considered as prototypical and distinct senses associated with a particular category (For a detailed account of the *Principled Polysemy Approach*, see Tyler and Evans, 2003 and Evans, 2004).

Equally important, while Lakoff (1987) denies the role of context in determining the various meanings of prepositions like *over*, cognitive linguists like Tyler and Evans (2011) argue that the formation of meaning of polysemous prepositions necessitates the integration *the sentential context* including the preposition in focus. Consider the following example:

The cat jumped over the wall.

Here Lakoff (1987) suggests that *over* codes the trajectory as a distinct sense instantiated in semantic memory. Tyler and Evans (2011), however, argue that this sense is possible thanks to the verb *jump* which “does prompt for a conceptualization involving motion, which entails a trajectory” (p.119). Extending this argument further, they state that our understanding of the sentence necessitates not only the integration of the linguistic prompts (in this case, the cat, jump over, and wall) at the level of the sentential context, but also the use of *inferencing and real word or encyclopedic knowledge*. Such knowledge includes:

- (i) our understanding of the action of jumping, and in particular our knowledge of the kind of jumping cats are likely to engage in (that is not straight up in the air [...]);
- (ii) our knowledge of cats (for instance, that they cannot physically hover in the air a hummingbird can);
- (iii) our knowledge of the nature of walls (that they provide vertical, impenetrable obstacles to forward motion along a path); and

(iv) our knowledge of force dynamics such as gravity (which tell us a cat cannot remain in mid-air indefinitely and that if the cat jumped from the ground such as the trajectory of its path at point B matches the relation described by over the wall, then it would have to come to rest beyond the wall, providing an arc trajectory.

(Tyler and Evans, 2011, p. 119)

On another front, Lakoff's approach was criticized for using examples based on *intuition* rather than real-life, corpus-driven data (Gries, 2006). Such a view has been shared by many critics of cognitive linguistics. To tackle this problem, cognitive linguists have sought to avoid the "artificial data and made-up examples" (Littlemore, 2009, p.11). Littlemore claims that her book *Applying Cognitive Linguistics to Second Language Learning and Teaching* "attempts to address this criticism by referring throughout to naturally occurring data from a wide variety of settings ranging from language classrooms, learner corpora, [and] university lectures" (2009, pp.11-12).

Conceptual Metonymy and Metaphorical Extensions

Metonymy is a conceptual process where, as Radden and Panther put it, "one conceptual entity, the target, is made mentally accessible by means of another conceptual entity, the vehicle, within the same ICM" (1999, p. 2). Peripheral, figurative senses extended from the core meanings through metonymy are not just a matter of words, but also of thought and action (Lakoff, 1981).

The following examples clearly explain the process of metonymy (Gunter, 2007, p.14).

- a. The company is hiring new **brains**.
- b. The **crown** never rejects a bill approved by the parliament.
- c. Our **school** won the cup.

Most people would agree that *the brains* in (a) means intelligent persons. In this case we have a shift in meaning from 'organ inside your head' as the literal meaning of brain to intelligent person as its extended meaning. Such a shift is made possible through the cognitive process of mapping. Here the body part 'brain' and the feature of 'intelligence' are mapped

onto ‘person’, arriving, thus, to the inference of ‘intelligent person for brain’. What makes (a) an example of metonymy is the fact that this conceptual shift involves a mapping between two categories that belong to the same frame, brain category and person category.

Examining example (b), we notice that another type of metonymy is illustrated. Here, ⁷PART FOR WHOLE conceptual metonymy is involved. In this example, the *crown* is used to stand for ‘monarch’ as Gunter puts it, we “mentally access a whole (monarch) via a salient part (crown)” (2007, p. 14).

The third type of metonymy is a reverse situation where a whole stands for a part. As illustrated in (c), the ‘school’ stands for the ‘team’ (see foot note below).

Metaphor-Metonymy Interaction

Contrary to the classical view which demarcated metaphor and metonymy as two distinctly separate figures of thought, cognitive linguists (e.g., Johnson 1980; Lakoff, 1987; Goossens, 1990; Barcelona, 2000b; Radden, 2000;) argue for seeing them as two interacting, overlapping tropes. According to Lakoff and Johnson (1980) metaphors which have metonymic basis are more basic and natural than those which are not grounded in metonymy. In the same vein, Barcelona (2000b) argues that “the seeds for metaphorical transfer are to be found in metonymic projection” (P 31). This interaction between metaphor and metonymy is espoused by Radden (2000) who states that “the distinction between the notions of metonymy and metaphor is notoriously difficult, both as theoretical term and in their application” (p. 93).

Barcelona (2000a) reduced the different forms of overlap to two general types:

- 1) Interaction at the purely conceptual level
- 2) Purely textual co-instantiation of metaphor and metonymy in the same linguistic expression

(Barcelona 2000a, p. 10)

Concerning the purely conceptual level, there are two sub-types of metaphor-metonymy interaction – *the metonymic conceptual motivation of metaphor* and *the*

⁷Conceptual metonymies and metaphors are conventionally printed in small capitals. Both the PART FOR WHOLE metonymy and WHOLE FOR PART metonymy are conceptual in nature because they have a very general application, i.e., many more instances of these metonymies can be found in language. Other types of conceptual metonymies may include: POSSESSION FOR OWNER, INSTITUTION FOR PERSON, CONTAINER FOR CONTENTS (Gunter, 2007, p. 14).

metaphorical conceptual motivation of metonymy (Barcelona 2000a, p.10). This is reminiscent of the expression of *metaphonymy* coined by Goossens (1990) to refer to these sub-types of interactions between metaphor and metonymy.

The first sub-type can be illustrated by most of metaphors for emotion (anger, happiness...), an example of which is *her heart was filled with sorrow*. Here there is an “instance of the metonymic mapping of a behavioral effect of an emotion (sadness) functioning as the conceptual motivation of the metaphor SADNESS IS DOWN” (Barcelona 2000a, p. 10). The second sub-type can be seen in examples like *she caught the minister’s ear and persuaded him to accept her plan*. This sentence involves a conceptual metaphor - ATTENTION IS A (TYPICALLY MOVING) PHYSICAL ENTITY and is licensed by a conventional metonymy BODY PART FOR (MANNER OF) FUNCTION(Goossens, 1990).

As for the second pattern of interaction where there is a textual co-instantiation of metaphor and metonymy in the same linguistic expression, it can be illustrated by the sentence *suddenly the pilot came over the intercom*. This sentence can be interpreted metonymically to mean that the pilot’s voice comes over the device of the intercom or it can metaphorically mean the pilot announces something over the intercom (Radden, 2000, p. 93).

As the conceptual and textual interactions of these tropes are prevalent in a great deal of figurative examples, Radden (2000) calls for integrating metonymy and metaphor in a continuum with metaphor and metonymy as “ prototypical categories at the end points” (p. 93). He suggests that unclear, fuzzy figurative expressions should be placed in the middle range of this metonymy-metaphor continuum.

Given the fact that polysemous extensions are ubiquitous in figurative language in English and that these words radiate towards the edge via metaphors and image schema transformation, knowledge of such a mechanism together with the understanding of conceptual metaphors, are indispensable for learners. I will elaborate on the possible pedagogical applications of this knowledge in a section specifically dealing with the applications of cognitive linguistics insights into pedagogy (section 2.2).

Now let us turn to the third corner stone of the cognitive linguistics paradigm - the embodiment thesis.

(3)The Embodied Mind Thesis

Contrary to traditional accounts of body/mind dualism which assume that the mind and the body are two different, independent entities, cognitive linguists argue that our body informed and shaped cognition “through its motor abilities, its actual movements and its posture” (Holme, 2008, p. 30). Such ideas might have been inspired by Lakoff (1987) who argues that certain concepts stem from our bodily nature (human biological capacities) and “the experience of functioning in a physical and social environment” (p. 12).

The Embodied Experience

The idea that our knowledge is experiential and the way we interact with the world is affected by the nature of our physical bodies’ capacities and limitations derives its legitimacy from a number of empirical studies (Evans and Green, 2006). For example, the way we perceive gravity is different from that of animals. Though gravity is an objective feature of the world, we do not perceive it in the same way as humming birds or fish for example. This leads to the principle of variable embodiment - “the idea that different organisms have different kinds of experiences due to the nature of their embodiment” (Evans and Green, 2006, p. 45).

The Embodied Cognition

Cognitive linguists argue that our *embodied experience* become structured in the mind in the form of image-schemas. Such structures are defined by Mark Johnson, in his now classic 1987 book, *The Body in the Mind: The Bodily Basis of Meaning, Imagination and Reason*, as “a recurring dynamic pattern of our perceptual interactions and motor programs that gives coherence and structure to our experience” (1987, p. xiv). For example, the activities of moving in and out rooms, houses and different kinds of bounded spaces and the perceptions of things going in and out of our bodies (food, water, air, etc., for in and water wastes, air, and blood, etc., for out) give rise to the IN/OUT schema. Johnson (1987) argues that these schemas are the abstract structures of our repeated activities, images, and perceptions. Similarly, other image-schematic concepts, such as VERTICALITY, PATHS, and BALANCE derive from our sensory and perceptual experiences with the world.

Table 2.1: Origins of conceptual metaphors

Sensory perceptual experiences with the world →	Abstract image-schematic concepts →	Conceptual metaphors (more abstract structures)
Example: In/Out concepts	In/Out schema	IN/OUT conceptual metaphor (through the process of conceptual projection)

The above table illustrates how our sensory perceptual experiences with the world give rise to abstract image-schematic concepts, which can themselves, as Evans and Green (2006) put it, “be systematically extended to provide more abstract concepts and conceptual domains with structure. This process is called conceptual projection” (p.46).

Lakoff (1987) and Johnson (1987) have argued that conceptual metaphors are forms of conceptual projections. Examples of conceptual metaphors are:

STATES ARE CONTAINERS

IDEAS ARE FOOD

LIFE IS A JOURNEY

A common type of metaphorical projection treats states and social or interpersonal agreements as bounded entities/containers. This generates expressions such as:

(a) Dody is in love.

(b) Don’t you dare back out of our agreement?

A meaningful concept of containment is used to generate and understand expressions about abstract concepts such as love or agreement. Studying these two examples, we can see many points of similarities between being bound in a situation on the one hand and a bounded place on the other one. Image-schemas such as those mentioned above have been argued to precede language. Based on research in developmental psychology, Mandler (1992) argues that pre-linguistic schemas are acquired well before the end of the first year. Borrowing Mandler’s (1992) words, “basic, recurrent experiences with the world form the bedrock of the

child's semantic architecture, which is already established well before the child begins producing language" (p. 597).

Critics claim that while the embodiment thesis is clear on the aspect of

"the interactive nature of the experience which gives rise to cognitive categories, and the fact that the environment in which the organism functions (and develops) in a social as well as a physical one, it does not, however, specify in which ways these two aspects of the organism's environment are related to each other".

(Sintha and Jensen, 2000, p. 20)

What remains unspecified is also the extent to which the organism should interact with the outer world in order for an image-schema to emerge (Sintha and Jensen, 2000).

As it has become clear from the above discussion of the embodied mind thesis, our knowledge and conceptual patterns partly spring from our interaction with the outer world and this entails that our thoughts are partly informed and shaped by sensory experience. As I have explained previously, our repeated encounters with the external, social and physical world give rise to image-schemas which in their turn are abstracted into conceptual metaphors and metonymies. The metaphors and metonymies we live by are important characteristics of our thought structure. Elaborating on how deeply-rooted metaphors are, Lakoff's explains that they are "pervasive in everyday life, not just in language but in thought and action. Our ordinary conceptual system, in terms of which we both think and act, is fundamentally metaphorical in nature" (1981, p. 3). Given that these conceptual metaphors have roots in image schemas and are pre-linguistic, cognitive linguists postulate that thought precedes, shapes, and even informs language.

(4) The Image Schema Construct

According to the mainstream, classical meaning of the image schema construct in cognitive science, "schemata are typically thought of as general knowledge structures, ranging from conceptual networks to scripted activities, to narrative structures and even to theoretical frameworks" (Jonson, 1987, p. 19). Advocates of this view argue that image schemas help us

organize the knowledge we acquire in the world. More importantly, they serve as structured frameworks in which we fit into the situations we encounter in our world in order to understand them. These frameworks or schemata, which are usually referred to as scripts, may include “characters, settings, sequence of events, causal connections, goals and so forth” (Johnson 1987, p. 19). According to this view, the schema should be regarded as abstract conceptual and propositional event structures, or as Johnson put it “the unified recurring organization of conceptual and organizational knowledge and values that we share about typical situations and events” (1987, p. 20)

While cognitive linguists are very much in tune with the idea that general knowledge of this sort helps us organize and understand the different situations we encounter in the world, they disagree with the mainstream view on a number of points. They argue that image-schemas (1) are embodied, (2) are not rich, concrete images, (3) have elements and structures (4) universal, and (5) constitute the source domains of many metaphors.

Regarding the embodiment characteristic of image schemas, Johnson (1987) disagrees with the standard view of image schemas as propositional and abstract structures and suggests, instead, these schemas should be viewed as *organizing structures* of our sensory and perceptual experiences. These schemas, as we explained in the embodied cognition above, are not abstract, but embodied because they stem from the sensory and perceptual experiences with the physical world.

As for the concrete character, image schemas are thought to “operate at one level of generality and abstraction above the specificity of particular concrete, rich images” (Johnson, 1987, p. 24). Cognitive linguists argue that schemas are not mental pictures or concrete images because these usually depict a particular thing. Image schemas, however, should capture all the structural features that are common to “many different objects, events, activities, and bodily movements” (Johnson, 1987, p. 24). In the case of *over*, for instance, Figure 4.5 would be considered as an image schema because it conveys all the literal and figurative meanings of *over*.

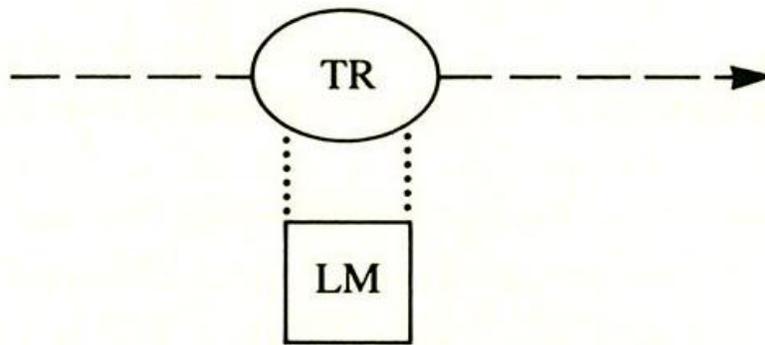


Figure 2.9. *Over* image-schema (Lakoff, 1987, p. 419)

This schema captures all the meanings of *over* as it combines elements of both above and across. All the sentences below can be explained through this image schema (for more details on how these meanings are extended from the core image schema, see the sub-section on the full specification approach in this chapter)

1. The plane flew *over*.
2. The plane flew *over* the hill.
3. Hang the painting *over* the fireplace.
4. She got *over* the flu easily.
5. The film is *over*.
6. His parents have good influence *over* him.

Johnson (1987) argues that there is a wealth of evidence in favor of the existence of an image-schematic level of cognitive processing which differs from mental, concrete pictures. To sum up, borrowing Johnson's words, "image schemata operate at a level of mental organization that falls between abstract propositional structures, on the one side and particular concrete images on the other" (1987, p.29).

Elaborating on the third characteristic, Johnson (1987) argues that image schemas have definite parts (such as people, events, and states) and structural relations, which, according to him, might consist of "causal relations, temporal sequences, part-whole patterns, relative relations, agent-patient structures, or instrumental relations" (1987, p. 28). However, in a particular schema we often have only a few parts and relations, best illustrated in the example below:



Figure 2.10. *Path* image schema (Johnson, 1987, p. 23)

This *path* schema, Johnson explains, includes three elements “a source point A, terminal point B, and a vector moving from A to B” (1987, p. 28). As for relations, we have one that is specified as a force moving from A to B.

In some other examples of image schemas, we can see a *Trajector and Landmark* as schemas parts, standing in simple relations as in this previously-mentioned example below. “Trajectors and Landmarks are generalizations of the concepts figure and ground” and are frequently referred to as TR and LM, (Lakoff, 1987’ p. 419). In “the plane flew *over*” for example, the plane is understood as a trajector (TR) oriented relative to a landmark (LM).

Concerning its fourth characteristic, the universal character, some cognitive linguists argue that image schemas stem from the human body and the nervous system’s interactions with the physical and social worlds, and as human beings have more or less the same body characteristics, we form the same image schemas (Sintha and Jensen, 2000). As these image schemas are used later to understand and speak about the world around us, this explains why we have the same concepts across some different cultures and languages. For example, conceiving food as ideas is prevalent in many languages such as English, Arabic and French.

English: A half-baked idea

Arabic : ناضجة غير فكرة

French : Idée bancale

While the universal character of the image schemas can be backed up by the huge body of literature supporting the idea of the embodied character of image schemas, it would appear that the ways people think of some concepts like in the above example cannot be driven only from the fact that we share the same image schemas, but from other innate, mental, universal factors.

Exploring the fifth characteristic, cognitive linguists argue that image schemas are used as source domains in many metaphors. Lakoff (1980) argues that “our ordinary conceptual system, in term of which we both think and act, is fundamentally metaphorical in nature” (p. 3). Often, we map the structure of one concrete domain (source domain) onto the structure of another abstract domain (target domain), and this results in related sets of conventional associations or *mappings*. Consider these metaphors:

Inflation makes me sick.

Inflation is giving the government a headache.

These metaphors use the image schema OBJECT as their source domain. This image schema is formed in our minds via our everyday interaction with concrete objects such as desks, chairs, doors and wardrobes and so on. The OBJECT schema has some physical properties that are common to objects such as color, weight, shape, and so forth. This image schema can be ‘mapped onto’ a nonconcrete entity like *inflation* which lacks these physical attributes. This *metaphoric mapping*, as Evans and Green put it, permit us “to understand an abstract entity like ‘inflation’ in terms of a physical object” (2006, p. 191). Perceiving ‘inflation’ as an object with physical properties allows us to make it concrete and talk about its effects, as illustrated in the examples above.

In conclusion, we can define image schemas as structures that stem from our physical, perceptual and social interactions with the physical and social world. Such structures help us understand, speak about the world around us and interact with each other as they are universally recognizable.

It is worth mentioning in this context that the purpose of this study is not to prove the psychological reality of image-schemas, but instead to use them as pedagogical tools. Showing the psychological reality of image schemas is beyond the scope of this study. Rather, I’m relying on the existing work on this to help EFL learners understand the mechanism underlying the meanings extension of polysemous words.

The following subsection looks at how the insights that sprang from the image schemas structures can be applied into the teaching of polysemous words.

2.2.2 Pedagogical Applications of the Cognitive Linguistic Insights into

Teaching Polysemous Words

The above discussion of the cognitive linguistics theoretical constructs yielded many insights about language and its relation to the mind and the physical and social world that surround us. Some of the insights that have possible implications for language teaching in general and polysemous words teaching and learning in particular are:

- polysemous words are natural categories of senses,
- polysemous peripheral senses are extended from core meanings
mainly via image-schema transformation, image schema, metaphor and metonymy.
- Instead of being completely abstract, metaphorical extensions
have literal bases. (Embodiment thesis).
- Image schemas are so powerful that they can capture the multiple
meanings of a given radial category and can serve as visual aids.
- Used as source domains in metaphors, image schemas can
structure abstract entities and enable us to understand them in
terms of entities with physical attributes.

In fact, many EFL teachers and authors of textbooks have applied these insights into grammar as well as vocabulary teaching and learning, but as the focus of this study is on polysemous words teaching and learning, I will limit myself to the applications of the insights that are relevant to vocabulary teaching.

- Polysemous words are natural categories of senses

As we saw in the cognitive linguistic account of categorization, Lakoff (1987), as well as many other cognitive linguists, has shown that polysemous words are natural categories of semantically motivated senses, with the more basic sense lying in the centre and the extended meanings radiating towards the periphery.

Proponents of such a theory believe teaching polysemous words as natural categories of semantically motivated senses might help EFL learners learn polysemous words better.

Danesi (1992) argues that, unlike native speakers, EFL learners prefer the more prototypical meanings occupying the centre of the radial categories to the figurative senses lying at the periphery. Such unwillingness to use extended meanings is, according to Littlemore (2009), due to the language learners' poor knowledge of these words which might be the result of their insufficient exposure to "frequent, meaningful, and varied types of communicative interaction" (p. 49) containing genuine examples of meaning extensions in their EFL contexts.

Similarly, advanced EFL learners pursuing their studies in English-speaking countries are reported in many studies (e.g. Alejo, 2008; Mahpeykar, 2008; and Littlemore, 2009) as having the tendency to operate more towards the centre of radial categories, thus producing too literal, unnatural language, void of any figurative language. This shows that even being surrounded by native speakers for a long time, the advanced learners' language proved to be too literal, and this indicates that, borrowing Littlemore's words, "radial category knowledge is something that builds over a lifetime" (2009, p.50) and easy to have access to and acquire in natural contexts.

At this stage we could ask: How can teachers help EFL learners understand and build up knowledge of English polysemous words' prototypical and extended figurative senses? To tackle this problem, Shortall (2002) advocates the explicit instruction of polysemous words through syllabuses that start with the more basic meanings of these words followed by the peripheral representations over a period of time (polysemous words are taught in a piecemeal fashion).

While the idea of presenting polysemous words in any English syllabus directed towards EFL learners is promising, learners may not understand the link between the literal meanings and the extended senses of the polysemous words once presented in a piecemeal fashion over an extended period of time. Being aware of the metaphoric and metonymic relationships between the literal and extended, metaphorical meanings is important for learners as such awareness may help them understand and remember these words better. If the meanings of polysemous word are taught in a piecemeal fashion, learners will be left with a fragmented picture of a good set of English vocabulary and the feeling that the various uses of polysemous words meanings are arbitrary and idiosyncratic (Tyler and Evans, 2004). Findings from several studies (e.g. Tyler and Evans, 2004) confirm that learners who are presented with semantic maps of polysemous words (a semantic maps is a network of a polysemous word

literal meaning and its extended senses) appear to have good long-term retention of these words.

Littlemore (2009) finds the task of developing a whole syllabus based on such a conception *monumental* given the fact that such words should be introduced through real data and not *artificial sounding texts*, moreover, “corpus linguistic research shows that categories develop around morphemes rather than individual words” (p. 53) and controlling for this will be an immense task. She suggests, instead, that teachers should introduce the learners to many senses at one stay and engage them in working out the metaphorical and metonymic relationships between the literal meanings and extended senses for themselves (2009).

Although presenting EFL learners with several senses of polysemous words from the beginning may be beneficial, in practical terms it is a very lengthy process, as a huge number of high frequency words are polysemous. For this it might be more rewarding if learners are taught polysemous words strategically, and specifically as a vocabulary learning strategy where learners guess the extended meanings of these words through their literal, prototypical meanings. Once mastered, the learners can apply such a strategy to any polysemous word that they may encounter in the future. In this way, teachers will not have to go through all the polysemous words in the English language. I will show how this strategy works and can be developed and assessed in the treatment section in chapter 4 on methodology.

- Metonymic and metaphorical extensions have literal bases.

The embodiment thesis discussed previously implies that cognition is grounded in reality in the sense that our experiences with the world shape and inform our cognition and figurative thoughts and concepts have pre-conceptual, linguistic bases. Lakoff (1981, 1987) and Johnson (1987) argue that figurative meanings of radial categories are extended from basic, prototypical meanings mainly via image schema transformation, metaphor and metonymy. So, according to the embodiment theory, figurative meanings, long rated as abstract and difficult to understand, are no longer problematic in the sense that we can trace back their literal, concrete meanings. If teachers know the processes through which the figurative extensions of polysemous words are extended from their literal original meanings and show how the literal is related to the figurative, their learners will have better chances to understand and retain these words’ central and peripheral meanings. It is empirically evidenced in some studies that associating figurative extensions with their core meanings can,

partly, help learners understand and remember them better (e.g. Csábi, 2004). Similarly, Boers, Eyckmans and Stengers (2007) and Boers *et al* (2008) find out that associating polysemous words in many idioms with their literal, original meanings enhances “insightful learning rather than ‘blind’ memorization” (p.43).

- Image schemas

As we saw in the previous discussion, primary image schemas are characterized by their abilities to capture all the meanings of the polysemous words they represent, as we saw previously in the example of *over*.

Pedagogically, this is helpful, as EFL learners will learn an array of meaning through one picture only. For instance, as suggested earlier when a learner is presented with a polysemous word primary image-schema, such as *over*, and its core meaning and five or six of its peripheral senses, he or she is likely to understand and learn all these meanings. Also, this will maximize the learner’s understanding of the potential new occurrences that will be encountered in the future.

Often, image schemas which in theory should be too general to capture all the meanings of polysemous words meanings, are specified (enriched) to account for particular, single meanings, as in the example below.

To gauge the effectiveness of teaching polysemous words with the help of image schemas, Morimoto and Loewen (2007) presented their experimental students with the core meaning of *break* and some of its peripheral senses using image-schemas for core and peripheral meanings, and then came up with the primary image-schema that combined both the literal and metaphorical meanings of the word *break*.

Ex.1. Who **broke** this radio?

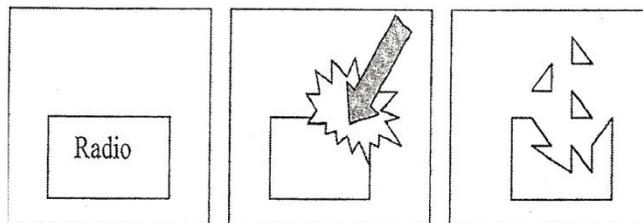


Figure 2.11. The image schema of the *literal meaning* of break

Ex.2. You cannot **break** your contract now.

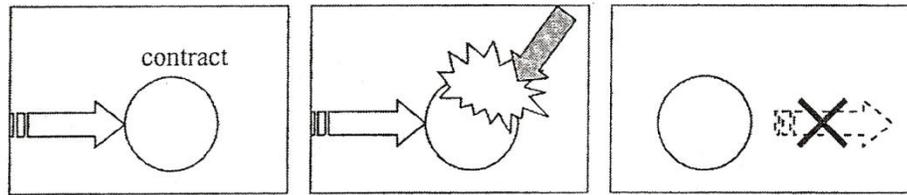


Figure 2.12 The image-schema of a figurative meaning of break

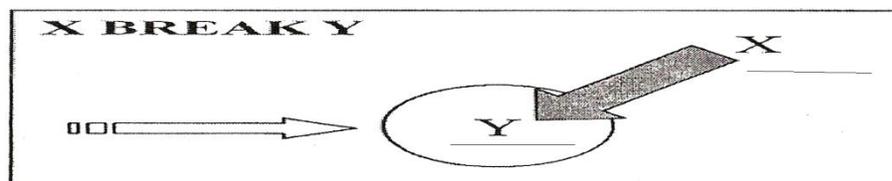


Figure 2.13 The primary image-schema (for both prototypical and peripheral meanings of break)

More importantly, image-schemas are visual aids that have the potential to concretize figurative meanings which are long-considered as abstract meanings.

Relevant literature (e.g. Lennon, 1996; Thornbury, 2002 and Csábi, 2004) reports that EFL teachers and learners have always shown reluctance to deal with polysemous words. Such aloofness is, partly, due to the abstract, figurative nature of the extended senses of these words. So, presenting figurative meanings of polysemous words with their image schemas can be very rewarding in a classroom setting. First, for teachers, as they will find it easy to teach metaphorical meanings through concrete images, and second, for learners, as they will better understand and retain these words. In this context, Boers *et al* (2007) find out that *etymological association* - associating polysemous words' metaphorical meanings with their original literal meanings- is "likely to call up a mental image of a concrete scene which can be stored in memory alongside the verbal form" (p. 43). Presenting polysemous words with their image schemas is likely to create dual verbal-nonverbal memory trace and thus can result in better retention. This is reminiscent of the dual coding theory, which was initially proposed by

Paivio (1971), and which was empirically proved fruitful for concrete as well as abstract words (for more details about this cognitive theory, see chapter 3).

As studying polysemous words requires deep thinking and often pondering over the relationships between the literal and figurative meanings of polysemous words, Boers and Lindstromberg (2008) advise EFL teachers “to keep in mind that relatively few L2 learners are inclined to engage in the kind of prolonged and intensive semantic analyses that linguists find so fascinating” (p. 30). When it comes to vocabulary understanding and learning, learners are often reported in many EFL contexts to have an inclination to use rote learning and formal vocabulary learning strategies at the expense of deep thinking and memory strategies (Takač, 2008). Following this, I think that, prior to teaching polysemous words, teachers should have an idea about their learners’ vocabulary learning strategies and the extent to which they are able to engage in semantic analyses about polysemous words like those discussed above. Teachers can have an idea about their learners’ vocabulary learning strategies through many vocabulary learning strategies (e.g., Takač, 2008). This issue will be explored in more details in chapter 4 on methodology.

Also, as learners taught along the lines of cognitive linguistics are expected to store image-schemas alongside with their verbal corresponding expressions, Boers *et al* (2008, p. 193) suggest investigating the learners’ *cognitive style* before teaching polysemous words along the lines of the cognitive linguistics approach. According to them, learners who have the inclination to think in pictures might be better than those who think in words in storing words with their pictures in their memories.

Boers *et al* (2008, p. 193) define *cognitive style* as “an individual characteristic and consistent approach to organizing and processing information”. One of the relevant cognitive style continua, identified in cognitive psychology, is the *imager continuum* which helps find out the extent to which an individual has the tendency to think in mental pictures rather than in words. According to this continuum, people can be classified as high imagers (with imaging cognitive style) or low imagers (with verbalizing style) (Boers *et al*, 2008, p. 193).

To estimate the extent to which learners are high or low imagers, these researchers suggest using a cognitive style questionnaire, designed by Childers, Houston and Heckler (1985) and called “style of processing scale”. This questionnaire consists of 22 statements, 11 are meant to estimate the extent to which a respondent has the inclination to think in words, and the other 11 try to find out about the respondent’s tendency to think in pictures.

Respondents are required to show on a three-point scale to what extent each of the 22 statements applies to them, and their answers, borrowing Boers *et al*'s words, "give an indication of their position on a cognitive-style continuum from low imagers to high imagers" (2008, p. 193) (for the questionnaire items, see Appendices I, Appendix 2).

Equally important, Boers and Lindstromberg (2008) warned against overestimating learners' ability to understand the meta-language researchers use in their studies. They argue that if the applications of the CL are to be embraced by the teaching community, they must

"be adapted to the target users; in particular they must be learner-friendly. This means especially that CL-inspired materials writers may need to modify their jargon and refrain from using technical terms such trajectory".

(2008, p. 30).

2.2.3 Conclusion

In this section, I have elaborated on the theoretical anchorage of the key claims of cognitive linguistics and its theoretical principles. In the first part, I introduced the three assumptions cognitive linguistics proposes about language and its relations to the mind and the physical world as well as the four corner stones on which it bases its theories. In the second part, I discussed and evaluated the potential application of the insights of cognitive linguistics into polysemous words teaching.

As this study deals with the teaching of polysemous words within the cognitive linguistics framework, I will, in the next chapter, investigate polysemy within the historical, structural and lexical approaches. Also, I will explore some of the recurrent issues in polysemy, namely polysemy and homonymy, polysemy and context, and polysemy and the mental lexicon. Equally important, the following chapter will hinge around the teaching and testing trends of vocabulary in general and polysemous vocabulary in particular.

CHAPTER 3 VOCABULARY AND POLYSEMOUS WORDS TEACHING AND TESTING

3.1 Polysemy

The study of polysemy - the phenomenon where a word acquires different, but obviously related senses, often with respect to particular contexts - is regarded by cognitive linguists and semanticists as indispensable for any *semantic study of language and cognition* (Nerlich, Todd, Herman, Clarke, 2003, p. 4). The analysis of polysemy and polysemization processes is of fundamental importance to the understanding of the network of interconnected theories of language, meaning and cognition (Nerlich et al, 2003, p. 4).

For this, polysemy, according to Dean (1988), should be studied from structural and cognitive perspectives, and should be viewed as a natural “necessary consequence of the human ability to think flexibly” (p. 325) and *economically* - storing and selecting information with minimal processing cost. Pedagogically, the study of polysemy is significant because it offers insights into how polysemous words’ core and peripheral extensions are represented and processed in the mental lexicon. Such clues could be used by teachers in the instruction of polysemous words.

Bréal’s (1924) revolutionary research in polysemy helped this discipline attain a good position in recent theories of cognitive linguistics and semantics. In fact, he was the first to create the word polysemy, to emancipate it from etymology, and to help start a new tradition of studies into polysemy.

The present section looks at how polysemy is studied within different approaches from the ⁸Stoics to the present and explores its main characteristics.

⁸Stoics: **Stoic:** A member of an originally Greek school of philosophy, founded by Zeno about 308 b.c., believing that God determined everything for the best and that virtue is sufficient for happiness. Its later Roman form advocated the calm acceptance of all occurrences as the unavoidable result of divine will or of the natural order.

3.1.1 Polysemy within the Historical, Structural and Lexical Approaches

According to Ravin and Leacock (2000), real research into polysemy was launched in the 18th century and continued in the 19th century by historical linguists and lexicographers (p. 1). They were, borrowing Nerlich's words, "interested in the multiplicity of meaning from the point of view of etymology, historical lexicography or historical semantics" (2003, p. 60).

By the end of the 19th century, the French semanticist Michel Bréal started a new tradition of studies into polysemy by setting it free from etymological concerns, and investigating it, instead, from the perspectives of language use, acquisition, and change (Nerlich, 2003, p. 60). Bréal's revolutionary treatment of polysemy has caused problems in linguistic research. Structural linguists, especially those who believe in the body/mind dualism and hold that language should be studied as a separate cognitive system (cut off from other cognitive systems, emotions and bodily influences) have claimed that polysemy does not exist, and have struggled to maintain the theorem of "one form one meaning" (Nerlich and Clarke, 2003, p. 4). Lexical semanticists, on the other hand, have reacted to Bréal's treatment differently as they admitted the existence of polysemy, but failed to distinguish it from homonymy - A phenomenon where two or more unrelated senses exist with a single linguistic form. To give a clear cut example, the homonymy *bank* can be used to refer to a financial institution or an edge of a river.

3.1.2 Polysemy within the Classical Approach

The ⁹classical approaches to word meanings are connected to philosophy and logic and to borrow Ravin and Leacock's words "emphasize definitions (either of meaning or of semantic properties and relations) and relate meaning to truth conditions, possible worlds, and states of affairs" (2000, p. 15).

This semantic theory of meaning holds that categories have *definitional structure*. According to this theory an "entity represents a category member by virtue of fulfilling a set of necessary and (jointly) sufficient conditions for category membership" (Evans and Green, 2006, p. 251). These conditions - conceived as sensory and perceptual - are individually

⁹It is termed classical "in that it goes back to Greek antiquity ultimately and in that it has dominated psychology, philosophy and linguistics (especially autonomous linguistics, both structuralist and generative, throughout much of the twentieth century" (Taylor, 1995, p. 22).

necessary (common to all members of a category) and collectively sufficient (no more features are required) for the definition of any category to be accurate. For example, for an entity to belong to the category of the lexical concept BACHELOR, it should possess these conditions or defining features: 'single'; 'is male'; 'is an adult'. This entails not only that all these conditions should be present to define the category, but also categories have definite, fixed and distinct, clear boundaries (Evans and Green, 2006, pp. 251-253).

Within this approach, polysemy is defined as the *affinity* in the representations of two or more senses of a lexical item (Ravin and Leacock, 2000, p. 9). According to Apresjan (1974) the definition of polysemy does not necessitate a shared part for all the senses of a *polysemantic word* and this entails that it is sufficient that each of the senses be connected to at least one other meaning. This definition is echoed in what Apresjan called *regular polysemy*:

Polysemy of a word A with the meaning *a* and *a*' is called regular if, in the given language, there exists at least one other word B with the meaning *b* and *b*', which are semantically distinguished from each other in exactly the same way as *a* and *a*' and if *a* and *b*, *a*' and *b*' are non-synonymous.

(1974, p. 16)

To illustrate, *cherry* can be described as polysemous as it has the meanings of *fruit* and *color*, and because in the English language there exists another word- *chestnut* - which has also the meanings of *fruit* and *color* (Barque and Chaumartin, p. 2006).

The notions of sense distinction and definitional structure have been challenged by opponents of the classical approach. With every conceptual difference the classical theory recommends new senses leading to what Ravin and Leacock (2000, p. 10) described as the risk of *an infinite proliferation of senses*. From the regular polysemy perspective, a simple word like *eat* should have a number of unlimited senses because *eating* can be performed with a spoons, fingers, and chopsticks. According to Katz (1972), these differences which are not entrenched in the meaning of *eat* are only differences created by the different situations in which the concept of eating is involved. For this reason, there is no need for new presentations of the same word every time it is used in a new, different situation. As for the definitional structure characteristic of categories, linguists argue it is extremely difficult to come up with

an accurate set of features that are necessary and sufficient to define a category (Evans and Green, p. 2006). The much cited example of the category GAME shows the difficulty inherent in this view. This category has members that do not share any single set of conditions, as there are games that involve mere AMUSEMENT, like ring-around-the-rosy. Here, unlike other games, no competition - no winning or losing - is involved. Some other games are characterized by mere LUCK, such as board games (Evans and Green, 2006, p. 253). So, though there is no single set of features common to games, the category of GAME is unified, by *family resemblances*. Here games, like family members, are similar to one another in different ways, for example, while poker and old maid are both card games, chess and football involve competition (Lakoff, 1987).

Also, the idea that an entity should have clear cut and clearly defined boundaries has received a lot of criticism (Evans and Green, 2006, p. 254). Following this, any category member will or will not have the necessary properties for category membership. The category BIRD, for instance, includes good, obvious representatives like ROBIN and SPARROW but also less obvious animals such as PENGUINS and OSTRICHES. This example illustrates the problem of *conceptual fuzziness* inherent in some categories, a puzzle that advocates of the classical approach failed to solve.

Applying the classical approach of categorization to the lexical categories of words, polysemous words should have distinct meanings and definitions that include necessary and sufficient properties. Such a view received a great deal of criticism by much of twentieth-century philosophy of language, especially the prototypical approach (Ravin and Leacock, 2000).

3.1.3 Polysemy within the Prototypical Approach

Prototype theory is closely connected with empirical research in psychology by Rosch (1977) and her colleagues in the 1970's. According to this theory, the human categorization system operates through two basic principles - (1) the *principle of cognitive economy* and (2) the *principle of perceived world structure* (Evans and Green, 2006, p. 255). As for the first, in order to gain as much information as possible with limited cognitive efforts, human beings try to classify information and store it as categories. As for the second principle, it states that our world has *correlational structure*. For example claws frequently co-occur with legs and hands

and the ability to hunt (as in eagles or some mammals), rather than with wings or the ability to fly. This principle suggests that humans make use of *correlational structure* to classify and categorize information (Evans and Green, 2006, p. 255).

The prototypical approach assumptions are in direct contrast to the classical view axioms. Lakoff (1987) criticized the classical theory for not being the result of empirical studies as it, in Lakoff's words, "was a philosophical position arrived at on the basis of pure speculation" and in spite of its non-scientific basis, it was taught in most scholarly disciplines as *unquestionable*, taken for granted *definitional truth* (Lakoff, 1987, p. 6). More importantly, based on a series of experiments, Rosch (1977) found that humans categorize objects on the basis of *family resemblance relations* that category members exhibit and not on the basis of necessary and sufficient conditions, as the classical theory suggests. The family resemblance principle states that it is sufficient for category members to resemble one another to some degrees to form a category. Also, contrary to the classical approach, which postulates that categories should be defined only by properties entrenched in the member, Rosch (1977) argues that categories should reflect to a certain degree the categorizer's uniqueness and matters as *human neurophysiology*.

Also, categories, in Lakoff's words, should mirror "human body movement and specific human capacities to perceive, to form mental images, to learn and remember, to organize the things learned, and to communicate efficiently" (Lakoff, 1987, p. 7). This entails that human capacities and mechanisms such as perception and imagination play a crucial role in categorization.

Equally important, the prototypical approach - for once similar to the classical approach - acknowledges the existence of hierarchy in the formation of categories. For instance, in Rabin and Leacock's words, "a dog is a mammal, an animal, a living thing" (2000, p. 13). However, unlike the classical approach's advocates, Rosch (1977) suggests that category membership is a matter of degree. The prototype (member) that displays the highest number of attributes of a category is the best candidate to represent a category (members have no equal status). For example the best representative for the category of BIRDS is *robin*, for FRUIT is *orange*, and for FURNITURE is *chair*.

Since its appearance in the 1970's, many criticisms have been raised against prototype theory. The first criticism revolves around the notion of the role of "similarity" in determining category membership. Murphy and Medin (1985) argue that categories should be coherent (a

coherent category is “one whose members seem to hang together, a grouping of objects that makes sense to the perceiver” Murphy and Medin (1985, p. 291)). According to them “similarity” and the approaches to category coherence based on it (e.g., correlated attributes) have been shown to be unsuccessful and insufficient to form coherent categories (for possible problems, see Murphy and Medin 1985, p. 295). One reason for this is that, at its best, similarity only serves to provide a language for talking about conceptual coherence and not giving the reasons for category formation. To remedy this situation, they suggest including people’s theories and knowledge of the real world in the conceptual coherence of categories.

Equally important, the idea that concepts might have prototype structures has come under a lot of attack. Fodor and Lepore (1996), for example, argue that concepts cannot be prototypes because they, unlike prototypes, are compositional. According to them, in some cases the prototype for the complex concept cannot be computed on the basis of its *primitive constituents*, best illustrated in the example of the complex prototype of PET FISH. Goldfish, for instance, as a good representative of pet fish, is a *poorish example* of both prototypes of pet and fish (Fodor and Lepore, 1996, p. 262). Another problem pertinent to the account of the compositionality of prototypes is that “prototype theory cannot account for certain relations of logical equivalence among concepts” (Fodor and Lepore, 1996, p. 258).

Applying insights from the prototypical approach into the explanation of words’ meanings, many linguists such as Lakoff (1987) and Taylor (1989) came up with interesting accounts of different types of prototypical meanings (for other linguists, see Ravin and Leacock, 2000).

According to Lakoff (1987, p. 68), categorization is a cognitive process guided by the *Idealized Cognitive Models*, or ICMs. These are structures by the means of which we organize our knowledge. Cognitively, an ICM, in the words of Lakoff, “is a complex structured whole, a gestalt which uses four kinds of structuring principles:” *prepositional structure, image-schematic structure, metaphoric mappings, and metonymic mappings* (1987, p. 68). As for their aspect of idealization, ICMs are found to be “abstract across a range of experiences rather than representing specific instances of a given experience” (Evans and Green, 2006, p. 270). When a number of ICMs unite to form a *complex cluster*, Lakoff (1987, p. 74) refers to them as *cluster models*. For example, *mother* is a concept that is beyond the defining method suggested by the classical approach, as there are different criteria for real motherhood. This entails that *mother* forms a concept where several distinct cognitive models converge to form a

cluster model. According to Lakoff (1987, p. 16), some of the individual ICMs of the mother cluster are the *birth model*, defining the mother as the person who gives birth; the *genetic model*, defining mother as the female who contributes to the genetic material; and the *nurturance model*, defining the mother as the female adult who nurtures the child.

This example shows how a word in English can be a radial category and can have a core meaning (where the models discussed above meet) and more peripheral models as meaning extensions like stepmother or adoptive mother. Such marginal meanings are extended through cognitive pathways, the most important of which are metaphor, metonymy and image-schema transformation (for the discussion of other examples such as *over*, refer to chapter 2 on cognitive linguistics).

While Taylor (1989) agrees with Lakoff (1987) on the relatedness of some meanings within certain lexical categories, he rejects the concept of radial categories, where marginal, derived senses derive from a prototypical meaning. Taylor (1989), however, suggests instead the concept of *family resemblance*, where polysemous categories display a set of individual, distinct, but related meanings. The difficulty to identify the central meaning for some polysemous categories can be clearly illustrated by the example of *over*. While Lakoff (1987) suggests that the below schema can capture all the meanings of *over* and can thus stand for the prototypical meaning from which extensions can be derived (examples 1 and 2), Taylor (1989) argues that this image schema cannot account for all the meanings of *over* and particularly those that involve contact between the landmark and the trajector (examples 3 and 4).

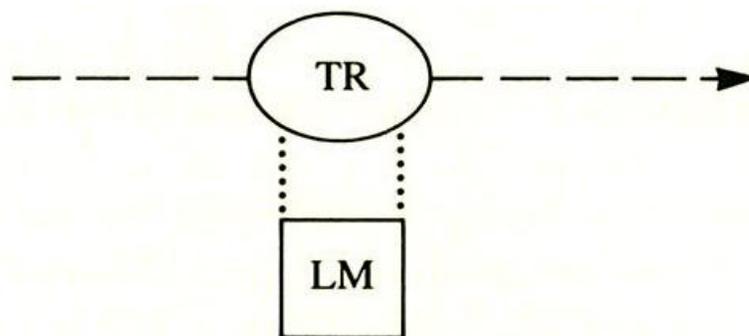


Figure 3.1.Over primary image-schema (Lakoff, 1987, p. 419)

1. The plane flew *over*. (no contact between TR and LM)
2. The plane flew *over* the hill. (no contact between TR and LM)

3. Walk *over* the street. (contact between TR and LM)
4. Walk *over* the hill. (contact between TR and LM)

The difficulty of determining the prototypical meaning stems also from the contradictory meanings some polysemous categories sometimes have, best illustrated in the example of *climb*.

1. Bill *climbed up* the mountain.
2. Bill *climbed down* the mountain.

Here the direction of climbing can be up or down (Ravin and Leacock, 2000, p. 18). From this, it is obvious that Taylor (1995) advocates a prototypical category which is complex, but not radial in that it doesn't have a core meaning. Instead, he conceives polysemous categories as a series of meanings chained by means of family resemblance (Ravin and Leacock, 2000, p. 18).

However, like Lakoff (1987), Taylor (1995) objects to formulating absolute prohibitions on meaning extensions as certain kinds of derived senses are more frequent, and more natural than others.

As the above discussion tried to show, empirical research into polysemy makes it possible for cognitive semanticists and linguists to depart from the traditional accounts of polysemy in favor of prototypical views. This is closely related to experimental research in psychology. In my study, I will apply Lakoff's cognitive linguistic insights to the teaching of polysemous words as his account of polysemous categories extensions appears to be convincing.

In what follows, I will explore some of the recurrent issues in polysemy, namely polysemy and homonymy, polysemy and context, and polysemy and the mental lexicon.

3.1.4 Polysemy versus Homonymy

Homonyms, words that share by chance the same orthographic form, are etymologically and semantically unrelated. For example, *bass* the fish, which comes from Old English *barse*, does not share the same roots with *bass* the voice, which is derived from Italian

basso (Ravin and Leacock, 2000, p. 4). On the contrary, polysemes are derived from the same source by means of general cognitive principles and share, therefore, some aspects of the original meaning. *Brain*, *school*, and *break* are good examples of polysemous words. This distinction, however, is not always straightforward as some polysemous words “can, over time, drift so far apart that the original semantic relation is no longer recognizable” (Raven and Leacock, 2000, p. 4), best illustrated in the example of the word *cardinal* whose disparate senses hardly share any aspects of *cardinal* original meaning - ‘principal’ (Taylor, 2008, p. 50).

Pedagogically, separating polysemy from homonymy is necessary because it means distinguishing the principled and the systematic from the arbitrary and the accidental. Such a distinction aids teachers in determining which teaching style to use when teaching polysemous words (see Methodology Chapter 4 for polysemous words teaching insights).

3.1.5 Polysemy and Context

While some senses of polysemous words appear to be distinct and stable under contextual changes as in metaphors, other meanings seem to be *context-sensitive* (Pustejovsky 1995; Cruse, 2000 and Evans and Green, 2006). Cruse (2000) shows how polysemous words senses are *context-dependent* through a number of ways, the most important of which are: *sub-senses*, *facets*, and *ways-of-seeing*.

Sub-senses

A sub-sense is a sense-nodule (in Cruse’s words) or a specific word meaning that is sensitive to context. To illustrate this, Cruse (2000, p. 35) argues that the meaning of *knife* consists of a set of specific meanings which can be determined only by the *situational contexts* in which they occur. Such contexts are:

- (i) on table at meal time
- (ii) part of a commando’s equipment
- (iii) in a butcher’s shop
- (iv) in an operating theatre
- (v) in the garden shed

The following example, taken from Cruse (2000, p. 36) shows how a specific situational context activates a specific reading of one of the sub-senses of knife, thus showing the importance of context for polysemy.

A. (*in garden; wants to cut some string*) Have you got a knife, by any chance?

B. (*has a penknife in pocket*) no.

The garden context causes the tool sub-sense to emerge here. For this reason, speaker B said “No”.

Facets

A facet is defined as “a sense that is due to the part-whole structure of an entity, and is selected by a specific sentential context” (Evans and Green, 2006, p. 354). By way of illustration, take the example of the word *letter*. Due to properties pertinent to its basic structure, the *letter* consists of both TEXT (the informational content of a letter) and TOME (the physical entity of page and envelope). What makes these two senses facets instead of sub-senses is the fact that they relate to the basic structure of letters rather than being linked to the contexts of use. The TEXT and TOME facets can be worked out through *sentential contexts*, best illustrated in the following examples (Cruse 2000, p. 41):

a. a crumpled letter [TOME]

b. a heart-breaking letter [TEXT]

Cruse (2000) identified three areas where this facet-like phenomenon is ubiquitous. Many lexical items such as *book, brochure* (belonging to communication), *bank, hospital* (localized organizations) and *country, nation* (geopolitical entities) display facets.

Ways-of-seeing

Just like the situational context and the sentential context play significant roles in assigning a specific meaning to the polysemous word, the *encyclopaedic knowledge*¹⁰ readers bring to texts affects the way words are interpreted. Consider this example (Evans and Green, 2006, p. 355):

Example: *an expensive hotel*

Possible interpretations:

‘Kind’ way of seeing: ‘a hotel that is / was expensive to buy’

‘Functional’ way of seeing: ‘a hotel that is expensive to stay at’

‘Life-history’ way of seeing: ‘a hotel that is / was expensive to build’

The different ways of seeing (stemming from different individuals having different backgrounds) bears upon the interpretation of the above phrase.

From this discussion, it is obvious that polysemous words’ interpretation depends to a large extent on factors related to situational and sentential contexts in which they occur and on factors related to what individuals bring as encyclopaedic knowledge.

Equally important, at the level of sentence interpretation and polysemous words’ disambiguation, Pustejovsky (1991) proposes a framework called Generative Lexicon (GL). This model for lexical semantic research is believed to, as Pustejovsky (1991) put it, “clarify the nature of word meaning and compositionality in natural language, and at the same time bring us closer to understanding the creative use of word senses” (p. 437).

Two basic assumptions figure in Pustejovsky’s lexical semantic framework, the necessity to take into consideration the syntactic structure of language, and the conceptual element of lexical categories. In other words, this framework “must be guided by a concern for semanticity in addition to grammaticality” Pustejovsky (1995, p. 2).

¹⁰*Encyclopaedic knowledge* is viewed by cognitive semanticists as “a structured system of knowledge, organized as a network” (Evan and Greens, 2006,p. 216). The knowledge that makes up the encyclopaedic network consists of four types, an example of which is conventional knowledge - the information that members of a speech community share (Evan and Greens, 2006, p. 217).

Unlike verb-based approaches to compositionality where the lexicon is seen as verbs only, GL tries to spread the semantic load throughout all the lexical categories of the utterance.

Under this theory, a basic set of word meanings is used to produce a larger set of extended senses when integrated with each other in phrases and clauses (1995). These extended senses are generated via operations (referred to as generative devices) such as type coercion and co-composition. This generative theory of the lexicon is constituted by a set of levels of representation and mechanisms which capture much of the richness of the set of word senses comprising the lexicon and to account for their relations with other linguistic levels, syntax and morphology. Among such levels are ARGUMENT STRUCTURE, EVENT STRUCTURE, QUALIA STRUCTURE, and INFERENCE STRUCTURE (Pustejovsky, 1995) (for further information about these levels, see Pustejovsky, 1991).

3.1.6 Polysemy in the Mental Lexicon

While there is a consensus on the assumption that unrelated meanings of homonymous words are represented in the mental lexicon as separate lexical entries, such as in the case of *bark* which can refer to a tree or a dog, how polysemous core meanings and extensions are represented and processed in the mental lexicon has always been a source of controversy (Klein and Murphy, 2001; Beretta, Fiorentino, and Poeppel, 2005). Pinning down how people store and process multi-meaning words is of a great importance for pedagogy, as teachers can successfully make use of the way polysemous words are represented in the lexicon when teaching these multi-meaning words.

In traditional accounts, polysemes are treated just like homonymous words where each meaning is represented separately in the mental lexicon. Under this account, each polysemous word has a short list of exhaustive possible senses from which we select the intended sense when needed (Clark and Gerrig, 1983). These patterns of lexical designs which are often referred to as Sense Enumeration Lexicons (SELs) received a lot of criticism on many fronts. First, the relatedness usually found between different senses of polysemous words cannot be captured by the SELs because these senses are distinct and stored separately in the mental lexicon (Klepousniotou, 2002; Bown, 2008). Second, however powerful the human imagination is, some senses may escape the exhaustive list each polysemous word is claimed to have in the mental lexicon. As an illustrative example, after the revolution that took place in

Tunisia in 2011, some revolution-related, novel Arabic terms have been coined, one of which is الثورةجهاضا, the literal translation of which is miscarriage or the abortion of the revolution. What the human mind can create in some situations is unpredictable and situation-dependent. Third, admitting that all the senses of polysemes are pre-stored in the mental lexicon entails that all the speakers of a given language can understand all the potential senses of a polysemous word, which is not always true as the understanding of some senses require the interlocutors to have the same encyclopaedic knowledge.

As the SELs proved inadequate and inaccurate in giving a convincing account of the representation of polysemous words senses in the mental lexicon, cognitive semanticists and linguists proposed more empirically-evidenced accounts, the most accepted of which is proposed by the *generative lexicon* (Pustejovsky, 1995). This model of lexical design postulates that the mental lexicon accommodates only the core meanings of polysemous words from which other peripheral, related extensions are created out of contextual necessity via a set of lexical rules (Nunberg, 1979; Copestake and Briscoe, 1995).

This is reminiscent of the view of Anderson and Orton (1975) who argue that the mental lexicon does not create and store polysemous senses on its own, but rather pairs with the speaker's world/encyclopaedic knowledge in the derivation of these senses. Also, this view of core meaning is advocated by some researchers who showed empirically that people can create and understand novel extensions which do not need to be pre-stored in the mental lexicon (Klepousniotou, 2002).

In spite of the experimental evidence advanced in favor of the core concept view, Klein and Murphy (2001) argue that these proofs "are muddied by the use of homonyms in the polysemous stimuli" (p. 262). In other words, most of the pertinent studies focus on both polysemy and homonymy. For this and other reasons, many linguists (e.g., Cruse, 1986; Lakoff, 1987; Deane, 1988; Tuggy, 1993) are neither for the SELs model nor for the single (core) theory. They favor the account that views that core, prototypical meanings of polysemous words are represented in the lexicon along with a reasonable number of their extended frequent senses. Lakoff (1987) and others propose that polysemy could "develop by the construction of a chain of extensions, each building on its predecessors" (Klein and Murphy, 2001, p. 262).

3.1.7 Conclusion

With the advent of cognitive linguistics in the 1980s, research into polysemy has witnessed a new era. Contrary to structural linguists and lexical semanticists' classical treatment of polysemy, cognitive linguists have brought Bréal's ideas of linking language with cognition, meaning, and society a step further. This *neo-Bréalian* treatment of polysemy is facilitated by the appearance of new ideas in *anthropology* and *psychology* and "new theories of how human establish categories on the basis of prototypes and family resemblances" (Nerlich and Clarke 2003, p.4). Also, the recent wealth of research into polysemy permits teachers and learners to distinguish polysemy from homonymy and differentiate it from indeterminacy.

Regarding the controversial issue of the storage of polysemous words in the lexicon, cognitive linguists and semanticists (e.g., Lakoff, 1987; Deane, 1988; Klein and Murphy, 2001) argue that purely structural accounts of meaning relatedness of polysemous words in the mental lexicon could be scaffold by cognitive accounts. Within this binary framework, empirical research into polysemy reveals that polysemous words' core, prototypical meanings are stored in the lexicon along with their frequent peripheral extensions.

As the intent of my project is to investigate the pedagogical effectiveness of insights from prototypical theory from cognitive linguistics perspective, the above brief overview of polysemy in lexis disregards polysemy within relational and computational frameworks as these are tangential to our concerns here (for an extensive overview of polysemy, see Ravin and Leacock, 2000; Nerlich, 2003 and Nerlich and Clarke 2003).

3.2 Vocabulary and Polysemous Words Learning and Teaching

3.2.1 Vocabulary Description and Acquisition

Introduction

The present section focuses on vocabulary description, acquisition and the current trends employed in teaching vocabulary in EFL contexts. These three strands are not only pertinent to the topic of my study, but also, quoting Schmitt and McCarthy (1997), "contribute to an applied linguistic theory of vocabulary" (p. 1). This section begins with discussing issues related to vocabulary description, after that it dwells upon issues related to vocabulary acquisition and instruction and particularly the most common trends in vocabulary teaching.

Thereafter, it concludes by showing how polysemous words are presented and taught to learners in EFL context, including the UAE's. I will also evaluate some of the CL-inspired studies that have tried to apply insights from cognitive linguistics to the teaching of polysemous words.

What is it to know a word?

Before engaging in answering this question, it is crucial first to find out how researchers have defined the term *word*, for having a clear definition of this term might illuminate our path when teaching vocabulary.

The term word can refer to individual lexical items such as function words (articles, prepositions, pronouns, conjunction, auxiliaries, etc.) and content words (nouns, verbs, adjectives, and adverbs) as well as larger lexical items like phrasal verbs, compound nouns, idioms, and lexical phrases (Read, 2000). Words are divided into categories, the most essential of which are *tokens*, *types*, *lemmas* and *word families*.

Tokens

Tokens are often referred to as *running word* (e.g. Nation 2001). We refer to *tokens* when making word counts. The *tokens* in a student's essay are literally the total number of words occurring in this essay.

Types

Types are used by researchers to find out about the number of *different* words that occur in a given text. In the sentence:

The textbook supports the goals of the program

there are eight *tokens* (a total of eight word), but the word *the* occurs thrice so there are only six *types*.

Lemmas

A headword such as *burn* and its most frequent regular inflections like *to burn*, *burns*, *burning*, and *burnt* is known as a *lemma*. In most word-frequency counts of learners' vocabulary breadths, the lemma is used as the basis of counting, and the root form and its regular inflections would be counted as just one *lemma* (Daller et al 2007). As can be seen, a *lemma* includes only a fairly limited number of words derived from the root form. For other

closely related words derived from *burn* like *burner* and *burnable*, for instance, they would be part of the *word family* of *burn*.

In the present study, I will be using ‘word’ to mean *word lemma*.

Knowing a word typically involves knowing its three aspects - *Form*, *Meaning* and *Use* (Nation, 1990, 2001 and 2008; Thornbury, 2002; and Laufer, 1997). Hence, when teaching words, teachers aim to equip their learners with the necessary receptive and productive knowledge in each of the three aspects. As the table shows (Table 4.1), the multiple features under each aspect are characterized by being either P (productive) or R (receptive). For *Form*, the first aspect, the receptive knowledge of a lexical item involves being able to recognize it when you hear it or see it, but the productive knowledge implies familiarity with how the word is pronounced and written. Also, knowing a word involves being able to recognize its parts. As for *Meaning*, the receptive knowledge of a word implies the ability to know its meaning and its concepts, but the productive knowledge involves being able to know the exact word form that corresponds to the intended meaning. Regarding the third aspect, *Use*, the receptive knowledge implies, among others, knowing the patterns in which the lexical item occurs and the other words or type of words that occur with it - *collocation*. However, the productive knowledge involves the ability to recognize the patterns in which the lexical item can be used and the familiarity with the words or type of words we can use with it.

Nation (1990) asserts that the “productive knowledge of a word includes receptive knowledge and extends it” (p. 32).

Table 3.1. What is involved in knowing a word?

Form	spoken	R	What does the word sound like?
		P	How is the word pronounced?
	Written	R	What does the word look like?
		P	How is the word written and spelled?
	word parts	R	What parts are recognizable in this word?
		P	What word parts are needed to express meaning?
Meaning	Form and meaning	R	What meaning does this word form signal?
		P	What word form can be used to express this meaning?

	concepts and referents	R	What is included in the concept?
		P	What items can the concept refer to?
	associations	R	What other words does this word make us think of?
		P	What other words could we use instead of this one?
Use	grammatical functions	R	In what patterns does the word occur?
		P	In what patterns must we use this word?
	collocations	R	What words or types of words occur with this one?
		P	What words or types of words must we use with this one?
	constraints on use	R	Where, when and how often would we meet this word?
		P	Where, when and how often could we use this word?

Note: in column 3, R = receptive knowledge, P = productive knowledge

(Nation, 2001, p. 27)

The Learning Burden of Words

When Nation (1990, p. 31) first suggested the multiple receptive and productive features necessary for vocabulary learning, some researchers (e.g., Meara, 1996) and teachers criticized his approach for its impracticality from teaching and assessment perspectives. Pedagogically, it is axiomatic that not all the words carry the same importance and deserve similar attention, for high frequency words, for instance, seem to be more crucial (for L2 speakers to know) in speech and writing than low frequency words. Similarly, from an assessment perspective, Meara (1996) notes that “it might be possible in theory to construct measures of each of these types of knowledge of particular words; in practice, it would be very difficult to do this for more than a handful of items” (p. 46). To disambiguate the situation,

Nation (1990, 2001, 2008) points out that teachers do not need to take into account all the features cited in the table to successfully teach a word, instead, they have to work out what needs to be taught about a word or what he called *the learning burden of a word* (2008, p. 99). In his seminal works on vocabulary learning and teaching, Nation (1990, p. 33) discusses the features that make learning words difficult, and states that the areas of difficulties of a word vary from “word to word according to the ways in which the word relates to first language and already existing knowledge or other known languages” (2008, p. 99). For instance, the adjective *free* is a loan word in Thai, where it is used exclusively to express ‘free of charge’. Hence, when Thai speakers learn English, they may assume that this word only means ‘free of charge’. Thus, when teaching this word in Thailand, teachers need not pay particular attention to form aspects - sound, spelling, and word part - because the word already exists in Thai. Instead, they have to draw the students’ attention to meaning aspects of *free* and focus on its multiple meanings such as *Are you free at six o’clock?*, *They were set free*, and *Free speech* (p. 100). Nation (1990, p. 33) and Laufer (1997, p. 140) discuss in depth the features that can affect the ability to learn words in a second language positively or negatively, but as covering all these features is beyond the scope of my study, I will limit myself to exploring the feature of multiple meanings and how polysemous words cause learning confusion for second language learners.

The semantic feature - multiplicity of meaning (where a lexical item has more than one meaning) has proved to have significant effects on word learnability (Laufer, 97) in the sense that multi-meaning words are more difficult to teach than words with single meanings.

A good deal of words in English is polysemous or homonymous depending on whether the meanings they have are related or not. Below is an example of a polysemous word:

(1) **Head** (core)

Top part of your body which houses
eyes, mouth, brain etc. :

Severe head injuries.

(2) **Head** (extension 1)

Top person, the leader or person
in charge of a group or organization:

Eileen is head of the family now.

(3) **Head** (extension 2)

Top part of, the head of the top of something:

*Write your name clearly at the **head** of each page.*

(4) **Head** (extension 3)

Front part of: *The **head** of a hammer*

(Longman Dictionary of Contemporary English, 1995, p. 657)

The extensions of *head* have metaphorical meanings and can be easily related to their core, literal meaning. For instance, the second extension derives its sense ‘top-person, the leader or person’ from the literal meaning of ‘head’ which suggests that this part of the body is the most important part because it includes the brain. As for the third extension, the sense of ‘top part of’ is derived from the fact that the head is the top part of the body. Such clarity in establishing the multiple meanings relatedness makes, according to Nation (1990), “the learning burden lighter” (p. 41) for students. Studies show that such meaning relatedness can help students learn the core meaning and the metaphorical extensions more easily and retain them longer (Csábi, 2004; Evans and Tyler, 2008; Boers and Lindstromberg, 2008) (See section 2.2, chapter 2) for the possible rewards behind teaching polysemous words along the lines of cognitive linguistics). But if lexicographers, teachers and learners fail to find this thread of meaning relatedness between the core and the peripheral senses of the multi-meaning word, the learning burden as well as the teaching job becomes heavy. For instance, in the case of homonyms such as the much cited example of *bank* we can see many meanings - (1) a financial institution, (2) a bank of river, and (3) a pile- which lack relatedness (in meaning) between them. Such a lack could make it more difficult for students to learn these multiple meanings as they will have to learn each meaning on its own.

The unmapped territory of polysemes and homonyms (due to the scarcity of studies) led Laufer (1997, p. 152) to suggest regarding them “as one problem in language learning, that of discriminating between the different senses of the same form and of using each sense correctly” (For further details on polysemous words, see section 3). While I agree with Laufer (1997) on the difficult nature of these words, I believe that most of the problems involved with understanding and teaching this set of English vocabulary have been resolved, at least for polysemous words, due to the research in cognitive linguistics (e.g., Brugman, 1981; Lakoff,

1987; Tyler and Evans, 2003). For example, words, which were considered as homonyms before the 1980's, are now regarded as polysemous and teachers and language learners come to see how we can work out their metaphorical meanings from their literal meaning (See section 3 for examples).

Word Frequency

Research on word frequency has yielded useful word lists such as the 2000-*word General Service List* (West, 1953) and *The Cambridge English Lexicon* (Hindmarch, 1980). Inspired by this, Nation and Xue (1984) brought the research a step further and established the academic *University Word List*.

After analyzing two short texts written for native speakers of primary and secondary levels, Nation (1990) found that about 87 percent of the words in both texts belong to the 2000 high-frequency words and the others are either low-frequency or academic words. While the former set is comprised of a large group of lexical items occurring very infrequently and covering a very small proportion of any text, the latter set is smaller in number and is made up of only ¹¹800 academic words - the university word list (UWL)(Table 2.2). According to Nation (1990), by mastering the high-frequency word list and the UWL list, learners will have coverage of 95 percent of any English text.

¹¹ The UWL was substituted by the Academic Word List (AWL) in 2000. Nation agrees that this list is better than his in equipping EFL learners with necessary academic vocabulary.

Table 3.2: Word types and text coverage

Proportion of text	No. of words	
High-frequency words	2,000	(87%)
University word list	800	(8%)
Technical words	2,000	(3%)
Low-frequency words	123,000	(2%)
Totals	128,000	(100%)

Nation (1990, p. 16)

Also, to justify the usefulness of high-frequency words, Nation (2001) examined the frequency of this layer of vocabularies in speech, in fiction, in newspapers and in academic texts and found similar figures that back up his hypothesis (see Table 2.3).

Table 3.3. Text type and text coverage by the most frequent 2000 words of English and an academic word list in four different kinds of texts

Level	Conversation	Fiction	Newspapers	Academic text
1 st 1000	84.3%	82.3%	75.6%	73.5%
2 nd 1000	6%	5.1%	4.7%	4.6%
Academic	1.9%	1.7%	3.9%	8.5%
Other	7.8%	10.9%	15.7%	13.3%

(Nation, 2001, p. 17)

To sum up, as not all words carry the same value in the sense some words are more common in speech and writing, learners should pay more attention to high frequency words in order to acquire the basic structure of a language. In this context, Nation (2001) suggests learning and teaching high frequency words through direct teaching which includes teacher explanation and peer teaching, direct learning which involves studying from word cards and dictionary use, incidental learning, and planned encounters- graded reading and vocabulary exercises. These ways and others will be discussed in the following section.

3.2.2 Current Trends in Teaching Second Language Vocabulary

Introduction

Much of the current trends used in teaching vocabulary are in favor of explicit vocabulary instructions. Such a tendency stems from a conviction that indirect vocabulary teaching is insufficient for EFL learners to form a substantial vocabulary base (Schmitt and McCarthy, 1997, Sökmen, 1997; Schmitt, 1997; Laufer, 2008) (see chapter 2 for more details about direct versus indirect vocabulary teaching).

Much of this subsection aims at discussing common techniques used in deliberate vocabulary instruction.

Focus on high-frequency words

The previous discussion of word frequency shows that, as Nation (1990) puts it, high-frequency words are so important that any “time spent teaching them will be well repaid because they cover a lot of text and will be met often” (p. 14). This also applies to the Academic Word List (AWL) which replaced the University Word List in 2000 (Coxhead, 2000). As for the low-frequency words, Nation argues that they are not worth spending too much time on, especially in EFL context where students have little exposure to English due to the limited amount of time they have for their English classes. To tackle such words, Nation (1990, 2001) suggests equipping learners with strategies like guessing meaning from context or using word parts.

Being aware of its usefulness in vocabulary instruction, many textbook designers and teachers have applied insights from vocabulary frequency research into pedagogy and particularly in the selection of *the to-be-learned* words. In this context, the French course *Voix et Images*, which appeared in the 1960's, was perhaps the pioneer to be guided by vocabulary frequency (Cook, 2008). In the 1980's, many course books adopted this approach in choosing the vocabulary to teach, an example of which is *People and Places*, Cook (1980).

While Nation (1990) advocates the deliberate teaching of high frequency words, Cook (2008) believes that we should not worry too much about these words as they will be supplied automatically to students as long as they are “getting reasonably natural English” (p. 49).

While this may be true when teaching English in an English-speaking environment, it may be less suited for an EFL context. For example, in my experience, English course books used here in many of the UAE governmental schools include non-authentic English materials, which negatively affects the learning of the high frequency words. Albeit studying English for 12 years before joining university, many of the subjects of my study (see Methodology) obtained low scores on Nation's vocabulary levels tests which aim to gauge learner's knowledge of high frequency words (see chapter 5 for the participants' results in VLT). For this reason, I agree with paying special attention to these words in term of selection and gradual incorporation in English language course books.

Providing enough repeated encounters for the targeted words

For a word to be truly acquired, learners should meet it repeatedly through a variety of activities and in different contexts (Sökmen, 1997, Nation, 1990). In fact, Nation (1990) believes teachers should use challenging ways to draw the learners' attention to the targeted word whenever it is encountered, ways like making the learner recall the form or the meaning of the word.

Positive reencounters of this kind (say between 5 and 16 as studies show (Nation, 1990)) are advisable because, for optimal learning of an item, learners need many occasions to know how often the word occurs, the words it collocates with, its appropriateness in different situations, its frequency, and its semantic features (Laufer, 1997).

As positive reencounters of the targeted lexical item is a pre-requisite for any real vocabulary learning, Nation (1990) calls for the necessity to pay attention to the *density index* of the language courses. By definition, the density index of a passage or a lesson or a book is "the proportion of different words to the total number of words" (p. 44). This proportion determines the easiness or the difficulty of any text, i.e., if it is high, the text becomes difficult and vice-versa. So, if the learning material does not guarantee enough repetition, teachers should create supplementary occasions to make up for the missing necessary encounters.

Research shows that repeated encounters with new vocabulary is not only significant in learning, but also in short-term and in long-term storage. According to Baddely (1990), "the act of successfully recalling an item increases the chance that the item will be remembered" (p. 56). Similarly, Pimsleur (1967) argues that if the learners encounter the lexical item very

frequently right after it is presented, then with “decreasing frequency during the succeeding days and weeks”, a greater likelihood of long-term retention will take place (p.73).

In conclusion, for optimal learning of a targeted lexical item, teachers should guarantee enough encounters with it, through interesting activities, in order for their learners to grasp all its features. In this context, Laufer (1997) suggests using entertaining, competitive, common games such as scrabble, bingo, and concentration to avoid the boredom that might be caused by working on the same words repeatedly. Also, in practice teachers should be particularly careful about the number of encounters a new vocabulary needs. Pimsleur (1967) explains that the number of repetitions and the length of the time between recalls depend on the word’s length, frequency and whether or not it is a cognate for the learner. To find out how often a word should be repeated, Pimsleur (1967) suggests using his “ideal” schedule (p. 75). Nonetheless, it would appear that the learners’ learning habits, their cognitive processing styles and their vocabulary leaning strategies should be taken into consideration when deciding on the number and the manner of the encounters.

Facilitating retention by promoting a deep level of processing

A big challenge facing vocabulary researchers is how to make EFL learners retrieve previously learnt words easily from the mental lexicon. This is particularly difficult in intermediate and advanced learners. According to research conducted in this area, for a word to be remembered, teachers need to make sure that it is taught properly and stored in the long-term memory. In this context, Boers and Lindstromberg (2008) postulate that such a goal can be achieved if teachers and researchers apply insights from memory theories into the teaching of vocabulary. Two are particularly relevant here: *levels-of-processing theory* and *dual coding theory*.

The first theory of central pertinence to the issue of remembrance of lexical items is *levels-of-processing theory*, according to which stimulus information is analyzed at a series or hierarchy of processing stages (Craik and Lockhart, 1972). According to these two researchers (1972) stimulus perceptual analysis “proceeds through a series of sensory stages to levels associated with matching or pattern organization and finally to semantic associative stages of stimulus enrichment” (p. 675). While the preliminary stages (sensory) are claimed to yield shallow processing, the later stages (pattern recognition and stimulus elaboration) can give rise

to deep processing. For example, a shallow processing of a word occurs when one skims over a sentence in an attempt to understand it without paying attention to its individual words. A deeper level of processing, on the other hand, happens when one dwells upon individual words (by paying attention to its meaning, form, part of speech, synonyms, and collocates) (Craik and Tulving, 1975).

Proponents of this framework claim that deep processing can lead to better recall in the sense that once a word is deep processed, its representation in the memory becomes mentally elaborated, i.e., it becomes associated with a bigger number of related words and images, thus allowing more potential retrieval pathways.

Pedagogically, instructors could seek activities and techniques to help students process the words more deeply for better understanding and retention. Successful activities would include exercises on the word form, meaning, collocation, and semantic connections.

Equally important for comprehension and recall of vocabulary is *dual coding theory* (henceforth DCT) - a cognitive theory which was initially proposed by Paivio (1971). Paivio proposes that the human mind consists of two distinct, independent cognitive subsystems that process knowledge simultaneously. The *verbal subsystem* contains, as (Clark and Paivio, 1991, p. 51) put it “visual, auditory, articulatory, and other modality-specific verbal codes (e.g., representations for such words as *book, text...*” and a *nonverbal* one that comprises modality-specific *imaginal representations* for shapes, environmental sounds, actions, and other non-linguistic objects and events. Although these two subsystems are distant and functionally independent, they are interconnected through *referential links*. Other links that characterize Paivio’s model are the *associative connections* which, on the verbal side, link new words to other words from the same field, and on the visual (nonverbal) side join new images to other related images.

Linguistically, according to the DCT, language is represented in the verbal subsystem in the form of language-like symbols and can be, in certain cases, linked to the pictorial subsystem via *referential links*. For example the word *book* is represented in the verbal subsystem as a verbal code and in the non-verbal, pictorial subsystem as a picture of a book. Nonetheless this dual coding - i.e., the presence of the word in both subsystems as a verbal code and picture might be true for concrete words only as it is easy for teachers and learners to picture them.

When teaching new vocabulary, teachers could use pictures to help learners establish the necessary referential and associative links for better storage. When, for instance, an Arab learner, living in the UAE, learns a new word whose picture already exists in the pictorial subsystem such as *tent*, this word becomes related to this subsystem via the referential links. If, however this learner is taught a new word, such as *igloo*, whose picture does not exist in his pictorial subsystem, it may not be represented there unless the teacher provides the picture of this form of accommodation.

Abstract words, on the other hand, are associated with related information within the verbal subsystem only, partly because they are difficult to image. As a way of example, while an abstract word like *unique* can be represented in the linguistic system easily, it might not be represented in the imagistic system because it is difficult to image. Consequently, when a new concrete word is taught, it activates the related verbal stored information as well as the relevant corresponding pictorial information via the referential connections that link both subsystems. Such dual activation is inaccessible in the case of abstract words because they only activate the information where they are well-stored, the verbal subsystem. For these reasons “concrete words have distinct processing advantage over abstract words because they have access to information from multiple systems” (Holcomb, Kounios, Anderson, and West, 2010, p. 2)

Pedagogically, DCT insights have the advantage of creating dual verbal-nonverbal memory traces for the newly taught words. This is beneficial for students because “the additive effect of imagery and verbal codes is better than a verbal code alone” (Clark and Paivio, 1991, p. 165). This applies to concrete and abstract words. To benefit from what Paivio and Clark (1991) called *imaginal elaboration*, teachers should provide pictures for the to-be-learned words or urge learners to image them. Such a method, as Paivio and Lambert (1981) put it,

Produce better recall than repeated encoding conditions (i.e., repeating target words aloud or silently), and even better memory than such deep encoding operations as translating into another language (cited in Clark and Paivio, 1991, p. 166).

While imaging concrete words is relatively easy, adding pictures to abstract words might be difficult. For this teachers should seek ways to concretize these words by giving examples. When an instructor teaches the word *unique*, for example, he can ask students to come up with things that exemplify its meaning, thus concretizing it.

Also, especially significant for the DCT and its applications are the beneficial effects of imagery on the newly taught words understanding and recall. When teaching new vocabulary, teachers should use pictures to activate the imagery system as such a partial cue can activate an entire related representation, thus helping the learner to better understand and later store the vocabulary in focus.

Given the empirically-evidenced benefits of DCT discussed above, teachers could use visual illustrations and concrete examples or instruct learners to use imagery when teaching abstract and concrete vocabulary as these techniques have the advantages of , as Clark and Paivio (1991) put it, “activating concrete referents and increasing the arousal of mental images in students” (p. 175).

Focus on vocabulary learning strategies

Vocabulary learning strategies (henceforth VLSs) consist of a specialized subgroup of general learning strategies. More precisely, quoting Takač,

they are activities, behaviors, steps, or techniques used by learners (often deliberately) to facilitate vocabulary learning. Vocabulary learning strategies can help learners to discover lexical items (both their meaning and form), and to internalize, store, retrieve, and actively use these in language production.

(2008, p. 106),

Research into VLSs started in the 1880’s and aimed at separating them from other language learning strategies (Takač, 2008). Such an interest in this subgroup is clearly seen in the researchers’ investigations into language learning strategies in general, many of which are VLSs (e.g., Chamot, 1987; O’Malley, 1987 and Oxford, 1990) and the wealth of research

aimed at discovering the efficiency of applying individual strategies into vocabulary learning (Takač, 2008, p. 58).

Such an early attempt marked the departure of VLSs from language learning strategies in general, however, the real separation was clearly seen in Schmitt’s taxonomy (Schmitt, 1997) of VLSs which is considered as the most comprehensive typology (see table 3.4 below) . Other attempts worth mentioning when it comes to identifying and categorizing VLSs also include Nation (2001) and Takač(2008). Although these taxonomies differ in the number of strategies they encompass and in the headings under which they are grouped, they share some characteristics (for an overview of these taxonomies, see Takač, 2008). Below are examples of VLSs extracted from Schmitt’s taxonomy (1997).

Schmitt divides vocabulary learning strategies into five groups, the first two groups A and B, under the heading of *definition strategies*, are used by learners to discover the meanings of new words and the other three (C, D and F), under the heading of *social strategies*, are used to consolidate the newly-encountered words.

Table 3.4. Schmitt’s five basic strategies

Strategy Group	Example
Strategies for the discovery of a new word’s meaning A. Determination strategies B. Social strategies	<ol style="list-style-type: none"> 1. Analyze part of speech 2. Make word lists <ol style="list-style-type: none"> 1. Ask teacher for an L1 translation 2. Discover new meaning through group work activity

<p>Strategies for consolidating a word once it has been encountered</p> <p>Social strategies</p> <p>C. Memory strategies</p> <p>D. Cognitive strategies</p> <p>F. Metacognitive</p>	<ol style="list-style-type: none"> 1. Study and practice meaning in a group 2. Teacher checks students' flashcards or word lists for accuracy <ol style="list-style-type: none"> 1. Study word with a pictorial representation of its meaning 2. Image word's meaning <ol style="list-style-type: none"> 1. Verbal repetition 2. Written repetition <ol style="list-style-type: none"> 1. Use English language media (songs, movies, newscasts, etc) 2. Testing oneself with word lists
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(Adapted from Schmitt 1997, p. 207)

In what follows, I explore the main payoffs of VLSs and on the need to teach vocabulary strategically.

Potential benefits of vocabulary learning strategies

(1) Promote learner autonomy

By acquiring a repertoire of VLSs, learners can learn new vocabulary items on their own and expand their vocabulary stores. Guessing words is one of the strategies that are believed to help learners work out the meanings of tricky words with the help of contextual clues. Schmitt (1997), expanding the notion of context, states that this latter concept "should

be taken to mean more than just textual context, since contextual clues can come from a variety of sources” (p, 209) such as pictures and gestures in spoken discourse. This vocabulary-guessing technique has been widely promoted by many researchers and teachers because it helps learners in EFL contexts meet their vocabulary needs on their own, thus, partly providing a solution to the limited classroom amount of time these learners have. Also such a strategy, as Nation (1990) suggests, can help learners cope with low-frequency words because this layer of words covers a very small proportion of any text and, therefore, is not worth spending time on.

Nonetheless, for guessing word meanings from context to yield its optimal benefits, the context should be rich with clues and the learner should have a certain level of proficiency and know how the strategy works (Schmitt, 1997, p. 209).

(2) Encourage cooperative group learning

Social strategies for discovering new words’ meanings and consolidating them such as those mentioned in Schmitt’s taxonomy (see table 3.4) have the potential to help learners and particularly the shy students to cooperate with each other and with the teacher to work out the meanings of difficult, newly-encountered vocabulary items. However, some social strategies such as asking teacher for L1 translation might not be very successful as it requires the instructor to know the learners’ L1. Also, often words just are not equivalent between languages.

(3) Enhance storage and retrieval

The ability to internalize information in the memory is indispensable for successful language learning. For this reason, human memory is considered as a central tool for the acquisition of linguistic skills (Thompson, 1987). Such a belief in memory power has given support to research in memory strategies, traditionally known as mnemonics, whose role is to “help individuals learn faster and recall better because they aid the integration of new materials into existing cognitive units and because they provide retrieval cues” (Thompson, 1987 p. 43).

Mnemonics derive their power from their abilities to associate the new target words with already acquired knowledge stored both in the verbal and pictorial subsystems. More precisely, the targeted words can be linked to their synonyms, antonyms, or any related words

to form semantic maps in the verbal / linguistic subsystem. Likewise, these words can be linked to pictures and vivid experiences in the learner's pictorial / imagistic subsystem.

Such associations can be partly reached through the best known and most researched mnemonic linguistic technique, the *key word method* (for a detailed discussion of mnemonics, see Thompson, 1987). This method, as Rubin and Wenden (1987) put it, "calls for establishment of an acoustic and imaginal link between an L2 word to be learned and a word in L1 which sounds similar" (p. 44). So, creating such strong bonds that connect the new with the old contributes to not only long-term retention, but also to more chances of retrieval - calling up language from storage. However, in spite of their reported efficiency, the key word method and mnemonics in general came under criticism.

Thomson (1987) summed up some of the most notorious pitfalls mnemonics are plagued with, three of which are: First, generating mnemonic cues by learners can be time-consuming, thus hindering learners in EFL contexts, where classroom time is limited, to learn and use other VLSs. Another shortcoming that may discourage teachers from adopting mnemonics is that "the learner who automatically relies on a mnemonic may fail to perceive the inherent meaningfulness of the material to be remembered" (Thompson, 1987, p. 48). Also, more importantly, abstract words do not always lend themselves easily to mnemonic associations, which minimizes the potential use of this strategy in L2 learning (Thompson, 1987).

(4) Facilitate mechanical Practice

Techniques such as repetition and using mechanical ways to study vocabulary (e.g., keeping vocabulary notebooks, using flashcards and word lists) are cognitive strategies that are suitable for mechanical practice. These strategies, though blamed for being mechanical and uncreative, are so entrenched in many learners and, as Schmitt (1997) reports, can help learners revise their vocabulary, expand it, and reach high levels of proficiency.

The need for vocabulary strategic teaching

Given the wealth of benefits VLSs can offer, many researchers (Cohen, 1998; Nation, 2001; Takač 2008; Schmitt, 1997; Nation, 1990) call for the necessity of providing vocabulary strategies-based instruction. Such demand is echoed by Cohen (1998) who claims that:

Language learning will be facilitated if students become more aware of the range of possible strategies that they can consciously select during language learning and language use. The view taken is that the most efficient way for learner awareness to be heightened is by having teachers provide strategies-based instruction to students as part of the foreign language curriculum.

(1998, p. 65)

According to this view, words will be better learned if learners are taught VLSs. At this level, Cohen (1998) claims that teachers should explicitly “teach learners how, when, and why strategies can be used” (p. 69). Such strategy training is crucial to help learners know and skillfully use VLSs.

Takač divides strategies into formal VLSs - traditional, mechanical rote learning strategies and Memory VLSs - deep cognitive processing strategies. According to strategies-based instruction proponents, VLSs should be tailored to meet the learners’ proficiency levels and their vocabulary needs. Formal and adapted memory VLSs for instance could be focused on in lower levels because they do not require a lot of deep thinking. Memory skills, however, could be taught to upper intermediate and advanced levels because at these stages learners have a better level of language proficiency that can help them learn and use memory, deep thinking strategies. In this context Piquer (2008) reports the findings of three studies that show that guessing the figurative senses of some polysemous words through their literal meanings - a cognitive VLSs - can be adapted and successfully taught to young learners. Also strategies-based instruction advocates claim that VLSs - formal, cognitive, metacognitive etc. - are convenient in all cultures. For example, Japanese learners are found to prefer traditional, mechanical rote learning strategies and refrain from using strategies requiring deep cognitive processing. In this case, Kudo (1999) states that strategy instruction and use should not be *necessarily culturally conditioned* and, as Bedell and Oxford (1996) convincingly put it “culture should not be seen as a straight jacket, binding students to a particular set of learning strategies all their lives” (p. 60). This implies that although some learners show an inclination towards some mechanical strategies at the expense of cognitive ones, we still should try to introduce them to new strategies.

In spite of the importance of VLSs in teaching vocabulary in general, Csábi (2004, p. 233) claims that none of these strategies has provided “the explanations and motivations for the related senses” of polysemous words. Such an attitude is shared by Boers and Lindstromberg (2008) who argue that none of these VLSs or mnemonics has exploited the *linguistic motivation* of polysemous words “in an overtly principled fashion, but instead treats vocabulary as arbitrary” (p. 14).

In what follows, I will shed light on how polysemous words are presented and taught to EFL learners. I will also examine some of the CL-inspired studies that attempted to apply insights from cognitive linguistics to the teaching of polysemous words in EFL contexts.

3.2.3 The Status of Polysemous Words Teaching in EFL Contexts

Introduction

This part attempts to focus on how polysemous words are treated in EFL course books in general and in UAE English textbooks in particular. In order to see how polysemous words are treated in the Emirati context, I will examine four English textbooks destined for UAE learners in governmental schools. Each of the examined textbooks stands for one level - primary, preparatory, secondary and university. This investigation is expected to enlighten us, partly, on how polysemous words are presented and taught to the participants of the main study of this project (see Methodology Chapter). Equally important, I will survey some of the much-cited, relevant CL-inspired studies that have focused on the teaching of polysemous words. This review will help me understand how insights from cognitive linguistics are applied to the teaching of some polysemous words (for a detailed account of these insights, see section 2 on Cognitive Linguistics and its Pedagogical Implications), evaluate the findings of these studies, and find out how I can contribute to the field of teaching polysemes.

The teaching of polysemous words in EFL course books

Polysemous words are often perceived as a “complete headache for learners” (Thornbury, 2002, p. 8). Likewise, Csábi (2004) argues that polysemes are often seen by many teachers and EFL learners of English as problematic and troublesome. The reasons behind this difficulty in dealing with polysemous words are manifold.

First, young EFL learners, in the words of Piquer Píriz, “are very often induced to associate one word with one meaning, frequently its literal, core sense” (2008, p. 222). Hence, they end up with the conviction that lexical items in English are monosemes. Also, these learners get a *fragmented* picture of a good set of English vocabulary in the sense that they are deprived of the figurative senses associated with these words (Tyler and Evans, 2004). Although figurative language learning has been traditionally linked to an advanced level of cognitive development, Piquer Píriz (2008) argues that there are semantic extensions (such as those driven from high frequency polysemes like *hand* and *head*) that are pertinent to the young EFL learners’ communicative needs (p. 222). According to Amaya and MacArthur (2006), who analysed the treatment of the polysemous senses of *hand*, *cool*, and *run* in twenty-four EFL text books, the peripheral extensions associated with the core meanings of many highly polysemes appear very late - only in intermediate and advanced levels.

Second, polysemous words’ primary meanings and the metaphorical senses extended from them are taught by many teachers, quoting Tyler and Evans (2004), as an “unorganized list of unrelated meanings that are accidentally coded by the same phonological form” (p. 152). They argue, for instance, that modern foreign language teaching books and materials have failed to explain why the four different meanings found in the below sentences (a-d) are all associated with the form *over*.

- a. *The picture is **over** the mantle.*
- b. *The teller at the central bank switched the account **over** to a local branch.*
- c. *The film is **over**.*
- d. *Arlington is **over** the river from Georgetown.*

Tyler and Evans (2004, p. 52)

Accordingly, these meanings are taught in a piecemeal fashion, thus leaving the learners with a *fragmented picture* of this word in particular and of a good set of English vocabulary in general (Tyler and Evans, 2004). This may lead to the learner’s feeling that the various uses of polysemous words meanings are arbitrary and idiosyncratic.

So far, we have seen how polysemous words’ figurative extensions are often taught in EFL contexts in intermediate and advanced levels in a piecemeal fashion. Regarding the UAE

context, I examined four English textbooks destined for four different levels and found that polysemous words are treated in the same way.

In primary governmental schools, Emirati young learners are presented with only the core, literal meanings of a very limited number of polysemous words. Primary students (grades 1 through 5) use a series of English textbooks entitled *UAE Parade*. This series is chosen by an adaptation committee composed of teachers and supervisors from the UAE ministry of education. This adaptation can be seen in the Arabic names and photos of Emirati students throughout the book. Examining *UAE Parade: Grade 3* textbook (Veramendi, 2006), we notice the scarcity of polysemous words. This is reminiscent of what Amaya and MacArthur (cited in Píriz, 2008) found concerning the rarity of polysemous words figurative senses in young EFL learners' English textbooks. Often such words are prevalent in idioms and figurative language, and as this series is directed towards UAE students as EFL learners, this sort of language is avoided. Such a tendency may be attributed to the adaptation carried out by the adaptation committee members. They might have thought that figurative language is too difficult for UAE young learners to grasp, and thus all the focus should be on the core, literal meaning of lexis.

At the preparatory level, the situation is a little bit different as the UAE preparatory learners (grades 6-10) are exposed to polysemous words' literal meanings only. For this level, learners use a series of textbooks called *UAE English Skills* (Tamim; Rabi and Saeed, 2006). Investigating one of this series (grade 7 textbooks), one can find polysemous lexical items used literally, such as: *open, push, break, stand, clean, on, and over*. Other words were used figuratively like the following:

1. She went to the library and saw that all the books were *sitting* neatly on the shelves.
2. *School clubs* can *offer* you experience in a variety of fields.
3. They cleaned up the *mess* and made strict laws.
4. The fish were so happy that they *leapt* from the water to thank us.

In spite of being used figuratively in some of the textbook readings, these polysemous words were neglected and no attention was drawn to them. At this level the authors could have

asked questions to draw the learners' attention about the multiple related meanings these words sometimes have so that learners treat these words differently.

At the secondary level (grade 10-12), the situation is better as Thomas Bye (2009), the author of the textbook used by twelve graders *On Location*, utilized authentic reading selections full of polysemous words. More significantly, the author treated many of these words as active vocabulary and included exercises (e.g., gap filling and guessing word meanings from context) to help UAE learners understand and learn them. Examining this textbook, we notice the use of glossaries following all the reading selections, best illustrated in the below extracts:

Extract 1

It's a typical day for Molly Benedict. The 12th grader gets home from Presidio Middle School. She does not **break for** cookies; she does not call a friend. She doesn't even sit down to rest. Molly heads straight for the computer in the basement [...] Molly has A quick snack and starts **chipping away at** more than 100 math problems.

(Bye, 2009, p. 6)

Glossary:

break for: to take time for

chip away at: to reduce something slowly

Extract 2

It's Thursday, and you find out you will have a big chemistry test next Tuesday. "No problem," you think, "that gives me lots of time to study. I don't need to know how to **cram for** tests. I'll **lace** this one.

Glossary:

Cram for: (informal) to study a lot of information quickly

lace: (informal) to get the best grade possible on a test or assignment

(Bye, 2009, p. 14)

As these two extracts show, polysemous words are prevalent. They occurred throughout the textbook as simple verbs - *to rest*, phrasal verbs - *head for*, *cram for*, and *burn out*, idiomatic expressions - *go nuts*, and as prepositions.

The only problem with the treatment of polysemous words here, however, is the way they are defined. As the glossaries show, the author presents the learners only with the meaning that is relevant to the context. Hence, learners might be left with the feeling that each of these multi-meaning words has one single meaning. To remedy for this problem and make learners aware of the multiplicity of meanings of polysemous words, the author could have provided the learners, on one or two occasions, with multiple meanings of a chosen word and asked them to choose the definition that goes with the meaning relevant to the context of a selected reading. In this way learners may know that some words have multiple meanings and are context-dependent (for the rewards of teaching polysemous words in accordance with the cognitive linguistics pedagogical insights, see Methodology Chapter).

At university level, the situation is a little bit different as freshmen, in the intensive program at the University of Sharjah in the UAE, for instance, (where the participants of this study are enrolled) are presented, on rare occasions, with multi-meaning words, some of which are polysemous. But the problem here is that the object of relevant tasks (see task below) is only to make these learners aware of the multiple meanings these words have. The task below appeared in a reading book entitled *Skills in English: Reading Course Book* (Phillips, 2003, p. 14), and used by first-year university students (for more information about these students and the program they are enrolled in, see participants in Methodology Chapter).

Lesson 4: Applying new skills

A. Study the words in the box below.

1. What is unusual about them?

(**Clue:** think about the meaning.)

2. Give two common meanings of each word.

a. train	c. found	e. point
b. play	d. school	f. model

As this task implies, nothing is mentioned on whether these words are homophones or polysemes. The teacher's role might be to make learners aware of the multiplicity of meanings some words have.

As this survey shows, the activities dedicated to polysemous words cannot by any means help draw the UAE learners' attention to the multiplicity of meanings these words have, and to the relatedness that exists between them - two features that are cherished by cognitive linguists for their pedagogical effectiveness in teaching polysemous words. This leads us to the following part in which I try to shed light on how some insights from cognitive linguistics have been applied into the teaching of polysemes.

Measuring the pedagogic effect of CL insights: A survey of three CL-inspired experiments

Cognitive linguists have found out that peripheral, figurative senses extend from the core, prototypical meaning of polysemous words mainly via three cognitive principles - image schema transformation, metaphor, and metonymy (for definitions of these principles and illustrating examples, see chapter 2). Since their appearance in the 1980s, many researchers and teachers have tried to measure the pedagogic effects of these three word extension mechanisms. As my intent in this project is to gauge the effectiveness of teaching polysemous words with the help of image schemas, I will begin by surveying an intervention study that tried to measure the pedagogic effect of word extension mechanisms in teaching polysemous words, and then proceed with looking at how other researchers, in other studies, tried to teach polysemous words with the help of conceptual metonymies and metaphors (for definitions of these terms, see chapter 2).

Study 1: A comparison of the effects of image-schema-based instruction and translation-based instruction on the acquisition of L2 polysemous words

In this intervention study, Morimoto and Loewen (2007) investigated the effectiveness of two methods of polysemous words instruction - image-schema-based instruction (ISBI) and translation based instruction (TBI). More specifically, the study was meant to make the participants aware of *the cross-linguistic semantic differences* between L1 (the Japanese in this

case) and L2 (English) polysemous words and to help them realize, borrowing Morimoto and Loewen's words, "that vocabulary learning is not simply a matter of one-to-one mapping of L1 onto L2" (2007, p. 354).

Participants were fifty-two Japanese high school learners of English divided into two treatment groups (ISBI and TBI) and a control group. The two treatment groups studied the same words but via different types of teaching methods, the first being the image schema-based- instruction (ISBI) and the second the translation-based instruction (TBI). While taking no instruction on the words in focus, the third group, served as a control.

Teaching polysemous words through the image schema-based- instruction (ISBI), the researcher first tried to raise the learners' awareness about the limitations of L1 = L2 equation by showing how the meaning *break* can be translated into Japanese in different words. In phase two, the researcher presented the learners with the image-schema of the core meaning of *break* and showed how figurative senses are extended from it by means of metaphor. Next, learners were invited to translate five English sentences including the verb *break* into Japanese.

Teaching polysemous words through the translation-based instruction (TBI), the researcher, using Japanese as the vehicular language, made learners aware of the limitations involved with word-for-word translation of polysemous words, as was done with the ISBI group. In phase two, the researcher provided the learners with a dictionary-like inventory of the different meanings of the word *break*, without explaining how the peripheral senses are derived from the core meaning. In the next phase, the participants were invited to translate 10 English sentences including the word *break* into Japanese.

In order to examine the effectiveness of both types of instruction methods, the participants took a pre-test, and two spaced delayed post-tests, post-test 1 (after two days) and post-test 2 (after two weeks). The pre-test included two types of vocabulary tests - an acceptability judgment test and a production test. The first type was meant to measure the participants' receptive knowledge of *break*, as the focus word, and *over* as another polyseme which was not targeted in the treatment. The researcher asked the participants in both groups to read English sentences including both *break* and *over* and judge whether the sentences were semantically appropriate or not (see examples below). The researchers included *over* in the test in order to find out how well the experimental participants would transfer the knowledge they learnt about the underlying mechanism of meaning extension of one polysemous word

i.e., *break* (how figurative senses are extended from literal, core meanings with the help of image schemas and by means of metaphor) to work out the meanings of *over*.

Examples of acceptability judgment test items

- 1) A storm broke some branches off the tree.
- 2) *They broke the old building and built a new one.
- 3) The king ruled the country for over 100 years.
- 4) * She wears a ring over her middle finger.

Morimoto and Loewen (2007, pp. 371-372)

The second type of vocabulary test was a production test in which the participants were asked to look at a series of pictures and write sentences that describe each picture. Students were expected to use *break* and *over* in their sentences.

Overall, unexpectedly, the findings showed that the ISBI is as effective as TBI for judging the semantic appropriateness of *break* and *over* and for using these two words in appropriate sentences. Equally significant, the ISBI group and the TBI group outperformed the control group on post-test 1 only.

Morimoto and Loewen expected that the new ISBI would be more effective than the traditional TBI in helping Japanese learners understand polysemous words and use them appropriately (2007, p. 363). But as the results failed to prove this, the researchers gave possible explanations in an attempt to account for their findings. First, the teacher who delivered the treatment for both groups “could have failed to fully differentiate ISBI from TBI” (Morimoto and Loewen, 2007, p. 361). Second, the teacher-centered type of instruction and the limited time allocated for the twenty-minute treatment lesson could have prevented the ISBI group from the relative depth of processing of the mechanism underlying the polysemous words meaning extension. Third, the researchers argue that the one-off lesson the participants had on *break* could have been insufficient to guarantee the learners’ full processing and restructuring of knowledge.

While I agree with Morimoto and Loewen’s possible explanations, one may add other factors that might have contributed to the reached unexpected results. First, the researchers expected the image-schema-based instruction approach to be more effective than the translation-based approach in the acquisition of polysemous words partly because the former

approach uses dual coding - verbal explanation and pictorial aids (image schema of *break* here). But as the participants' cognitive processing style, as a learner variable, was not well controlled, the anticipated results were not reached. Elaborating on this, it was argued that learners in general can be characterized either as *low imagers* or *high imagers* when processing information (Childers and Houston, 1985; Boers and Lindstromberg, 2008). High imagers are learners who think in images as they, for instance, can form mental pictures when teachers introduce new lexical items. Low imagers, however, are learners who lack this cognitive processing ability and are thus disadvantaged compared with high imagers. Researchers (e.g. Boers and Lindstromberg, 2008) suggest that teachers help these students by complementing the verbal explanation with pictorial aids when introducing new lexical items. Back to my point, the fact that no differences were seen between the scores of the ISBI and the TBI groups can be attributed to the fact that the ISBI and TBI participants were all high imagers and in this way the plus (the pictorial aid) the ISBI had would not have made the expected difference because the TBI learners could have been high imagers and thus formed pictures from the delivered instruction.

Second, extending the issue of time constraints a step further, one may deduce that the limited twenty-minute lesson the ISBI group had on the word *break* might not have given the participants the sufficient time to understand how figurative, abstract senses of the word *break* are extended from the core, literal meaning through the *pathway* metaphor. According to Boers and Lindstromberg (2008), the image-schema-based type of instruction is mentally challenging, and thus requires more than a twenty-minute, one-off lesson to be fruitful. In this respect, in order to measure the effectiveness of ISBI in polysemous words acquisition, I think that it might be appropriate that teachers apply this type of instruction to a number of polysemous words so that learners can understand how the mechanism of word meaning extension works.

While this study tried to investigate the effectiveness of image-schema-based instruction and the translation-based instruction on the acquisition of L2 polysemous words, other studies, such as the two mentioned below, concentrated on metaphor and metonymy as chief cognitive principles of polysemous words' meaning extension.

Study 2. Polysemy in English and its implications for teaching

In this experiment, Csábi (2004) investigated the pedagogic effectiveness of teachers and learners' awareness of the cognitive conceptual mechanisms - conceptual metaphors and conceptual metonymies - giving rise to the network of senses of the English verbs *hold* and *keep*. Participants selected for the study were 52 Hungarian secondary school students. They were divided into four learner groups (two experimental groups and two control groups) according to their levels of proficiency.

Immediately after the teaching phase, a twenty-two-item test including known and new senses of *hold* and *keep* was administered. The three-task test focused on *hold* and *keep* as polysemous words and phrasal verbs expressing either literal or figurative meanings. The four learner groups took also a delayed post-test (one day after instruction) after the intervention.

In the experimental condition, the researcher presented the participants with the core meaning of *hold* as illustrated in the following examples:

1. She **held** the purse in her right hand.
2. The dog **held** the newspaper between its teeth.

Csábi (2004, p. 240)

She explained to her students how the *agent* (e.g., she, the dog) can be human or nonhuman and the *patient* (e.g., purse, newspaper) is usually a concrete object. She made clear that holding something means possessing. The experimental learners were also shown how figurative senses of *hold* are extended from its prototypical meaning via conceptual metaphors (Example 3) and conceptual metonymies (Example 4), as illustrated in the table below.

Table 3.5. Figurative meanings of *hand*

Example	Meaning extension mechanism
3. She holds a firearm certificate.	POSSESSING IS HOLDING (conceptual metaphor)
4. Demonstrators held the square for months.	THE HAND FOR CONTROL (conceptual metonymy)

Concerning *keep*, the second targeted polysemous word, Csábi (2004) presented the participants with the core meaning followed by figurative extensions. The explanations provided for both words were accompanied by pictorial support in the form of gestures, miming, and drawing.

In the control condition the researcher used the same materials, but did not explain how the figurative senses of *hold* and *keep* are extended from their core, central meanings. Instead, the targeted words and their meanings were provided with their Hungarian equivalents.

The computed statistics reveal that the experimental students outperformed their control peers, hence suggesting significantly that the explicit CL explanations of the semantic networks of *hold* and *keep* can be more effective than memorization in polysemous words teaching and learning.

While admitting that Csábi's (2004) study is interesting for trying to put insights from cognitive linguistics to pedagogic test, one may notice a few pitfalls, the most important of which is *the crowding effect*. The forty-five-minute delivered lesson was too short for the wealth of information presented by the researcher to be fully assimilated by the learners. It is axiomatic that understanding cognitive semantic analyses involved in the use of cognitive linguistics insights to teach polysemous words is mentally demanding (Boers and Lindstromberg, 2008). More precisely, showing how the figurative senses are extended from the core meanings of two polysemous words via conceptual metaphors and conceptual metonymies in phrasal verbs and idiomatic expressions is not an easy task. For this reason, I believe that these insights should be applied into pedagogy in a piecemeal fashion on many occasions.

Study 3: A cognitive semantic approach to teaching prepositions

In this experiment, Boers and Demecheleer (1998) tried to show that students might have better chances of correctly interpreting unfamiliar figurative senses of *beyond* if they are given cognitive semantic analyses of its core meaning and if shown how figurative senses are extended from the core meaning - *the metaphorization process*.

The metaphorical senses of *beyond* used in the experiment are unfamiliar to the 73 French-speaking students of English who participated in this experiment because *beyond* has no one-to-one equivalent in French.

Unlike the way in which *beyond* is defined in English learner dictionaries, the researchers included in their definition the notions of *different regions* and *distance*, as illustrated in the example below (Boers and Demecheleer, 1998, p. 203).

1. We cannot recover our **ball**; it's beyond the neighbor's **hedge**.

Here the two entities - the *ball* and the *hedge*- are conceived as being situated in different regions. Consequently, there is some distance between them. According to the researchers, these two notions are relevant for the metaphorical extensions of *beyond*, and could facilitate the learners' comprehension of new and even unfamiliar figurative senses of polysemous propositions. In other words, if learners grasp these two notions, it will be easier for them to understand the metaphorical senses generated by the following conceptual metaphor- ABSTRACT INACCESSABILITY IS DISTANCE.

2. We cannot buy this house; it's *beyond* our means.
3. Her recent behavior is way *beyond* my understanding.

(Boers and Demecheleer, 1998, p. 203)

In the experimental condition students were presented with the *spatial*, core meaning of *beyond* accompanied by "cognitive semantic definitions (located at the other side at some distance from and, moving into another region at the other side of)" (Boers and Demecheleer, 1998, p. 203). In the control condition, however, students were presented with the traditional definitions of *beyond* (located at the farther side of, moving to the other side of).

This intervention was followed by a test in which the participants were asked to translate and rephrase sentences containing metaphorical uses of *beyond*. The results revealed that the experimental students significantly outperformed their control peers.

While the cognitive semantic analyses included in this experiment might be enjoyable for most teachers, we should not overestimate the learners' ability to engage in these sorts of analyses and in figurative thought (Boers and Lindstromberg, 2008). Also, I believe that such analyses could have been made easier had the researchers presented their learners with the image-schemas illustrating the core meaning of *beyond*.

Concluding Comments

Though these surveyed interventions were well-designed in terms of data collection, analyses etc., they were found to suffer from some pitfalls, some of which are:

First, all of these experiments are small-scale. All the yielded findings were based on one-off lessons, and this may jeopardize their validity. Insights from cognitive linguistics require figurative thought and are might be mentally challenging for students, especially low imagers. For this, teachers and researchers had better expose their learners to many examples to maximize their chances of understanding how these insights work.

Equally significant, due to time constraint, none of the researchers have examined the participants' cognitive processing styles and their vocabulary leaning strategies. Investigating the learners' cognitive processing styles might be helpful because it can shed light on whether they are high imagers (those who tend to think in images) or low imagers (those who tend to think in words). Researchers' awareness of their learners' processing styles might be helpful in the tailoring of the treatments and in data analysis. Concerning the vocabulary leaning strategies (VLSs), researchers may better instruct polysemous words if they gain some knowledge about their learners' VLSs in general and about whether their learners have memory, deep thinking or traditional, rote learning VLSs. In other words, knowledge about the learners' characteristics and styles may help teachers alter their teaching styles to meet their learners' needs.

Summary

In this section, I have shown how since the 1990's, a resurgent interest in vocabulary description, acquisition, and pedagogy has emerged and yielded a wealth of research (Nation, 1990, 1991; Meara, 1996; Coady and Huckin, 1997; Schmitt, 1997; Schmitt and McCarthy, 1997 and Read, 2000). It is thanks to this research that we now know more about how vocabulary is presented and processed in the memory and how it can be taught and retained in and retrieved from the human brain. More precisely, memory theories argue that when a single-meaning word is targeted, it becomes represented in the verbal system and can be linked, via associative links, to other words such as synonyms, antonyms, and other related words belonging to the same domain. Also, newly-taught words, especially concrete words, can be linked to the non-verbal, pictorial subsystem via referential links.

I have also explored the teaching of polysemous words in EFL contexts, including the UAE's, and found out that polysemous words are treated like single-meaning words in the sense that their related senses are taught in a piecemeal fashion as the "strategy commonly employed by teachers is to not deal with the various senses of a certain word all at once, but to explain the specific senses when they turn up" (Csábi, 2004, p. 233).

I have ended by surveying some studies that have tried to apply cognitive linguistics insights into the teaching of polysemous words. Such an evaluation showed the modest superiority of cognitive linguistics insights over the traditional techniques in teaching polysemous words, and the pitfalls these experiments had.

The examination of these interventions has allowed me to know about the difficulties and problems involved with applying the cognitive linguistics insights into the teaching of polysemous words. In my study I will try to remedy for these problems and extend research into polysemous words teaching in accordance with cognitive linguistics a step further. While this section focused on vocabulary and polysemous words learning and teaching, next section will deal with vocabulary and polysemous words testing.

3.2.4 Vocabulary and Polysemous Words Testing

Introduction

The focus of this section is on the assessment of vocabulary in general and polysemous words in particular. There are a number of reasons for incorporating vocabulary knowledge testing research in this project.

Part of the methodology of this project is the construction of a test destined to assess the subjects' knowledge of the multiple meanings of polysemous words. Secondly, the polysemous words knowledge test (PWKT), used in this project, necessitates the examination of the new trends in assessing vocabulary in EFL contexts - measuring EFL learners' vocabulary depth and breadth. Equally important, in designing the PWKT, I want to ensure that his instrument meets the validity and reliability criteria. For these reasons, I will briefly and selectively investigate the vocabulary assessment areas that are pertinent to vocabulary tests criteria - validity and reliability, design, and types leading up to the discussion of the vocabulary depth assessment measures relevant to this study.

Test Criteria

For any vocabulary test to yield a true picture of the learner's vocabulary knowledge, it should be characterized by validity and reliability.

A. Validity

Validity is an indispensable test criterion that should characterize any test. Before World War II, psychologists and teachers used to establish validity of tests by correlating their scores with already established tests' results. In the 1950's and over the next four decades, however, Cronbach (1955) and other researchers broadened the scope of validity by postulating that it should be divided into three types - content validity, construct validity, and criterion validity.

Out of dissatisfaction with the outcome of these *validities*, Messick (1995) and other psychologists revolutionized the triple view of validity in favor of a different modern conception which considers validity is as a *unified concept*. In what follows, I will briefly explore the traditional triplet view of validity, and then compare it with its modern modified view.

(1) The Traditional conception of validity

To ensure validity, a test designer has to be clear about what the test is *intended to* measure and *for whom* it is intended. For example, a gap filling test which is constructed to assess vocabulary knowledge may not be valid if the test taker faces too many difficult words that can hinder reading comprehension. For this test to be valid, it should measure only what is *intended to* measure i.e., vocabulary and not any other aspect like reading comprehension.

In respect to *for whom* aspect, a vocabulary test which is appropriate for high school students is not likely to be valid for primary school graders (Gay, 1991). As validity is, as Gay (1991) puts it, “the degree to which a test measures what is supposed to measure” (p. 157), it is possible to describe tests as having a low, satisfactory, or high degree of validity.

Another characteristic of validity is that it encompasses three types: content, construct, and criterion validity. These three types are determined in different ways, for example, content validity is determined chiefly via judgment.

- Content validity

The most simplistic definition of content validity is that it is “the degree to which a test measures an intended content area” (Gay, 1991, p. 159). This type of validity necessitates the presence of both *item validity* and *sampling validity*. If, for example, the content area in focus is geography, all the test items should be about geographic facts. Also, these items should be well-chosen to help the test constructor make good inferences about the test taker’s performance in the whole intended content area. Usually, this type of validity is determined by experts’ judgments (teachers, advisors, book designers) in the intended area.

- Construct validity

A construct often refers to a *theorized psychological construct*. Construct validity is concerned with a whether “the theoretical construct matches up with a specific measurement / scale used in research” (Shuttleworth, 2009, p. 1).

The measurements of intelligence, level of emotions, language proficiency, or artistic ability are good examples. Though these concepts are nonconcrete and theoretical, they have been seen in practice (Shuttleworth, 2009). For a doctor testing the effectiveness of painkillers in the treatment of back pain, he has to make sure that he is measuring pain and not numbness

or any other factor. Therefore, only if we define construct properly can we partly guarantee construct ability, “a measure of how well the test measures the construct” (Shuttleworth, 2009, p. 1).

Wherever subjectivity to concepts is omnipresent like in the case of social sciences, construct validity is strongly recommended. In order to measure construct variability in major research in language studies, for instance, researchers often test the construct validity in the pilot study.

In spite of the researchers’ continuous efforts to devise statistical methods to test construct validity, they failed to come up with workable and practical techniques. For this reason, establishing construct validity has remained a *matter of experience and judgment* (Shuttleworth, 2009).

- Criterion validity

Criterion validity is composed of two types of validity, concurrent validity and predictive validity.

Concurrent validity is concerned with figuring how far the scores of a newly-developed test match those of another already established test. Most of the time, a newly-constructed test claims to have improvements over the already existing valid tests in terms of time or ease of administration.

To determine the concurrent validity, the evaluator should correlate the sets of the scores of the test in focus and the already established test. If the correlation is high (say $r > .80$), the new test can be considered as an acceptable substitute to the old test (Gay, 1991).

Like concurrent validity, predictive validity is the degree to which results on a new test agree with those provided by another highly dependable assessment, which Hughes (1989) sees as “the criterion measure against which the test is validated” (p. 23). But, unlike concurrent validity, predictive validity is concerned with the degree to which a test can predict the test takers’ future success and performance. Proficiency tests, such as TOEFL and IELTS, have been widely used to predict success in graduate and postgraduate studies in English. The criterion measure here could be the students’ outcome in their majors. In this respect, many studies have been conducted to investigate the predictive validity of IELTS, an example of which is Ingram and Bayliss’ (2007) study. The study aimed to investigate whether the IELTS scores obtained by a group of 28 non-English speaking students can predict their language

behavior in a university context. The obtained findings showed that the students' language behavior in the context of their academic studies was similar to that denoted by their IELTS entry tests during the first six months of degree program. Also, the researchers found that most of the students performed well in the chosen program, concluding that an overall score of 6.5 or higher was highly recommended in the chosen areas of study. However, the researchers found that disciplines necessitate different scores in individual macro skills. By way of example, in humanity-based disciplines, where there is an early emphasis on written language proficiency, the findings suggest that a minimum score of 6.0 in individual macro skills, and particularly in writing and speaking is necessary (Ingram and Bayliss, 2003). A similar concern was echoed by Paul (2007) after conducting a similar study to that of Ingram and Bayliss. The researcher found that it might be appropriate for faculties to specify the recommended scores for individual productive macro skills essential to certain disciplines instead of requiring just an overall proficiency rating (for detailed discussion of all types of validity, check Hughes, 1989 and Gay, 1991).

(2)The Modified View of Validity

The conventional conception of validity is attacked by Messick (1995) on two main fronts, first as being *fragmented* and second as being *incomplete*. Messick (1995) thinks of validity not as separate entities, but as a unified concept “interrelating these issues [entities] as fundamental aspects of a more comprehensive theory of construct validity” (p. 741). As for the second front, he argues that the old view is unable to consider validity-supporting evidence from the examination of the tests' takers responses and from the social consequences of the uses of the test scores. In this way, validity should be looked at as a comprehensive unified concept that integrates aspects from the traditional and the new models. These aspects are “content, substantive, structural, generalizability, external, and consequential” (p. 741) (for a detailed discussion of the modified view, see Messick, 1998 and Messick, 1995).

Opponents of validity as a construct, however, argue that social “consequences should not be a component of validity because test developers should not be held responsible for the consequences of misuse” (Yu, 2011, p. 8). They clarify that the responsibility should lie with the *misuser*. In order for a test to be valid, it should be reliable.

B. Reliability

The second most significant characteristic in gauging a test is reliability. It is different from validity in that it is not concerned with what is measured, but rather with how well the used measure is measuring something consistently. In other words, reliability is interested in the *consistency* and *stability* of the test takers' scores. If we measure the same students on two different occasions, and we assume that the test is administered in almost the same conditions, that the scoring is objective, and that no learning or forgetting has happened during the one-day interval, their scores should be approximately the same, otherwise the test is not reliable. The more identical the results of a test would be, the more reliable the test would be. According to Karmel and Karmel (1978), the most three commonly used techniques of estimating the reliability of *psychological* and *educational* tests are:

1. Retesting subjects with the same test.
2. Alternate form of the original test, that is, correlation of original test scores with scores on another independent test (different form) having an item content similar to the original test.
3. "split half," or "odd-even," correlation which involves a division of the test into two parts, one part being the odd-numbered questions and the other being the even-numbered questions. The correlation between scores on the odd-numbered and the even-numbered items yields a reliability coefficient for the entire test.

(p. 112)

In split-half reliability we divide all the instrument's items into two sets at random. After administering the instrument to the subjects and calculating the total score for each half, we correlate the scores and we obtain the split-half reliability estimate. This estimate is computed through Cronbach's alpha (α), the most common measure of internal consistency (i.e., reliability). That is how closely related a set of items are as a group. This measure is a generalization of an earlier form of estimating internal consistency, Kuder-Richardson Formula.

Alpha coefficient lies between 0 and 1 and may be used to describe the reliability of factors extracted from dichotomous (that is, questions with two possible answers) and/or multi-point formatted questionnaires or scales. The higher the score, the more reliable the generated scale is. It is agreed on that 0.7 can be an acceptable reliability coefficient but lower thresholds are sometimes used in the literature (Reynaldo, 2012).

New Trends in Vocabulary Measurement

As one of the intents of this study is to gain insights in EFL learners' vocabulary knowledge depth and breadth, this sub-section will focus on the various measures pertinent to two relatively new trends in vocabulary assessment - vocabulary knowledge breadth and depth. Lexical richness instruments (for measuring learners' vocabulary knowledge in written passages) will not be dealt with because the focus of the study is on vocabulary tests only. Similarly, I will not focus on the conventional types of recall and recognition vocabulary tests, such as multiple choice questions, gap filling, matching and picture labeling (For further information consult Madsen, 1983, Chapter 2; Hughes, 1989, chapter 13, Nation, 1990, chapter 5, Read, 1990 and Milton, 2011).

(A) Measuring Breadth of Vocabulary Knowledge

Vocabulary breadth (also referred to as *vocabulary size*) tests permit teachers chiefly to estimate the total number of words learners now know and to measure their knowledge of particular groups of words. As this study is concerned with the second function of these vocabulary size tests, I will explore Paul Nation's vocabulary levels test (henceforth VLT) as an exemplar of those tests destined to measuring the learners' vocabulary knowledge of certain groups of words.

VLT and similar tests (e.g. The Eurocentres Vocabulary Size Test) are useful because they can give teachers an indication of whether their learners have sufficient vocabulary for certain tasks. For instance, empirical research shows that if students have a good command of the vocabulary of the *General Service list*¹²(GSL), then they become capable of reading all the

¹² The General Service List (GSL) (West, 1953) is a set of 2,000 words selected to be of the greatest "general service" to learners of English.

texts which used that vocabulary, and of studying the words in the University Word List¹³ (UWL). According to Nation (1990) and Cobb (2006), the GSL is a prerequisite for studying the UWL for learners who plan to study majors where English is the medium of instruction.

In its original paper-based 1990 version, Paul Nation’s VLT is divided into five levels as clarified in the table below:

Table 3.6: Vocabulary level and learning Adapted from Nation (1990, pp. 79 and 263)

Vocabulary level	Type of vocabulary
2,000-word level	High-frequency words; the vocabulary of simplified reading books
3,000-word level	High frequency words; a basis for beginning to read unsimplified texts.
5,000-word level	On the boundary of high and low frequency words
The university word level	The specialized vocabulary of university texts
The 10,000 word level	A large wide vocabulary

In each of these sections, Nation (1990) used a word-definition matching with six words and three definitions as test items. Each of the five levels consists of 18 test items and 36 options presented in the form of 3 definitions and 6 words, the tree of which are distractors, as the example below:

1. business
 2. clock _____ part of a house
 3. horse _____ animal with four legs
-

¹³The University Word List (UWL) is a list of vocabulary items common in academic texts. It is composed of 808 words, divided into 11 levels. **It has been substituted by the Academic Word List (AWL) in the most recent versions of the VLT (Schmitt, N; Schmitt, D and Clapham, 2001).**

- 4. pencil _____ something used for writing
- 5. shoe
- 6. wall

(Nation, 1990, p. 265)

The VLT prides itself on testing many words in a short time. Albeit only 18 words are matched at each of the five levels of the test, 36 words are tested for the three distractors included in the six options should be read and understood by the testers. Besides, the test constructor argues that his test has sampling validity because the lexical items tested in each section were skillfully chosen so as to be the best representatives of all the words of the 5 five word levels. In order to evaluate the scalability of the test, one aspect of validity, Read (2000) administered the VLT to 81 teachers prior and post to a three-month intensive course in English for academic purposes, and he found that the test had a high degree of implicational scaling (p. 123).

This test has been widely used by teachers and researchers in many countries as an effective tool for *diagnostic vocabulary testing* of non-native-speaking students (Read, 2000). Many new versions of the VLT were developed over the last ten years, the most important of which is Laufer's *active version* (Laufer and Nation, 1995). This version kept the same test items, but changed the test format from the original word-definition matching to gap filling. Each of the five section of this new version consists of number of gapped sentences with variable numbers of the initial letters of the target words which test-takers are required to finish as in the following example from the 2000-word level:

- 1. I'm glad we had this opp_____ to talk.
- 2. There are a doz_____eggs in the basket.
- 3. Every working person must pay income t_____.

One of the main differences found between the versions is that the new version presents the target items in context. In this respect, these items need more word knowledge and more use of contextual and structural information. Also, test takers are required to supply their responses rather than choosing from given words. Equally significant, the UWL has been

substituted by the AWL in the most recent versions of the VLT (Schmitt, N; Schmitt, D and Clapham, 2001).

Although Laufer (Laufer and Nation, 1999), describes this new version as a measure of productive vocabulary knowledge, Read (2000) views it as an “alternative way of assessing receptive knowledge rather than a measure of productive ability” (p. 126).

Whatever the merits of these vocabulary size tests, they have always been criticized for their limited scope in that they have concentrated only on the *macro-level* aspect of the lexicon - the breath of vocabulary knowledge. The *micro-level* element of the lexicon - vocabulary depth - has been overlooked in the sense that, as Read (2000) put it, such measures “give only a superficial indication of how well any particular word is known” (p. 90). The VLT failed to probe the test-takers’ knowledge of the target words in some depth in that the test items cannot indicate “whether additional, derived or figurative meanings are known” (p. 91). One reason for this flaw might be the presentation of test items in isolation, which can be seen in the *passive original paper-based version* of the VLT. The absence of context cannot show the meaning the test developer intends to assess. Going a step further, knowing a word should by no means be restricted to identifying its meanings and synonyms. As we saw in section 4, Nation (1990) compiles an exhaustive list of several features of word knowledge involving *concepts and referents, associations, grammatical functions, collocations and use*.

To remedy such a situation and to address the different components of the lexicon, more attention has been paid to the formulation of vocabulary knowledge depth measures (Paribakht & Wesche, 1993; Verhallen and Schoonen, 1993 and Read, 2000).

(B) Measuring Depth of Vocabulary Knowledge

Vocabulary knowledge depth is concerned with assessing the quality of vocabulary knowledge learners have. Below are some of the main measures used to check the learners’ knowledge of vocabulary in depth.

- Interviews

This assessment procedure permits the tester and the researcher to probe the learner’s knowledge of the word in some depth. In order to see how well their students know individual words, Verhallen and Schoonen (1993) generate the following series of questions:

What does [e.g. shirt] mean?

What is a [shirt]?

How would you explain what a [shirt] is?

What do you see if you look at a [shirt]?

What kinds of [shirt] are there?

What can you do with a [shirt]?

Can you make three sentences with the word [shirt]?

(Verhallen and Schoonen, 1993, p. 350)

While such an interview may yield accurate information about a good set of aspects of the interviewees' knowledge of words, the whole process is time-consuming and impractical as it does not permit the teacher to cover more than six words in an interview (Read, 2000).

- The Vocabulary Knowledge Scale

The Vocabulary Knowledge Scale (VKS) was developed in 1993 by Sima Paribakht and Mari Wesche to track their learners' developing knowledge of a set of words in their research on incidental vocabulary acquisition (Paribakht and Wesche, 1997).

This scale permits the teacher or researcher to measure the different levels of knowledge of target words. This testing instrument involves a 5-point *elicitation scale* _ *self-report categories* (see table 3.7) in which test-takers are presented with a set of target words and are required to indicate their degrees of knowledge for each on a scale ranging from total unfamiliarity (category I), through recognition of the word and some idea of its meaning (category II & III), to the ability to use the word accurately in a sentence (category IV & V) (Paribakht and Wesche, 1997, p. 179). Through the combination of self-report and elicitation of verifiable responses, this format of VKS makes test-takers validly report their knowledge of the target words. In fact, such a format requires the test-takers "to demonstrate in some verifiable way that they know what the word means" (Read, 1993, p. 356).

Table 3.7: VKS elicitation scale – self report categories

Self-report Categories	
I	I don't remember having seen this word before.
II	I have seen this word before, but I don't know what it means.
III	I have seen this word before, and I think it means _____. (synonym or translation).
IV	I can use this word in sentence: _____. (Write a sentence)
<i>(if you do this section, please do section IV)</i>	

(Paribakht and Wesche, 1997, p. 180)

What makes this scale practical and accurate is that it helps teachers translate the test-takers' responses with the help of a scoring scale (for further details about this scale, refer to Paribakht and Wesche, 1993, 1997).

While the VKS proved to be a *workable* instrument to measure vocabulary knowledge depth, in that it, according to Read (2000), "seems to be sensitive to increases in vocabulary knowledge that result from reading activities" (p. 135), it permits to assess only few aspects of vocabulary knowledge in depth. For instance, a key feature which is not assessed by the VKS is the polysemous nature of some words. In this respect, the following sentence-composing category has been suggested to be added to the VKS "the following sentences show all the meanings I can think of for the word" (Paribakht and Wesche, 1996, p. 35, footnote 9). Responding to this, Read (2000) claims that such a category may not shed light on the participants' knowledge of the multiple meanings of lexical items (p. 136-137). This shows that the different aspects of word knowledge learners have cannot be captured through a single scale. In an attempt to fully cover this aspect, Read (2000) developed the word-associates test.

- The Word-associates Test

The word-associates test (WAT) is an instrument that attempts to assess specifically the *various meanings* and *collocational possibilities* of adjectives (Read, 2000, p. 185). This tool was developed following a series of tests trialed by Read (2000) to assess a full range of aspects characterizing vocabulary knowledge depth.

- a. The initial explorations of depth of vocabulary knowledge

In an attempt to see how well learners - at an intensive course in English for academic purposes - know individual words, Read (1993) first used an interview procedure, in which test takers were given a list of words and open-ended questions. These questions are meant to elicit responses from test takers on several features of vocabulary knowledge of each word. Albeit the efficiency of this instrument in probing the test takers' knowledge of the word in some depth, it, as we saw previously, proved to be *time-consuming* and the number of the target words assessed in a 30-minute session is very limited (Read, 2000, p. 179).

As this approach proved unworkable, Read (2000) produced a three-stage, written version of the interview with the aim of probing the test-takers' knowledge of the target words on many fronts. At the first stage, the test-takers are invited to self-assess the depth of their vocabulary knowledge, on a 4-point scale. At the second stage, the test-takers are required to answer three questions (see ¹⁴Table 3.8), the aim of which is to make sure the testees really know the target words.

Question 1 focuses on the productive use of individual words. In fact testees are required to write two sentences using the supplied words. For example, in A, they are presented with a target word *-interpret-* and a guiding word *-experiment* (see table 3.8). The guiding word is meant to cue a specific meaning of the target word. Such an activity is effective as it permits to verify the testees' awareness of the multiplicity of meanings of the target word. However, composing sentences that incorporate the target and the guiding words adds a productive writing requirement to the task, which can weaken the content validity of the interview. More critically, the rating of the yielded sentences might not be as objective as is required in valid tests.

Question 2 is concerned with the collocational possibilities of the target word. Here, the testees are expected to provide answers like to *interpret i. a poem, ii. data, iii. a language, iv. the law*. While this activity can probe the testees' knowledge of the target word partnership, the tester can never orient the testees' answers to the expected responses, as the testees can generate right, but one-sided answers like: *to interpret a book, a poem, a text, a novel*. In the same vein, suppose that test-takers were given the target word *break* and were expected to generate collocations, the ideal, answer would be *to break the law, an oath, a habit, a journey, a chair*. But what if the testees provided answers figuring literal meanings only at the expense

¹⁴This table is part 2 of the written, three-stage version of the interview.

Given these limitations, Read (2000) found it impractical and unreasonable to assess so many aspects at the same time in one go. As a result, he “opted for the modest goal of assessing how well they knew various meanings of the target words, using a less open test format” (Read, 2000, p. 180) - *the word-associates test*.

b. The creation of the format

Based on a suggestion by Paul Meara, Read (2000) created a test format in which the test-takers are presented with a stimulus word along with a group of other words some of which are relevant to the stimulus word and others are distractors. The test takers are required to select the related words (or associates) and discard the distractors, as in the following sample item (Read, 2000, p.181):

edit

arithmetic	film	pole	publishing
revise	risk	surface	text

team

alternative	chalk	ear	group
orbit	scientists	sport	together

According to Read (2000), the selected associates are related to the stimulus words in three main ways:

- Paradigmatic: The two words are synonyms or at least similar in meaning, perhaps with one being more general than the other: *edit - revise, abstract - summary, assent - agreement, adjust - modify*.
- Syntagmatic: The two words often occur together in a phrase, that is, they collocate: *edit - film, team - sport, abstract - concept, occur - phenomenon*.
- Analytic: The associate represents one aspect, or component, of the target word and is likely to form part of its dictionary definition: *team - together, edit - publishing, electron - tiny, export - overseas*.

On developing and using two tests in which the stimuli are words selected arbitrarily from the University Word List and administering them to 100 university freshmen, Read (2000) found that the WAT was flawed, in that guessing played a significant role in test results. He clarified that proficient test-takers “were willing to guess and were often quite successful at identifying two or three associates” (p. 183) (a full report of this study is found in Read, 1993). In an attempt to eliminate this factor of guessing, a new version of WAT was designed; however, it was found that guessing was still there (see Read, 1998). Also, this tool can be criticized for presenting the test items in isolation, thus preventing the test-takers from understanding them as they occur in connected written discourse. As the WAT is concerned mainly with the various meanings of the target words, context should be taken into consideration. Read (2000) counter-argues that the use of context will limit the number of the covered words, and will add a *reading requirement* to the WAT. While Read may be correct in his claim about the reading burden, an adequate, rich, written context in which difficult words are simplified (or translated into the test-takers’ mother tongue in case of EFL contexts), may alleviate such a burden.

As has become obvious from the above discussion, research in the depth assessment of vocabulary knowledge reveals that attempts to capture the different aspects of vocabulary knowledge through a multi-category scale proved impractical (e.g., Paribakht and Wesche’s VKS (1993, 1997); Verhallen and Schoonen’s interview (1993); Read’s written analogue (1993)). In light of these findings, researchers invested a great deal of interest in developing simpler tests targeting limited aspects of vocabulary knowledge depth, best illustrated in Read’s WAT.

While important, these current trends in vocabulary measurement have not found their way to teaching and testing polysemous ¹⁵vocabulary. In what follows, we look at how this layer of high frequency words has been assessed.

¹⁵For a full discussion on how polysemous words have been taught, refer to section 3.2.3, this chapter.

One more example, in the listening section of the *Heinemann ELT TOEFL Preparation Course*, Duffy and Mahnke (1996) address polysemous words and warn students that “answer choices containing words with many meanings are usually not the correct answers.” (p. 54). The options given to students (see table 3.10) are usually *tricky* as they try to focus on the literal meanings of the polysemous words in different contexts.

Table 3.10: A model for testing polysemous words in listening

<p>Model</p> <p>You will hear</p> <p>M: Jacky’s been very busy lately, hasn’t he?</p> <p>W: Yes. He’s running his father’s office.</p> <p>Q: What does the woman mean?</p> <p>You will read:</p> <p>(A) Jack runs to his father’s office.</p> <p>(B) Jack’s father is running for a public office.</p> <p>(C) Jack manages his father’s office.</p> <p>(D) Jack is running away from his father’s office.</p>

Duffy and Mahnke (1996, p. 54)

The above ways in which polysemous words are treated have many pitfalls. First, neither of the two books (Duffy and Mahnke, 1996; Philips, 2003) differentiates between polysemous words and homonyms. Second, neither book hints at the fact that the metaphorical senses of polysemous words are extended from their literal meanings, thus, depriving the learners of better understanding of a large category of English vocabulary and of the possibility to work out the metaphorical senses of polysemous words through their literal, primary meanings. Also the ways polysemous words are tested can reflect how they are taught in many English language materials, as teachers usually test what they teach.

This section looked briefly at how vocabulary is assessed. In doing so, the criteria necessary for test validity and reliability were discussed, and the different vocabulary testing

instruments were explored. A special interest was given to the measures used in assessing learners' depth of vocabulary knowledge as I constructed a test which aims at probing my subjects' knowledge of polysemous words multiple meaning. Equally important, in this section I reported the findings of two widely-used testing books with the goal of showing how polysemous words have been assessed.

3.2.5 Conclusion and research hypotheses and questions

This literature review is significant in two ways. First, based on the insights found throughout it and particularly those in pedagogical applications of the CL insights into polysemous words teaching (chapter 2, section 2), I found ways of carrying out my own study. In this study, I will implement some of what I learnt here and avoid the limitations recorded in the previous surveyed studies, which aimed to gauge the effectiveness of cognitive linguistic insights into polysemous words teaching (for a survey of three of these studies, see chapter 3, section 2 on measuring the pedagogic effect of insights from cognitive linguistics into teaching polysemous words).

Second, as this review of literature shows, and particularly the survey of the cognitive-oriented studies, there is no conclusive evidence on the primacy of image schema based method over the translation based one in teaching polysemous words within the frame of cognitive linguistics in Greek and Japanese contexts (Toupiolki, 2007, Morimoto and Lowen, 2007). Such a result can be attributed to the small scale of these studies and their neglect of important learner characteristics that may have relative contributions in the acquisition of polysemous words.

In order to address these issues and the applicability of the image schema based method in different contexts (Arab context in the case of this study), this study will consider the following **hypotheses**:

1. The experimental participants who will be taught polysemous words using the *image schema based vocabulary instruction method* (ISBM) are expected to outperform the control group, who will be taught the same words using the *translation based vocabulary instruction method* (TBM).

2. In the long-term, retention of the metaphorical senses of polysemous words will be higher for the experimental students, taught via the ISBM, than for the control students, who are taught the same words using the TBM.

Additionally, this study will address the following **questions**:

1. Are students in the experimental group likely to transfer the insights of cognitive linguistics used for learning polysemous words to their processing of the polysemes they encounter subsequently? (This concerns the polysemous words seen in the treatment compared to new ones that are encountered in the future), and
- (2) Are there any relations between the experimental participants' scores on the polysemous words knowledge test (PWKT) and their cognitive styles, language proficiency (TOEFL and VLT) and vocabulary learning strategies (VLSs)?

While this chapter focused on theoretical matters related to my study, the next chapter will deal with matters pertinent to the participants, setting, and instructional treatment of the study.

CHAPTER 4 METHODOLOGY

4.1 The study

4.1.1 Participants and Setting

The subjects that participated in the study are low-intermediate, pre-university UAE female students. These participants were divided into two groups - an experimental group and a control group, each of which consists of 20 students all from small towns called Dibba, Kalbaa, and Khor Fakken.

Before joining the university, these participants had studied in governmental schools and had been taught English as a subject, (which is usually) five hours a week for 12 years. These EFL learners had used books designed by English authors (e.g. *UAE Parade: Grade 3*, by Veramendi (2006) and *On Location: Grade 12*, by Bye (2009)) and had been taught by non-native, Arab teachers (Tunisian, Egyptian and Syrian). After obtaining their high school certificates, Emirati students whose majors' medium of instruction is English must sit the TOEFL test and get a score of 500 or higher or take IELTS and score 5. If they fail, they join an Intensive English Program (Henceforth IEP) to improve their English and maximize their chances to reach the required TOEFL or IELTS scores.

The participants in this study belong to the University of Sharjah, and, on joining this institution, they are required to take the TOEFL test. Based on their TOEFL test scores, they either join their majors (in case they get 500), or they are placed in four levels - level 1 (...<370), level 2 (373 - 437), level 3 (440 - 477), and level 4 (480 - 497).

The subjects of this study consist of level 2 students who got TOEFL scores between 373 and 437. These students were classified by the IEP faculty as low-intermediate learners, and books corresponding to this level were used in the IEP. This level was selected for this study for the following reasons: First, the students belonging to this level have the right level of English proficiency requisite for the treatment of the study. For example, these students know most of the literal meanings of the words used in the treatment, a requirement without which they cannot understand the process of metaphorical extension (see section 2.2, chapter 2). Treatment words such as *burn* and *beyond* proved to be difficult for level 1 students (personal communication with participants whose scores were below 400). Equally important, level 2 students were selected for this study because they already have some learning skills like inferencing, a skill which Tyler and Evans (2004) found necessary to understand how metaphorical senses are extended from literal meanings (the importance of this skill is

demonstrated in the treatment lessons, see section 4.2 below for more details)¹⁶. Students at levels 3 and 4 were not considered for the treatment due to their limited numbers.

As it was impossible to secure the necessary number (20 for each group) from one semester because level 2 groups' numbers ranged between 10 and 20 students, the participants were chosen from three groups over three semesters.

With respect to the teacher who taught the instructional treatment, I taught both the experimental and control groups, thus taking a teacher-as-researcher role. I am an MA holder who has taught English for 16 years, 11 of which in high schools in Tunisia and the UAE and 5 of which at the University of Sharjah, UAE.

4.2 Instructional Treatment

4.2.1 Defining the Instructional Treatment

The instructional treatment of this study is a short course aiming at teaching polysemous words using two different teaching methods. It consists of 9 short lessons for each of the experimental and the control groups. The taught words for both groups are the same. They are *hand, break, head, over, burn, push, beyond* and *root*. I chose these words for the following reasons: First, most of them belong to the first 2000 most frequent words in both spoken and written English according to *Collins Cobuild Advanced Dictionary* (2009) and *Longman Dictionary of Contemporary English* (1995). In other words, the chances for the participants to encounter these words are very high. Second, the participants knew most of the literal meanings of these words, a requisite condition for understanding the metaphorical extensions. Similarly, the participants' familiarity with the concrete meanings might help them acquire further abstract, related senses. Third, some of the words were tried in other studies with the purpose of assessing the effectiveness of the cognitive linguistics approach (e.g. *over* by Tyler and Evans, 2004 and *break* by Morimoto and Loewen, 2007). Fourth, albeit these words occur very frequently in English with different meanings in dissimilar contexts, most of

¹⁶ This should not be understood as this treatment is suitable for low-intermediate students only. This treatment can be fruitful for all levels of EFL learners on condition that some pre-treatment work should be undertaken. For example, the researcher has to teach the participants all the literal meaning of the treatment words and the necessary leaning skills like inferencing in case of lower-level students (high beginners).

the participants knew only their literal meanings. Such a gap in knowledge of other senses of very high frequency words such as these can cause obstacles that can hinder clear understanding of written and spoken English. Last, these words' literal and extended meanings are likely to expose students to different mechanisms used in word meanings extension. In fact, the metaphorical senses of these eight words are extended from their literal meanings by virtue of different cognitive mechanisms such as conceptual metaphors (as in *We can solve the problem of expensive weddings by getting to its **root.***) and image schema transformation (as is *Sam lives **over** the hill*) (see chapter 2, section 2.2 for more details and examples). Most of the definitions and example sentences of the eight target words were taken from two dictionaries, *Longman Dictionary of Contemporary English* (1995) and *Collins Cobuild Advanced Dictionary* (2009), the only two dictionaries that list the 3000 most frequent words relying on authentic American as well as British English corpora (e.g. the Longman Corpus Network and the Collins Bank of English Corpus). Frequency bands are used by these two dictionaries to give information about the most common words that belong to this group.

In what follows I explore the two methods of instruction along which the polysemous words of the treatment were explained, accompanied by two sample lessons delivered to both of the experimental and the control groups, discussing the tasks and objectives behind each lesson plan. Both lessons are kept similar in length to insure that both groups get the same timing on each of the treatment lessons.

Instructional Treatment

Methods of Instruction and Sample lessons

A. The image-schema-based vocabulary instruction method (ISBM)

The image-schema-based vocabulary instruction method (ISBM) was used with the experimental group. It is inspired from the cognitive linguistics approach to teaching polysemous words. The aim of the ISBM, as Boers and Lindstromberg (2008) put it, is to attempt “to make learners aware both of the word’s central sense and of how particular

additional senses extended from this central sense” (p. 28). It is built on a constellation of principles, the most important of which are the:

- i. embodied experience of non-propositional representations of concepts,
- ii. the key concept of image-schema (Lakoff, 1987; Dwell, 94, Tyler and Evans, 2004), and
- iii. the non-arbitrary nature of polysemous words senses.

Boers and Lindstromberg (2008, p. 28)

Also, this approach uses image schemas figuring the central meanings of the target words together with the specified, enriched schemas depicting the derived metaphorical senses. Figure 4.1, for instance, shows the primary image schema for the target word *break*.

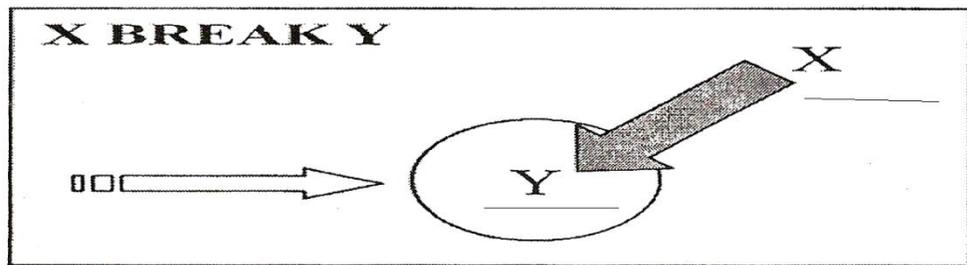


Figure 4.1: The image-schema of the core meaning of break

Tanaka (1987)

Once the X and Y are specified, the primary image schema gives rise to other specified image schemas figuring meanings such as *to destroy the shape or function of something* in Figure 4.2 and *to not do what is agreed upon / put an end to* in Figure 4.3.

Example 1: Who broke this radio?

Meaning: *destroy the shape or function of something*

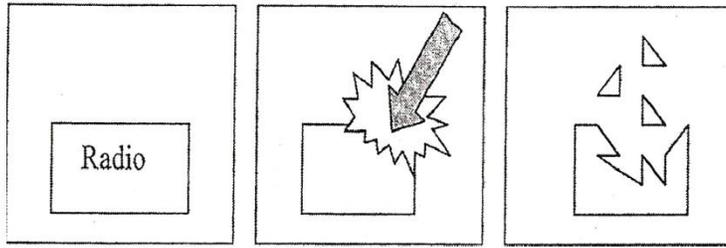


Figure 4.2: Image schema of the literal meaning of *break* (e.g. radio)

Physical Space: Exert energy so as to destroy the shape or the function of something.

Morimoto Loewen (2007, p. 370).

Example 2: You cannot break your contract now.

Meaning: to not do what is agreed upon / put an end to

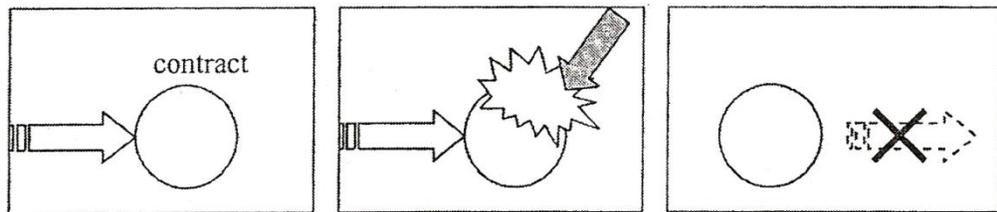


Figure 4.3: Image schema of the metaphorical senses of *break* (e.g., contract)

Abstract Space: Put an end to something that has been continued. (**Abstract:** based on ideas rather than real things)

Morimoto and Loewen (2007, p. 370)

Conclusion

In my opinion, the cognitive linguistics-inspired approach to teaching polysemous words has a number of advantages to other teaching methods: First, it will provide learners

with various senses of polysemous words not in a piecemeal fashion, but in a *gestalt*-like way, thus helping learners to capture a unified picture of language. The second payoff of this approach is that it helps learners understand the intra-lexical structure underlying polysemous words via the use of image schema. Such a tool may account for the motivations of the literal and metaphorical senses of polysemous words. It may also help learners to acquire these words as image-schemas may aid in dual-coding. In this way, EFL teachers will be equipped with adequate, teachable methods necessary to the instruction of many high frequency lexical items long assumed too complicated to teach and learn (Csábi, 2004; Morimoto and Lowen, 2007).

The third advantage, as convincingly discussed by Tanaka and Abe (1985), is that the use of image-schema has the potential to enable learners to understand the additional senses of polysemous words in the L2, particularly those which do not have exact counterparts in L1, without being constrained by its L1 equivalent (Morimoto, and Loewen, 2007).

The fourth payoff is that this approach is expected to equip EFL learners with strategies to guess the senses of novel usages of polysemous words based on their understanding of the underlying common meaning-core meaning (Tyler and Evans, 2004). The help learners will get from the understanding of the underlying mechanisms of polysemous words may supplement what they have already acquired as strategies for guessing the meanings of “tricky” words.

Finally, the cognitive linguistics inspired approach has the merit of engaging learning in “deep processing” of polysemous words, thus resulting in better comprehension, short and long-term retention. Below is a detailed description of a sample lesson on *over* - one of the target words:

Lesson Handout

Focus: *over*

Time: 20 minutes

Objectives

- a. To introduce the image schemas of both the core and some of the metaphorical meanings of *over*

b. To help students find out how the metaphorical senses are extended from the core meaning

Step # 1: To preview previous lesson (The core / peripheral meaning of *over* is already introduced in the previous reading class)

Step # 2: To create information gap: students are asked to come up with other meanings of *over*.

Step # 3: To present the image-schema and the core meaning of *over* to the learners.

Step # 4. To show how by adding further details to the central schema (the TR and LM), and by considering the sentential context and our conventional knowledge, we get new meanings of *over* related to its spatial sense.

Step # 5. To help the learners further understand the links between some uses of *over* and the presented image-schemas.

Step # 6. To explain that the semantic extension of *over* focusing on how the various metaphorical senses of *over* can be derived from the core image schema and the literal meaning it depicts.

The lesson

Step # 1. Use over in an example

Example1. The clock is **over** the board.

Step # 2. Can you come up with other sentences showing other uses of *over*?

Step # 3: Let's see how this meaning can be presented.

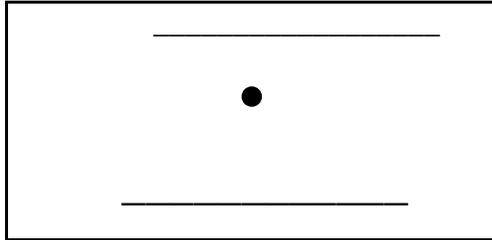


Figure 4.4: The image-schema of the core meaning of over

Tyler and Evans (2004, p 262)

The core meaning of **over** can be stated as an object/creature lying above something else (with or without contact)

Step # 4: Now let's see how some of metaphorical meanings of *over* can be presented

Spatial sense: ABC trajectory cluster

1. The cat jumped over the wall.

Meaning: moving from one side of something to the other

Examples showing metaphorical senses

1. Bob switched the money **over** to his family in India.

Meaning: transfer money from one bank to another

2. I'm happy the war is **over**.

Meaning: finished completely

3. Your monthly expenditure is **over** your monthly income.

Meaning: more than normal

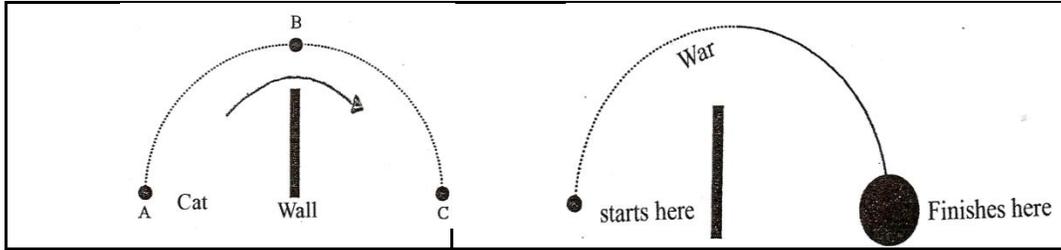


Figure 4.5 Specified schemas of ABC trajectory

Tyler and Evans (2004, pp. 265, 269)

The metaphorical senses of *over* can be stated as a process which departs from the starting point A and then arrives to point C.

Step # 5: Practice

A. Explain the following sentences with reference to the image-schemas above. (Pair work)

1. I'm happy the school year is **over**. It was a long year; it started in September and finished in August.
2. You need to be careful not to go **over** the limit.
3. Bob lives in Dubai. Every month he **switches** money **over** to his parents in India.
4. Agassi **hit** the ball **over** the net to Sampras.

B. Choose the right option

1. What might happen when the film is **over**?
 - a. The audience leaves the cinema
 - b. The audience waits for the film
2. Your friend is abroad and asks you for some money. Where to go to switch some money **over** to him.
 - a. a grocery
 - b. a bank
 - c. a police station
3.are good at jumping **over** fences.
 - a. cows
 - b. bears
 - c. horses

Step # 6: Conclusion

Part of *over* Network

transfer more than normal

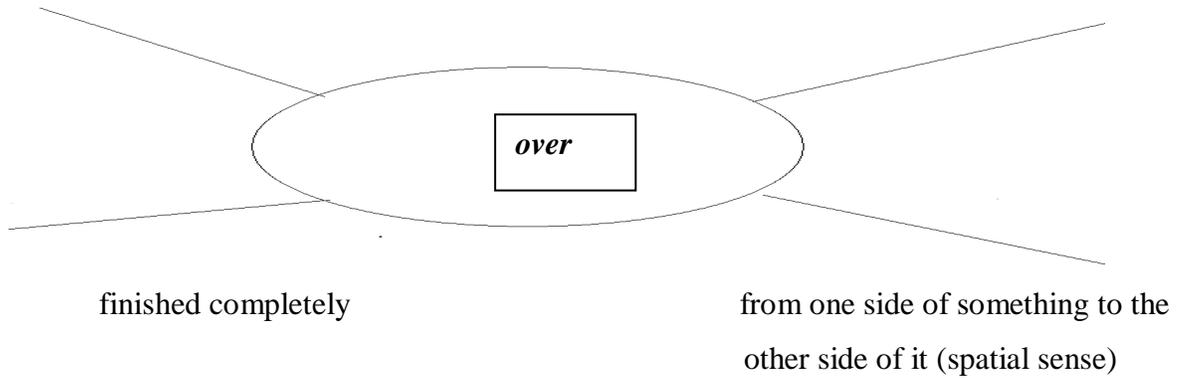


Figure 4.6. Part of the semantic network of *over*

(Adapted from Tyler and Evans, 2004, p. 272)

Homework

Put metaphorical meanings you learnt of *over* in sentences of your own.

B. The Translation-Based Vocabulary Instruction Method (TBM)

The control participants were taught the same list of polysemous words as their experimental peers along the lines of the translation-based approach. This traditional method¹⁷ treats polysemous words as homophones and teaches the different senses of polysemous words as they turn up. Thus, these words were presented to the participants in a piecemeal fashion. In each lesson, the researcher presented the participants with three metaphorical senses of three different words from the list in focus. More importantly, the researcher explained the semantics of the target words without showing how their metaphorical senses can be derived from their core meanings. Like the experimental group, the control group treatment was interwoven in their reading class, thus assuring that most of the target words (literal or metaphorical meanings) were presented in context.

The table below presents all the polysemous words' English literal and metaphorical meanings as they are used in the treatment. These are accompanied by their Arabic equivalents.

Table 4.1: Treatment words' English literal and metaphorical meanings accompanied by their Arabic equivalents.

Treatment words	Taught Literal meaning	Arabic equivalent	Taught metaphorical meanings	Arabic equivalents
1. Head (N)	Top part of the body	رأس	a. The chief or most important person b. At the top of a list c. At the front of	a. رأس - رئيس b. على رأس القائمة c. يتقدم - يتصدر

¹⁷ The traditional translation method used for teaching polysemous words' metaphorical senses for the control participants has been widely used in the UAE. Arab teachers of English usually resort to this method as they believe that it is the shortest and easiest way to teach words with abstract meanings.

2. Break (V)	destroy the shape or function of something	يكسر	<p>a. To do something better anyone has ever or faster than done before</p> <p>b. Disobey</p> <p>c. stop a habit</p>	<p>a. يحطم الرقم القياسي</p> <p>b. يخالف/يخرق القانون</p> <p>c. يقطع عادة</p>
3. Over (prep)	from one side of something to the other side of it	من جانب شيء ما الى الجانب الاخر	<p>a. finished completely</p> <p>b. more than normal</p> <p>c. transfer</p>	<p>a. منته</p> <p>b. اكثر من العادي</p> <p>c. يحول</p>
4. Hand (N)	The part of the end of a person's arm	يد	<p>a. being looked after by someone who can be trusted</p> <p>b. bring under control</p> <p>c. having a problem that must be dealt with</p>	<p>a. في ايد أمينة</p> <p>b. المسيطر عليه</p> <p>c. (المسؤولية) على عاتق</p>

5. Push (V)	To use force to make something move from you or way from its previous position	يدفع	<ul style="list-style-type: none"> a. move forward using force b. to force someone to do something c. to convince people to accept one's ideas in a forceful way 	<ul style="list-style-type: none"> a. يندفع – يشق طريقه b. يدفع c. يدفع أفكاره لغاية الاقناع
6. Burn (V)	To destroy, damage by fire or heat	يحرق	<ul style="list-style-type: none"> a. ruin one's health b. lose fat, calories ... by working out c. feel unpleasantly hot 	<ul style="list-style-type: none"> a. يهلك صحته b. يحرق السعرات الحرارية c. يشعر بالحرارة
7. Beyond (Prep)	on the further side of something	على الجانب الاخر	<ul style="list-style-type: none"> a. above, outside one's abilities / difficult to lift, believe... b. go further to include other things c. more than a particular limit 	<ul style="list-style-type: none"> a. فوق طاقة التحمل b. يتخطى ليشمل أشياء أخرى c. ما بعد - فوق

8. Root (N)	part of a plant	جدر	a. origins/place or culture that a person or their family comes from b. the main cause or source of a problem c. make a place like home / settle down	a. أصل – جدور b. أصل المشكلة c. يستقر
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Below is the structure of the sample lesson:

Sample lesson

Lesson handout

Focus: (break, over and beyond)

Step: 1: Teacher checks the participants' knowledge of the literal meanings of the target words in focus.

Literal meanings of *break, over* and *beyond*: _____, _____, _____

How many meanings does each of these words have? _____, _____, _____

Step # 2: participants are presented with metaphorical meanings of some of the target words and asked for their Arabic translation.

Below are words you know used metaphorically.

1: break:

Example: The sportsman **broke** the world record for the 100 meters.

English meaning: (verb) beat (a previous record)

Sentence translation:

2: over:

Example: The audience saw the credits after the film was over.

English Meaning: (preposition) finished completely

Sentence translation: _____

3: beyond:

Example: In a lifting competition, the athlete succeeded in lifting 70-kilogram shaped weights, but lifting 80-kilogram weights was beyond him.

English meaning: (preposition) above his lifting ability

Sentence translation:

Step # 3:

Here the participants consolidate the newly taught meanings.

Exercise # 1

Words in context:

1. 1. The athlete *broke* the European record in the 100 meters, so he

a. won the race

b. lost the race

2. I can lift a 70-kilogram- box, but lifting a box that weighs 100 kilograms is *beyond* me. This means that the I

a. can lift 100-kilogram box

b. can't lift 100-kilogram box

3. When the war is *over*....

a. people may lead a peaceful life

b. people may still live in danger

Exercise # 2

Gap filling

Table 4.2: Some of the main differences between the methods adopted in the instructional treatment for both groups

	TBM	ISBM
	<ul style="list-style-type: none"> • Translation-based: whole sentences including the target words were translated. • Different meanings of the target words were perceived as idiosyncratic and arbitrary and not motivated. 	<ul style="list-style-type: none"> • Image schema-based instructional techniques: image-schemas and verbal explanation were used which resulted in <i>dual coding</i>. • Different meanings of the target words were perceived as motivated and not idiosyncratic.
	<ul style="list-style-type: none"> • The participants got a dictionary-like list of the taught meanings. 	<ul style="list-style-type: none"> • The participants were taught the meanings in the form of a semantic network.
	<ul style="list-style-type: none"> • The participants were made aware of the mismatch found between Arabic and English at the level of some words: For example, the Arabic translation of <i>break</i> (one of the target words) is يكسر, however, in some sentences it is not translated as in the following examples: E.g. a. To <i>break</i> the record. b. To <i>break</i> a promise. In ‘a’ <i>break</i> is translated as يحطم and in ‘b’ it is translated as يخلف الوعد . 	<ul style="list-style-type: none"> • The Participants were made aware of the mismatch found between Arabic and English, but in an indirect way.
	<ul style="list-style-type: none"> • The different meanings of 	<ul style="list-style-type: none"> • The different meanings of each single word of

each single word of the treatment were taught in a piece meal fashion.	the treatment were taught together in one lesson.
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4.3. Study Materials

4.3.1. Pre-treatment Instruments

A. Polysemous Words Knowledge Test

The polysemous words knowledge test (PWKT) is a vocabulary-depth instrument which seeks to measure the participants' deep knowledge of the polysemy aspect of the eight polysemous words that are taught in the treatment (see Appendices 1). It consists of 24 sentences (3 metaphorical meanings for each of the 8 target words) and has a gap-filling format. It is a productive test as the participants are required to complete one unfinished word in each sentence. In an attempt to guide the participants to the target words, a variable number of initial letters are provided for each blank (see ex. 1. below). While the PWKT presents words in rich context (clues to the appropriate meaning are provided), it does not involve a significant amount of reading. In fact, most of the structures of the sentences are simple, and the difficult words were translated into Arabic – the participants' L1, as in the following example.

Ex1. When we went out, we left the kids in the good *ha*.....sof our babysitter. We
(أطفالجليسة)
all trust her and think that the kids will be safe with her.
(امنة)

Prior to being administered to students, the test was given to two native English teachers to check if the unfinished items can be finished with more than the words intended by the researcher. The outcome of this inspection led to few minor corrections of the original version of this test. For example, in some of the test sentences like Ex1, I started the unfinished word with two letters instead of one only. Had I started the sentence with 'h' only, the participants might have come with words like *homes* or *houses* instead of *hands*.

Besides, in order to make sure that all the test items are new to the participants, the researcher gave the first version of the test to 3 average students and found that none of the metaphorical meanings of these polysemous words in focus was well known to them. Also these students helped the researcher spot the difficult words that might hinder the understanding of any test sentence. Following this, the researcher translated these words into Arabic to ensure that any failure to find the sought word would be because of the participants' inability to know the word in focus and not due to other difficult words found in the sentence.

The PWKT was designed by me as a ready-made, commercial test about the polysemy aspect of polysemous words was not available (For further information, see chapter 2, section 5 on vocabulary testing).

B. Vocabulary Levels Test (1st and 2nd thousands)

The vocabulary levels test (VLT) (Paul Nation and Laufer, 1999) used in this study is the online version of the original test. This test is used to assess the breadth of the participants' vocabulary knowledge prior to the treatment. As the participants scored below 83% in the second level (words from 1001 to 2000), the researcher contended with the results obtained in the first two levels of this vocabulary test. Another measurement which was used to shed light on the English language proficiency of the participants and to group them under different levels was the TOEFL test (for further details about the VLT, see chapter 2, section 5 on vocabulary testing).

C. The TOEFL Test

The TOEFL test was used to assess the participants' proficiency prior to the treatment and to place them in their corresponding levels in the intensive English program they joined at the University of Sharjah, UAE where the study was conducted. The test was administered on campus by AMIDIST representatives.

D. Questionnaires

1. Style of Processing Scale(SOPS)

This style of processing scale (SOPS) was designed by Childers, Houston and Heckler (1985) and has been widely used in the field of marketing and particularly in examining memory for advertising materials (see Appendix 2). In the present study, it is used to estimate the extent to which a respondent has the inclination to think in words (low imager) or in pictures (high imager). It is a self-paced, paper-and pencil-test which was completed by the participants in 3 minutes.

The SOPS was preferred to other instruments (e.g. Paivio's Individual Differences Questionnaire, 1971) because it has been used by many researchers in cognitive linguistic studies to investigate EFL learners' cognitive styles (e.g. Boers and Lindstromberg, 2008; Boers *et al*, 2008). It was described by Boers *et al*(2008) as a "well-established and user-friendly instrument to estimate whether one is relatively high or low imager" (p. 194). Boers *et al*(2008) found positive correlations between the extent to which individual learners are "inclined to think in images and the mnemonic effectiveness of the dual coding technique" (p. 332).

The scale consists of 22 statements which fall under two categories, eleven under the visual category and eleven under the verbal category. An example of a visual item is "My thinking often consists of mental pictures or images" and a verbal item is "I prefer to read instructions about how to do something rather than have someone show me".

To facilitate the task for the participants, all the scale items were translated into Arabic. First, all the items were translated into Arabic and then independently back-translated into English by a second translator. The emerged differences between the original version and the back-translated version were addressed. Also, to make the scale user-friendly, the researcher simplified some of its items. For example, "*I like to doodle*" was paraphrased as "*I like to draw something aimlessly or absent-mindedly, usually while doing something else such as having a telephone conversation or listening to the teacher in class.*" The obtained scores would give an indication of respondents' position on a cognitive-style continuum ranging from verbally oriented to visually oriented processing. Equally significant, the collected data from this questionnaire would determine the kind of instruction the teacher should use.

2. Vocabulary Learning Strategy Questionnaire (VLSQ)

This questionnaire was designed by Takač(2008) (see Appendix 3). Its original version consists of three classes of strategies, (1) strategies of formal vocabulary learning and

practicing, (2) self-initiated independent vocabulary learning, and (3) incidental vocabulary learning strategies.

Though there are other questionnaires on vocabulary learning strategies, I preferred to use the VLSQ because it aims to probe the participants' memory and formal vocabulary learning strategies - the two types of strategy the study is interested in.

For this reason, the third class of the VLSQ, incidental vocabulary learning strategies, was discarded (for further details about the three classes of the questionnaire, see Chapter 2, section 1).

A. Strategies of formal vocabulary learning and practicing

This category encompasses strategies of rote vocabulary memorization, reliance on L1, and a metacognitive aspect of regular and planned revision.

B. Self-initiated independent vocabulary learning

This class includes strategies of exposure to target language and those strategies that reveal an elaborated approach to vocabulary study that includes the use of memory strategies.

The aim of the questionnaire was to shed light on the participants' frequent vocabulary learning strategies. Such knowledge about the participants' inclinations towards the traditional, rote learning VLSs and/or the memory, deep-thinking strategies would help the researcher anticipate the participants' problems with the treatment. If, for instance, the results of the questionnaire would show that the participants prefer to use traditional VLSs, the researcher should take this into consideration when delivering the treatment whose activities require deep thinking and memory strategies. All the items on the questionnaire were translated into Arabic and then back-translated into English, and the discrepancies between the original English questionnaire and the Arabic version led to a few amendments in the Arabic version. Also, a few statements were explained to be more easily understandable for the participants, for instance the original questionnaire's statement *I used spaced word practice in order to remember words* was followed by (*continuing to study the word over time*).

4.3.2 Post-treatment Instruments

A. Immediate Polysemous Words Knowledge Test

After the two-month treatment, the PWKT was immediately administered to the participants to track their progress in understanding and learning the polysemous target words. To prevent the participants from recalling some of the sentences given in the pre-test, some researchers make changes to the post-test, especially if they are administered in close temporal succession. In this research, however, I kept both tests the same because I judged the two-month period between the pre-test and the post-test adequate to avoid such an overlap.

B. Strategy Assessment Test

The aim of the study is not merely to teach the participants the target polysemous words, but rather to draw their attention to the existing links between the literal, core meanings and the metaphorical extensions of many of these words. Also, I seek to train the experimental participants on how to use insights from the cognitive linguistics paradigm to work out the unseen metaphorical senses of the target words. Equally important, I hope that the acquired knowledge obtained from the treatment polysemous words would help the participants work out the metaphorical senses of other unseen polysemous words through their literal, core meanings. To assess the participants' mastery and assimilation of this strategy, I designed a test that consists of ten items, five on unseen metaphorical senses of the target words taught in the treatment and five on new, unseen polysemous words (Appendices I, Appendix 4). This test was administered immediately after the treatment phase. For example, in the instructional treatment I exposed the participants to three metaphorical meanings of the target word *break* – *to not do what you have promised to do, to stop/ interrupt, and to disobey the law*. In the first part of the strategy assessment test, the participants were tested on an unseen metaphorical sense of *break* which is *to interrupt* (see Table 3.14).

Table 4.3: A sample item of the strategy assessment test (Part one)

	He decided to _____ his journey to Italy when he received a telegram from his brother.	<p>a. cut</p> <p>b. break</p> <p>c. refuse</p> <p>d. hand</p>
--	--	---

In the second part of the test, the participants were presented with five gapped sentences in front of which they were given four words with their Arabic translations and literal meaning(s) (Table 4.4). For every sentence, the participants were required to read the translations and the literal meanings of the given words and choose one for the gap. The participants were reminded to think about the possible figurative meanings (based on the literal meaning) these words might have in order to succeed in choosing the right option.

Table 4.4: A sample item of the strategy assessment test (Part two)

	Metaphorical Meaning	Literal Meaning
	<p>The <u>frightened</u> boy _____ed (خائف)(V) on the door until his mother opened it.</p>	<p>a. knob (N): a round handle or thing that you turn to open a door. مقبض</p> <p>b. nail (N): a thin piece of metal with one pointed end and one flat end. مسمار</p> <p>c. saw (N): a tool that has a flat blade with a row of V-shaped metal pieces used for cutting woods. منشار</p> <p>d. hammer (N): a hammer is a tool that consists of a heavy piece of metal at the end of a handle. It is used to hit nail for example. مطرقة.</p>

C. The Delayed Post Treatment Test

After a month of the treatment, the same PWKT was again administered to both groups to track their long-term retention of the target words' metaphorical meanings taught during the treatment phase.

4.4 The Pilot Study

Prior to the main study, a pilot study was conducted on students similar to the participants of the present study. They were 10 in the experimental group and 9 in the control group. The aim of the pilot study was to check whether or not the experiment was conductible and if the teaching methods used in the treatment were appropriate. All of what I explained above for the main study holds true for the pilot study, with the exception of the method of instruction for the control group being different.

Unexpectedly, the findings of the pilot study showed no significant differences between the means (or mean score) of the experimental group and the control group with respect to the word knowledge test for polysemous words taken after the treatment. At this level, I revised the whole study instruments and procedures and found out that the teaching methods employed with both groups were not that different. In fact, the researcher, being the teacher who taught both experimental and control groups, showed to the control participants how the polysemous words' core meanings and their metaphorical senses are related and motivated. At this level the control group participants, especially the ones who are high-imagers, might have been able to extract their own image-schemas, despite the fact that the researcher didn't show them the image schemas of the taught target words. Also, probably, due to the fact that the researcher taught each of the target words' three metaphorical meanings in one lesson, the control participants might have captured a whole, undivided picture of the polysemous words and their extensions.

For these reasons, insignificant differences were probably found between the scores of both the experimental and control groups in the post-treatment and delayed tests. To iron things out, I tried to abide by the rules of the translation-based vocabulary instruction method and teach polysemous words just as was discussed above (see polysemous words methods of instruction) in the main study. In other words, the participants were taught the words in a

piecemeal fashion and the motivations behind the core meanings and their extensions were not made clear to them.

4.5 The Instructor and the Setting of the Study

All the instructional treatment lessons of this study were delivered by me. As the teacher-as-researcher role in conducting educational research may cause validity and credibility problems, a number of precautions were taken. The instructional treatment was delivered by the same person for both groups. Also, I tried to keep each of the taught lessons equal in length. Equally important, the experimental participants were not told that they were the focus learners and that their results in the study would be determinant in showing the effectiveness of the cognitive approach over the translation-based one. This measure was taken in order not to influence the experimental participants' performance, as had they been informed about being the experimental subjects, they, for instance, might have shown more enthusiasm to impress me. Last, I tried to abide by the insights of the teaching methods used in the instructional treatment.

4.6 Study Stages and Methods of Data Analysis

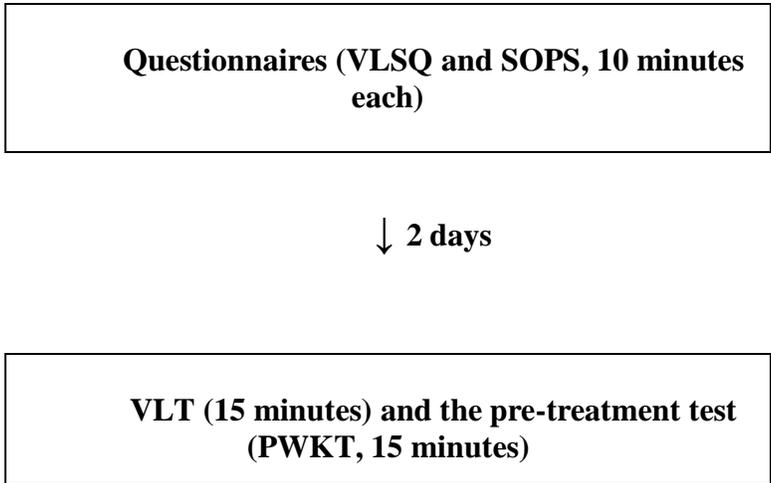
4.6.1 Study Stages

Before embarking on the main study, ethics approval had to be obtained. I completed an application for ethical approval provided by the UAE, got it signed by my supervisors and submitted it to the University Research Ethics Committee. Equally important, I took permission from the University of Sharjah to conduct the experiment. The participants who agreed to be part of the study signed a consent form (see Appendices I, Appendix 6). From the outset, the researcher explained to the participants that the marks they would obtain in the study tests would not be part of their program grades. Also, they were reminded that the data that would be collected in the questionnaires of the study would remain confidential and would be used for the sake of the study only. In the next stage of the study, the participants filled out two questionnaires and took the vocabulary levels test (see study instruments above). Also, prior to the instructional treatment, the participants took the PWKT.

Following this, the treatment for both experimental and control groups started by an introductory lesson in which the researcher tried to familiarize the participants with the

notions of literal and metaphorical meanings for the distinction of these two meanings is very significant for the study (see Appendix 7 for the introductory lesson). Next, and over a period of a month and a half a battery of 18 lessons was given to the participants in their regular reading classes (one lesson per week: nine for the experimental group and nine for the control group) which paved the way for the in-context introduction of all the target words (See Appendix 7). The language of instruction for both groups was English, with the exception of the use of Arabic for translation for the control group. Immediately after the treatment, the PWKT was administered, and after one month the same test was taken by the participants as a delayed post-treatment test. The scoring procedures used for the PWKT were simple as every right answer was allotted one 1 point making 24 as the possible full mark in this test. As this is a productive test in which the participants had to finish certain words, many spelling mistakes were made (for example *beyond*, one of the target word, was misspelled as □*beyong* and to decide on what to accept as right answers, the Word Program spelling checker was used. Each misspelled word was typed and checked by the spelling checker, and if the provided suggestions included the target word, the misspelled word would be accepted and allotted one point.

After the experiment, the participants retook the PWKT twice as an immediate and a delayed post-treatment test. Also, the strategy assessment test was administered to the experimental group. The overall procedures were as follows:



↓ 2 days

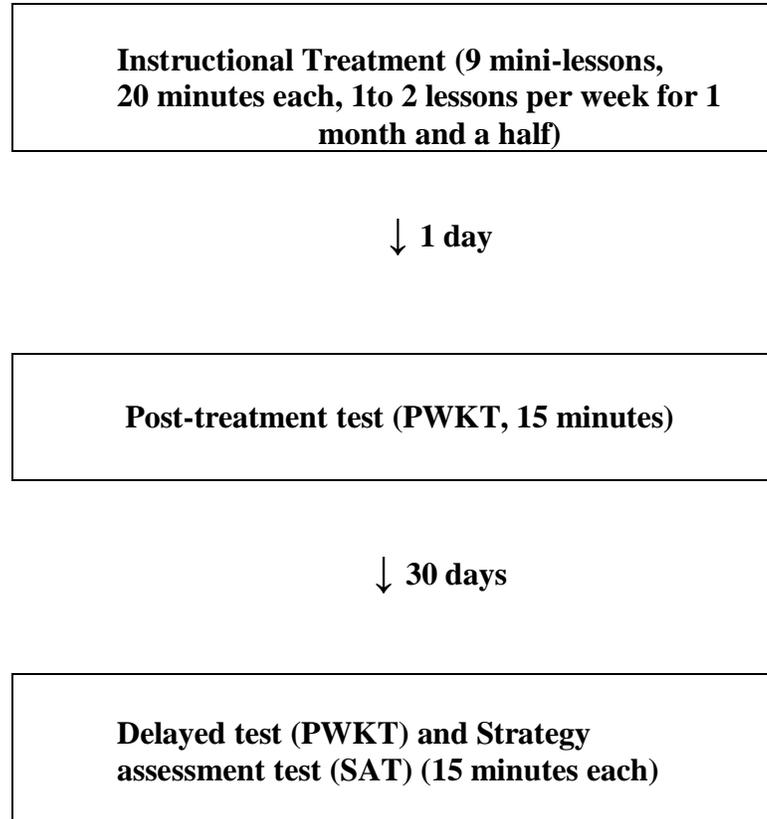


Figure 4.7 Study Procedures

4.6.2 Methods of Data Analysis

Descriptive analyses such as *the mean, the standard deviation, the median, the minimum and the maximum* were calculated for the scores obtained from all the pre and post-treatments tests. In addition, in order to gauge the effectiveness of the instructional treatment for each of the experimental and the control groups, the *paired-samples t-test* was performed in order to compare the mean differences of the pre and post-treatment PWKT scores and to show whether or not the instructional treatment was effective. However, to show that the entry level is not significant between the experimental and control groups in the pre-treatment test (PWKT), the VLT, and the TOEFL, the *independent samples t-test* was applied. The same test was applied to compare the scores of both of the groups' pre, post-treatment and delayed PWKT scores to show the participants' long-term retention of the words taught in the instructional treatment.

Also, relationships (through Multiple Regression) between the experimental participants' PWKT scores and their style of processing information and learning vocabulary, vocabulary learning strategies, and their TOEFL and VLT scores were examined. All the data was analyzed using the statistical package SPSS 19.

As for the questionnaires, the following methods of analysis were considered:

A. The VLSQ

Originally, the statements in the questionnaires were followed by a 3-point scale because it was believed that this scale is suitable for the primary school level. In the present study, as the respondents are older, we used a 7-point scale for more accurate responses. The scores are the summed ratings of the questionnaire items. Though several factor analyses were conducted by the designer of this questionnaire (Takač, 2008) in order to refine the questionnaire, and identify the underlying constructs based on the set of observables variable (p. 94), similar analyses were conducted in this present study because the scale was changed and the participants to whom the questionnaire was administered were university students. In addition, the internal consistency of the scale (for each category and for the overall questionnaire) was assessed (reliability analysis). *Cronbach's alpha* coefficient was used as the internal consistency indicator. Alpha (α) equal to or greater than (\geq) 0.7 was considered acceptable.

B. The SOPS

Originally, respondents rate on a four-point scale to what extent each of the 22 statements applies to them. In the present research, however, a seven-point scale is used as it is likely to yield a clearer picture of the respondents' styles of processing. The scores are the summed ratings of the scale items. This scale was scored to produce verbal and visual subscores. These scores would permit the researcher to find out about the participants' inclinations when processing information i.e., whether they think in pictures or words.

4.6.3 Conclusion

In this chapter, I focused on matters pertinent to the participants and setting of the study, and then I dealt with the instructional treatment. At this level, I defined the treatment,

discussed the methods of instruction along the lines of which the polysemous words were delivered to the experimental and control groups, and gave sample lessons used with both groups. After that, I explored the pre- and post-treatment instruments of the study such as the VLS, the PWKT, and the VLT. In addition, other issues related to the study were dealt with like the pilot study, the instructor and the particularities of this study compared with other related studies. Finally, I explained the study stages and explored the methods of data analysis.

The next chapter will be concerned with the results obtained from the analysis and comparison of the different pre- and post-treatments instruments.

CHAPTER 5 RESULTS

Chapter 5 Results

In this chapter, I analyzed the collected data, reported the main results and correlated the results obtained for the experimental and control groups. First, I computed descriptive statistics of the pre-treatment tests, and then carried out an Independent Samples t-Tests to see whether or not the differences between the scores at entry level for both groups were significant.

Next, the data from the post-test were statistically analyzed. In particular, I computed descriptive statistics for the scores obtained by both groups on the PWKT. Also, Paired Samples t-Tests were carried out to see whether or not the treatment has a significant effect. Likewise, Paired Samples t-Tests were used to check if the differences between the two groups' scores on the PWKT were statistically significant. Equally important, the scores obtained on the SAT test were analyzed to check the effect of time on the retention of the assimilated meanings of the taught words.

Last, the data collected from the administration of the questionnaires were statistically analyzed in order to investigate the participants' vocabulary learning strategies and their processing styles when undertaking mental tasks.

5.1 Statistical Analysis of the Pre-treatment Collected Data

Before performing statistical tests, I tested my data to determine if it was normally distributed (This means that the data is not full of anomalies that can create inaccurate results). At this level, I ran a couple of normality tests to check if the data of both the experimental and control group was normally distributed. Results (see Appendices III, Appendix 1) show that most of the tests involved in the Independent T-tests were normally distributed. It is worth mentioning here that, since I have only 20 participants in each group, the Shapiro-wilk test results are used. For the test data whose distributions were not normal (Pre-treatment PWKT, and delayed PWKT for the experimental group and Pre-treatment PWKT for the control group) Mann-Whitney U-tests were used.

(TOEFL, VLT and PWKT)

5.1.1 TOEFL

Table 5.1: Descriptive statistics of the TOEFL test mean scores

Groups	N	Mean	Std. Deviation	Minimum	Maximum
Experimental	20	400.10	21.35	373	430
Control	20	403.90	11.63	384	420
Total	40	402.00	17.08	373	430

Table 4.1 shows the mean scores of the experimental and control groups in the TOEFL test. Also, the carried out Independent Samples t-Test shows that the difference between the two groups is not statistically significant ($t = .699$, $df = 29.353$, $p = .490$).

5.1.2 VLT

Table 5.2: Descriptive statistics of the VLT scores (K1)

Groups	N	Mean	Std. Deviation	Minimum	Maximum
Experimental	20	28.10	3.75	21	36
Control	20	27.75	4.02	21	35
Total	40	27.93	3.84	21	35.5

Table 5.3: Descriptive statistics of the VLT scores (K2)

Groups	N	Mean	Std. Deviation	Minimum	Maximum
Experimental	20	3.10	2.75	0	9
Control	20	3.00	2.00	0	7
Total	40	3.05	2.37	0	8

Tables 5.2 and 5.3 shed light on the participants' knowledge of the first and second most commonly used words in written and spoken English. The VLT K1 is based on the first 1000 words and K2 on the second 1000 words. The VLT K1 consists of 39 items, and K2 of 19 items. The differences between the groups at both levels are not significant.

5.1.3 PWKT

Table 5.4: Descriptive statistics of the pre-treatment PWKT Scores

Groups	N	Mean	Std. Deviation
Experimental	20	1.95	1.90
Control	20	2.35	2.54
Total	40	2.15	2.22

Table 5.4 shows the mean scores of the experimental and the control group in the PWKT test. The difference between the two groups is statistically not significant ($U= 197, P=.947$) (See Appendices III, Appendix 5 for the corresponding Mann-Whitney U-Test).

Overall, as the data analysed and the graph (4.1) below of the TOEFL, VLT, and PWKT show, there was no significant difference between the experimental and control groups in the entry level tests.

5.2 Statistical Analysis of the Post-treatment Collected Data

5.2.1 PWKT

Table 5.5: Differences between the pre-treatment and the post-treatment¹⁸PWKT scores (experimental group)

Experimental Group	N	Mean	Std. Deviation
PWKT pre-treatment test	20	1.95	1.90
PWKT post-treatment test	20	15.45	7.66

Table 5.6: Differences between the pre-treatment and the post-treatment PWKT Scores (control group)

Control Group	N	Mean	Std. Deviation
PWKT pre-treatment test	20	2.35	2.54

¹⁸ Post-treatment PWKT means the polysemous words knowledge test administered **immediately** after the instructional treatment. The delayed PWKT, however, is the polysemous words knowledge test taken by the participants after one month from the treatment.

PWKT post-treatment test	20	8.45	4.57
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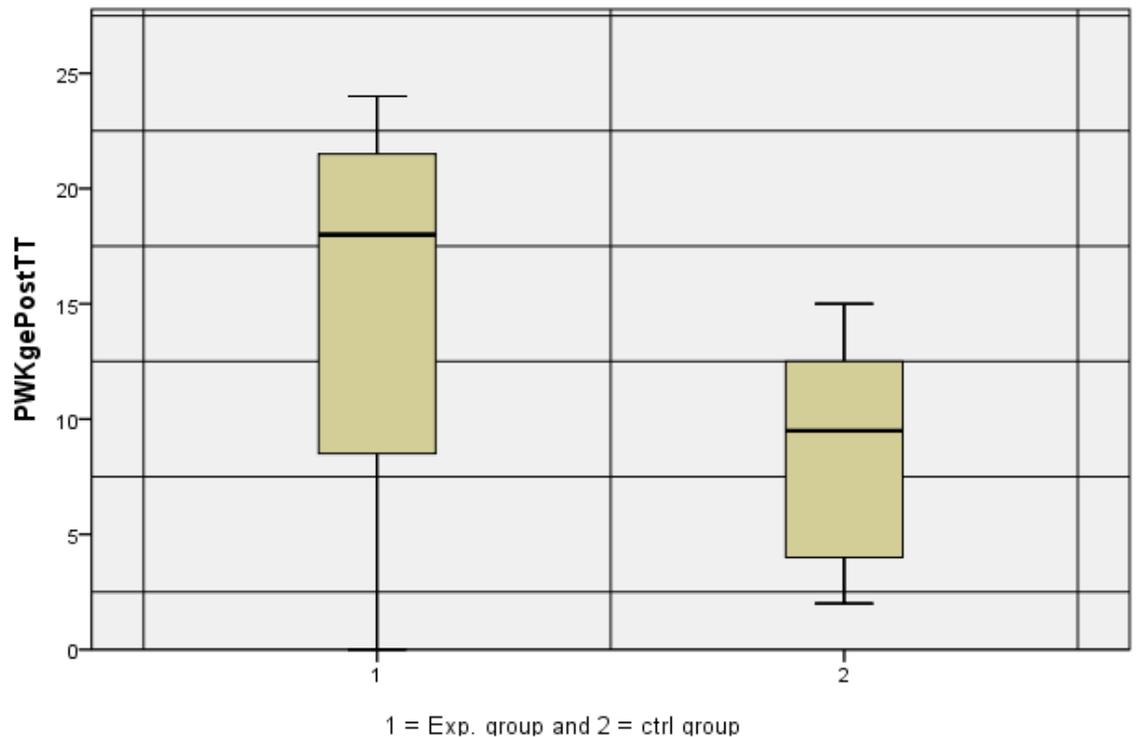
Table 5.7: Differences between the scores of the experimental and control groups on the post-treatment PWKT

Groups	N	Mean	Std. Deviation
Experimental	20	15.45	7.66
Control	20	8.45	4.57

As we have seen earlier (Table 5.4), there is no significant difference between the experimental and the control groups in the results of the PWKT taken before the treatment. At the post-test, though both the experimental ($t = 9.053$, $df = 19$, $p < 0.0001$) and the control group ($t = 5.79$, $df = 19$, $p < .001$) performed better (Tables 5.5 and 5.6), the gains of the experimental group were larger. The scores of the experimental group increased from $(1.95 \pm 1.905)^{19}$ in the pre-test to (15.45 ± 7.667) in the post-test compared to the control group which went from (2.35 ± 2.450) to (8.45 ± 4.571) . The differences between the two groups in the PWKT post-test are significant ($t = 3.507$, $df = 38$, $p = .001$) (for this statistical test, see Appendices III).

Also, a close look at the boxplot below (graph 5.1) reveals that a good number of the experimental participants got full marks on the test (24). Such a performance was absent in the control participants' scores as the highest score for this group was around 15.

¹⁹ The standard deviation is reported with the mean.



Graph 5.1 Post-treatmentPWKT for experimental and control groups

Analysis of the individual words of the post treatment PWKT

Control Group

The PWKT test includes eight words, namely, *break, beyond, over, head, roots, push, hand, and burn*. As there are three sentences for each word in the test, and there are 20 participants in the control group, the maximum number of the correct answers for each word would be 60. Below is a table with the correct answers for each word.

Examining the control participants' correct answers at the level of these words, we notice that *hand, push* and *head* head the list, while *break, beyond* and *burn* lie at the bottom (see table 5.8).

Table 5.8: Analysis of the individual words of the post treatment immediate PWKT (control group)

PWKT items	Maximum score	Mean
hand	60	32
push	60	30
head	60	27
roots	60	23
over	60	22
break	60	19
beyond	60	10
burn	60	9

Experimental group

Table 5.9: Analysis of the individual words of the post treatment immediate PWKT (experimental group)

PWKT items	Maximum	Mean
push	60	48
roots	60	45
head	60	41
hand	60	40
over	60	35
beyond	60	32
burn	60	30
break	60	26

Examining the table, the experimental groups were found to score better at the level of all the words. At the level of the words heading and those lying at the bottom of the table, we notice that there are not big differences from the control group order (see Table 5.8).

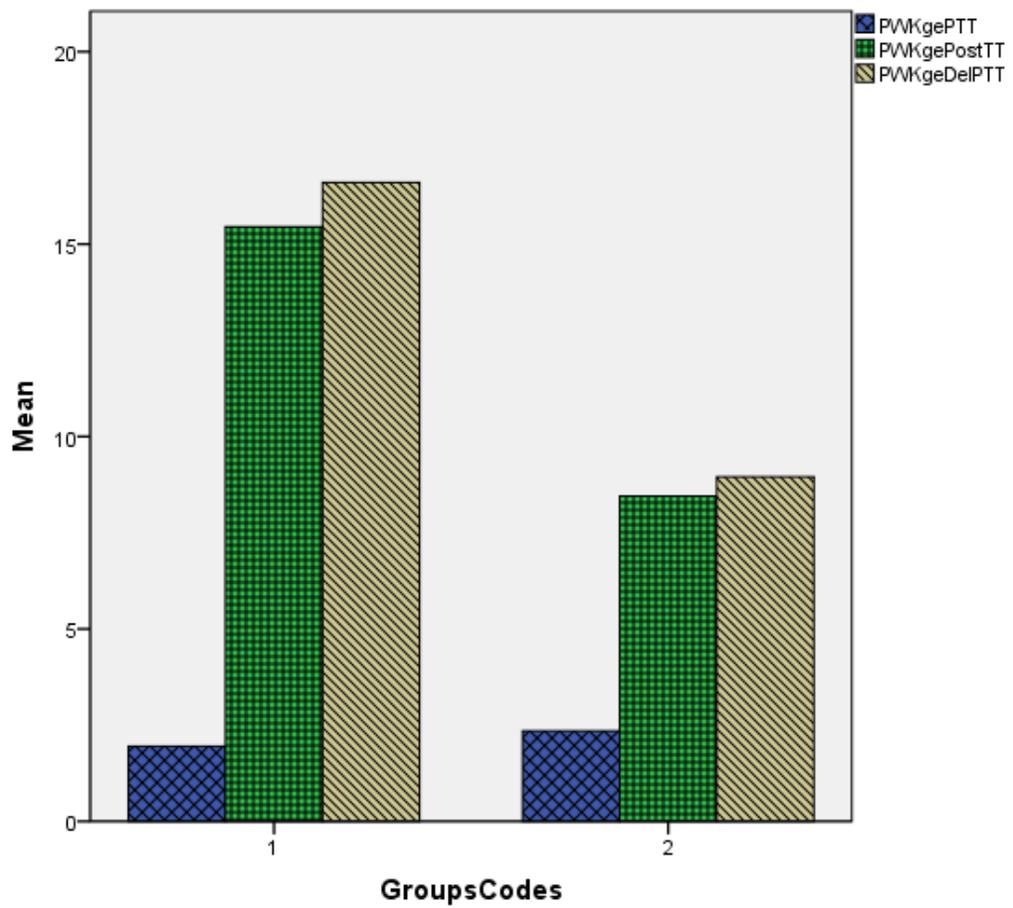
Overall both groups found the metaphorical senses of words like *push* and *head* easy to understand and retain than words like *break* and *burn*.

5.2.2 Statistical Analysis of the Delayed PWKT

Table 5.10: Descriptive statistics of the post-treatment and delayed PWKT (N for both groups = 20)

Groups	Post-treatment PWKT	Delayed PWKT
Experimental	15.45 (SD =7.667)	16.60 (SD = 7.570)
Control	8.45 (SD = 4.571)	8.95 (SD = 6.295)

A closer look at table 5.10 reveals that the difference between the participants' scores of the PWKT taken on two occasions (immediately after and after one month from the treatment) is not significant ($t = 1.476$, $df = 19$, $p = .156$) and ($t = .484$, $df = 19$, $p = .634$) for the experimental and the control group respectively. In other words, the effect of time was null. In both groups, the participants were able to score higher in the delayed PWKT than in the immediate one. More specifically, the experimental group's mean changed from 15.45 to 16.50 and the control group's mean from 8.45 to 8.95. As we can see, the experimental group's performance was a bit better, but not significantly different. These data coupled with the graph below (5.2) reveal that the long-term retention of the assimilated and retained information (the treatment) was not affected by the factor of time for both groups. Also, the graph shows that the experimental participants' scores at the delayed PWKT were slightly better than those of the control group.



Graph 5.2 Comparison between pre, post-treatment and delayed PWKT mean scores for the experimental and the control group

5.2.3 The Strategy Assessment Test

The table below shows the means of both parts of the SAT test (see Appendix 4 for more details about this test). In part 1 (2.60 ± 1.353), the participants in the experimental group performed better than in part 2 ($1.65 \pm .933$). This shows that around 50% of part 1 and nearly 35% of part 2 of the SAT test were correctly answered.

Table 5.11: Descriptive statistics of the SAT

	N	Minimum	Maximum	Mean	Std. Deviation
SAT scores (Part1)	20	0	5	2.60	1.353
SAT scores (Part2)	20	0	3	1.65	.933

5.3. Statistical analysis of the Questionnaires

5.3.1 Analysis of the VLSQ

After administering, I carried out reliability analysis with Cronbach's alpha and deleted some questions until I reached an optimal value for Cronbach's alpha ($\alpha = .704$), and on the basis of the remaining items I computed a descriptive statistics test. (see Appendix 8).

Appendix 8 shows the mean scores the participants in both groups got after administering the VLSQ. These scores reveal the participants' reliance on formal, rote learning VLSs at the expense of the Self-initiated VLS that include memory strategies which involve imaging new words' meanings, using them in sentences, and associating them with their relevant contexts. Tables (5.12 and 5.13) present some examples of the participants' mean scores in both types of VLSs.

Table 5.12: Groups' mean scores in formal, rote learning VLSs

Formal, rote learning VLSs			
Strategy name	Minimum	Maximum	Mean
Translating words into L1	1	7	6.83
Repeating words mentally	1	7	5.75
Remembering words if they are written down	1	7	5.43

Table 5.13: Groups' mean scores in self-initiated, memory VLSs

Self-initiated, memory VLSs			
Strategy name	Minimum	Maximum	Mean
Using words in sentences	1	7	3.95
Grouping words together	1	7	3.22
Keeping a vocabulary notebook	1	7	3.48

Such a reliance on formal vocabulary learning strategies was also clear from the findings obtained from the examination of some of the English books used by the participants in the primary, preparatory and secondary levels (for a detailed examination of these books, see chapter 3 on polysemous words teaching and testing).

5.3.2 The SOPS

The SOPS investigates two of the learners' styles of processing information, the imager and the verbalizer style.

As the aim of the study was to investigate the possible contribution of the learner imager variable to the acquisition of polysemous words within the framework of CL, only this learner characteristic was considered. After administering this scale, I carried out reliability analysis with Cronbach's Alpha for the imager variable dimension and deleted some questions until I had an optimal value for Cronbach's alpha ($\alpha = .607$).

On the basis of the remaining items, I computed descriptive analysis tests and found that the experimental group average on the image style variable was 2.63 on a continuum between 1 and 7 for 1 means high imager and 7 means low imager.

5.4. Multiple Regression

One of the aims of the study is explore the possible contribution of learner characteristics to the acquisition of polysemous words. The learner variables that were considered here were cognitive style, language proficiency, knowledge of high frequency words, and vocabulary learning strategies. The variables of cognitive style and language proficiency were obtained from the SOPS (SOPS Analysis) and from the TOEFL, the participant took before the treatment, respectively. As for the variables of the knowledge of high frequency words and the use of vocabulary learning strategies, they were obtained from the VLT (K1 and K2) and from the VLSs questionnaire.

The forced entry multiple regression was adopted in the study. All the designated predictor variables are entered together.

Table 5.14: Multiple Regression(Dependent Variable: ThePost-treatment PWKT)

Model	Coefficients ^a				
	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
(Constant)	-59.218	42.998		-1.377	.190
Experimental Imager Mean	-4.125	2.277	-.410	-1.811	.092
TOEFLScores	.202	.085	.561	2.374	.032
VLT K1	.808	.455	.396	1.774	.098
VLT K2	-.874	.705	-.314	- 1.241	.235
Experimental Vocabulary learning strategies Mean	-3.504	2.932	-.309	-1.195	.252

a. Dependent Variable: Post-treatment PWKT

Table 5.15: Multiple Regression (Dependent Variable: TheDelayed PWKT)

Model	Coefficients ^a				
	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
1 (Constant)	-57.734	41.842		-1.380	.189
Experimental Imager variable Mean	-2.519	2.216	-.253	-1.137	.275
TOEFLScores	.193	.083	.545	2.340	.035
VLT K1	.654	.443	.324	1.476	.162
VLT K2	-.338	.686	-.123	-.493	.630
Experimental Vocabulary learning strategies Mean	-3.178	2.854	-.284	-1.114	.284

a. Dependent Variable: The Delayed PWKT

The figures in the tables 5.14 and 5.15 Show that language proficiency (inferred from TOEFL) significantly predicted PWKT results. This means that the higher the language proficiency of the learners is, the better they will be at understanding and retaining polysemous words. Also, it was found that, none of the other remaining variables can predict the success in learning the polysemous words delivered in the instructional treatment. Nonetheless, we can

still talk about weak correlations between these variables and the ability to cope with the polysemous words taught.

Conclusion

The focus of this chapter was on the statistical analysis of the data collected before and after the treatment. Various statistical tests were used for the analysis of obtained data. First, the pre-treatment tests' scores (TOEFL, VLT, and PWKT) were submitted to analysis using descriptive statistics, normality tests and T-tests. The yielded results showed that there were no statistically significant differences between the control and experimental groups prior to the treatment. As a result, any differences between the groups at the post-treatment test (the PWKT) were attributed to the approaches used for each group and not to any external, prior knowledge of the participants.

As far as the immediate post-treatment test, although the yielded results from the computed statistical tests reveal significant gains for both groups, it was demonstrated that the experimental participants who were taught using the cognitive-inspired method, outperformed their control peers who were taught using the translation-based instructional techniques.

With respect to the post-treatment delayed test, participants in both groups managed to remember the assimilated metaphorical meanings retained in the treatment, and were able to perform better than in the immediate post-treatment test. This was particularly visible in the experimental group. This good performance was clearly seen in the results of the SAT test.

Last, both of the questionnaires were submitted to statistical analysis and the participants' preferences at the levels of information processing and vocabulary learning strategies were investigated. It was found that the participants favoured the presence of pictures when undertaking mental tasks in the SOPS, and showed reliance on the formal, rote vocabulary learning strategies.

In what follows, I will discuss these results and examine the thesis questions and hypotheses of the study in light of the data.

CHAPTER 6 DISCUSSION

6.1. Discussion of the Results

The first part of this chapter is concerned with exploring the possible reasons behind the different results obtained from the analysis of the study tests and questionnaires. More specifically, I will compare the immediate PWKT scores of the experimental and the control group, and draw on the factors that helped the experimental participants outperform their control peers. Also, I will see how well the experimental and control groups succeeded in retaining the instructed metaphorical senses after a month of the treatment by comparing their scores of the delayed PWKT. Different factors that might have helped both groups recall the taught senses will be highlighted.

Next, the discussion will look at the SAT scores of both groups and the ability of the experimental participants to apply the strategy they learnt in the treatment to new unseen meanings. Last, I will explore the possible relationships between the effectiveness of the insights of cognitive linguistics into pedagogy, exhibited in the experimental participants' PWKT scores, and the cognitive styles and language proficiency (through TOEFL and VLT scores) of the experimental group.

In the second part of this chapter, I will examine the main research hypotheses and questions of the study. In light of the discussed results drawn from the study tests and questionnaires, I will verify whether the hypotheses are confirmed, and whether there are relations between the usefulness of the insights of cognitive linguistics into teaching polysemous words and specific learner characteristics - cognitive styles, language proficiency, vocabulary learning strategies, and knowledge of high frequency words.

The PWKT

The case of the experimental and control participants

In considering the PWKT, which was used to assess the effectiveness of the treatment instructional methods – the ISBM and the TBM, the results in the post-treatment PWKT

suggest that the experimental participants outperformed their control group peers. The difference between the scores of the experimental (15.45 ± 7.667) and control groups (8.45 ± 4.571) is statistically significant. Also, a close look at the scores of the pre and post-treatment PWKT of both groups shows that nine of the experimental participants' scores are clustered between 20 and 24 (maximum score 24) and a good number of them got full marks on the post-treatment PWKT, however around 50% of the scores of the control peers are between 10 and 15 (see figure 5.1), and none of them managed to get a full mark on the post-treatment PWKT. In what follows, I will discuss the possible reasons behind the good scores of the experimental participants on the post-treatment PWKT and investigate the possible causes that led to the control participants' poor scores on the same test.

The results achieved by the experimental group can be attributed to several factors, the most important of which are:

- 1 The usefulness of understanding the underlying mechanism of polysemous words' meaning extension
- 2 The beneficial role of dual-coding in understanding polysemous words
- 3 The effectiveness of the explicit instruction of vocabulary
- 4 The power of the ISBM to deal with words which have more than one equivalent in their L1
- 5 Motivation to learn new metaphorical senses

I will discuss these points one by one in what follows.

(1) The usefulness of understanding the underlying mechanism of polysemous words' meaning extension

This finding indicates that the ISBM is better than the TBM in that it can help learners better understand, assimilate and recall the metaphorical senses of the polysemous words in focus. The cognitive linguistic instructional method was advantageous when compared to the translation-based method in guiding the learners to understand the intra-lexical structure underlying polysemous words via the use of image schemas and conceptual metaphors. Compared with the control participants, the experimental subjects found it relatively easier to understand the mechanism underlying the meanings extension of polysemous words. This was

clear in the overall scores obtained on the PWKT in general. The cognitive approach allowed the experimental participants to learn the metaphorical meanings of the treatment words in a *gestalt*-like version, in the same way they are presented in the mental lexicon according to many researchers (e.g., Cruse, 1986; Lakoff, 1987; Deane, 1988; Tuggy, 1993). So, unlike the control participants who were left with a fragmented picture of language, their experimental peers were provided with a unified view of language, remedying, thus, for the inability to understand the relationship between core meanings and peripheral senses of polysemous words' meanings. According to Tyler and Evans (2004), as a result of the treatment of the extended meanings polysemous words' as an "unorganized list of unrelated meanings that are accidentally coded by the same phonological form" (p. 152), EFL learners failed to grasp the relatedness that exists between the different, but related meanings of polysemous words. To illustrate this point they give the following example (5.1) of *over*:

Example 5.1

- a. *The picture is **over** the mantle.*
- b. *The teller at the central bank switched the account **over** to a local branch.*
- c. *The film is **over**.*
- d. *Arlington is **over** the river from Georgetown.*

Tyler and Evans (2004, p. 152)

The PWKT high scores achieved by the experimental participants suggest that these subjects not only avoided the problem involved with *over*, but also with other polysemous words. The understanding of the links that exist between the different meanings of polysemous words might have facilitated the assimilation and the retention of these meanings for the experimental group.

The findings about the primacy of the ISBM over the TBM in making the experimental participants aware of the intra-lexical structure underlying the meaning extensions of polysemous words are congruent with the results reached by other studies inspired by cognitive linguistics and notably those of Touplikioti (2007). This researcher found out that by showing the Greek learners of English how the metaphorical senses of the polysemous verbs '*make*' and '*do*' are related to their literal meanings through cognitive mechanism such as

conceptual metaphors and image schemas (called them graphic representations in her study), the experimental group outperformed their control peers in the understanding of the these verbs. Similarly, the primacy of the ISBM proved by this study supports the findings reached by Csábi (2004) who found that the explicit cognitive linguistic explanations of the semantic networks of *hold* and *keep* can be more effective than translation and memorization in polysemous words teaching and learning (for further details about this study, see chapter 3, section 3.3). Besides, this finding is consistent with what is argued by Demecheleer and Boers (1998) about the ability of EFL learners to correctly interpret unfamiliar figurative senses of *beyond* if they are given cognitive semantic analyses of its core meaning and if shown how figurative senses are extended from the core meaning, a phenomenon they refer to as *the metaphorization process* (p. 97).

As has become obvious from the above discussion that by being aware of how the extended senses of polysemous words are derived from their core, literal meanings, the experimental participants were able to assimilate and retain the taught information better than their control peers. This finding raises questions about the effectiveness of the translation-based method and blind memorization.

(2) *The beneficial role of dual-coding in understanding polysemous words*

Equally important, the good performance of the experimental group on the PWKT can be attributed to the implementation of the dual coding theory. The instructional approach in accordance with which the experimental participants studied polysemous words adopted image-schemas accompanied by verbal explanations in showing how metaphorical senses are extended from core meanings of polysemous words (see Appendices I, Appendix 7 for treatment lessons). As a result, image-schemas were used as visual aids that might have helped the experimental participants better understand the metaphorical extensions of the polysemous words taught. According to proponents of the dual coding theory (e.g. Paivio, 1971; Clark and Paivio; 1991, Boers *et al*, 2007), visual aids used in the form of image-schemas in this study might have had the potential to make the taught figurative, abstract senses, which are long-considered to be beyond the EFL learners' grasp, concrete. Such concretization seems to have helped the experimental participants better understand and retain the abstract senses of the taught words as concrete scenes in memory along with their verbal forms. Such visual aids were absent in the instructional treatment of the control group who seems to rely only on the

teacher's verbal explanations to understand the instructed polysemous metaphorical senses, and this may, partly, account for their low scores on the post-treatment PWKT.

In the same context, the good results achieved by the experimental group indicate that by associating figurative, abstract extensions with their core, literal meanings, EFL learners will be in a better position to understand and retain the central and peripheral meanings of polysemous words. Such a finding is congruent with the results reached by Csábi (2004) and Boers *et al* (2007) who wrote about the power of presenting figurative idioms with the touch of etymology and who found that by linking polysemous words in many idioms to their literal, original meanings “insightful learning rather than ‘blind’ memorization” will take place (p.43).

(3)The effectiveness of the explicit instruction of vocabulary

More importantly, the experimental group obtained better results on the post PWKT, which might have been made possible through the deliberate instruction of the treatment words. This finding provides evidence in the support of the view that vocabulary should be deliberately targeted for instruction (Nation, 2001; Laufer, 2005).

The explicit vocabulary instruction method has always been advocated as a requisite for the EFL learner's substantial vocabulary base (Schmitt and McCarthy, 1997, Sökmen, 1997; Schmitt, 1997; Laufer, 2008). As a result, the direct vocabulary teaching method would be more appropriate for teaching high frequency words (Nation, 1990, 2001, 2008). The direct method adopted in the study proved to be very rewarding in drawing the learners' attention to the different, related meanings of polysemous words. Such awareness would not have been possible had I used the indirect teaching method. In other words, EFL English language learning contexts can by no means provide enough exposure to authentic English in order for the acquisition of the different meanings of the polysemous words to take place. The direct teaching method not only exposed the experimental learners to the different meanings of polysemous words as a group, but also provided them with clear explanations of how the literal and metaphorical meanings are related. Yet, even though I directed the control learners' attention towards activities that focused on the treatment words, and provided them with opportunities to repeatedly meet these words in use in different contexts in order to make the process of learning gradual and cumulative (Nation, 2001), they failed to be as efficient as their experimental peers in the post PWKT. This shows that deliberate teaching and learning

of polysemous vocabulary in this context should be backed by insights from the cognitive linguistics approach.

(4) *The power of the ISBM to deal with words which have more than one equivalent in their L1*

The good performance of the experimental participants on the PWKT reveals the possible potential of image-schemas to enable the experimental learners to understand the extended senses of polysemous words in general and those which do not have exact counterparts in L1 in particular. Table (6.1) shows how the verb *burn* (in some sentences, phrasal verb), for instance, does not have a one-to-one equivalent in Arabic and this concept is expressed in a different way. The different meanings expressed by *burn* in English are expressed in different words in Arabic.

Table 6.1: English definitions and Arabic translations of *burn*

Example	English meaning	Arabic translation
It was a terrible fire and the whole house was <i>burnt</i> to the ground.	To destroy, damage by fire or heat (literal translation)	يحرق
The man will <i>burn</i> himself <i>out</i> by working too hard. He works even on weekends.	ruin one's health (metaphorical meaning)	يهلك صحته
It's recommended to work out on daily basis to <i>burnoff</i> a few calories.	lose fat, calories ... by working out (metaphorical meaning)	يحرق السعرات الحرارية
You must have a temperature, your forehead is <i>burning</i> .	feel unpleasantly hot (metaphorical meaning)	يشعر بالحرارة

Using the image-schema based approach and being aware of the motivations lying behind the meanings extension of *burn* helped the learners, to a certain degree, to develop a sense for all the different meanings of this verb.

The control participants found *burn* and other words figuring the same problem such as *break* and *beyond* tricky. This is clearly seen in their post PWKT scores. This problem was partly avoided by their experimental peers who scores significantly higher on these three words as indicated in the table below (6.2) and this can be attributed to the advantage of the ISBM over the TBM in teaching polysemous words. It seems that the cognitive semantic explanations the experimental participants got from the cognitive-based instructional treatment helped them outperform their control peers who appeared to rely more on translation and *blind memorization*. Such a finding sheds light on the limitations of L1 = L2 equation and the inappropriateness for the EFL learners to fall back on their L1 when dealing with polysemous words. These results appear to be in line with Tanaka and Abe's (1985) assertion that the use of image-schema has the potential to enable learners to understand the L2 additional senses of polysemous words, particularly those which do not have exact counterparts in L1, without being constrained by its L1 equivalent (Morimoto, and Loewen, 2007).

Table 6.2. Scores from the PWKT of the polysemous words with more than one Arabic equivalent

Treatment polysemous words	Maximum score	Experimental group scores	Control group scores
<i>burn</i>	60	30	9
<i>beyond</i>	60	32	10
<i>break</i>	60	26	19

Drawing on the results displayed in the table above and on the results obtained from the other treatment words, it is possible to deduce that literal translation is likely to fail as mismatching is predominant between Arabic and English. In this context, students are likely to make *production errors* in speech and writing as differences in the native and target language exist (Odlin, 1989, p. 167). The low scores the control group obtained on these individual words in particular might be attributed to their reliance on the literal translation of these words when taking the PWKT. This is consistent with what Gabrys-Barker (2006, p. 145) refers to as 'calques' which he defines as the "literal translations of complex words or phrases". Resorting to literal translation and ignoring the *cross-linguistic semantic differences* between L1 and

English when dealing with polysemous words may lead to comprehension and production errors.

Also, it seems that EFL learners cannot rely on their L1 in order to work out the meanings of the English idiomatic expressions, where polysemous words are prevalent. In other words, they cannot fall back on their L1 for transfer as, according to literature the metaphoric senses of polysemous words are picked up (unconsciously) from the language they are exposed to. My four-year-old son, for example, can generate idiomatic expressions like طفح الكيل, the English translation of which is “*it is over*” without knowing the meanings of its single components – طفح and الكيل, the literal translations of which are ‘has overflowed’ and ‘the gauge’ respectively. Also, this example shows that, while some polysemous words have the same literal meanings and core image schemas in certain languages (as is found in English and Arabic) they sometimes give different metaphorical extensions, as in this example of ‘*break the record*’:

Table 6.3. Literal and metaphorical English meanings and their Arabic equivalents

	English literal meaning	Arabic equivalent
break	To destroy the shape or function of something Ex. The girl broke the vase.	يكسر كسرت البنت المزهريّة.
	English metaphorical meaning	Arabic equivalent
	To do something better or faster than anyone has ever done before Ex. The athlete broke the record .	يحطم الرقم القياسي حطم الرياضي الرقم القياسي.

As we can see, in order to convey the meaning of *breaking a record*, Arabic speakers resort to a metaphorical meaning of another word – يحطم which means ‘*destroy*’ in English instead of using ‘*break*’.

At this level it is possible to deduce that the cognitive linguistics insights should be encouraged in the teaching of polysemous words, which is shown by the ability of the

experimental participants to partly avoid the mismatching problem faced by the control group in comparable situations.

To conclude, on the one hand, the findings of this study in this context support the wealth of information supporting the pedagogic effectiveness of the insights from cognitive linguistics in teaching polysemous words in the relevant literature (Chapters 2 and 3 on literature review). On the other hand, these findings stand in contrast to the results reached by researchers such as Morimoto and Loewen (2007), who failed to prove the supremacy of the cognitive linguistics-based approach over the translation-based approach (for a more details about this study, see Chapter 3).

(5) Motivation of the experimental group to learn polysemous words

I was the instructor of the treatment and noticed throughout the treatment, that the experimental participants showed interest in learning the instructed polysemous metaphorical senses. Such enthusiasm can be attributed to a number of factors.

First, contrary to the regular reading class in which the treatment was integrated, many participants found that the treatment presented them with new vocabulary. On asking the participants about their opinions on the reading class, one of them told me that the treatment was the best part of the whole class, and when I asked her about the reasons for her opinion, she told me that the reading book failed to present them with new vocabulary. She explained that the treatment helped them better expand their vocabulary knowledge. Such a viewpoint was echoed by many participants.

As previously explained in the methodology chapter, the participants of this study are freshmen trying to improve their English in order to score 500 on TOEFL or reach band 5 in IELTS (see methodology chapter for more information). For this reason, they were interested in expanding their vocabulary knowledge, and they found that the treatment helped them do so.

Second, the participants were keen on learning the instructed polysemous senses because they felt their importance in learning English in general and in reading and speaking in particular. Such a positive reaction towards the treatment was achieved partly because the instructed polysemous words were integrated in the reading class in the sense that one of the three taught meanings was directly related to the reading lesson. For example, the word *burn*, was integrated in a unit on healthy lifestyles, and the starting sentence in the treatment lesson was

“it’s recommended to work out on a daily basis to *burnoff* a few calories”. This sentence was given to paraphrase an idea suggested in the reading passage the participants were studying in this unit.

By integrating the treatment words in the reading classes, the treatment was perceived by the participants as a useful rather than a complementary part of the reading class. Apart from feeling that the instructed senses might have helped them with reading, the participants might have found these senses helpful with speaking. As previously explained, the treatment incorporated eight high frequency words that are ubiquitous in speaking and writing. The participants were interested in improving their speaking skill because many of them were trying to pass IELTS, exit the intensive English program in which they were enrolled and join their majors (for further information about the participants, see methodology chapter). The effectiveness of context in introducing and teaching new vocabulary is echoed in literature (e.g., Coady and Huckin, 1997; Nation, 2001; Richard and Renanda, 2002).

Third, the activities used in the treatment were designed in a way that helped the participants successfully deal with abstract meanings, long rated by students as difficult to digest. For instance the activities of *Differentiating between literal and metaphorical senses* and *Identifying points of similarity shared by the literal and figurative meanings of the instructed words* might have helped the learners better understand polysemous vocabulary. While differentiating between literal and metaphorical senses might help the experimental participants categorize different meanings, identifying points of similarity might have helped them better understand and assimilate the new instructed senses.

Example 1

Differentiating between literal and metaphorical senses. Tick literal or Metaphorical.

Table 6.4: Exercise for the differentiation between literal and metaphorical senses

	sentence	Literal	Metaphorical
	A sudden <u>break</u> in the cloud allowed the rescuers to spot the victim.		
	An honest man shouldn't <u>break</u> his promise.		
	She <u>broke</u> her leg when she slipped.		

Example 2

Identify the points of similarity shared by the literal and figurative meanings of *root* in the following table.

Table 6.5: Exercise for the identification of the points of similarity shared by the literal and figurative meanings of *root*

Literal meaning	Points of similarities	Figurative meaning
<p>The <i>roots</i> of the palm <i>tree</i> are long and strong.</p>	<p>1. literal mg: <u>first</u>part of a Tree figurative mg: <u>first</u> people/ ancestors</p> <p>2. _____</p> <p>3. _____</p>	<p>1. After twenty years of <u>search for her <i>roots</i></u>, Jane succeeded in finding her relatives.</p> <p>2. They failed to solve the <u>problem</u> because they didn't discover its <i>root</i>.</p> <p>3. Many expatriates <u>put down <i>roots</i></u> in the UAE and <u>refuse to go back</u> to their home countries.</p>

Equally important, activities like *Using words in context* and *Words choice* which were meant to practice and consolidate the instructed meanings might have helped the participants assimilate better recall the treatment meanings. Below are two examples from treatment lessons on *root* and *break*.

Example 1

Words in context

Discussion questions

1. Why do some people like to search for their **roots**?
2. Why is it important to discover the **root** of the problem you're trying to solve?
3. How can immigrants put down **roots** in the host countries?
4. How are **roots** important for the tree?

Example 2

Word Choice

1. The athlete broke the European record in the 100 meters, so he
 - a. won the race
 - b. lost the race
2. When someone breaks the habit of smoking, s/he
 - a. stops smoking
 - b. cuts down on smoking
3. The motorist broke the law because he
 - a. respected the speed limit
 - b. exceeded the speed limit
4. Has any of your friends ever promised you something then broke her word?
 - a. Yes
 - b. No

These two activities are motivation-promoting because they incorporate sentences that encourage the participants discuss personal matters. By using newly taught vocabulary to discuss matters related to the interests of the learners, chances are big that these meaning will be retained by the learners.

To sum up, the experimental participants' attitude towards the instructional treatment was positive not only because the teacher presented them with new, high frequency and useful polysemous metaphorical senses, but because they found themselves able to understand and acquire a class of high frequency lexical items. The ways the treatment lessons were designed and the polysemous words were presented to the experimental group seem to have helped spur them to learn polysemous words. Exploring the factor of motivation in the case of the control group, I can say that the control participants were not as motivated to learn polysemous words as their experimental peers.

Throughout the treatment, many of the control participants were indifferent to the instructional treatment, and this can be attributed mainly, in my opinion, to their inability to deal with the instructed metaphorical senses. Such a failure might be caused, as I explained previously, by the abstract and difficult nature of the instructed senses, the inability of the control participants to understand the mechanism underlying the meanings extension of polysemous words, the absence of dual coding, and the reliance on translation and blind memorization in learning the instructed senses. For this reason, many of the control participants failed to see the importance of the instructed senses and found the task of learning them troublesome. Mere translation did not seem to help them see how the metaphorical senses of a polyseme are extended from its core, literal meaning. However, few control learners, especially those who have good language proficiency, showed a positive attitude towards the treatment as they seemingly were able to understand the taught senses. It seems that good language proficiency has a positive effect on the understanding polysemous words (this point will be discussed in the last part of this section and particularly in Research question 2)

To sum up, the experimental participants succeeded in outperforming their control peers in dealing with the metaphorical meanings of polysemous words due to the power of the ISBM to facilitate the teaching and learning tasks of polysemous words. The statistically significant differences between both group's scores in the immediate post-treatment PWKT were maintained in the delayed post treatment PWKT. Next section will be reserved to the discussion of the delayed PWKT.

The Delayed PWKT

The statistical analyses of the immediate and the delayed PWKT of the experimental and control groups yielded results which showed that time did not negatively affect the long-term retention of the assimilated metaphorical senses of the treatment polysemous words. First, I will see how well the experimental and control groups managed to retain the instructed metaphorical senses of the treatment words after a month of the treatment, and second, compare their scores in the delayed PWKT to see which group managed to recall these senses better, and then discuss the reasons that might lead to this good recall for both groups.

The statistical analysis of the delayed PWKT revealed that both of the groups managed to maintain and even slightly ameliorate the scores reached on the post-treatment PWKT as table 6.4 below shows (see also chapter 5).

Table 6.6: Means of experimental and control participants' post-treatment and delayed PWKT scores

	Experimental group	Control group
The immediate post-treatment PWKT scores	15.45	8.45
The delayed PWKT scores	16.6	8.95

The case of the experimental participants

As far as the experimental group is concerned, the successful long-term retention of the metaphorical senses can be attributed to a number of factors. Many of the factors discussed in the previous section might have helped the experimental participants understand the taught metaphorical senses, store them in the short-term memory and transfer them to the long-term memory. In other words, good comprehension can lead to good recall. In what follows I will go into more detail with other factors that could have been behind this good long-term retention. More specifically, I will explain how *deep processing* and the *gestalt-like* way of teaching polysemous words can enhance long-term retention.

(1) Deep processing can lead to better recall.

To begin with, the long-term retention the experimental participants exhibited in recalling the metaphorical senses was probably due to deep processing (this is reminiscent of dual coding). Deep processing might have occurred when the experimental participants were exposed to the polysemous words' extensions through image schemas (already explained in the previous section on the immediate post PWKT) and were encouraged to think of these derivations as a semantic network of interrelated senses. Each of the treatment lessons was finished with a primary schema and a semantic map of the taught meanings, as in the example below (from the treatment lesson on *break*).

Part of *Break* Network

destroy the shape or function/
separate something into pieces

stop/put an end

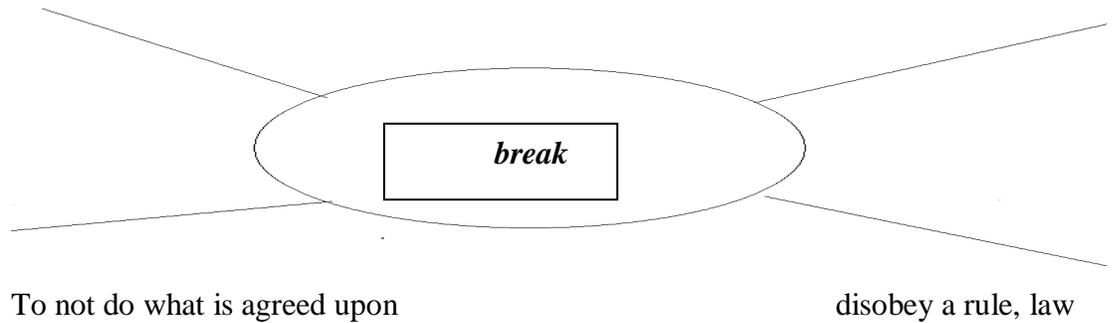


Figure 6.1. Part of *Break* network

Also, In some lessons, the experimental participants were engaged in activities on semantic elaboration where they were asked to show how certain metaphorical senses were derived from the primary image schema and how they were connected with each other, best illustrated in the following activity from the treatment lesson on break (for more examples, see Experimental Group Treatment Lessons Appendices I, Appendix 7).

The power of image-schemas(1 image-schema for many meanings)

Explain the sentences below with reference to the following image-schema.

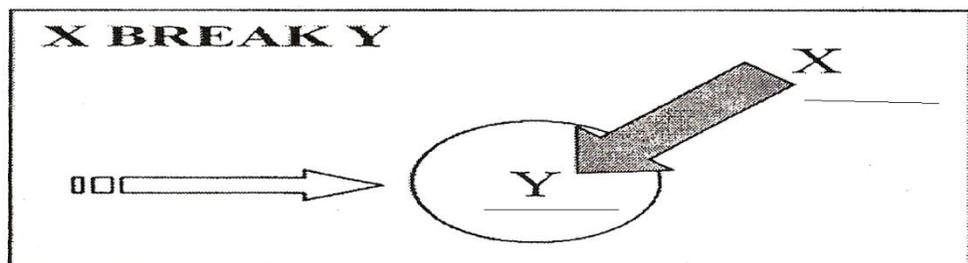


Figure 6.2. The image schema of the core meaning of breakTanaka (1987)

Sentences:

Example:

Boys (X) always **break** their toys (Y) quickly.

1. Ali managed to **break** the habit of eating junk food.
2. The teenager **broke** the law when he stole a car.
3. I **broke** my promise when I forgot to take my son to the film.

These findings about the long-term retention of the instructed senses is in line with Boers *et al*'s assertion that once a word is deep processed, its representation in the memory becomes mentally elaborated, i.e., it becomes associated with a bigger number of related words and images, thus allowing more potential retrieval pathways (2007).

(2) Polysemous words taught in a gestalt-like way can enhance long-term retention.

The success of the experimental participants in maintaining the marks scored at the immediate PWKT after a month of the treatment might have been caused by the *gestalt-like* method in accordance with which the treatment words were taught. By adopting this method, every time I presented a polysemous word, I tried to show how each of its literal meanings can be extended to give rise to a number of associated metaphorical senses. Such a technique will have left the experimental participants with the understanding that some of the words in the English language have different, but interrelated meanings. In this way they were provided with a unified picture of the treatment words in particular and the polysemous words in general. Also, such a technique is congruent with the way the polysemous words are presented in the mental lexicon. According to some researchers(e.g., Cruse, 1986; Lakoff, 1987; Deane, 1988; Tuggy, 1993) core, prototypical meanings of polysemous words are represented in the lexicon along with a reasonable number of their extended frequent senses. Lakoff (1987) and others propose that polysemy could “develop by the construction of a chain of extensions, each building on its predecessors” (Klein and Murphy, 2001, p. 262).

Findings from several studies (e.g. Tyler and Evans, 2004; Kovecses and Szabo, 1996 and Touplikioti, 2007, Littlemore, 2009) confirm that learners who are presented with many senses of a polysemous word at once appear to have good long-term retention of these words.

(3) The attempts to categorize words as polysemous or homonymous

The attempts of the experimental participants to apply what they have learnt from the treatment and classify words as polysemous or homonymous might have led to the success in maintaining and ameliorating the results scored of the immediate PWKT. Due to the cognitive insights received in the instructional treatment, many of the experimental participants started to pay attention to words with different meanings and try to find links between their different meanings. When for instance, the participants encountered the word *line* used metaphorically in the phrase of *reading between lines*, they automatically managed to categorize this sense as metaphorical and tried to link it to its core, literal meaning. This behavior was also seen in other listening and speaking classes the participants were studying.

Such new thinking in multi-meaning words as polysemous or homonymous might have served the experimental participants revise the words they met in the treatment and apply the insights of cognitive linguistics used to understand the polysemization process.

The case of the control participants

Similar to the experimental participants, the control participants scored slightly better on the delayed PWKT than the immediate post treatment PWKT. Good recall in this control group, however, might have been caused by factors that are dissimilar to those of the experimental participants. In what follows, I will explain how the *repeated encounters* of the targeted vocabulary and *positive transfer* might have led to good long-term retention.

(1) Repeated encounters of the targeted vocabulary may lead to better recall.

To begin with, the control participants were able to remember the assimilated metaphorical senses, probably because they were exposed to the instructed polysemous words on several occasions.

As I taught the metaphorical senses of the polysemous words in a piecemeal fashion, the control participants encountered these words repeatedly. Each of the control group's treatment lessons dealt with three different senses of the targeted words. This spaced

presentation allowed the control participants to see each of the targeted words three times in three different lessons over a period of two months. This claim supports the view taken by Nation (1990) according to which it is probable that *positive reencounters* of the targeted lexical item is a prerequisite for any real vocabulary learning. Moreover, This finding gives evidence to the research on vocabulary instruction which shows that repeated encounters with new vocabulary and new senses of already known words is significant in short-term and in long-term storage. According to Baddely (1990), “the act of successfully recalling an item increases the chance that the item will be remembered” (p. 56). Similarly, Pimsleur (1967) argues that if the learners encounter the lexical item very frequently right after it is presented, then with “decreasing frequency during the succeeding days and weeks”, a greater likelihood of long-term retention will take place (p.73).

(2) *Long-term retention may take place whenever positive transfer exists.*

The results suggest that similarities between English and Arabic might have facilitated the control participants’ task of assimilating and retaining the polysemous words’ instructed senses. In fact, analyses of the immediate and delayed PWKT scores reveal that they were more successful with polysemous words that have exact equivalents in Arabic than with those which exhibited mismatching. For example, they scored better in words like *head* and *push* than in words such as *break* (see table 5.3 above). In most of the cases *head* and *push* have equivalents in Arabic as the following examples from the instructional treatment and the PWKT show:

a. France **heads** the top ten tourist destinations with 71 million visitors.

English meaning of ‘heads’: at the top of a list = **Arabic equivalent:** تتراًس

b. Mr. Jassim is a very important person. He **heads**a group of companies.

English meaning of ‘heads’: to be in charge or to lead something= **Arabic equivalent:** يتراًس

c. He **pushed** his way through the crowd until he reached his son.

English meaning of ‘pushed’: move forward using force =
Arabic equivalent: اندفع

d. James **did not push** Mira into stealing the money. She planned everything without his knowledge.

English meaning of ‘did not push’: to force someone to do something =

Arabic equivalent: لم يدفع

The literal translations for *push* (verb form) and *head* (noun form) in Arabic are يدفع and رأس respectively. These examples show that many of these two words’ metaphorical senses are expressed through the same words in English and Arabic. Also, this shows that metaphorical extensions are derived from the core, literal meaning exactly in the same way the *metaphorization process* works in the English language.

To conclude, just like the experimental group, the control group managed in the delayed PWKT to maintain the scores obtained at the immediate PWKT. Better recall in both groups can be attributed to different factors, thus, giving merits not only to the ISBM but also to the TBM along which the instructional treatment was delivered to both groups.

SAT

The results of the Strategy Assessment Test (SAT) suggest that the experimental participants succeeded to some extent in applying the strategy of working out the metaphorical senses of polysemous words through their literal meanings. More specifically, in part 1 (2.60 ± 1.353), the participants performed better than in part 2 (1.65 ± 0.933). This shows that around 50% of Part 1 and nearly 35% of Part 2 of the SAT items were answered correctly (for more details about the SAT, see chapter 5 on results). These results are by far better than the pre-treatment PWKT results (1.95 ± 1.905) where the experimental participants scored very poorly in their first encounter with the polysemous words.

The relative success of the participants in applying the strategy of working out the metaphorical senses of polysemous words through their literal, core meaning suggests that teaching polysemous words strategically might be more rewarding for Arab EFL learners [in the UAE] in particular and in comparable contexts in general. Such a strategy might allow the learners to guess the metaphorical senses not only of the polysemous words instructed in the treatment, but also of those they will encounter subsequently. Given that polysemous words represent a significant layer of high frequency words in English, this strategy might be very rewarding for EFL learners and teachers who will not have to go through all the polysemous words in the English language. This finding is congruent with the literature on the “vocabulary learning strategy, teaching and learning” which advocates the teaching of vocabulary

strategically (Cohen, 1998; Nation, 1990). This finding is also consistent with Tyler and Evans' views (2004) that the cognitive linguistic approach is able to equip EFL learners with strategies to guess the meanings of novel usages of polysemous words based on their understanding of the underlying common meaning; in this case the core, literal meaning.

Equally significant, this finding suggests that this new strategy could supplement what the EFL learners have already acquired as vocabulary learning strategies for guessing the meanings of difficult words. This is in harmony with Boers *et al's* views that such a strategy "could provide an additional pathway for insightful learning" (2007, p. 45) especially if it used in combination with contextual cues such conceptual metaphors and semantic explanations. Boers *et al's* (2007, pp.45,46) *optimism* was "fuelled by studies which have yielded encouraging results with regard to learners' ability to interpret figurative senses of polysemous words on the basis of knowledge of the literal senses of these words" (e.g. Boers, 2000; Csábi, 2004; Verspoor and Lowie, 2003).

As this strategy requires cognitive processing and semantic elaboration, it can be classified as a memory vocabulary learning strategy according to the taxonomies of Schmitt (1997) and Takač (2008). Because of this fact, some skeptics doubt its usefulness in EFL contexts and cultures where learners have an inclination towards traditional, formal learning strategies. The findings of this study stands in contrast to these skeptics' views. In fact, in spite of the fact that the VLSQ showed that the participants prefer formal learning strategies at the expense of memory tasks, the results of the PWKT and the SAT are encouraging and do not indicate the failure of cognitive strategies in cultures favoring formal vocabulary learning strategies. This is consistent with Kudo's (1999) claim that strategy instruction and use should not be *necessarily culturally conditioned* and, as Bedell and Oxford (1996) put it "culture should not be seen as a strait jacket, binding students to a particular set of learning strategies all their lives" (p. 60).

What also gives significance to this strategy is its potential success even with younger learners. According to strategies-based instruction advocates, memory vocabulary learning strategy such as this should not be restricted to intermediate and advanced levels because at these stages learners have a better level of language proficiency that can help them learn and use memory, deep thinking strategies. Instead, they could be tailored to meet the learners' proficiency levels and their vocabulary needs. In this context, Piquer (2008) reports the findings of three studies that show that guessing the figurative senses of some polysemous

words through their literal meanings - a cognitive VLS - can be adapted and successfully taught to young learners.

6.2 Discussion of Hypotheses and Questions

6.2.1 Discussion of Hypothesis 1

Hypothesis 1

The experimental participants who will be taught polysemous words using the *image schema based vocabulary instruction method (ISBM)* are expected to outperform the control group, who will be taught the same words using the *translation based vocabulary instruction method (TBM)*.

In considering this hypothesis, the results suggest that the experimental participants outperformed their control group peers on the PWKT which was used to assess the effectiveness of the treatment instructional methods – the ISBM and the TBM. The statistically significant difference between the scores of the experimental (15.45 ± 7.667) and control groups (8.45 ± 4.571) supports hypothesis one (see chapter 5 for detailed results). The good results achieved by the experimental group can be attributed, as the previous discussion of the PWKT, to several factors, the most important of which are: (1) The usefulness of understanding the underlying mechanism of polysemous words' meaning extension, (2) the beneficial role of dual-coding in understanding polysemous words, (3) the effectiveness of the explicit instruction of vocabulary (4) the power of the ISBM to deal with words which have more than one equivalent in their L1, and (5) motivation to learn polysemous words the control participants showed during the treatment lessons.

6.2.2 Discussion of Hypothesis 2

Hypothesis 2

In the long-term, retention of the metaphorical senses of polysemous words will be higher for the experimental students, taught via the ISBM, than for the control students, who are taught the same words using the IBM.

The statistical analyses and the discussion of the immediate and the delayed PWKT of the experimental and control groups yielded results which showed that time did not negatively affect the long-term retention of the assimilated metaphorical senses of the treatment polysemous words, showing, thus, that hypothesis 2 cannot be confirmed (see table 6.4 above and chapter 5).

In verifying this hypothesis, first, I saw how well the experimental and control groups managed to retain the instructed metaphorical senses of the treatment words after a month of the treatment, and second, I compared their scores in the delayed PWKT to see which group managed to recall these senses better (see discussion of the delayed PWKT above).

As far as the experimental group is concerned, the successful long-term retention of the metaphorical senses can be attributed to factors discussed in hypothesis one. Many of these factors may have helped the experimental participants understand the taught metaphorical senses, store them in the short-term memory and transfer them to the long-term memory. In other words, good comprehension and processing can lead to good recall. Equally important, other factors such as the depth of processing, the gestalt-like way of teaching polysemous words, and the attempts of the control participants to categorize words as polysemous or homonyms might have enhanced long-term retention.

As for the control participants, their successful long-term retention can be attributed to several factors, the most important of which are: (1) the repeated encounters of the targeted vocabulary and (2) the effectiveness of positive transfer (see discussion of the delayed PWKT, the case of the control participants above).

6.2.3 Discussion of Research Question 1

Are students in the experimental group likely to transfer the insights of cognitive linguistics used for learning polysemous words to their processing of the polysemes they

will encounter subsequently? (This concerns the polysemous words seen in the treatment and those new ones that will be encountered in the future)

In considering the first research question, the discussion of the Strategy Assessment Test (SAT) suggests that the experimental participants succeeded to some extent in applying the strategy of working out the metaphorical senses of polysemous words through their literal, prototype meanings. More specifically, in part 1 (2.60 ± 1.353), the participants performed better than in part 2 ($1.65 \pm .933$). This shows that around 50% of Part 1 and nearly 35% of Part 2 of the SAT items were answered correctly (for more details about the SAT, see chapter 5 on results). These results are by far better than the pre-treatment polysemous words knowledge test (PWKT) results (1.95 ± 1.905) where the experimental participants scored very poorly in their first encounter with the polysemous words.

6.2.4. Discussion of Research Question 2

Are there any relations between the experimental participants' scores on the polysemous words knowledge test and their cognitive styles, language proficiency and vocabulary learning strategies?

In answering this question, I will examine whether there are relationships between a number of variables and the effectiveness of the ISBM. More specifically, I will investigate the experimental participants' ability to think in pictures, their English language proficiency, and their vocabulary learning strategies in relation with the ability to study polysemous words along the lines of the cognitive linguistic approach.

Relationship between the high imager variable and the effectiveness of the ISBM

The computed correlation coefficient, used to evaluate whether the high imager variable (the ability to think in mental pictures) is related to the success of the CL-inspired pedagogy (which is reflected in the scores of the experimental participants on the post-treatment PWKT), shows that there is a moderate, positive correlation between these two variables ($r = .092$). This supports the view taken by Boers and Lindstromberg (2008, p.41) which states that “not all learners may be equally susceptible to the effectiveness of CL-

inspired pedagogy” as learners who are prone to think in mental pictures may benefit more from cognitive linguistic instruction that relies heavily on image schemas. However, this correlation coefficient is not strong enough to be considered statistically significant as it is smaller than the critical value number. This indicates that the ability to think in pictures may not be enough for the success of the CL-inspired pedagogy. Also, the absence of a strong overlap between these two variables might mean that other variables might have come into play in the process of polysemous words’ instruction, one of which is language proficiency.

Relationship between the participants’ language proficiency and their scores on the PWKT

The participants’ language proficiency is gauged through their TOEFL and VLT scores.

The TOEFL

In considering the participants’ TOEFL scores, we can see that there is a strong relationship between these scores and their scores on the PWKT ($r = .032$). This finding suggests that the higher the participants scored on TOEFL, the better they were at understanding the metaphorization process and benefiting from the CL insights into pedagogy. The reason for this is that, good proficiency means deep vocabulary knowledge and large vocabulary store. According to Vermeer (2001), knowledge of words is “considered the most important factor in language proficiency and school success” (p. 218). The good knowledge of vocabulary the participants have might have facilitated the assimilation of the polysemous words. As has been explained earlier, the knowledge of the literal meanings of the treatment words is prerequisite to benefiting from the cognitive linguistics insights used in polysemous words learning.

VLT

The results obtained from the VLT support the findings about the relationship between the participants’ TOEFL scores and their success in learning polysemous words. The relationship between the participants’ PWKT scores and the VLT scores is clearly seen in the multiple regression test - VLT K1, $r = .098$ and VLT K2, $r = .235$. However, this correlation coefficient is not strong enough to be considered statistically significant as it is smaller than

the critical value number. It seems that the better the participants are at the first and second thousands of high frequency words of English language, the more likely they will succeed in learning polysemous words. This is partly true because polysemous words belong to this high frequency layer of English vocabulary.

These findings support Boers and Lindstromberg's (2008) claim that English majors, who must have good proficiency in English, are more motivated and more susceptible to the effectiveness of CL-inspired pedagogy as they may "be more willing to engage in quests for meaning instead of relying on the teacher's (or handbook's) input" (2008, p. 41)

Closely related to proficiency is the variable vocabulary learning strategies (Dreyer and Oxford, 1996), which should be taken into consideration when analyzing the experimental participants' PWKT scores.

Relationship between the participants VLSs and their PWKT scores

The obtained results of the computed correlation coefficient between the participants' PWKT scores and the mean of the VLSQ they responded to revealed a correlation between these two variables ($r = .252$). While this correlation coefficient is not statistically significant, it indicates that there might be a relationship between the success of the insights of cognitive linguistics used for teaching polysemous words (exhibited in the participants' PWKT scores) and the VLSs learners have. This claim is consistent with Tyler and Evans's (2011) view that vocabulary learning strategies are essential for the understanding of the meaning of polysemous words like *over* in the example 6.2 below.

Example 6.2

The cat jumped over the wall.

In order to understand the meaning of *over* here, learners have to use two learning strategies, *guessing meaning from context* and *inferencing*. According to Tyler and Evans (2011) learners should make use of the *sentential context* by integrating all the linguistic prompts (in this case, *the cat*, *jump over*, and *wall*) to work out the meaning of *over*. According to these two researchers, the trajectory sense is not coded by *over* alone, but also made possible thanks to the verb *jump* which "does prompt for a conceptualization involving motion, which entails a trajectory" (p.119) (for the importance of context in polysemy, see

section 1, Chapter 3). Other examples from the treatment lessons necessitating the use of the sentential context are:

- A. We can solve the problem of expensive weddings by getting to its **root**. (*Meaning: the main cause or source of a problem*)
- B. He started putting down **roots** in Sharjah after living 2 years there. (*Meaning: make a place like home by making friends, taking part in local activities/ settle down*)

As we can see, words like *the problem* in A and *putting down* in B are necessary for guessing the right meaning of *root*.

However, in certain cases, linguistic prompts may be insufficient for meaning construction. In fact, sometimes successful meaning formation necessitates the integration of the sentential context with the encyclopaedic knowledge (real world knowledge) and the involvement of inferencing strategies, as in the examples 5.3 below.

Examples 6.3: A. We can solve the problem of expensive weddings by getting to its *root*.

B. The man will *burn himself out* by working too hard. He works even on weekends.

C. She *broke* the world record for the 100 meters.

Background information about very expensive weddings in the UAE, workaholism, and sports could aid learners in the construction of meaning. Also, common knowledge, for example, that being a workaholic could be bad for your health, provides us with the inference that *burn out* can mean *harm one's health* or can be equated with a negative meaning. In other words, by considering certain words in the sentence, learners may be in a better position to make successful inferences.

These findings appeared to be in line with advocates of language learning strategies

(E.g. Wesche, 1975; O'Malley *et al.*, 1985; Oxford, 1990, 2011; Nambiar, 1996; Makni 2006) who argue that the learning of language learning strategies, including VLSs can contribute to successful language learning. In other words, EFL successful learners were found to use more strategies than low achievers and their absence can jeopardize the process of language learning. Equally important, these findings came to remedy for a pitfall noticed in some of the previous CL oriented studies (e.g. Csábi, 2004; Moritmo and Lowen, 2007) (see a review of these studies in Chapter 3). These studies did not take into consideration the learners' VLSs, a variable that should be investigated before teaching polysemous vocabulary to EFL learners.

Conclusion

In this chapter, I have discussed in detail the results obtained from the statistical analysis of the tests and questionnaires of the study. Reasons for the high/low scores the participants in both groups got were explored. Then, in light of this discussion, I addressed my hypotheses and the questions set out in the first chapter.

As far as the first hypothesis is concerned, it was found that the cognitive linguistics approach to teaching polysemous words is more effective than the traditional translation approach. I discussed different explanations accounting for the supremacy of the cognitive oriented approach. For example, I attributed the success of the ISBM to the usefulness of understanding the underlying mechanism of polysemous words' meaning extension, the beneficial role of dual-coding in understanding polysemous words, the effectiveness of the explicit instruction of vocabulary, and to the motivation of many of the experimental participants to learn polysemous words.

With regard to the second hypothesis, I found that after one month from the treatment, the participants in both groups scored slightly better on the delayed PWKT compared with the immediate post treatment PWKT. This showed that time did not have a negative effect on the long-retention of the treatment metaphorical senses delivered in accordance with the cognitive and translation approaches. Possible reasons for the success of the participants in recalling these senses were given. For example, I attributed the success of the experimental group in retaining the taught words to the deep processing and the gestalt-like way of teaching polysemous words.

As for question one, I found out that teaching polysemous words along the lines of the cognitive approach paid off as the experimental participants managed to a certain degree to apply the strategy of working out the metaphorical senses of polysemous words through their literal meanings. In fact, they managed to guess the metaphorical senses of the polysemous words used in the test by implementing the strategy they were taught in the instructional treatment.

Concerning the second question, correlations ranging from moderately strong to significant were found between the effectiveness of the cognitive oriented approach exhibited in the experimental participants' scores on the PWKT and variables pertinent to learners' characteristics such as cognitive style of information processing, language proficiency, and vocabulary learning strategies. In the next chapter, I will elaborate on the possible pedagogical implications made possible by the findings obtained.

CHAPTER 7 SUMMARY AND PEDAGOGICAL IMPLICATIONS

7.1 Summary

This study sought to compare the effectiveness of two different approaches to teaching polysemous words to Arab EFL learners: an image-scheme approach based on insights from cognitive linguistics and the traditional translation method. Furthermore, the study considered the relationships between the specific characteristics of the learners and the usefulness of insights from cognitive linguistics in teaching polysemous words.

The findings drawn from the statistically analyzed results confirm the primacy of techniques inspired by cognitive linguistics over those based on translation in learning polysemous words. However, both techniques proved beneficial in the long-term retention, as the experimental participants and their control peers maintained nearly the same results that were scored on the post PWKT taken immediately after the treatment. Yet, teaching polysemous vocabulary strategically, using an approach inspired by cognitive linguistics, was found advantageous as the experimental participants managed to work out the metaphorical senses of newly encountered polysemous words through their literal meanings. Also, it was shown that a host of variables come into play when dealing with the acquisition of polysemous words. In fact, relationships, ranging from moderately strong to strong, were found between the learning of polysemous words through the cognitive linguistics-based method and learners' characteristics such as language proficiency, information-processing styles, and vocabulary learning strategies. More specifically, it came to light that learners who are inclined to think in pictures and have good language proficiency were found to be more successful in learning polysemous words.

Such findings give pedagogic support to the tenets of cognitive linguistics and prototype theory within cognitive linguistics (e.g., Brugman, 1980; Lakoff 1987; Tyler and Evans, 2004; Evans and Tyler, 2008). Additionally, the results of my study confirm findings from other studies using teaching methods based on the insights from cognitive linguistics. (e.g., Csábi, 2004; Touplikioti, 2007).

7.2 Implications

The findings of this study have a number of implications that can be used to inform teachers, material developers, and lexicographers.

Pedagogical implications for teachers

First, given the efficiency of image schemas and verbal explanations in helping the experimental participants assimilate and recall the polysemous words of the treatment, teachers are advised to adopt the dual coding theory (DCT) in teaching vocabulary. Possibly, visual aids used in the form of image-schemas in this study had the potential to concretize the taught figurative, abstract senses which are long-considered to be beyond the grasp of EFL learners. Such concretization seems to have helped the experimental participants to understand the abstract senses of the taught words and retain in memory as concrete scenes along with their verbal forms.

Pedagogically, DCT insights have the benefit of creating dual verbal-nonverbal memory traces for newly taught words. This is advantageous for students because “the additive effect of imagery and verbal codes is better than a verbal code alone” (Clark and Paivio, 1991, p. 165). This is promising as it can be applied to concrete and abstract words. By concretizing the metaphorical extensions of polysemous words which are abstract by nature, EFL learners’ chances of understanding them might be maximized. To benefit from this *imaginal elaboration*, Paivio and Clark (1991), argue that teachers should provide pictures for new words or urge learners to image them. Such a method might be profitable for UAE learners and EFL learners in other comparable contexts as it has the potential to be better than the translation technique. In this respect, Paivio and Lambert (1981) argue that dual coding can “produce better recall than repeated encoding conditions (i.e., repeating target words aloud or silently), and even better memory than such deep encoding operations as translating into another language” (cited in Clark and Paivio, 1991, p.166).

Also, concerning the techniques of teaching polysemous words, Morimoto and Lowen (2007) warn against applying the insights from cognitive linguistics to the teaching of polysemous words on one occasion only. They argue in the limitation section of their study that “isolated, one-off lessons might not be sufficient to ensure students’ full internalization and restructuring” of their knowledge of the polysemous words’ literal and metaphorical senses (p. 362). For this reason, I taught polysemous words to the experimental group

strategically. By showing the students how the insights from cognitive linguistics work through eight polysemous words over a period of two months, I allowed the students time to fully understand the underlying mechanism governing the polysemization process. Therefore, it might be worth leading the EFL learners steadily through the techniques proposed by cognitive linguistics to teach English polysemous vocabulary to give them a chance to internalize and restructure their knowledge of polysemous words and to digest these newly taught techniques.

What may give further significance to a strategic way of teaching polysemous words is that it goes in line with Littlemore's (2009) suggestion to introduce the learners to many senses at once and engage them in working out the metaphorical and metonymic relationships between the literal meanings and extended senses for themselves. Such a method is consistent with the literature pertinent to the representation of the polysemous vocabulary in the mental lexicon. Following this, it might be advisable for teachers to cluster the meanings of the target polysemous word in a semantic network with the literal, central meanings and the metaphorical senses radiating out towards the edges (see treatment lessons, Appendices I, Appendix 7).

Second, the investigation of the learner characteristics (language proficiency, information-processing style, vocabulary learning strategies, and the knowledge of high frequency words) and their possible relationships with the applicability of the insights from cognitive linguistics also revealed positive correlations. This finding shows the importance of having an idea about learners' characteristics before embarking on any teaching activity. This is congruent with the views of Oxford and Ehrman (1993) who argue that EFL teachers should investigate and understand important individual differences in their learners in order to conduct effective teaching. Given this fact, EFL teachers are advised to check their learners' language proficiency before engaging them in any activities related to the polysemization process, in particular and to vocabulary acquisition, in general. More specifically, teachers have to make sure that their learners know the literal meaning of the polyseme in focus as this knowledge is prerequisite for understanding how the metaphorical is derived from the literal.

Third, the results show that the learners in this study were inclined to use formal, rote-learning vocabulary learning strategies at the expense of memory strategies. As the strategy taught in the treatment of this thesis relies heavily on memory and the ability of learners to infer and make use of imagery, teachers should tailor activities to meet their learners' mental

capacities. For example, image schemas that are abstract by nature should be well specified (see treatment lessons, Appendices I, Appendix 7) and explained through different examples until learners grasp them. This will help learners understand how the image-schema can be applied in metaphorical domains.

Fourth, results from the immediate post-treatment PWKT reveal that the control participants that were taught the treatment in accordance with the translation method, scored lower than their experimental peers on the polysemous words that do not have exact equivalents in Arabic. This mismatching phenomenon was also witnessed in the Japanese EFL context where Morimoto and Loewen (2007) reached the conclusion “that vocabulary learning is not simply a matter of one-to-one mapping of L1 onto L2” (p. 354). For this reason, EFL teachers should draw their learners’ attention to limitations of word-for-word translation when dealing with polysemous words. However, given the cases where we have matches between English words and their Arabic equivalents, teachers can additionally point this out using the translation method. In this case the L1 should not be seen as a thing to be avoided, but rather as an additional asset in learning polysemous vocabulary.

Fifth, as cognitive linguistics have proven effective in equipping teachers with a feasible way of teaching English polysemous words to EFL learners, English teachers should be trained in techniques pertinent to polysemous vocabulary teaching proposed by this framework. Before the 1990s, teachers used to find polysemous vocabulary teaching problematic, especially with respect to their metaphorical senses which were conceived as abstract, arbitrary and idiosyncratic (Lennon, 1996; Thornbury, 2002; Csábi, 2004). However, with the advent of cognitive linguistics and the increased use of its techniques in the classroom, polysemous vocabulary has become easily accessible, and cognitive linguists and semanticists have shown how the metaphorical senses of a polyseme are related to its literal meaning through cognitive mechanisms, such as conceptual metaphors, conceptual metonymies, and image schema transformations.

So far, all of the suggested implications have arisen from the findings on teaching polysemous vocabulary within the framework of cognitive linguistics. In its own way, the translation method adopted with the control group too offers significant pedagogical implications.

One of the reasons given to explain the efficiency of the method used with the control learners is that each of the treatment words was delivered in a *piecemeal fashion* over a period

of two months (see methodology chapter for more details). While the repeated encounters characterizing this method might be blamed for not helping learners establish semantic relationships between the different senses of polysemous words, they could result in better recall. Given this fact, like Nation (1990), we call for learning materials that guarantee enough repetition of the targeted vocabulary, and if these materials do not ensure sufficient encounters, teachers could create supplementary occasions to make up for the missing necessary exposures.

Pedagogical implications for material developers

Given their importance, the results reaped from this study might be of great help to EFL learners in the UAE and other EFL learners in comparable contexts. One way to do so is to include the method used in teaching polysemous vocabulary to the experimental participants in English language materials designed for EFL learners.

Many vocabulary course books or even reading materials often devise a section for vocabulary skills (e.g., Anderson's *Active skills for reading* series, 2007). Such books can introduce the skill of working out the metaphorical senses of polysemous words through their literal, central meanings, following the method I have devised in this thesis.

In order to ensure the success of this strategy, material developers are invited to consider these recommendations:

1. Activities should be designed to ensure that the learners know the literal meaning of the polysemous words they are learning.
2. Tasks should be tailored to make learners aware of the differences between literal and figurative meanings.
3. The various meanings of polysemous words (3 to 4) should be introduced in one stay and motivations behind their relatedness should be explained.
4. Whenever possible, image schemas should be designed to support the verbal explanations of the teacher.
5. A semantic network figuring the different taught meanings should be used for better understanding and recall.
6. Opportunities ensuring repeated encounters with the taught meanings should be distributed in the subsequent lessons of the book.
7. Activities to apply the taught strategy to other unseen meanings of the already targeted

polyseme should be provided.

In my study all of these suggestions have been put into practice in the instructional treatment used with the experimental learners (see Appendices I, appendix 7 for all the lessons).

Implication for lexicographers

The teaching of the metaphorical senses of polysemous words as an interrelated set derived from a core, proto-scene meaning proved to be fruitful in this study and in other studies (Csábi, 2004; Morimoto & Lowen, 2007; Touplikioti, 2007). Motivations explaining the relatedness of different metaphorical senses to a core meaning seem to be more helpful than blind memorization in understanding and retaining the abstract senses of polysemous vocabulary.

However, looking up polysemous words, such as *over*, in any English dictionary, we find that the different, but related senses of polysemous words are presented through multiple entries haphazardly, ungoverned by any rule (see, *LONGMAN Dictionary of Contemporary English, 1995* and *Collins COBUILD Advanced Dictionary, 2009*).

The way these meanings are presented does not mirror the way they are presented in the mental lexicon and this may make their learning difficult. Researchers (e.g., Lakoff, 1987; Klein and Murphy, 2001) often argue that core, prototypical meanings of polysemous words are represented in the mental lexicon along with a reasonable number of their extended frequent metaphorical senses.

In order to facilitate the acquisition of polysemous vocabulary, lexicographers should adopt the insights offered by cognitive linguistics and present the senses of polysemous words that exhibit relatedness together, just as shown in the example of *over* in table 7.1. In order to do so, they need to study polysemous words and identify their related meanings and form semantic networks. For example, Tyler and Evans (2004) have identified 14 senses of *over* derived from the proto-scene (for further details, see literature, Chapter 2). In this case the core meaning of *over* gives rise to distinct meanings and spatial meanings that can in their turn generate related metaphorical senses. Table 7.1 summarizes two of the main meaning clusters of *over*.

Table 7.1: *Over* spatial meanings and their metaphorical extensions

Spatial meanings	Metaphorical senses
ABC trajectory cluster	Transfer meaning Completion meaning Above-and-beyond (excess 1) meaning On-the-other-side-of meaning
Up cluster	More meaning Control meaning Preference meaning

7.3 Limitations and Directions for Future Research

I have tried to remedy for the pitfalls of the previous related studies but I encountered a few limitations during the course of my study.

First and foremost, the long term-retention of the metaphorical senses delivered in the instructional treatment was one of the main variables the study was meant to examine. In order to investigate this, I administered a delayed PWKT after one month from the study. At this level, some teachers and researchers may judge this period to be too short to gauge the durability effect of the instructional treatment. Initially, I thought of administering the delayed test after 6 months from the treatment. However, due to some changes in the program²⁰ the participants of this study are enrolled in, it was mandatory to finish the treatment and the tests within one semester. So, it might be interesting to have a delayed test, if time permits, after a longer period (6 months or even more) to see the durability effect of the insights from cognitive linguistics in teaching polysemous words to EFL learners.

Secondly, this study was meant to investigate whether there is any relationship between the inclination of EFL learners to think in pictures and the effectiveness of the cognitive linguistics-based approach which relies heavily on image schemas in teaching polysemous vocabulary. In order to examine the learners' information processing style and find whether they are high or low imagers, I used the style of processing scale (SPOS) designed by Childers

²⁰ In order to exit the intensive English program the participants of this study are enrolled in, the participants are required to obtain 5.00 in IELTS or 500 in TOEFL. This change was in favor of the students as they were able to meet the new IELTS score and exit the program within one semester only.

et al (1985). However, though this scale proved reliable, and yielded significant results, I could have probed the participants' styles of processing information better had I used information processing tasks instead of the SPOS. In other words, I think that activities (tests, quizzes, etc...) are more reliable than questionnaires or scales in gathering information about any population.

Thirdly, partly because the study was set out to be a fully ecological one, in the sense that the presentation of the polysemous words taught and the practice exercises of the instructional treatment for the control group replicated the mainstream teaching practices of polysemous words (unlike some previous studies), I was not able to control for these variables: (1) piecemeal presentation of polysemous words, (2) different practice exercises between control and experimental group, and (3) lack of translation test at the end of the experiment.

(1) Piecemeal presentation of polysemous words

The advocates of the traditional, translation-based approach treat polysemous words as homophones and teach their different senses as they turn up. For this reason, the polysemous treatment words were presented to the control participants in a piecemeal fashion. The experimental participants, however, were exposed to these words in a *gestalt-like* way. As the latter way of presenting polysemous words might be more effective in teaching polysemous words, the experimental group might be more advantageous than their control peers. The *gestalt-like* technique might have left the experimental participants with the understanding that some of the words in the English language have different, but interrelated meanings and might have provided them with a unified picture of the treatment words in particular and the polysemous words in general. Findings from several studies (e.g. Tyler and Evans, 2004; Kovecses and Szabó, 1996 and Toupikioti, 2007, Littlemore, 2009) confirm that learners who are presented with many senses of a polysemous word at once appear to have good long-term retention of these words.

To sum up, the control participants' inability to have better scores in the PWKT could, partly, be attributed to the inefficiency of the piecemeal fashion in presenting the polysemous words of the instructional treatment.

(2) Different practice exercises between control and experimental group

Because of the different nature of the methods adopted in the instructional treatments – the ISBM for the experimental group and the TBM for control group – some of the practice exercises for both groups were different (see Appendices 1, Appendix 7 for treatment lessons). *Identifying points of similarity shared by the literal and figurative meanings of the instructed words*, for example, was one of the practice exercises given to the experimental group only. This task might have helped the experimental learners better understand and assimilate the polysemous words delivered in the treatment because it might have helped them categorize the different meanings of polysemous words as literal and metaphorical, and identify points of similarity between them. This pitfall was inevitable because the control group participants had no idea about the metaphorization process, a prerequisite for such a type of exercise.

(3) Lack of translation test at the end of the experiment

While the control group participants were taught the polysemous words along the lines of the translation based method, the post-treatment test has a gap-filling format where participants were required to complete one unfinished word in each sentence (see section 4.3 for more details about the PWKT). So, it might be possible that because the polysemous words were taught in a way which was different from how they were tested, the control participants were not able to score better in the post-treatment PWKT. This pitfall could have been avoided had I added a ten-sentence testing component to the PWKT.

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Appendices

Appendices I: Study Materials

Appendix 1. The Polysemous words knowledge test (PWKT)

Name: _____ ID: _____

Polysemous Words Knowledge (Pre-test)

This test is meant to gather information about your knowledge and understanding of a particular set of English vocabulary. Your cooperation is highly appreciated.

The findings will help me monitor my teaching. The marks you'll get on this test won't be part of your mid-term or final overall grades.

Read the following sentences carefully and pay attention to the underlined words and their Arabic translations for further understanding, then complete the unfinished words.

1. Some bad eating habits are difficult to stop, for instance, for some, eating junk food daily is a habit which one cannot *b*..... easily.

(عادة)

2. Many people continue working *b*.....the age of 60. At this age people usually

(يواصل)

retire. (يتقاعد)

3. Your article is *o*.....the page limit. You wrote more than what is required.

(مقال)

(الحد)

4. Passing the TOEFL *h*.....the list of ambitions among all the students who

(النجاح)

(طموحات)

joined the Intensive English Program at the University of Sharjah.

(التحق)

5. I like Oman very much, and I'm proud of my Omani *ro*.....We live in the

(فخور)

- Emirates, but my parents were born in Muscat (مسقط).
6. The new manager managed to **pu**..... his ideas to reform things in the company.
 (المدير) (يصلح) (الشركة)
- He kept talking about his new ideas until he convinced all the workers to trust him.
 (أقنع) (يثق)
7. When we went out, we left the kids in the good **ha**.....sof our babysitter. We all
 (أطفالالجيسة)
- trust her and think that the kids will be safe with her.
 (امين)
8. Her cheeks were **b**.....**ing**with embarrassment when she failed to know the
 (خدين) (احراج) (فشل)
- answer.
9. You'll **b**.....yourself out by taking drugs and drinking too much alcohol. These bad
 habits will ruin (يهدم) your health. (كحول)
10. We didn't know we were **b**...**ing**the law until the policeman arrested us and
 (القانون) (يوقف)
- gave us a ticket (مخالفة تذكرة).
11. When I was in high school I was interested only in cinema as a hobby, but
 nowadays, my interests extended**b**..... the cinema to sports and reading.
 (تخطى)
12. The teller at the central bank switchedthe accountoto a local branch.
 (صراف) (حساب بنكي) (يحول) (فرع)
13. When Omar tried to push in at the **h**.....of the queue, all the people standing in
 (الطابور)
- the queue yelled at him as he wanted to be at the front of the line.
14. It took them two hours of discussions to get to the **r**.....of the problem. Knowing
 (نقاش)
- the main cause of the problem will help them solve it quickly.

15. James did not **p**..... Mira into stealing the money. She planned everything without his knowledge. (سرقة) (خططت)
16. “Don’t worry! The situation is in **h**.....”, the police said trying to convince people that the situation is under control and the thieves will go to jail. (أقنع) (السيطرة تحت)
17. I think I need to do exercise to **b**..... off a few calories. Daily working out is essential for losing weight and good health.
18. The talented athlete was praised for **b**.....*ing*the record in the Olympic Games. (رقم قياسي) (مدح) (رياضي موهوب)
- He run faster than anyone ever has.
19. The old lady stopped climbing the hill as the task proved to be **b**.....her (هضبة) physical abilities (قدرات بدنية). Such an exercise was too hard for her.
20. When the film was **o**..... , the audience rushed towards the exit door noisily. (أسرع الحضور)
21. Mr. Jassim is a very important person. He **h**a group of companies. (شركات)
22. When they moved in Al Ain two years ago, they put down **r**.....and built a new (أرسي) life. Now, they live in their own house and have lots of friends.
23. He **pu**.....**d** his way towards her saying “wait for me, I won’t hurt you”, but he didn’t reach her as the place was very crowded with people.
24. The policemen have a drug problem on their **h**..... They must deal with a very big drug case.

Appendix 2: The Style of Processing Scale (SOPS)

Name: _____ ID _____ Date: _____

Style of Processing Scale (SOPS)

The aim of this questionnaire is to determine the style or manner you use when carrying out different mental tasks. Your answers to the questions should reflect the manner in which you typically engage in each of the tasks mentioned. There are no right or wrong answers, I only ask that you provide honest and accurate answers.

Please answer each question by writing the corresponding number of the five possible responses on the right.

1 2 3 4 5 6 7

Strongly
Agree

Strongly

Disagree

1. I enjoy doing work that requires the use of words. (W) أستمتع بالقيام بالأعمال التي تتطلب استعمال كلمات.	
*2. There are some special times in my life that I like to relive by mentally “picturing” just how everything looked. (P) في حياتي هناك بعض اللحظات التي احب تذكرها واحياءها وذلك بتصوير كيف كانت تبدو تلك اللحظات.	

3. I like to think of synonyms for words. (W) أحب ان افكر في مرادفات الكلمات التي أستعملها.	
4. I do a lot of reading. (W) أطالع كثيرا.	
*5. When I'm trying to learn something new, I'd rather watch a demonstration than read how to do it. (P) عند تعلم شيء جديد أفضل أن أراقب شخص يقوم أمامي بتجربة عوضا عن قراءة تعليمات عن كيفية القيام به.	
*6. I think I often use words in the wrong way. (W) أظن اني كثيرا ما أستعمل الكلمات بطريقة خاطئة.	
7. I enjoy learning new words. (W) أستمتع بتعلم كلمات جديدة.	
8. I often make written notes to myself. (W) كثيرا ما أكتب ملاحظات بنفسي.	
*9. When the teacher introduces or explains new words, images related to these words pass through the mind. (P) عندما يشرح المدرس كلمات جديدة تمر في ذهني صور لتلك الكلمات.	
10. I generally prefer to use a diagram rather than a written set of instruction (P) بصفة عامة أفضل استعمال صورة توضيحية عوضا عن قراءة مجموعة التعليمات المكتوبة.	
*11. I like to draw something aimlessly or absent-mindedly, usually while doing something else such as having a telephone conversation or listening to the teacher in class. (P) عندما أكون منهكة في شيء ما كالتحدث لشخص ما في الهاتف أو الاتماع للمدرس في الصف أجد نفسي وبصفة لا شعورية أرسم على الطاولة / الدفتر.	
*12. I find it helps to think in terms of mental pictures when doing many things. (P) أكتشفت أنه من المفيد التفكير بالصور الذهنية عند القيام بالعديد من الأشياء.	

*13. After I meet someone for the first time, I can usually remember what they look like, but not much about them. (P)	
بعد الالتقاء بأناس للمرة الأولى أستطيع دائما التذكر كيف يبدوون ولكن ليس الكثير عنهم.	
*14. When I have forgotten something, I frequently try to form a mental picture to remember it. (P)	
عندما أنسى شيئا كثيرا ما أحاول تكوين صورة ذهنية عنه لأتذكره	
15. I like learning new words. (W)	
أحب تعلم كلمات جديدة.	
16. I prefer to read instructions about how to do something rather than have someone show me. (W)	
أحب قراءة تعليمات عن كيفية عمل شيء ما عوض عن مشاهدة شخص يقوم بتجربة أمامي.	
*17. I prefer activities that don't require a lot of reading. (W)	
أفضل نشاطات لا تتطلب الكثير من القراءة.	
18. When the teacher introduces or explains new words, rarely do images related to these words pass through the mind. (P)	
عندما يشرح المدرس كلمات جديدة قلما تمر ذهني صور مرتبطة بهذه الكلمات.	
*19. I spend very little time attempting to increase my vocabulary. (W)	
أقضي وقتا قليلا جدا للعثور على مفردات من المفردات.	
*20. My thinking often consists of mental pictures or images. (P)	
كثيرا ما أفكر مستعملا صور او صور ذهنية.	
*21. I can never seem to find the right word when I need it. (W)	
يبدو أنه لا يمكنني ايجاد الكلمات المناسبة عندما أحتاجها.	
*22. I like to picture how I could fix up my room if I could buy anything I wanted.(P)	
أحب أن أتخيل كيف سأرتب غرفتي في حال اشتريت شيئا أريده.	

Appendix 3: The Vocabulary Learning Strategy Questionnaire

Name:..... ID.....

Vocabulary Learning Strategy Questionnaires (VLSQ)

English can be learnt in various ways. The aim of this questionnaire is to find out how YOU used to learn new English words before coming to the university (in primary, preparatory and high school). Please answer **how you really used to learn** and **not** how you think you should learn or how somebody else learns.

For each statement choose among one of the following numbers:

1	2	3	4	5	6	7
(0%)	(15%)	(30%)	(50%)	(65%)	(80%)	(100%)
Never rarely	now and then	occasionally	sometimes	often	Always	

Write the corresponding number on the right column. There are no right or wrong answers to these statements.

1	I use new words in sentences in order to remember them. أستعمل الكلمات الجديدة في جمل حتى أستفيد منها.	
2	I keep a vocabulary notebook for new words. أحتفظ بدفتر للمفردات أسجل فيه الكلمات الجديدة.	
3	I review words regularly outside the classroom. أراجع الكلمات باستمرار خارج الصف.	

4	I test myself to check if I remember the new words. أمتحن نفسي لاتأكد من حفصي للكلمات الجديدة.	
5	I pick up words from films and TV programs I watch in English. أتعلم كلمات من الأفلام والبرامج التلفزيونية باللغة الأنكليزية.	
6	If I cannot remember a word while conversing with others, I use another one with a similar meaning. ان تعذر علي تذكر كلمة عند التحدث الى الآخرين أستعمل طلمة أخرى لها نفس المعنى.	
7	I write down words while I read English books and magazines for pleasure. أسجل الكلمات عندما أقرأ الكتب والمجلات باللغة الأنكليزية لغرض التسلية.	
8	I plan for vocabulary leaning in advance. أخطط مشبقا لتعلم المفردات.	
9	I remember a word if I see it written down. أتذكر كلمة رأيتها سابقا مكتوبة.	
10	I say a word out loud repeatedly in order to remember it. أقرأ الكلمة بصوت عال مراراً عديدة حتى يسهل تذكرها.	
11	I connect an image with a word's meaning in order to remember it. أربط معنى الكلمات الجديدة بصورة حتى يسهل تذكرها.	
12	I associate new words with the ones I already know. أربط الكلمات الجديدة بكلمات أعرفها مسبقاً.	
13	I write down words when I watch films and TV programs in English. أسجل كلمات من الأفلام والبرامج التلفزيونية التي أشاهد ها باللغة الأنكليزية.	
14	I write down words repeatedly to remember them. أكتب الكلمات مراراً عديدة حتى أتذكرها.	
15	Sometimes, I read and leaf through a dictionary to learn new words. في بعض الأحيان أقرأ وأتصفح المعجم للتعلم كلمات جديدة.	
16	I make a mental image of a word's written form in order to remember it. أكون صورة ذهنية لمعنى الكلمة حتى أتذكرها.	

17	If I cannot remember a word in a conversation, I describe it in my own words in English. ان تعذر علي تذكر الكلمة عند التحدث الى الآخرين أصفها بالإنكليزية مستعملا لغتي الخاصة.	
18	I imagine a context in which a word could be used in order to remember it. أتخيل سياقاً يمكن من خلاله ان أستعمل الكلمة حتى أتذكرها.	
19	I listen to songs in English language and try to understand the words. أستمع للأغاني باللغة الأنكليزية وأحاول فهم الكلمات.	
20	Whenever I learn a new word, I translate it into Arabic. عندما أتعلم كلمة أترجمها باللغة العربية.	
21	I group words together in order to remember them. أضع كلمات تشترك في المعنى في مجموعات حتى أتذكرها.	
22	I repeat the word mentally in order to remember them. أكرر الكلمات في ذهني باستمرار حتى أتذكرها.	
23	I pick up words while reading books and magazines in English. أسجل كلمات من الكتب والمجلات.	
24	I use spaced word practice (continuing to study the word over time) in order to remember words. أستعمل الكلمات من وقت الى آخر حتى أتذكرها.	
25	I connect words to physical objects to remember them. أربط الكلمات بأشياء محسوسة حتى أتذكرها.	
26	I pick up words from the internet. أسجل كلمات من الأنترنت.	

Appendix 4: The Strategy Assessment Test (SAT)

Name: _____ ID _____

Strategy Assessment Test

Part I (on previously taught words, but different meanings are targeted)

Read the following sentences carefully and choose the right word.

1	He decided to _____ his journey to Italy when he received a telegram from his brother.	a. cut b. break c. refuse d. hand
2	What Jack has done was _____ my <u>belief</u> . I can't believe that he left his job and stayed at home. (تصديقه يمكنما)	a. over b. on c. beyond d. below
3	The <u>queen</u> welcomed all the _____ of <u>states</u> who accepted the call for <u>the summit</u> . (الملكة) (دول) (القمة)	a. roots b. hearts c. heads d. hands
4	We need to _____ out <u>obesity</u> to <u>guarantee</u> healthy life. (يضمن) (السمنة) obesity <u>proved</u> to be the main cause of many diseases. (أثبتت)	a. root b. put c. burn d. hand

5	Dubai is continuing to _____ its economy forward in spite of the world <u>economic crisis</u> . (اقتصادية أزمة)	<p>a. pull</p> <p>b. write</p> <p>c. push</p> <p>d. make</p>
---	---	--

Part II (Testing students on unseen polysemous words (not covered in class))

Read the literal meanings of the words in the right column and fill in the blanks. Remember that you need to think about the possible figurative meanings these word have in order to succeed in choosing the right option.

Metaphorical Meaning	Literal Meaning
<p>The <u>frightened</u> boy _____ed(خائف) (V) on the door until his mother opened it.</p>	<p>a. knob (N): A round handle or thing that you turn to open a door. مقبض</p> <p>b. nail (N): A thin piece of metal with one pointed end and one flat end. مسمار</p> <p>c. saw (N): A tool that has a flat blade with a row of V-shaped metal pieces used for cutting woods. منشار</p> <p>d. hammer (N): A hammer is a tool that consists of a heavy piece of metal at the end of a handle. It is used to hit nails for example. مطرقة</p>

	<p>The famous actor received a _____ of letters from his <u>admirers</u>. He needs a whole month <u>المعجبين</u> to read all of them.</p>	<p>a. storm: A heavy fall of rain, snow, or sleet, often occurring with strong wind. عاصفة</p> <p>b. hurricane: A severe tropical storm زوبعة شديدة</p> <p>c. flood: If there is a flood, a large amount of water covers an area.</p> <p>d. blizzard: A severe snowstorm with strong winds and poor visibility عاصفة ثلجية</p>
	<p>In my village, it's very boring and days always _____ because you do the same <u>routine</u> <u>daily</u>.</p>	<p>a. drag: To pull someone or something along the ground often because they are too heavy to carry. بجهد يسحب/يجر</p> <p>b. pull: when you pull something, you hold it firmly and use force in order to move it towards you or away from its previous position.</p> <p>c. push: when you push something, you use force to make it move away from you or away from its previous position.</p> <p>d. rush: to go or come very quickly يسرع</p>

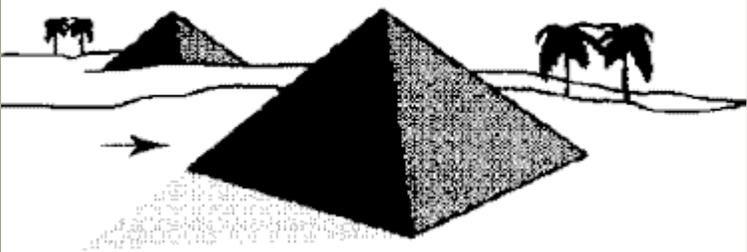
	<p>Usually, the weekend _____ when I spend it in Dubai. Time passes very quickly in big cities.</p>	<p>a.crawl: To move slowly with the body on or close to the ground, or on the hands and knees يزحف b. walk: To move along on foot at a fairly slow speed c. jump: To move quickly off the ground يقفز d. fly: To move through the air يطير</p>
	<p>The workers asked their company to increase their <u>salaries</u> because الرواتب food prices _____ed.</p>	<p>a. rocket: A rocket is a space vehicle that is shaped like a long tube صاروخ b. car c. bicycle: A vehicle with wheels and a jet engine d. ship: a large boat for carrying passengers</p>

Appendix 5.Vocabulary Levels Test

Part I

VOCABULARY TEST: 1000 LEVEL TEST A

Instructions: There are 39 questions. Click "T" if a sentence is true. Click "N" if a sentence is not true. Click "X" if you do not understand the sentence. At the end of the test, click "*Check*" at the bottom of the web page to see your score.

<p><u>Example:</u> We cut time into minutes, hours, and days.</p>	
<p>The first one has been answered for you.</p>	<p><input checked="" type="radio"/> T (This is True)</p> <p><input type="radio"/> N (This is Not true)</p> <p><input type="radio"/> X (I do Not understand the question)</p>
<p>1. This one is little.</p>  <p><input type="radio"/> T</p> <p><input type="radio"/> N</p> <p><input type="radio"/> X</p>	 <p>2. You can find these everywhere.</p> <p><input type="radio"/> T</p> <p><input type="radio"/> N</p> <p><input type="radio"/> X</p>
<p>3. Some children call their mother Mama.</p> <p><input type="radio"/> T</p>	<p>4. <i>Show me the way to do it</i> means 'show me how to do it.'</p> <p><input type="radio"/> T</p>

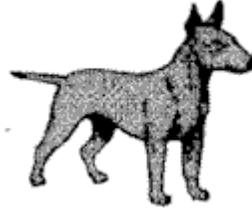
- N
- X

- N
- X

5. This country is part of the world.

- T
- N
- X

6. This can keep people away from your house.



- T
- N
- X

7. When something falls, it goes up.

- T
- N
- X

8. Most children go to school at night.

- T
- N
- X

9. It is easy for children to remain still.

- T
- N
- X

10. One person can carry this.



- T
- N

	<p><input type="radio"/> X</p>
<p>11. A scene is part of a play.</p> <p><input type="radio"/> T</p> <p><input type="radio"/> N</p> <p><input type="radio"/> X</p>	<p>12. People often think of their home, when they are away from it.</p> <p><input type="radio"/> T</p> <p><input type="radio"/> N</p> <p><input type="radio"/> X</p>
<p>13. There is a mountain in every city.</p> <p><input type="radio"/> T</p> <p><input type="radio"/> N</p> <p><input type="radio"/> X</p>	<p>14. Every month has the same number of days.</p> <p><input type="radio"/> T</p> <p><input type="radio"/> N</p> <p><input type="radio"/> X</p>
<p>15. A chief is the youngest person in a group.</p> <p><input type="radio"/> T</p> <p><input type="radio"/> N</p> <p><input type="radio"/> X</p>	<p>16. Black is a colour.</p> <p><input type="radio"/> T</p> <p><input type="radio"/> N</p> <p><input type="radio"/> X</p>
<p>17. You can use a pen to make marks on paper.</p> <p><input type="radio"/> T</p> <p><input type="radio"/> N</p>	<p>18. A family always has at least two people.</p> <p><input type="radio"/> T</p> <p><input type="radio"/> N</p>

X

X

19. You can go by road from London to New York.

20. Silver costs a lot of money.

T

T

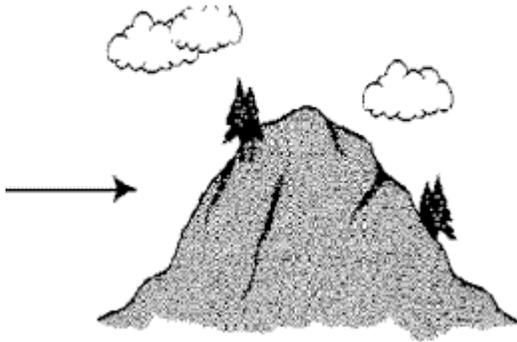
N

N

X

X

21. This is a hill.



22. This young person is a girl.

T

T

N

N

X

X

23. We can be sure that one day we will die.

24. A society is made up of people living together.

T

T

N

N

X

X

<p>25. An example can help you understand.</p> <p><input type="radio"/> T</p> <p><input type="radio"/> N</p> <p><input type="radio"/> X</p>	<p>26. Some books have pictures in them.</p> <p><input type="radio"/> T</p> <p><input type="radio"/> N</p> <p><input type="radio"/> X</p>
<p>27. When some people attack other people, they try to hurt them.</p> <p><input type="radio"/> T</p> <p><input type="radio"/> N</p> <p><input type="radio"/> X</p>	<p>28. When something is ancient, it is very big.</p> <p><input type="radio"/> T</p> <p><input type="radio"/> N</p> <p><input type="radio"/> X</p>
<p>29. Big ships can sail up a stream.</p> <p><input type="radio"/> T</p> <p><input type="radio"/> N</p> <p><input type="radio"/> X</p>	<p>30. It is good to keep a promise.</p> <p><input type="radio"/> T</p> <p><input type="radio"/> N</p> <p><input type="radio"/> X</p>
<p>31. People often dream when they are sleeping.</p> <p><input type="radio"/> T</p> <p><input type="radio"/> N</p> <p><input type="radio"/> X</p>	<p>32. This is a date - 10 o'clock.</p> <p><input type="radio"/> T</p> <p><input type="radio"/> N</p> <p><input type="radio"/> X</p>
<p>33. When something is</p>	<p>34. Milk is blue.</p>

impossible, it is easy to do it.

- T
- N
- X

- T
- N
- X

35. A square has five sides.

- T
- N
- X

36. Boats are made to travel on land.

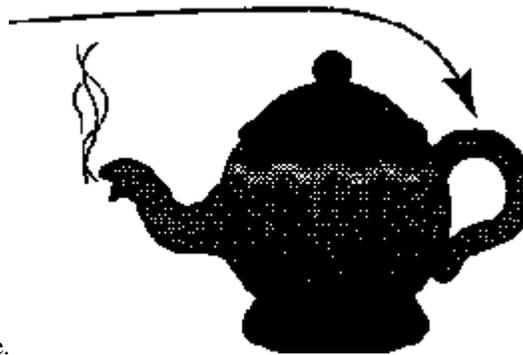
- T
- N
- X

37. Cars cannot pass each other on a wide road.

- T
- N
- X

38. When you look at something closely, you can see the details.

- T
- N
- X



39. This part is a handle.

- T
- N

Part 2

Vocabulary Level Test: 2000 LEVEL TEST

1. I'm glad we had this opp[] to talk.
2. There are a doz[] eggs in the basket.
3. Every working person must pay income t[].
4. The pirates buried the trea[] on a desert island.
5. Her beauty and ch[] had a powerful effect on men.
6. La[] of rain led to a shortage of water in the city.
7. He takes cr[] and sugar in his coffee.
8. The rich man died and left all his we[] to his son.
9. Pup[] must hand in their papers by the end of the week.
10. This sweater is too tight. It needs to be stret[].
11. Ann intro[] her boyfriend to her mother.
12. Teenagers often adm[] and worship pop singers.
13. If you blow up that balloon any more it will bu[].
14. In order to be accepted into the university, he had to impr[] his grades.
15. The telegram was deli[] two hours after it had been sent.
16. The differences were so sl[] that they went unnoticed.
17. The dress you're wearing is lov[].
18. He wasn't very popu[] when he was a teenager, but he has many friends now.

Appendix 6: Participant Information Sheet and Consent Form

Participant Information Sheet and Consent Form

Why do this study? – I am interested in teaching polysemous words (multi-meaning words such as break, push, pull..) in two different methods. I need to collect data before and after the treatment and compare the effectiveness of both methods.

What will participation involve? - This research involves studying the figurative meanings of eight polysemous words with the help of the researcher (treatment), taking a pre-treatment test and a post treatment test on these words, and completing two questionnaires, one on vocabulary learning strategies and the other on processing styles.

How long will participation take? These words meanings will be taught over a period of six weeks and the questionnaires and the tests will take one hour and a half.

As an informed participant of this experiment, I understand that:

1. My participation is voluntary and I may cease to take part in this experiment at any time by not taking the planned tests or completing the questionnaires, without penalty.
2. I am aware of what my participation involves.
3. The pre- and post-tests marks won't be part of my final term grades.

4. All my questions about the study have been satisfactorily answered.

I have read and understood the above, and give consent to participate:

Participant's Signature: _____

Date: _____

I have explained the above and answered all questions asked by the participant:

Researcher's Signature: _____

Date: _____

Appendix 7: Instructional Treatment Lessons

A. Experimental Group Lessons

Lesson # 1

Objective: Familiarizing students with the notions of literal and metaphorical meanings

1. Dictionary work

A. How many meanings do you think break and heart have?

Break.....?.....

Heart.....?.....

B. Look up both words in the dictionary and complete the table below.

break	heart
Number of meanings:	Number of meanings:
Verb meanings:	Noun meanings:
Noun Meanings:.....	
Examples	Examples
Break something	Heart as an organ
Break a journey	Break one's heart
Break a contract	The heart of the problem

2. Defining polysemous words

Definition:

Examples:...../...../.....

3. How is literal meaning different from metaphorical meaning ?

Literal meaning: original, core meaning

Metaphorical meaning: not with its exact (original) meaning but used to give an imaginative description or special effect

Example 1.

The stomach can't digest the food well because it's too spicy.

Digest is used in its **literal meaning** (**definition: digest:** to change food in your stomach so that it can be used by the body)

Example 2.

It is better to study for several sessions to digest what you read.

Here, **digest** is used in its **metaphorical meaning** (**Definition: digest:** To think about new information so that you understand it fully.)

Exercise

Read the following pairs of sentences and say whether the underlined verbs have literal or metaphorical meanings.

	Sentence	Li	Metap
--	----------	----	-------

		teral	horical
	<p>a. The thieves got in by <u>breaking</u>a window.</p> <p>b. It'll <u>break</u> your father's heart if you tell him you're giving up university.</p>		
	<p>a. The book gets to the <u>heart</u> of the problem.</p> <p>b. Eating too many fatty foods is bad for the <u>heart</u>.</p>		

Lesson # 2 Handout (Break)

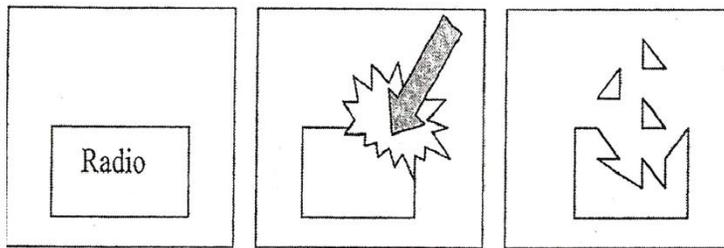
Example 1.

1. Who **broke** this radio?

Meaning: destroy the shape or function of something

Step # 1. Can you come up with other sentences showing other uses of **break**?

Step # 2: Let's see how this meaning can be presented.



The image-schema of the core meaning of break

Physical Space: Exert energy so as to destroy the shape or the function of something. (**Physical:** can be touched/ seen)

Step # 3: Now let's see how figurative meanings of **break** can be presented

Examples showing figurative senses:

1. You cannot **break** your contract now.

Meaning: to not do what is agreed upon, put an end to

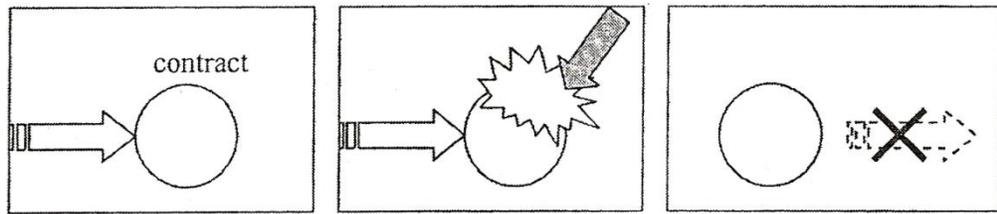
2. The teenager **broke** the law when he stole a car.

Meaning: disobey the law

3. He was addicted to junk food, but he managed to **break** this bad habit. *Meaning: stop a habit*

4. She **broke** the world record for the 100 meters.

Meaning: beat a previous record and put an end to it



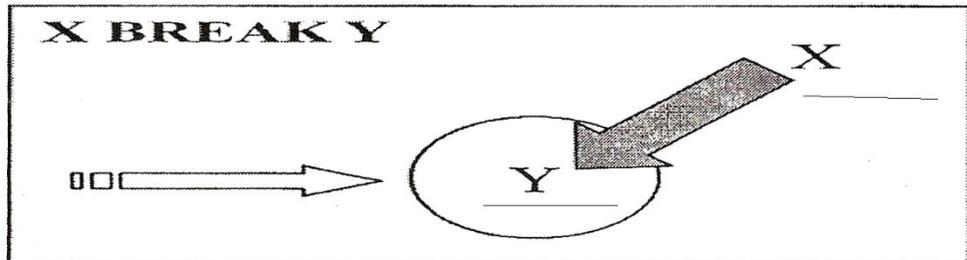
The

image-schema of the figurative meaning of break

Abstract Space: Put an end to something that has been continued. (**Abstract:** based on ideas rather than real things)

The power of image-schemas(1 image-schema for many meanings)

Explain the sentences below with reference to the following image-schema.



Sentences:

1. Boys (X) always **break** their toys (Y) quickly.
2. Ali (X) managed to **break** the habit of eating junk food (Y).
3. The teenager (X) **broke** the law (Y) when he stole a car.
4. I (X) **broke** my promise (Y) when I forgot to take my son to the film.

Exercise # 1

Word Choice:

1. The athlete broke the European record in the 100 meters, so he
 - a. won the race
 - b. lost the race
2. When someone breaks the habit of smoking, s/he
 - a. stops smoking
 - b. cuts down on smoking
3. The motorist broke the law because he
 - a. respected the speed limit
 - b. exceeded the speed limit
4. Has any of your friends ever promised you something then broke her word?
 - a. Yes
 - b. No

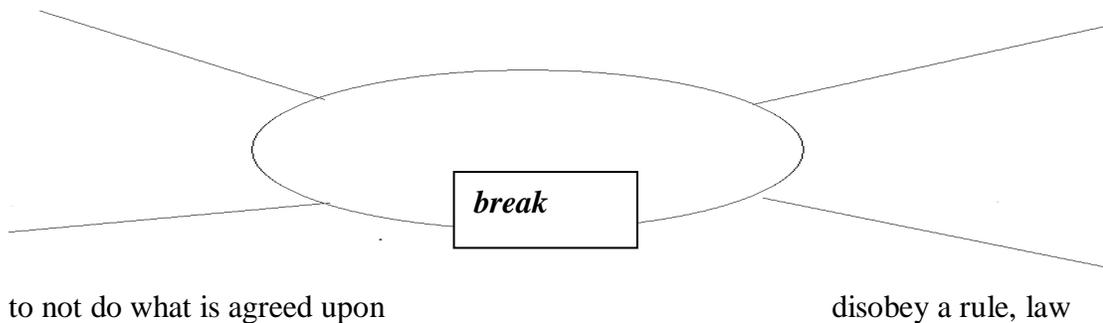
Exercise # 2

A. Differentiating between literal and metaphorical senses. Tick literal or Metaphorical.

	sentence	Literal	figurative
	A sudden <u>break</u> in the cloud allowed the rescuers to spot the victim.		
	An honest man shouldn't <u>break</u> his promise.		
	She <u>broke</u> her leg when she slipped.		

Part of Break Network

stop/put an end/destroy the shape or function separate something into pieces



Homework

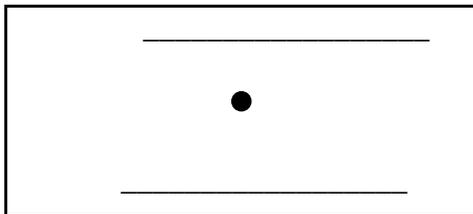
Write the word *break* in you vocabulary notebook and revise its meanings for next class.

Lesson # 3 Handout (over)

Example1. The clock is **over** the board.

Step # 1. Can you come up with other sentences showing other uses of *over*?

Step # 2: Let's see how this meaning can be presented.



The image-schema of the core meaning of over

The core meaning of **over** can be stated as an object/creature lying above something else (with or without contact)

Step # 3: Now let's see how some of figurative meanings of *over* can be presented

ABC trajectory cluster

Examples showing figurative senses

1. The cat jumped over the wall.

Meaning: moving from one side of something to the other

1. Bob switched the money **over** to his family in India.

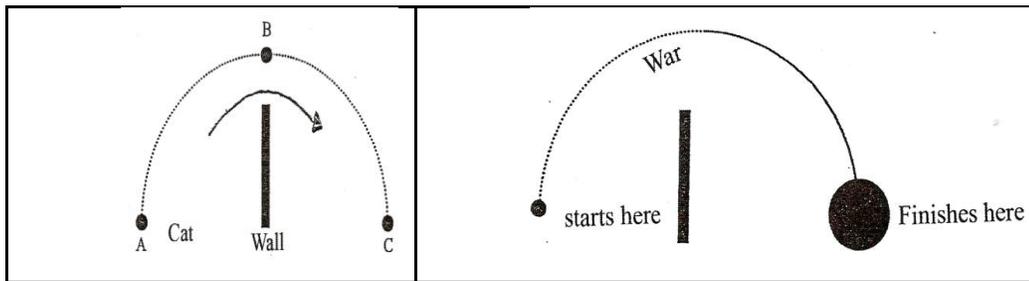
Meaning: transfer money from one bank to another

2. I'm happy the war is **over**.

Meaning: finished completely

3. Your monthly expenditure is **over** your monthly income.

Meaning: more than normal

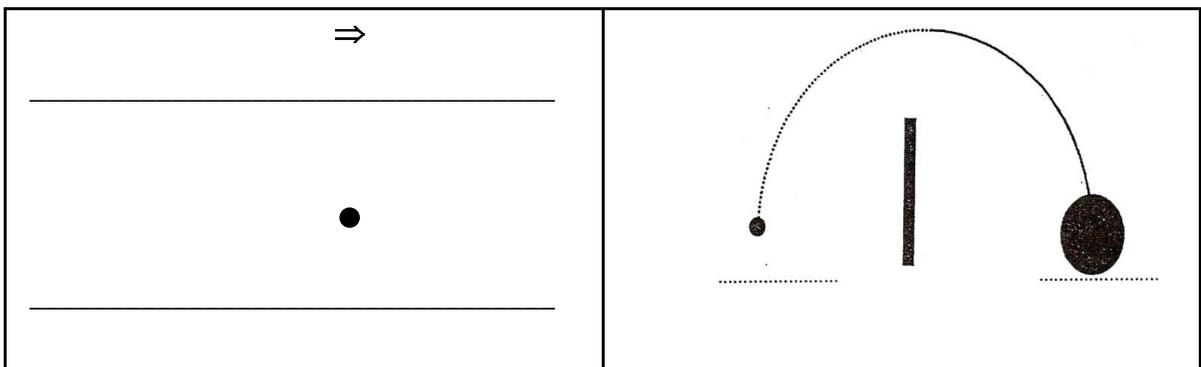


The figurative meaning of over can be stated as a process departs from the starting point A and then arrives to point C.

Step # 4

More about Over (Pair work)

Explain the following sentences with reference to the image-schemas below.



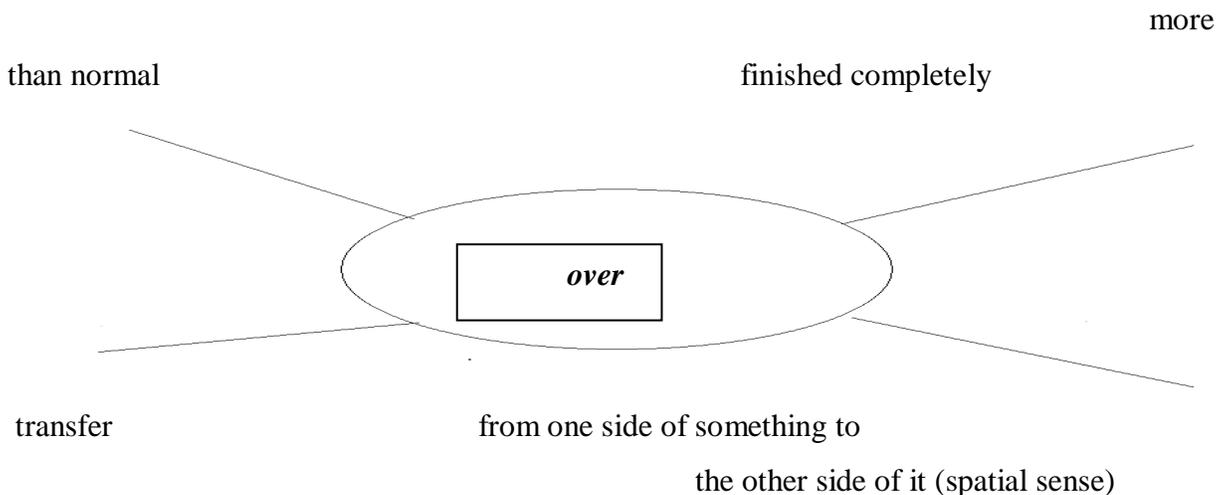
Sentences

1. I'm happy the school year is **over**. It was a long year; it started in September and finished in August.
2. You need to be careful because what you spend is **over** what you earn.
3. Bob lives in Dubai. Every month he **switches** money **over** to his parents in India.
4. Agassi **hit** the ball **over** the net to Sampras.

Exercise

1. What probably might happen when the film is **over**?
 - a. The audience leave the cinema
 - b. The audience wait for the film
2. If your brother's monthly expenditure is **over** his monthly income, he
 - a. might have financial problems
 - b. won't have financial problems
3. Your friend is abroad and asks you for some money. Where to go to switch some money **over** to him.
 - a. a grocery
 - b. a bank
 - c. police station
4.are good at jumping **over** fences.
 - a. cows
 - b. bears
 - c. horses

Part of *over* Network



Homework

Write the word *over* in you vocabulary notebook and revise its meanings for next class.

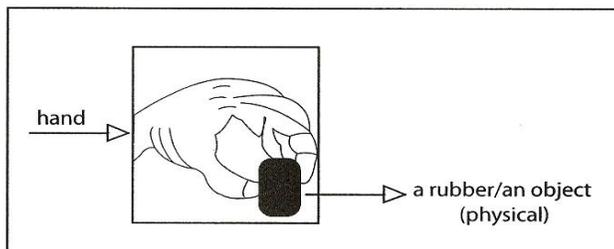
Lesson # 4 Handout (hand)

Example 1. He pulled the rope with his strong **hands**.

Here *hand* means the part of the end of a person's arm, including the fingers and the thumb, used to **pick up** or **keep hold** of things.

Step # 1. Can you come up with other sentences showing other uses of *hand*?

Step # 2: Let's see how this meaning can be presented.



The enriched image-schema of the core meaning of hand

Physical space : When the hand picks up or takes hold of something, it controls it.

Step # 3: Now let's see how figurative meanings of *hand* can be presented

Examples showing figurative senses

1. When John went abroad, he left his business in the *hands* of his brother.

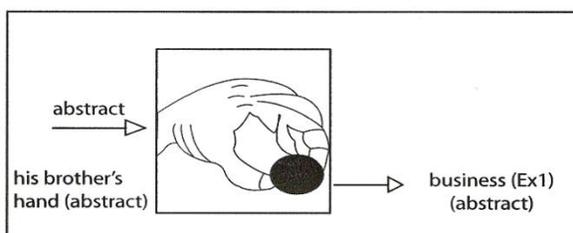
Meaning: being looked after by someone who can be trusted

2. The police took the thieves in *hand* and peace reigned again.

Meaning: bring under control

3. The policemen have a drug problem on their *hands*.

Meaning: having a problem that they must deal with



The image schema of the figurative meanings of hand

Abstract space:

When something is *in* or *onhand(s)*, or *in the hands* of someone, it is taken into consideration (being dealt with, being looked after, brought under control)

Step # 4

Identify the points of similarity shared by the literal and figurative meanings of *hand* in the following table.

Literal meaning	Points of similarities	Figurative meaning
<p>He pulled the rope with his strong hands.</p> <p>Literal meaning: - the rope is under control</p>	<p>1. _____</p> <p>2. _____</p> <p>3. _____</p>	<p>1. As he was very busy, he left his <u>apartment</u> in the <i>hands</i> of <u>the real state</u>.</p> <p>2. <u>The teacher</u> decided to take <u>the class</u> in <i>hand</i> because students are too noisy.</p> <p>3. <u>Khor fakken municipality</u> have a <u>pollution problem</u> on their <i>hands</i>.</p>

Step # 4 : Words in context

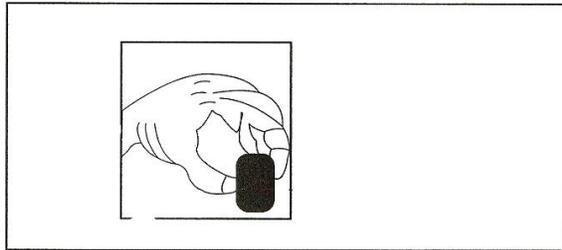
hold of things (N) (*literal meaning*)

being looked after
bring under control

hand

being dealt with

Conclusion: The Enriched image schema for both literal and figurative meanings



Homework

Write the word *hand* in your vocabulary notebook and revise its meanings for next class.

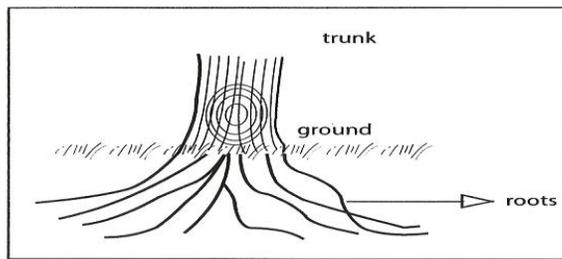
Lesson # 5 Handout (root EG)

Example 1.

The *roots* of the palm tree are long and strong.

Step # 1. Can you come up with other sentences showing other uses of *root*?

Step # 2: Let's see how this meaning can be presented.



The enriched image-schema of the core meaning of root

Physical space

Root: the first and most important part of a plant that grows under the ground and takes in water and food from the soil

Step # 3: Now let's see how figurative meanings of *root* can be presented

Examples showing figurative senses

1. Robert went to America in search for his **roots**. He was born there.

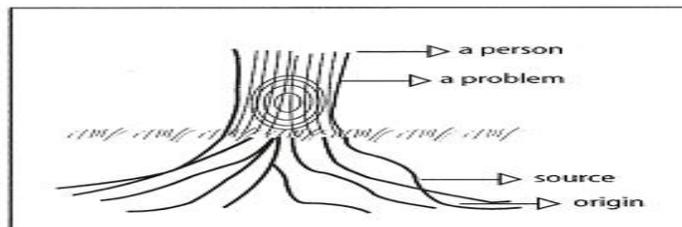
Meaning: origin, place where one was born.

2. We can solve the problem of expensive weddings by getting to its **root**.

Meaning: the main cause or source of a problem

3. He started putting down **roots** in Sharjah after living 2 years there.

Meaning: make a place like home by making friends, taking part in local activities/ settle down



The enriched image-schemas of the figurative meanings of root

Abstract space:

As a figurative meaning, the word **root** is used to mean origins, the main part of something, the first cause or source of a problem etc... These meanings come from

the fact that the root of a plant is the main and first part to grow.

Step # 4

Identify the points of similarity shared by the literal and figurative meanings of *root* in the following table.

Liter al meaning	Points of similarities	Figurative meaning
<p>The <i>roots</i> of the palm tree are long and strong.</p>	<p>1. literal mg: <u>first</u> part of a Tree figurative mg: <u>first</u> people/ ancestors</p> <p>2. _____</p> <p>3. _____</p> <p>4. _____</p>	<p>1. After twenty years of <u>search</u> for her <i>roots</i>, Jane succeeded in finding her relatives.</p> <p>2. They failed to solve the <u>problem</u> because they didn't discover its <i>root</i>.</p> <p>3. Many expatriates <u>put down</u> <i>roots</i> in the UAE and <u>refuse to go back</u> to their home countries.</p> <p>4. The <i>roots</i> of the date palm are long and strong.</p>

Step # 4 : Words in context

Discussion questions

1. Why do some people like to search for their **roots**?

2. Why is it important to discover the **root** of the problem you're trying to solve?

3. How can immigrants put down **roots** in the host countries?

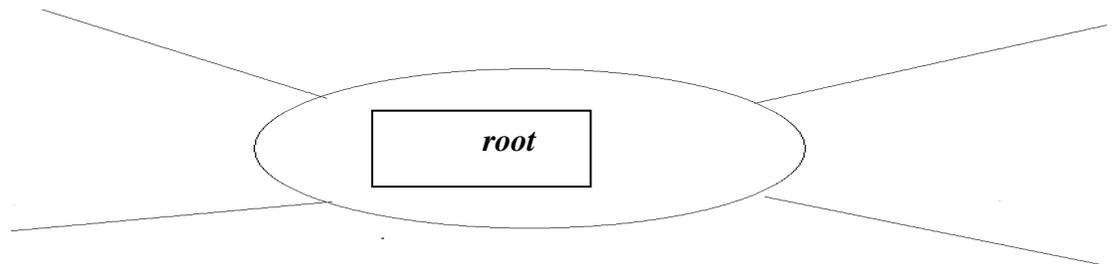
4. How are **roots** important for the tree?

Part of *root* Network

part of a plant (*literal meaning*)

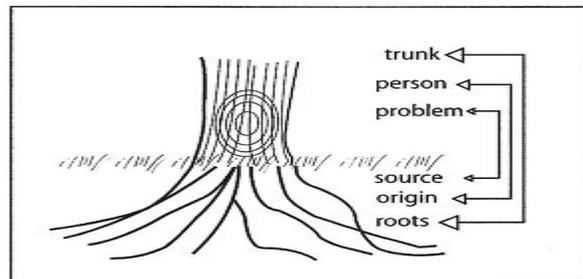
make a place like home /

settle down



origins/place or culture that a
person or their family comes from
the main cause or source of a problem

Conclusion: Image-schemas for both literal and figurative meanings



Exercise (strategy training)

Choose the correct choice

If a new idea **takes root**,

- a. it makes roots under the ground.
- b. people begin to accept or believe it
- c. people stop thinking about it

d. it stops existing in a place

Homework

Use the different meaning of *roots* to write good sentences.

Lesson # 6 Handout (push)

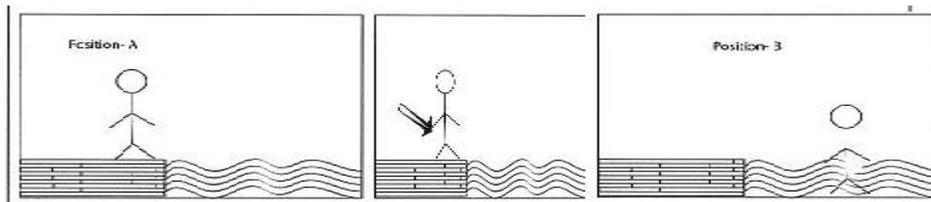
Example 1.

Christine **pushed** the poor boy into the water.

Push definition: When you push something, you use **force** to make it **move away from you** or **away from its previous position**.

Step # 1. Can you come up with other sentences showing other uses of *push*?

Step # 2: Let's see how this meaning can be presented.



Physical space

Use **force** so as to make something move away and consequently **changes position**.

Step # 3: Now let's see how figurative meanings of *push* can be presented

Examples showing figurative senses

1. He **pushed** his way through the crowd until he reached his son.

Meaning: *move forward using force*

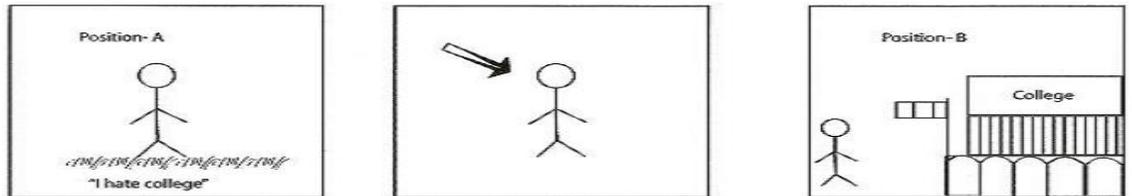
2. My parents pushed me into going to college. I didn't want to pursue my studies, but they forced me to do so.

Meaning: *to force*

3. After **pushing** his new political ideas, the candidate was elected.

He kept talking about his new ideas until people trusted him.

Meaning: *to convince people to accept one's ideas in a forceful way*

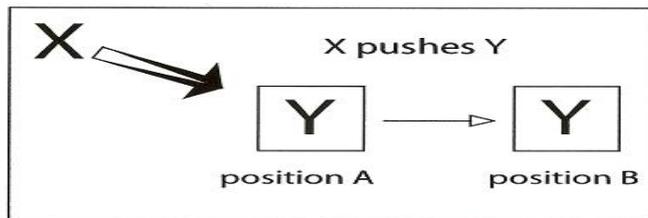


Abstract space:

Use **force** so as to cause **someone** to **change position** and behave in a different way.

Step # 4

Explain the following sentences with reference to the image-schema below.



Sentences

1. The naughty boy **pushed** the closed door open with his foot.

2. The poor mother **pushed** her way through the crowd (A.....B) looking for her son.

3. The teacher **pushed** his new ideas until he persuaded his students. They were not convinced with what he called for in the beginning, but as he kept talking about his

move forward using force

push

to force

to convince sb to accept one's idea

or point

Exercise

Choose the correct choice

A. Teachers don't seem **to push** these kids very hard.

- a. advise them to work very hard
- b. use their hands to push the kids to work very hard
- c. to show them how to work very hard
- d. to force them to work more

B. The movie, *Titanic*, **heads** the list of Oscar nominations

- a. Titanic is in the second position.
- b. Titanic is at the top of the list of Oscar nominations.

C. I think I'm **over** the cold I caught last week now.

- a. I feel better.
- b. I'm still ill.

D. The whole affair is now **in the hands** of the police.

The affair:

- a. is dealt with by the police.
- b. is not dealt with by the police.

Homework

Write the word *push* in your vocabulary notebook and revise its meanings for next class.

Lesson # 7 Handout (burn)

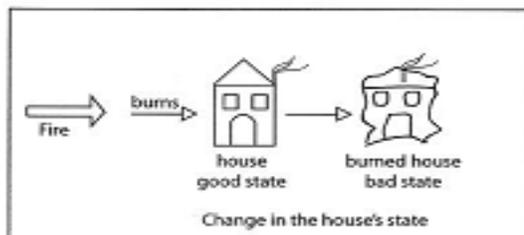
Example 1.

It was a terrible fire and the whole house was **burnt** to the ground.

Here *burn* means **to destroy** something with fire

Step # 1. Can you come up with other sentences showing other uses of *burn*?

Step # 2: Let's see how this meaning can be presented.



Physical space

When fire **burns something or someone**, it exerts energy so as to **destroy, damage** or **injuresomeone or something else** and thus it **changes its state**.

Step # 3: Now let's see how figurative meanings of *burn* can be presented

Examples showing figurative senses

1. You must have a temperature, your forehead is *burning*.

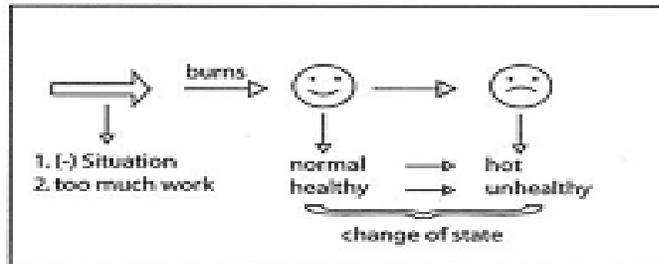
Meaning: feel unpleasantly hot

2. The man will *burn* himself *out* by working too hard. He works even on weekends.

Meaning: destroy/ruin/harm one's health

3. It's recommended to work out on daily basis to **burnoff** a few calories.

Meaning: lose calories by working out



The enriched/specified image-schema of the figurative meanings of **burn**

Abstract space:

When **X** burns **Y**, **X** exerts energy so as to cause **Y** to change its state.

Step # 4

Exercise A

1. If something is **burned**, it's state (shape, color, smell)
 - a. changes
 - b. remains the same
2. After **burningoff** a lot of calories, she felt
 - a. better
 - b. worse
3. If your forehead is **burning**, you might be suffering from
 - a. a severe flu
 - b. a mild illness
4. What are the other things that can **burn** someone out?
 - a. addiction alcoholic drinks
 - b. addiction to shopping

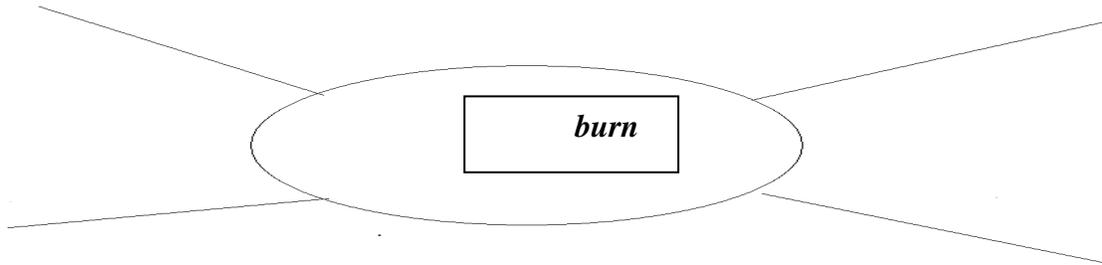
Exercise B

Identify the points of similarity shared by the literal and figurative meanings of **burn** in the following table.

Literal meaning	Points of similarities	Figurative meaning
<p>We took all the <u>rubbish</u> outside and <i>burned</i> it.</p> <p>Soon it transformed into <u>ash</u>.</p>	<p>1. literal mg: change of state/cause to disappear</p> <p>. figurative mg: cause the calories to disappear</p> <p>. literal mg: change of state</p> <p>. figurative mg: ?</p> <p>2. _____</p> <p>. literal mg: change of state</p> <p>. figurative mg: ?</p> <p>3. _____</p> <p>. literal mg: change of state</p> <p>. figurative mg: ?</p>	<p>1. <u>Leila, who was fat</u>, went on a diet to <i>burn</i> off the extra calories she had, and after two months, she <u>regained her ideal weight</u>.</p> <p>2. When the doctor arrived, the boy's <u>forehead was <i>burning</i></u>. The mother was very surprised as her son's <u>temperature was normal in the morning</u>.</p> <p>3. In an attempt to pass the TOEFL, some girls are about to <i>burn</i> themselves out by <u>studying day and night</u>. Before joining the IEP, <u>they used to study moderately</u>.</p>

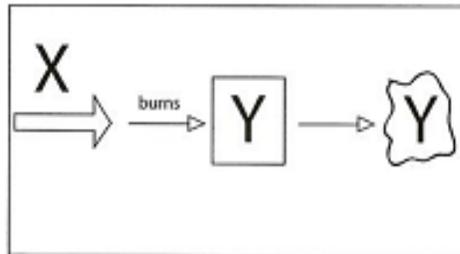
destroy, damage by fire or heat (literal)

feel unpleasantly hot



lose fat calories ... by working out
destroy/ruin/harm one's health

Conclusion: Image-schema for both literal and figurative meanings



Exercise

Choose the correct choice

Liza's face was **burning** because she was angry with her friend.

- a. Liza's face was burnt with fire.
- b. Liza's face got burned in the sun.
- c. Liza's face was red because she was upset.
- d. Liza's face was pale because she was sick.

Homework

Write the word *burn* in your vocabulary notebook and revise its meanings for next class.

Lesson # 8 Handout (beyond)

Example 1.

There is a hill *beyond* the river.

Here *Beyond* means the hill is on the other side but not close to the river (see image-schema below)

Step # 1. Can you come up with other sentences showing other uses of *beyond*?

Step # 2: Let's see how this meaning can be presented.



The enriched image-schema of the core meaning of beyond

Physical space

Beyond is used to show that something/someone is located on the other side of another thing/one plus some distance further.

Step # 3: Now let's see how figurative meanings of *beyond* can be presented

Examples showing figurative senses

1. Jane's hobbies extended **beyond** photography to include painting and drawing.

Meaning: have other things

2. In most European countries, more and more people are living *beyond* one hundred.

Meaning: to more than one hundred

3. I can lift a 70-kilogram box, but Lifting a box that weighs 100 kilograms is *beyond* me.

Meaning: above my lifting ability / difficult for me to lift

4. Thomas Edison **went beyond** his deafness and became a successful inventor.

Meaning: defeated



The enriched image-schema of the figurative meanings of beyond

Abstract space:

When something is located on the further side of something else it exceeds it.

Step # 4

Exercise A

Words in Context: Choose the most appropriate option.

1. What might happen to drivers who drive **beyond** the speed limit.
 - a. get a traffic ticket
 - b. will be respected by the traffic police
2. If a cottage is **beyond** the river,
 - a. it's on the near side of the river
 - b. it's on the farther side of the river
3. If you say that TOEFL is **beyond** you, this means that this test is:
 - a. too difficult to pass
 - b. a piece of cake
4. The film is for only those who are **beyond** 18. Who can see the movie?
 - a. Ali who is 20
 - b. Obaid who is 17

Exercise B

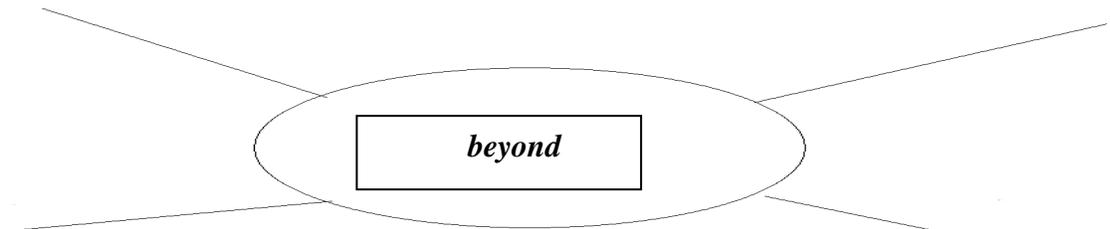
Identify the points of similarity shared by the literal and figurative meanings of *beyond* in the following table.

Literal meaning	Points of similarities	Figurative meaning
<p>There is a hill <i>beyond</i> the river.</p> <p>Meaning</p> <p>Something (The hill) is located <u>on the other side</u> of another thing (the river)plus <u>some distance</u> <u>father</u></p>	<p>1. literal mg: on the other side + some distance</p> <p>1. figurative mg: not within my reach, some distance</p> <p>1. literal mg: on the other side + some distance</p> <p>2. _____</p> <p>1. literal mg: on the other side + some distance</p> <p>3. _____</p>	<p>1. I can reach the <u>top of the board</u>, but touching the <u>ceiling</u> is <i>beyond</i> me.</p> <p>2. Some students feel that getting 5 on IELTS is beyond them.</p> <p>3. The reckless drivers always drive beyond the speed limit.</p>

Part of *beyond* Network

on the further side of something (literal)

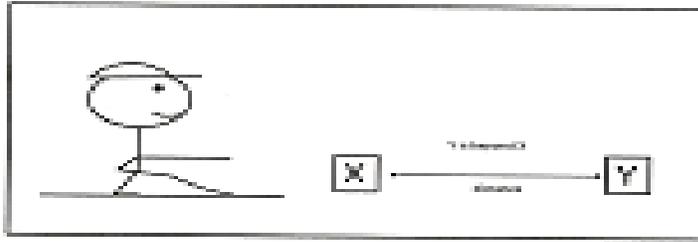
go further to include other things



above, outside one's abilities / difficult to lift, believe...

more than a particular limit

Conclusion: Image-schemas for both literal and figurative meanings



Homework

Write the word *beyond* in your vocabulary notebook and revise its meanings for next class

B: Control group Lessons

Lesson # 1

Objective: Familiarizing students with the notions of literal and metaphorical meanings

1. Dictionary work

A. How many meanings do you think break and heart have?

Break.....?.....

Heart.....?.....

B. Look up both words in the dictionary and complete the table below.

break	heart
Number of meanings:	Number of meanings:
Verb meanings:	Noun meanings:
Noun Meanings:.....	
Examples	Examples
Break something	Heart as an organ
Break a journey	Break one's heart
Break a contract	The heart of the problem

2. Defining polysemous words

Definition:

Examples:...../...../.....

3. How is literal meaning different from metaphorical meaning ?

Literal meaning: original, core meaning

Metaphorical meaning: not with its exact (original)meaning but used to give an imaginative description or special effect

Example 1.

The stomach can't digest the food well because it's too spicy.

Digest is used in its **literal meaning** (**definition: digest:** to change food in your stomach so that it can be used by the body)

Example 2.

It is better to study for several sessions to digest what you read.

Here, **digest** is used in its **metaphorical meaning** (**Definition: digest:** To think about new information so that you understand it fully.)

Exercise

Read the following pairs of sentences and say whether the underlined verbs have literal or metaphorical meanings.

	Sentence	Literal	Metaphorical
	a. The thieves got in by <u>breaking</u> a window.		
	b. It'll <u>break</u> your father's heart if you tell him you're giving up university.		

	<p>a. The book gets to the heart of the problem.</p> <p>b. Eating too many fatty foods is bad for the heart.</p>		
--	--	--	--

Lesson #2 CG (head / over / beyond)

Literal meanings of head, over and beyond : _____, _____, _____

How many meanings do you think does each of these words have? _____,
 _____, _____

Below are words you know used figuratively

1. Head:

English meaning: (verb) at the top of a list

Example: *France **heads** the world's top ten tourist destinations chart.*

Sentence translation: _____

2. Over:

English Meaning: (preposition) from one side of something to the other side of it /
 transfer money from one bank to another

Example: *My father switched money over to my brother who was spending his vacation in Australia.*

Sentence translation: _____

3. Beyond:

English meaning: (preposition) above, outside one's abilities

Example: *I can afford only Dhs 10,000 for my Summer holiday. Taking a*

_____ me.

Exercise # 3

Literal (L) / Figurative (F)

1. ____ He's in hospital with serious **head** injuries after the crash.

2. ____ The house **beyond** the hill is difficult to reach

Homework

Write the word *over* in your vocabulary notebook and revise its meanings for next class.

Lesson #3 CG (push / root / burn)

Themes: Exams and traveling

Literal meanings of push, root and burn : _____, _____, _____

How many meanings do you think does each of these words have? _____,
_____, _____

Sentences translation: _____

Below are words you know used figuratively.

1. Push:

*Example: Standardized tests like TOEFL seem to **push** students to work really hard.*

English meaning: (verb) to force

Sentences translation:

2. Root:

*Example: Robert traveled to Vietnam in search for his **roots**. He was born there.*

English Meaning: (preposition) origin, place where one was born

Sentences translation:

3. Burn: (to destroy something with fire)

Example: In order to pass the TOEFL, the student studies day and night.
She may *burn* herself *out* by working too hard.

English meaning: (verb) ruin one's health

Sentences Arabic translation:

Exercise # 1

Words in context:

1. How can one search for his/her roots?

a. surfing the internet

b. reading novels

2. How can teachers push students to work very hard?

a. giving them a lot of homework

b. deducting marks

3. Who might burn himself out?

a. a drunkard

b. a fireman working 6 hours a day

Exercise # 2

Gap filling

burn - roots - push

1. Teachers don't seem to ____ these kids very hard. They don't force them to work hard.
2. The workaholic risk _____ themselves out.
3. Certain TV programs can help people search for their_____ .

Homework

Write the words in focus above in your vocabulary notebook and revise its meanings for next class.

Lesson # 4 CG (break / over / beyond)

Themes (sports and movie making)

Literal meanings of break, over and beyond : _____, _____, _____

How many meanings do you think does each of these words have? _____,
_____, _____

Below are words you know used figuratively.

1. break:

*Example: The sportsman **broke** the world record for the 100 meters.*

English meaning: (verb) beat (a previous record)

Sentences translation:

2. : over:

*Example: The audience saw the credits after the film was **over**.*

English Meaning: (preposition) finished completely

Sentences translation:

3. : beyond:

*Example: In a lifting competition, the athlete succeeded in lifting 70-kilogram shaped weights, but lifting 80-kilogram weights was **beyond** him.*

English meaning: (preposition) above his lifting ability

Sentences translation:

Exercise # 1

Words in context:

1. 1. The athlete *broke* the European record in the 100 meters, so he

a. won the race

b. lost the race

2. I can lift a 70-kilogram- box, but Lifting a box that weighs 100 kilograms is *beyond* me. This means that the I

a. can lift 100-kilogram box

b. can't lift 100-kilogram box

3. When the war is over....

a. people may lead a peaceful life

b. people may still live in danger

Exercise # 2

Gap filling

over - beyond - break

1. To be able to _____ a world record in any sport, athletes have to work really hard.
2. The situation was _____ her control.
3. When the third class was _____, the students rushed to the cafeteria for some food .

Exercise # 3 (revising previous words)

Baseball had its **roots** in....

a. The US

b. Scotland

c. China

Homework

Write the words in focus above in your vocabulary notebook and revise their meanings for next class.

Lesson # 5 CG (break / head / root)

Themes (sports and caring for one's body)

Literal meanings of break / head / root : _____, _____, _____

How many meanings do you think does each of these words have? _____,
_____, _____

Below are words you know used figuratively.

1. break:

Example: I'm addicted to junk food. I feel that I can't **break** the habit of eating fast food daily.

English meaning: (verb) *can't stop the habit of eating*

Sentences translation: _____

2. : head:

Example: His car was badly damaged in the car race because he was **heading** all the cars involved in the accident.

English Meaning: (Verb) at the front of

Sentences translation:

3. : roots:

Example: Finally, Yao Ming managed to adjust to American basketball, and started putting down roots in America.

English meaning: (Noun) make a place like home by making friends, taking part in local activities/ settle down

Sentences translation:

Exercise # 1

Words in context:

1. 1.may help you **put down roots** in a new place you like to live in permanently.
 - a. Taking part in local activities
 - b. Keeping to yourself

2. When someone breaks the habit of smoking, s/he
 - a. stops smoking
 - b. cuts down on smoking

3. If your bicycle heads your friends' bicycles, you are
 - a. at the front
 - b. in the middle

Exercise # 2

Gap filling

head - root - break

1. Smoking is a habit which is very difficult to_____.

2. The top sportsman managed to _____ the athletes in the competition.

3. He started putting down _____ in Sharjah after living 2 years there.

Exercise # 3 (revising previous words)

Yao Ming _____ the record when he scored 23 shots in one match.

a. headed

b. broke

c. destroyed

Homework

Write the words in focus above in your vocabulary notebook and revise their meanings for next class.

Lesson # 6 CG (beyond / hand / push)

Themes (sports)

Literal meanings of beyond / hand / push : _____, _____, _____

How many meanings do you think does each of these words have? _____,

_____, _____

Below are words you know used figuratively.

1. hand:

Example: After the surgery, Steve took his health problems in **hand** and continued rowing.

English meaning: (verb) *bring under control*

Sentence translation:

2. : push:

Example: The athlete **pushed** his way through his competitors and won the race.

English Meaning: (Verb) *move forward using force*

2. The police took the thieves in _____ and peace reigned again.
4. Jane's hobbies extended _____ photography to include reading and playing chess.

Exercise # 3 (revising previous words)

Redgrave went _____ his body's limits when he decided to continue rowing.

a. beyond

b. over

Homework

Write the words in focus above in your vocabulary notebook and revise their meanings for next class.

Lesson # 7 CG (burn / head / push)

Theme (chocolate)

Literal meanings of burn / head / push: _____, _____, _____

How many meanings do you think does each of these words have? _____,

_____, _____

Below are words you know used figuratively.

1. head:

Example: One story says the head of the Aztecs drank fifty cups of chocolate flavored with chili a day.

English meaning: (noun) the chief, ruler or most important person

- a. by eating chocolate in front of them
- b. by providing scientific facts about the health benefits of chocolate

Exercise # 2

Gap filling

head - burn - push

1. After _____ in his new political ideas, the candidate was elected. He kept talking about his new ideas until people trusted him.
2. The _____ of the family should be responsible for the education of his kids.
3. If you want to _____ a few calories, join a gym.

Exercise # 3 (revising previous words)

1. The policemen took the thieves in hand and peace reigned again.
 - A. the policemen caught the thieves with their hands.
 - B. the policemen caught the thieves red-handed.
 - C. the policemen put the thieves in handcuffs.
 - D. the policeman brought the thieves under control.

Homework

Write the words in focus above in your vocabulary notebook and revise their meanings for next class.

Lesson # 8 CG (break / root / hand)

Themes (chocolate addiction)

Literal meanings of break , root and hand : _____, _____, _____

How many meanings do you think does each of these words have? _____,
_____, _____

Below are words you know used figuratively.

1. break:

Example: The teenager **broke** the law when he tried to buy drugs from a drug dealer .

English meaning: (verb) : *to disobey*

Sentence translation:

2. root:

Example: They can solve the problem of obesity by getting to its **root**.

English Meaning: (Noun). the main cause or source of a problem

Sentence translation:

3. hand:

Example: The policemen have many drug problems on their **hands**. The number of drug addicts is increasing these days.

English Meaning: *(noun) having a problem that they must deal with*

Sentence translation:

Exercise # 1

Words in context:

1. How one can break the law?
 - a. by being addicted to chocolate
 - b. by being addicted to alcoholic drinks
2. what can be the root of illiteracy?
 - a. poverty
 - b. laziness
3. If you have a problem on your hands, this means that the problem
 - a. is serious and must be solved
 - b. is insignificant and can be ignored

Exercise # 2

Gap filling

hand - broke - root

1. The teenager _____ the law when he stole a car.
2. Unawareness is the _____ of all the problems fat people suffer from.
3. They'll have a big problem on their _____ if they try to destroy the forest.

Exercise # 3 (revising previous meanings)

In order to pass the TOEFL, the student studies day and night.
She may *burn* herself *out* by working too hard.

The underlined sentence means:

- A. She burn herself with fire coming from a burning TOEFL book.
- B. she may be asked some burning questions on the TOEFL exam
- C. She may ruin her health
- D. She may burn herself by playing with matches at night.

Homework

Write the words in focus above in your vocabulary notebook and revise their meanings for next class.

Lesson # 9 CG (over / beyond / hand / burn)

Themes (Advertising , Health)

Literal meanings of over , beyond and hand, and burn : _____, _____,

How many meanings do you think does each of these words have? _____,
_____, _____

Below are words you know used figuratively.

1: beyond:

Example: The aim of the ad is to persuade people who are *beyond* 20 to buy the
product.

English meaning: (preposition): more than one 20

Sentence translation:

2: over:

Example: Your monthly expenditure is **over** your monthly income.

English Meaning: (preposition) more than normal

Sentence translation:

3: hand:

Example: When John went abroad, he left his advertising company in the **hands** of his brother.

English Meaning: (noun) being left with / looked after by someone who can be trusted

Sentence translation:

4: Burn

Example: You must have a temperature, your forehead is **burning**.

English Meaning: (verb) feel unpleasantly hot

Sentence translation:

Exercise # 1

Words in context

1. Choose the correct choice

Liza's face was **burning** because she was angry with her friend.

a. Liza's face was burnt with fire

- b. Liza's face got burned in the sun
 - c. Liza's face was red because she was upset
 - d. Liza's face was pale she was sick
2. When your monthly expenditure is beyond your monthly income, you
- a. borrow money from your brother (s) and / or sister (s)
 - b. lend money to your friends
3. When John went abroad, he left his advertising company in the *hands* of his brother. This means that John
- a. trusts his brother
 - b. hates his brother
4. What else can be a cause of a burning forehead?
- a. flu
 - b. sleep

Exercise # 2

Gap filling

hands - beyond - over

1. In most European countries, more and more people are living _____ one hundred.
2. The old man retired and left the whole business in the _____ of his sons.
2. Many people have financial problems because their expenditures are always _____ their incomes.

Exercise # 3 (revising previous meanings)

“I’m happy the semester is **over**”, the girl said.

This sentence means that

- A. She is happy because the semester is about to finish.
- B. She is happy because the semester finished completely.
- C. She is happy because the semester will finish soon.
- D. She is happy to study ‘over’ this semester.

Homework

Write the words in focus above in your vocabulary notebook and revise their meanings for next class.

Appendices II: Participants' Scores

Appendix 1: Both Groups' Mean Scores of the VLS Questionnaire

Strategy number	Strategy name	Minimum (Disagree)	Maximum (Agree)	Mean
VLS19	Translating words into L1	5	7	6.83
VLS21	Repeating words mentally	2	7	5.75
VLS17		1	7	5.45
VLS9	Remembering words if they are written down	2	7	5.43
VLS24	Using spaced word practice	2	7	5.00
VLS12		1	7	5.00
VLS16	Imaging words' orthographical form	1	7	4.97
VLS11	Imaging word's meanings	1	7	4.95
VLS25	Connecting words to physical objects	1	7	4.92
VLS3	Regular reviewing outside classroom	1	7	4.53
VLS18	Associating words with the context	1	7	4.38
VLS1	Using new words in sentences	1	7	3.95
VLS8	Planning for vocabulary learning	1	7	3.95
VLS26		1	7	3.77
VLS23		1	7	3.65
VLS15	Reading and leafing through dictionary	1	7	3.55
VLS2	Keeping a vocabulary notebook	1	7	3.48
VLS20	Grouping words together to study them	1	7	3.22
VLS13		1	7	3.17
VLS7	Taking notes while reading for pleasure	1	7	2.75

Appendix 2: Participants' Scores on the Main Tests of the Study

A. Pre-treatment Tests Scores

Experimental Group

participants	TOEFL	PWKT	VLT	
			Part 1	Part 2
1	423	1	31	7
2	407	1	29	3
3	383	2	27	3
4	393	4	32	0
5	387	2	29	0
6	373	0	26	2
7	420	3	24	0
8	430	8	21	4
9	373	0	28	0
10	373	0	29	0
11	373	0	23	5
12	430	3	30	1
13	387	3	24	9
14	417	1	31	2
15	383	3	32	6
16	420	1	23	5
17	427	2	36	5
18	417	2	27	6
19	383	3	31	0
20	403	0	29	4

Control Group

Participants	TOEFL	PWKT	VLT	
			Part I	Part II
1	420	1	29	6
2	390	0	23	3
3	420	0	29	5
4	420	1	32	7
5	416	3	30	7
6	413	8	26	4
7	413	0	24	0
8	410	0	25	3
9	390	1	32	2
10	410	5	35	3
11	400	3	31	2
12	407	0	31	1
13	388	1	23	2
14	390	1	21	2
15	400	0	22	0
16	390	6	29	4
17	410	6	29	2
18	384	3	25	2
19	407	6	26	3
20	410	2	33	2

Appendix B: Post-treatment Tests Scores

1-Polysemous Word Knowledge Test (PWKT)

Polysemous Word Knowledge Test (PWKT)				
	Immediate		Delayed	
	Exp. Gr.	Ctrl. Gr.	Exp. Gr.	Ctrl. Gr.
1	23	4	23	3
2	11	15	22	1
3	21	14	22	13
4	22	12	20	14
5	18	14	17	16
6	4	11	2	20
7	20	4	21	0
8	23	10	23	18
9	3	10	2	13
10	6	13	6	15
11	0	14	2	13
12	24	4	24	5
13	20	2	20	1
14	16	2	15	3
15	14	2	21	2
16	6	8	12	7
17	17	9	21	13
18	18	3	19	4
19	21	8	22	10
20	22	10	18	8

Strategy Assessment Test Scores (Experimental Group only)

	Strategy Assessment Test	
Participants	Part I	Part 2
1	3	1
2	3	2
3	2	2
4	4	2
5	3	2
6	1	3
7	5	1
8	4	2
9	1	2
10	3	1
11	0	1
12	4	3
13	2	1
14	2	0
15	2	0
16	2	3
17	5	3
18	2	1
19	3	1
20	1	2

Appendices III: Normality and Statistical tests tables

Appendix 1: Tests of Normality For the Experimental and Control Group

The Case of the Experimental Group

Tests of Normality

Tests data	Tests of Normality		
	Statistics	df	Sig
TOEFL	.880	20	.017
VLT K1	.967	20	.692
VLT K2	.910	20	.064
PWKT (pre-treatment scores)	.828	20	.002
PWKT (post-treatment scores)	.868	20	.011
PWKT (delayed scores)	.783	20	.000

The Case of the Control Group

Tests of Normality

Tests data	Tests of Normality		
	Statistics	df	Sig
TOEFL	.906	20	.055
VLT K1	.958	20	.508
VLT K2	.907	20	.056
PWKT (pre-treatment scores)	.838	20	.003
PWKT (post-treatment scores)	.901	20	.043
PWKT (delayed scores)	.928	20	.142

Appendix 2: Independent samples t-tests for the TOEFL

	Levene's Test for Equality of Variances	t-test for Equality of Means
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						Si g. (2- tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
		ig.		f					ower	pper
TOEFLScores	Equal variances assumed	8.434	000	.699	8	.4 89	- 3.800	5. 437	14.806	.206
	Equal variances not assumed			.699	9.3 53	.4 90	- 3.800	5. 437	14.913	.313

Appendix 3: Independent samples t-tests for the VLT (K1)

Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means						
						ig. (2- tailed)	Mean Differenc e	St d. Error Differenc e	95% Confidence Interval of the Difference	
		ig.		f					ower	pper
VocLevelsTestK 1	Equal variances assumed	576	453	284	8	.778	.3 50	1. 231	2.141	.841
	Equal variances not assumed			284	7.818	.778	.3 50	1. 231	2.142	.842

Appendix 4: Independent samples t-tests for the VLT (K2)

Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means						
			ig.		f	ig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
									ower	pper
VocLevelsTestK2	Equal variances assumed	.662	.063	131	8	.896	.100	.761	1.440	.640
	Equal variances not assumed			131	4.698	.896	.100	.761	1.444	.644

Appendix 5: Mann-Whitney U-tests and Independent samples t-tests for the PWKT

A. The case of the Pre-treatment PWKT

Comparison between Pre-treatment PWKT scores for both groups (Mann-Whitney U-test)

	PWKgePTT
Mann-Whitney U	197.000
Wilcoxon W	407.000
Z	-.083
Asymp. Sig. (2-tailed)	.934
Exact Sig. [2*(1-tailed Sig.)]	.947 ^a

a. Not corrected for ties.

b. Grouping Variable: GroupsCodes

B. The case of the Post-treatment PWKT (Independent samples t-test)

Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means						
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
									Lower	Upper
PWKgePostTT	Equal variances assumed	6.204	.017	3.507	38	.001	7.000	1.996	2.959	11.041
	Equal variances not assumed			3.507	30.990	.001	7.000	1.996	2.929	11.071

C. The case of the Delayed PWKT

Comparison between the Delayed PWKT scores for both groups (Mann-Whitney-test)

Test Statistics^b

	PWKgeDelPPT
Mann-Whitney U	79.500
Wilcoxon W	289.500
Z	-3.265
Asymp. Sig. (2-tailed)	.001
Exact Sig. [2*(1-tailed Sig.)]	.001 ^a

a. Not corrected for ties.

b. Grouping Variable: GroupsCodes

Appendix 6: The Paired-Samples T Test (for the experimental group)

		Paired Differences						f	ig. (2-tailed)
		Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference				
					Lower	Upper			
Pair 1	PWKT pre-treatment test – PWKT Post-treatment test	-13.500	6.669	1.491	-16.621	-10.379	9.053	9	000

Appendix 7: The Paired-Samples T Test (for the control group)

		Paired Differences						f	ig. (2-tailed)
		Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference				
					Lower	Upper			
Pair 1	PWKT pre-treatment test – PWKT Post-treatment test	-6.100	4.712	1.054	-8.305	-3.895	5.790	9	000



Appendix 8: Comparison between the post-treatment immediate and delayed PWKT test (the case of the control group)

	Paired Differences					t	df	S(2-tailed)
	Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference				
				Lower	Upper			
Pair 1 PWKgePostTT - PWKgeDelPTT	-.500	4.617	1.032	-2.661	1.661	-.484	19	.634

Appendix 9: Comparison between the post-treatment immediate and delayed PWKT test (the case of the Exp. Group)

	Paired Differences					t	f	Sig. (2-tailed)
	Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference				
				Lower	Upper			
Pair 1 PWKgePostTT - PWKgeDelPTT	1.150	3.483	.779	-2.780	.480	-1.476	9	.156

