

THESIS

THE EFFECTS OF SEMANTIC AND THEMATIC CATEGORIZATION OF
VOCABULAY ON ARABIC-SPEAKING EFL LEARNERS

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ABSTRACT

THE EFFECTS OF SEMANTIC AND THEMATIC CATEGORIZATION OF VOCABULARY ON ARABIC-SPEAKING EFL LEARNERS.

The present study aims at investigating the most effective method of clustering vocabulary in the presentation of vocabulary to learners. It investigated three types of clustering, semantically-related sets, semantically-unrelated sets, and thematically related sets and their effectiveness in helping Arabic-speaking learners recall and acquire new vocabulary.

The study employed three lists of vocabulary according to their clustering type and immediate and delayed L2-L1 translation recall tests. In each list, 15 new English words along with their equivalents in Arabic were chosen to represent; a) semantically-related words, b) semantically-unrelated words, c) thematically related words. Recall test by giving the equivalent of the English word in Arabic which the immediate test is given right after the learners had studied the words and a week-late delayed test was given as well.

58 adult male Arabic-speaking students involved in advanced level of the English intensive program of a Saudi leading higher education institution participated in the study. The subjects were divided into three groups in which each group studied one type of clustering.

A one-way Analysis of Variance (ANOVA) statistical test was employed to analyze the data. The results showed that in the immediate test there was no significant difference among the three types of clustering on recalling new words. For the delayed test, the results showed a significant difference in favor of semantically-related and semantically-unrelated over the thematic clustering.

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DEDICATION

I dedicate this work to my parents, Zain and Fatimah, my only sister, three brothers and friends for their endless support and inspiration throughout my whole life.

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Chapter I

Introduction

Teaching and learning vocabulary is one of the major aspects in the process of learning and teaching a second or foreign language. Since a word with all the different definitions and concepts it contains is considered the core of the language. As Wilkins notes, “without grammar very little can be conveyed, without vocabulary *nothing* can be conveyed” (p. 111).

In the field of applied linguistics, there are many different aspects of language that can be explored and studied. Vocabulary learning and teaching are among the many different topics that have been under systematic research in the field of applied linguistics recently.

However, the interest in the topic has been neglected early in the studies of applied linguistics (Carter, 1998). Carter relates the neglect of vocabulary research to the importance which was first given to syntax and phonology where it was perceived that vocabulary was a less important factor in learning a second language.

Milton (2009) thinks that there are three reasons for the neglect of vocabulary importance in second language acquisition studies. First, the pervasiveness of structural approaches was an important factor that influenced teaching language. It is the belief of early researchers that vocabulary is nonsystematic and that the focus should be on patterns of language that can be acquired systematically. The second reason is the common belief among teachers, learners and educational administrators, that learners can

achieve high proficiency levels without much consideration to large vocabulary resources. Third reason is that explicit instruction of vocabulary would waste a big proportion of time because it is believed that explicit instruction of words proved not to be the only factor in vocabulary acquisition (Harris & Snow, 2004) and that most vocabulary is learned incidentally (Ellis, 1994).

In the 1950s, a shift from the structural approaches to language, took place by the generative theory of linguistics proposed by Chomsky in (1957). Decarricco (1991) states that, about the generative theory, “the general assumption is being that language is represented as a speaker’s mental grammar, a set of abstract rules for generating grammatical sentences.” Therefore, this theory suggests that language is rule acquisition and not habit formation, as earlier structural approaches had suggested, and that words had been given more important role, but are still considered secondary to grammar rules (Carter & McCarthy, 1988).

Later on, Hymes (1972) focuses on communicative competence. The approach provides greater emphasis on the meaningful use of sociolinguistic and pragmatic factors that affect the use of language. Instead of focusing on habit formation and rule acquisition, communicative approach provided greater emphasis on contextualizing the language for particular social situations, such as a conversation between a banker and a customer, since the main goal of learning a language is to be able to communicate. Although this approach gives more attention to the discourse level rather than the sentence level, the importance of vocabulary is not considered directly related to the ability of communicating (Schmitt, 2000).

However, the interest in vocabulary is in the heart of second language acquisition studies, and there is agreement among vocabulary specialists that lexical competence is very important to achieve communicative competence (Coady & Huckin, 1997). The interest in vocabulary has taken an important appeal, as Carter (1998) notes, in the 70s and on in the work of different vocabulary specialists see (Judd, 1978; Laufer, 1986; McCarthy, 1984; Meara, 1980).

Decarricco (1991) relates the resurgence of the research, regarding the research in vocabulary role in learning language, mainly to development in computer-assisted research which provides vast information to be analyzed. Moreover, the developments in psycholinguistics research give insights into memory, storage, retrieval and information processing; all of which related to mental processing and other issues related to mental processing.

Curriculum design specialists and language teaching programs administrators have been faced by the challenge of vocabulary and its role in learning language, especially after the progress that had been achieved by researchers in terms of words frequency studies in response to vocabulary control in language programs (Stern, 1983). Various techniques have been introduced to provide effective exploitation of teaching methods and providing vocabulary. One of the issues is how to present vocabulary or how vocabulary can be integrated in teaching programs and curricula. For example, there is the challenge of how to employ explicit/implicit teaching approaches of vocabulary: what to teach, strategies/activities, and other issues of teaching vocabulary (Decarricco, 1991; Nation, 2001; Schmitt, 2000). In addition, the challenges that curriculum designers face to organize and include vocabulary in the best method that can effectively help learning,

retrieving and understanding of words from the learners' perspective (Channell, 1981; Nation, 2000; Tinkham, 1993, 1997).

Typically, authors of textbooks organize and present vocabulary in what Gairns and Redman (1986) call 'lexical sets' or as Marzano and Marzano (1988) prefer the term 'semantic clusters'. Tinkham (1993) states that there is no or little empirical proof of the effectiveness of semantic clustering of vocabulary presented to students as new in textbooks in either perspectives of learner-centered or language-centered. Tinkham (1993) also notes that such clustering of semantically related vocabulary can lead to *interference* in such situations.

Crystal (1997) defines lexical set as "certain formal or semantic features" (p. 221) that words share. Al-Jabri (2005) also notes that a unit of word or vocabulary can be called a lexical item or lexeme. This similarity among the lexical sets can lead to, according to (Tinkham, 1993, 1997), interference. The Interference happens "when words are being learned at the same time, but are too 'similar' or share too many common elements, then these words will interfere with each other thus impairing retention of them" (Waring, 1997, pp. 261–262).

Many ESL textbooks provide vocabulary in semantic sets because the authors believe that presenting vocabulary in such approach facilitates learning. Looking at some textbooks, we can see how words are clustered around superordinate or, as (Al-Jabri, 2005) calls it, 'headword'. For example, Al-Jabri (2005) provides examples from Costinett (1987) who clusters *bed, sofa, chair, table,* and *dresser* together in his textbook *Spectrum, 2*, and Franklin and Meyers (1991) in their textbook *Crossroads, 1*, cluster

single, married, divorced, separated, and widowed together further discussion in Chapter 2.

Numerous writers (e.g. Channell, 1981; Dunbar, 1992; Neuner, 1992) suggest organizing vocabulary according to semantic clusters and provide justification for this method. They state that semantic clustering of vocabulary help in many ways because of different reasons, more in Chapter 2.

On the other hand, Tinkham (1993), (1997) and Waring (1997) are among the early studies that show learning words in semantically-related methods can impede the acquisition of vocabulary. The recent findings in light of interference theory maintain that learning closely-related items can lead to interference among them which can hinder learning vocabulary at the end. Moreover, recent findings of the *distinctiveness* hypothesis can also be an explanation to support these results where learning unrelated items can actually help better in maintaining information (Hunt & Elliot, 1980; Hunt & Mitchell, 1982).

Tinkham (1997) calls for the research around psychological relationships among items to be learned. It is the assumption that clustering words around thematically-related topics; which takes place in light of the findings of the *interference theory* and the *distinctiveness hypothesis*. While, there are a good amount of studies concerning the interference theory, research around distinctiveness and thematic studies in vocabulary acquisition research is still growing in the field of second language acquisition.

Thematic clustering research took place in accord to the advancements achieved under distinctiveness hypothesis and interference theory under the field of psychology. Tinkham (1997) suggests that “words might be subconsciously organized in accordance

with their participation within certain ‘frames’ or ‘schemas’, concepts which segmentize a speaker’s background knowledge” (p. 141). An example of this concept can be *frog, pond, slippery, swim, hop, green*; these words are related to different parts of speech but they share certain “frame” or “schema” that can be *frog* (Tinkham, 1997). Regarding the schematic organization, several writers claim that presenting material according to schematic organization lead to facilitate learning more easily (Anderson & Pearson, 1984; Brewer & Nakamura, 1984), more in Chapter 2.

Recently, numerous studies have investigated the role of vocabulary presentation in achieving effective storing and retrieving of words (Al-Jabri, 2005; Erten & Tekin, 2008; Hashemi & Gowdasiaei, 2005; Hippner-Page, 2000; Papathanasiou, 2009). These studies tried to investigate the methods of presenting vocabulary, either in semantically-related sets or semantically-unrelated sets. Furthermore, (Al-Jabri, 2005; Hippner-Page, 2000; Tinkham, 1997) add one more element, that is thematic clustering to contrast them with the semantic clustering in previous studies.

In the current study, there are three main underlying concerns: the effect of semantically-related sets of vocabulary, semantically-unrelated sets of vocabulary and finally thematically- related sets of words categorizations on the acquisition of new words. Moreover, the study investigated to what extent short-term memory and long-term memory can reserve these words in different sets.

The studies that employ the method of presenting vocabulary in thematically-related set in contrast to studies about semantically-related sets are growing. Therefore, the study had employed the three types of vocabulary sets in one particular setting and a

homogeneous group of learners. So far, there is one study conducted in Saudi Arabia by Al-Jabri (2005).

This study aims at investigating three different methods of presenting vocabulary. These are semantically-related (SR), semantically-unrelated (SU) and thematically related (TR) vocabulary presentation methods in EFL context in Saudi Arabia.

1-1: Research questions

1- Is there a significant difference among SR clustering, SU clustering and TR clustering of vocabulary presented to EFL Arabic speaking learners?

2- What is the most effective way of presenting vocabulary to EFL Arabic speaking learners?

1-2: Research hypotheses

1- There is a significant difference among the types of clustering vocabulary to EFL learners.

2- The most effective way will be that TR clustering is the most effective way of vocabulary presentation, then SU clustering, and finally SR clustering is the least effective way of vocabulary presentation.

In chapter two, the literature related to the topic of semantic and thematic clustering is reviewed. Different approaches led to question the effectiveness of vocabulary presentation to learners.

The approaches include a review of the justifications provided by supporters of “semantic sets” approach. Then, from psycholinguistic perspective, *semantic fields* which

provides insights into the nature and structure of lexicons in the mind which is considered a justification to present vocabulary in SR method. Finally, justification against the use of SR method in presenting vocabulary to learners is reviewed.

Theories such as *interference theory*, *distinctiveness hypothesis*, *schema theory* and, from psycholinguistic perspective, *semantic frames* are among the approaches used to provide justifications against presenting vocabulary in semantic sets. They are considered as the theoretical background to support presenting vocabulary in TR, or SU sets as an alternative to SR sets. See chapter 2 for details.

In chapter three, a detailed description of the methodology used to investigate the effectiveness of vocabulary presentation in SR, SU and TR methods is provided. It includes a description of the subjects participated in the study, setting, materials and scoring methods of the study.

The study employed three 15-word lists provided with their equivalents in Arabic, and learners took two minutes for each word to study. After they studied the lists, they were tested receptively by giving translation L2 to L1 direction in an immediate test and a week later they were tested a delayed test. The three sets distributed among the groups in such a fashion that each group experienced a particular method of presentation; *First group: SR presentation, Second group: SU presentation and Third group: TR presentation*. see Chapter 3 for further details.

In chapter four, the results of data analysis are provided. The results showed that in short-term memory there was no significant difference among the three methods of vocabulary presentation, while there was a significant difference in support of SR and SU sets while TR is showed as the least effective method. See chapter 4.

Finally, chapter five includes discussion of the results in relation to previous research, limitations of the study; and suggestions for further research.

Chapter II

Review of Literature

This chapter includes a review of different approaches that contribute to the study. Since the call to thematic clustering of lexical items is concerned, the previous research concerning the semantic clustering of words is discussed. Examples from selected textbooks of English are reviewed to show how the trend towards semantic clustering of vocabulary was because of the assumption that this type of clustering is useful. In addition, the topic of semantic fields which is considered the basis by which many textbooks employed the semantic sets method is reviewed.

Then, a review of the theories that shaped the opposing assumptions that clustering words semantically can impede learning of words by exploring the interference theory in its two major types; retroactive and proactive, and the review also includes distinctive hypothesis which provides evidence that similarity can be an obstacle in learning new items.

After that, schema theory which provides some evidence on how the lexical items are structured into the human mind in general is reviewed. Thematic clustering is reviewed by discussing theories that lead to the hypothesis that thematic clustering is useful. The section reviews the semantic theories of semantic frames that helped in shaping the call to employ thematic clustering in vocabulary presentation. Finally, studies that examined the effectiveness of semantic and thematic clustering are discussed in detail.

2-1: Semantic clustering:

2-1-1: Examples of vocabulary presentation in language textbooks

Throughout numerous English language textbooks, providing vocabulary is typically presented in semantic clustering. Usually, authors of these textbooks use their “dedication to methodology or syllabus that accompanies their approach to second language development” (Tinkham, 1993, pp. 371–372) to provide vocabulary in this particular set rather than empirical evidence or theoretical background. By examining some of these textbooks, we will see the significance of semantic clustering in the presentation of vocabulary.

- In *Say It in English* (Ministry of Education, 2009) , which is the textbook for Saudi students in the 1st grade of *intermediate school*, they provide new words in a unit labeled *My Clothes*, in this clustering “*blouse, skirt, headscarf, jacket...shirt*” (p. 16). Also, they provide similar way of clustering in a unit labeled *My Body*, “*face, head, ear, arm, hand, knee...toes*” (p. 27).
- In *Side by Side, 2* (Molinsky & Bliss, 2001), they provide vocabulary related to food in a unit labeled *Count/Non-Count Nouns*, in this way “*apple, bananas, cake, milk, fish...tomatoes*” (p. 11). In addition, in the same unit, they provide adjectives to describe the taste of food by presenting the antonyms “*delicious/terrible*” (p. 17).

By examining vocabulary textbooks that are designed specifically for vocabulary instruction, it appears that some authors tend to use semantic clusters in presenting vocabulary.

- In *Vocabulary Builder, 7* (Fischer, 2004), vocabulary is organized according to semantic clusters as we see in this unit under the label *Vocabulary of Behavior,* "carping, deferential, lethargic, patronizing, phlegmatic...truculent" (p. 19).
- In *5-Minute Daily Practice Vocabulary*, (Fitzgibbon, 2003), the author provides vocabulary in semantic clusters such as this example of *Theater words*, "scenery, audience, wardrobe, balcony and spotlight" (p. 8).

2-1-2: Justification for semantic clustering

Most of the above mentioned textbooks do not provide justification for employing clustering words in semantically related method. It seems that they tend to use their intuition to use this method because of the lack of empirical evidence supporting this view (Nation, 2000; Tinkham, 1993, 1997; Tinkham, 1994). However, Seal (1990) in his vocabulary textbook *American Vocabulary Builder, 1* provides justification for using the method of semantic clustering in two reasons. First, Seal justifies using this method because learners can get the sense of structure and progress they need to understand and acquire new vocabulary. Second, he believes that this organization of presentation lead learners to successfully guess the meaning of words by providing them among similar other words, for example, providing the word "handsome" along with the word "beautiful."

Likewise, Nation (2000) concludes that different writers provide justification for this clustering due to the following reasons:

- requires less effort to learn words in a set (Neuner, 1992);
- it is easier to retrieve related words from memory;
- It helps learners see how knowledge can be organized (Dunbar, 1992);
- It reflects the way such information is stored in the brain; and
- It makes the meaning of words clearer by helping students to see how they relate to and may be differentiated from other words in the set.

The origins of the need to organize vocabulary in semantic sets go back to the developments made in *notional/functional syllabuses*. Wilkins (1972) suggests a functional/communicative description of language that could serve as a foundation for developing communicative syllabuses for language teaching. Richards and Rodgers (2001) point out that Wilkins provided two types of meaning: “notional categories such as time, sequence, quantity, location and functional categories such as requests, denials, offers and complaints” (p. 154). Again, in this view of organization towards notions and communicative demands of learners, the need for semantically related sets of vocabulary presentation is suggested. According to Wilkins (1976), “it is probably necessary to establish a number of themes around which semantically related items can be grouped and from which in constructing a notional syllabus an appropriate selection can be made” (p. 76). Thus, this view of vocabulary use in semantic sets is considered the reason why most of ESL textbooks use this method to present new vocabulary when the notional/functional approach became popular in second or foreign language instruction (Al-Jabri, 2005; Tinkham, 1994).

Some writers also argue that semantic clustering of vocabulary can help distinguish the small differences that similar items can carry. Crow (1986) and Marzano and Marzano (1988) argue that the presentation of vocabulary in semantic clusters can facilitate the ability of learners and teachers alike to recognize the small differences in similar confusing lexical sets. By grouping words based on their semantic similarities, Gairns and Redman (1986) state that it “provide[s] a useful framework for the learner to understand the semantic boundaries: to see where meaning overlaps and learn the limits of use of an item” (p. 32).

Moreover, Gairns and Redman (1986) suggests that presentation of new words in such sets can provide learners with a sense of coherence in the lessons instructed and help in shaping a feeling of organization and regularity.

Besides that, there is evidence that words are stored in semantic sets in the human mind, and that semantic clusters are useful “building blocks” and can go under revision and expansion in concurrence with the learners progress according to Gairns and Redman (1986), and this type of grouping gives “a clear context for practice” (p. 69) and “can speed up the learning process and facilitate learning” (p. 89). Seal (1991) also notes that teaching lexical items should be derived from the same lexical domain and that this type of presentation can lead to a number of benefits. “First, by learning items in sets, the learning of one item can reinforce the learning of another. Second, items that are similar in meaning can be differentiated. Third, students may be more likely to feel a sense of tangible progress in having mastered a circumscribed lexical domain” (Seal, 1991, pp. 300-301).

Other studies in first language vocabulary development also support the idea that presentation of words in semantic sets can help in the acquisition process (see Beck, Perfetti, & McKeown (1982) and McKeown, Beck, Omanson, & Pople (1985). Beck et al., (1982) designed a study in which 27 fourth-grade children were taught 104 words over a five-month period. The study aims at investigating the relationship between knowledge of word meanings and semantic processes and how that can affect text comprehension. They instructed the words in semantic clusters, for example, in the *eating* category they listed the words *obese, glutton, devour, appetite...etc.* They found that instructing the children in this way helps in increasing the level of comprehension, thus semantic clustering of words is helpful to facilitate vocabulary acquisition. Nonetheless, the children received rich instruction of the words that can be an effective factor for the acquisition process to take place and also there was no employment of other ways of presenting vocabulary such as thematic or semantically-unrelated presentations (Stahl, Burdge, Machuga, & Stecyk, 1992).

In the other study, McKeown et al., (1985) affirms that rich instruction of words contributes efficiently in improving verbal processing. McKeown et al., (1985) instructed students in three different kinds of methods. The findings were that by teaching words meanings along with vocabulary enrichment activities, the students performed better than students who were only taught word meanings in story comprehension. Also, they provided the words in semantic; results lead indirectly to suggest that presenting words in semantically-related sets helps in the acquisition of new words.

On the other hand, Stahl et al., (1992) conducted a study on two groups in which each group received rich instruction of two sets of vocabulary presentation; one is

semantically-related and the second semantically-unrelated. Subjects took two tests to measure their vocabulary acquisition. First, immediate test by having the subjects answering sentence cloze and examples test, delayed test by answering multiple choice questions, and classification of words methods of testing .They found that semantic clustering did not necessarily have an effect on vocabulary acquisition.

To conclude, semantic clustering or semantic sets in vocabulary presentation seems to be intuitive at the beginnings of vocabulary instruction. Later on, based on the notional/functional syllabuses of ESL/EFL practice, the need to organize vocabulary in particular sets raised as a necessity to develop useful curriculum designs since language has pragmatic or functional skills to learn. Thus, numerous authors suggested that organizing vocabulary can lead learners to have a sense of organization and structure of knowledge, which helps facilitate learning vocabulary.

From this point on, the question of whether semantic clustering of vocabulary in pedagogical context and curriculum design is, as effective as appears on the surface. Vocabulary specialists called for the need of systematic research in the topic in order to find scientific answers to the effectiveness of vocabulary presentation methods.

From the field of psycholinguistics, the theory of *semantic fields* has insights of how lexicons are organized in the mind. Semantic fields seek to answer questions related to how we distinguish and understand the boundaries between similar lexicons. Since this study is to determine the best method to present vocabulary according to semantic and thematic relations, the following section sheds light on the topic of semantic fields.

2-1-2: Semantic fields

In the field of psycholinguistics, numerous researchers have attempted to discover how lexical items are organized in the *mental lexicon*. Mental lexicon is the term used to describe the collection of words that a speaker of a language knows in that language (Aitchison, 1987). As a result of investigation in this issue, psycholinguists established the concept of *semantic fields* and *semantic frames*. Semantic fields, according to Tinkham (1994), were the basis where for pedagogical purposes ‘semantic clustering’ was drawn and semantic frames were the basis which ‘thematic clustering’ was drawn.

Kittay and Lehrer (1992) defined the semantic field as “words applicable to a common conceptual domain are organized within a semantic field by relations of affinity and contrast (e.g., synonymy, hyponymy, incompatibility, antonymy, etc)” (p. 3). Despite the fact that some field theorists limit the field of lexemes (words) to the same syntactic classes, others see that it is important to look at the semantic field as it can include different parts of speech.

Barsalou (1992) adds that the concepts in a conceptual field become lexicalized to form a semantic field. For example, the semantic field for “mare” refers to *horse-female-adult*. Barsalou also notes that some conceptual fields are heavily lexicalized while others are not lexicalized, for instance, no lexical items exist for *horse-female-adult-unneutered*. Therefore, we see in this example that there is a *lexical gap* which leads people to express these fields with more complex linguistic constructions. As a result, Barsalou concludes that “lexicalized concepts in a semantic field only capture a small fragment of the concepts in the conceptual field” (p. 63).

Grandy (1992) following an intuitive approach to analyze semantic fields, emphasizes *contrast sets* in his definition of semantic fields. He states that contrast sets are sets (S) of contrasting terms organized under one covering term (T) that show contrast relations (R). For example, the cover term (T) *Day* acts as a covering term for contrasting sets posited over *Monday, Saturday, etc.* Grandy supposes that the membership for these contrasting terms is founded by the language speaker's knowledge of contrasts and field relationships.

Similarly, Kittay (1992) depending on her intuition to semantic fields analysis, sees that most speakers' understanding of "the distinctions that mark out boundaries of a concept" (p. 236), or "individuations" (Kittay's term) which take place between a concept and another related concept. She assumes that the distinction among related items describes the knowledge of the term. In consequence, semantic fields are groupings of lexicalized items, and they can encode the distinctions that individuate concepts and terms as well as listing together semantically related terms.

Another approach to studying semantic fields is by providing analytical description. Tversky (1977) in his efforts to investigate similarities among objects used a feature-matching approach in order to analyze linguistic similarity. In his set-theoretical approach, objects are represented as collections of features and similarities. This is described as feature-matching. As a result, objects and their features help in understanding the words and their features and to what extent the similarity among words occur when there are features that carry similar aspects. In addition to that, Wizerzbicka (1992) believes that language lexicons should be studied empirically rather than in abstract discussions and she calls for *nonarbitrary* determinations of semantic fields.

Consequently, she proposed to establish universal principles in order to determine specific semantic fields. Therefore, to serve as semantic primitives she presents a list of 32 indefinable words to analyze semantic fields.

As mentioned earlier in the justification for semantic clustering of vocabulary presentation, there is evidence against the use of this method in light of the interference theory. Interference theory can help in understanding how similarity can be an obstacle in the acquisition of new words provided that no rich instruction is employed. In the following section, the focus will be on the interference process and how it can impede the process of vocabulary acquisition.

2-1-3: Interference theory

The interference theory can provide insights to refute the assumption that clustering words in semantically-related method is effective for the acquisition of words to occur. It is assumed in this study and several other studies that semantic clustering can impede rather than help in the process of learning words. Thus, it is useful to shed light on the interference theory and its definitions and types.

The interference theory was formulated by McGeoch (1942) and it appeared initially under the literature of psychological studies of learning in the behaviorist theories of learning (Gass & Selinker, 2008). The main notion of the interference theory is *transfer*. Transfer can take two opposite directions; one of them can be positive (facilitation) and the second direction is negative (interference). It was used in the second language acquisition to explain the effect that a first language can have on the learning of a second language. Furthermore, it assumes also any other language learned earlier can affect the learning of a new language. Therefore, Gass and Selinker (2008) defined it in

simple terms as “the learning of task A will affect the subsequent learning of task B” (p. 93).

The theory attempts to explore the causes of forgetting at the beginning. Its hypothesis is that the nature of acquired knowledge can influence the retention or loss of recent knowledge. There are two directions of the process of interference; (1) retroactive interference and, (2) proactive interference. McGeoch (1932) argued that memory does not decay over time, rather other material which is processed as time passes, causes interference in our memories. Furthermore, he gives three characteristics of interference. First, interference can be detected at the time of retrieval; second, failure to retrieve information takes place when undesired information stored in the memory appears instead of the wanted information; third, he claims that forgetting is due to a lapse in retrieval rather than loss of information (McGeoch, 1932; McGeoch, 1942).

Retroactive interference

Gass and Selinker (2008) define retroactive interference as the situation “where learning acts back on previously learned material, causing someone to forget (language loss)” (p. 94). Thus, it is clear in this type of interference that newly learned information can play a major role in impeding the retrieval of previously learned information. There are numerous studies which examined the effect of this process and came up with robust results. These results mostly showed that *similarity* is a major factor for retroaction to occur. McGeoch (1942) explains that the newly acquired information similarity with critical information to be retrieved can cause competition which leads consequently to difficulties in retrieval. Furthermore, Underwood, Ekstrand, and Keppel (1965) have divided the similarity into three different types:

- 1- Similarity in form: it is the similarity in numbers of letters.
- 2- Similarity in meaning: it is the similarity in terms of meaning relations among words.
- 3- Similarity in concepts: it concerns the membership within particular taxonomic categories (Tinkham, 1994).

Given that similarity is considered a major factor for retroaction to take place, McGeoch and McDonald (1931) conducted a study in which they employed two experiments to investigate how similarity can lead to retroaction. First experiment, the study employed a list of 11 two-syllable adjectives to be presented to learners (original list). Following the original list, students were presented with other lists which are characterized by; (1) synonym adjectives, (2) antonym adjectives, (3) unrelated adjectives to the original list, (4) a list of nonsense syllables, (5) a list of 3-place numbers. Twelve students were presented the original list in 5 trials, 10 trials with interpolated lists and finally students are to be tested on the original list. The results showed that retroaction decreased as the similarity dropped from more to less, and retroaction increased as the similarity increased.

In the second experiment, the students were presented a list of adjectives (original list) and three other lists with synonyms that varied according to closeness degree to the original list. Also, the students received 5 presentations of the original list and 10 presentations of the other lists. Yet again, the results showed that as similarity increased retroaction increased accordingly. These results were also similar to other studies such as (Johnson, 1933; McGeoch & McGeoch, 1937; Pollack, 1969).

Proactive interference

The other type of interference is what is known as proactive interference (PI). This type of interference is the interference that occurs when critical-to-be-remembered information is inhibited by the influence of previously learned information. It is also assumed this type of interference can provide insights into how similarity can play a role in the difficulty of retention, due to the fact that in the pedagogical context all of the different types of interference are highly possible to take place.

According to Tinkham (1994), PI has not been recognized by scholars earlier in the interference studies, the attention to this type of interference was later than retroactive interference. Melton and von Lackum (1941) conducted a study in order to investigate the influence of both types of interference on learning. In the condition of PI, Melton and von Lackum employed lists of 10 three-consonant syllables (trigrams) and the lists were derived from a collection of nine consonants. The lists were categorized into six conditions related to the two types of interference. The conditions related to PI are the first condition:

- (1) The subjects had to learn a list of 10 trigrams derived from a nine consonants as a proactive list.
- (2) The subjects had to learn a to-be-remembered list of different 10 trigrams than the first list but from the same consonant range.
- (3) After 20 minutes the subjects had to relearn the to-remembered list without knowing that they will retested.

The second condition is similar but the subjects had to learn the proactive list and the to-remembered list that came from different consonants set. The third condition was

that the subjects had no proactive list to be learned. The results of the study revealed that the similarity in the condition which included two similar lists impedes recalling, and group who had dissimilar lists recalled more items and finally the group that did not have proactive or retroactive materials to be learned, scored the best in terms of recalling. Therefore, Melton and von Lackum concluded that similarity was a major factor in inhibition for both types proactive and retroactive to take place.

In another study, Gibson (1941) concluded the same results. Gibson employed associate pairs of visual forms and nonsense syllables to measure the degree of interference between the original list and the interpolated list to determine the effect of similarity factor in interference. The subjects had to study the primary list which consisted of irregular geometric forms which are drawn according to similarity or dissimilarity levels, and the responses were nonsense syllables which were manipulated according to similarity. After that, the subjects had to learn the interpolated list which is characterized by being stimulus forms that matched the positions of their equivalent on the primary list. Related to retroactive interference, the results showed that subjects' recall of the words in primary list was decreased when the similarity of the two lists increased. Consequently, the result showed that proactive interference can also happen when similarity increases between primary list and interpolated list.

As interference theory provides considerable explanation of the problems semantic clustering can cause in the acquisition of vocabulary, thematic clustering is suggested as an alternative way to present new vocabulary in language teaching and learning contexts.

However, the interference theory provides insights into the effects of similarity in the acquisition or retrieval of critical information, but in the field of linguistics usually interference is studied from perspectives of L1 or L2 either as positive or negative interference effects on the learning of a new a language. The question raised is to what extent similarity in terms of linguistics proved to be problematic. Does the interference theory tend to generalize about similarity in general or only in specific fields of human knowledge? Section 3-2-1 of the current chapter includes some studies concerning the effects of meaning similarities on the learning of new words. The following section demonstrates the main motives behind the support of thematic clustering as an effective method in vocabulary presentation.

2-2: Thematic clustering

Thematic clustering revolves around the presentation of lexical items that are based upon psychological relations which consequently leads to theme-based representation of lexicons rather than semantic connections (Al-Jabri, 2005). Semanticists who had studied how the words are presented in the mental lexicon found that words are grouped into “frames” or “schemas”, which reflects the speakers’ background knowledge and experiences rather than semantic fields “related lexical items”. For example, the theme of a restaurant would include *plates, fish, waiter, drinks, order, serve* and *table*. These words do not reflect semantic fields; rather they reflect frames or schemas because there are no or little relations semantically or syntactically.

The question of the effectiveness of TR presentation of vocabulary is linked to how lexicons are organized in mind. Since semantic fields main finding is that vocabulary is represented as semantic relations or feature matching, semantic frames

provides another explanation of how lexicons are organized in the mind. Moreover, semantic frames act as the main motive to introduce words in thematic sets due to the fact that lexicons consist of the common background which, within words, are connected indirectly and linked as a result of shared service. In order to elaborate more on *frames*, the following section deals with the topic.

3-2-1: Semantic Frames

In contrast to the notion of semantic fields which was first developed by structural linguists, semantic frames theory existence is due to the developments in the field of psycholinguistics. Violi (2001) defined semantic fields as “the sets of all lexemes connected at a syntagmatic and paradigmatic in a given linguistic system” (p. 24). Yet, Violi criticizes that semantic fields “lack the precise definition of *field* and its relative extensions. Thus, the areas which organize the lexicons internally are not fixed and defined sets, but rather segments with blurred and partially overlapping boundaries” (p. 25).

Therefore, lexicon instead of being a list of linguistically related items; they are sets of multidimensional nature of structures composed of thematically related subsets; an idea confirmed by many psycholinguistic tests (Violi, 2001). Fillmore and Atkins (1992) in their explanation of frames followed an intuitive approach to understand semantic frames, defined “frames” as the common background which, within words, are connected indirectly and linked as a result of shared service. For example, Fillmore and Atkins provide a list of thematically related lexical items: *buy, sell, charge, spend, pay* and *cost* and nouns such as *buyer, seller, goods* and *money* as words that are linked to each other within *commercial transaction* frame. The notion of semantic frames is that words

meanings can be understood by its “reference to a structured background of experience, beliefs and practices” (Fillmore & Atkins, 1992, p. 76), and the direct relationship of words meanings to each other is not a crucial factor in understanding the mental representation of the lexicons.

In terms of analytical analysis of the notion of frames, Barsalou (1992) provides further explanation for the issue. Barsalou states that frames consist of “attribute-value sets” (p. 43). He continuously explaining that “attributes are concepts that represent aspects of a category’s members and values are subordinate concepts of attributes” (p. 43). For instance, an attribute color can have values such *green* or *red* and the attribute food can have values such as *spicy*, *sweet*, *crunchy*..etc.

Semantic frames theory provides insight into the organization of lexical items in human mind, and for this study it contributes to the hypothesis that learning words thematically is more effective than semantic clustering.

As a consequence of the findings of interference theory, distinctive theory provides an explanation to how differentiation in input can be useful for memory. Related to that, the study tried to answer the question of how grouping words that do not share semantic features can be useful in comparison to TR or SR methods of vocabulary presentation. The following section provides an overview of the distinctiveness hypothesis.

3-2-2: Distinctiveness hypothesis

The interference theory discussed earlier presents clear indication that similarity can cause difficulties in learning. Consequently, the distinctiveness hypothesis as a result of studies in interference suggests that variation within information facilitates learning.

Hunt and Elliot (1980) studied the effect of nonsemantic information distinctiveness on retention. The study contains several experiments which were developed to investigate the orthographic distinctiveness effect on retention. A 20-word orthographically distinctive list was developed and another orthographically common words list was developed as well. The results revealed that subjects had successfully retained orthographically distinctive words more than orthographically common words. The findings were used to generalize that distinctiveness in nonsemantic information is a major factor in retention of information.

Similarly, Hunt and Mitchell (1982) studied the impact of distinctiveness, but this time adding semantic (conceptual) distinctiveness to nonsemantic (orthographic). The study composed of four different conditions. Every condition contains four critical items and 16 other items (background). The four conditions are characterized by; (a) the isolated items that were from the same conceptual category as the background items but were orthographically distinctive, (b) the isolated items that were orthographically common but were from a different conceptual category than the background items, (c) the critical items that were both orthographically distinctive and from a different conceptual category than the background items. (d) The fourth condition had no isolated items in that the critical items were orthographically common and from the same conceptual category as the background items. The findings of the study showed that in both cases either orthographic or conceptual, distinctiveness played an effective factor in retention level.

In addition to that, Schmidt (1985) conducted a study in which he investigated the effect of distinctiveness on recognition and recall. In his study, the distinctiveness effect was examined on conceptual level. In the first recognition experiment, the subjects had to

study a list of 24 words and the list contains four words which are of one conceptual domain while the rest of the words are different. In the other list, the whole 24 words belong to the same category. Then, subjects were tested to recognize whether the words in the test belong to the test or not. The results showed that the subjects were more successful in recognizing words that belong to diverse conceptual domain than in the list of the same conceptual domain.

In the second recall experiment, the same idea of the lists in the first experiment where a list contained words of different conceptual domains and the other list contained words of the same conceptual domain. Also, the results showed that subjects tended to recall words in the diverse conceptual domain better than the homogenous list.

These findings showed that distinctiveness is an important factor that facilitates learning and retrieving. Furthermore, schemata theory helped in forming the initiative for thematic clustering of vocabulary in the presentation of new vocabulary. The theory seeks answers to the structure of knowledge in the human mind. Although, the theory is mainly used in applied linguistics fields to seek answers in reading and listening comprehension, the theory leads to assume that presentation of vocabulary in thematic sets method is useful because it meets the explanation of schemata theory that knowledge or learning is based on the interaction of experiences. The following section sheds light on the theory with some studies related to the issue.

2-2-3: Schema theory

Schema or (schemata in the plural) theory was developed to explain how human knowledge is structured in the human brain and to what extent that can help explaining

the learning theory in the field of education psychology. In other words, it aims at exploring how learners acquire knowledge and how they tend to use it (Tracey & Morrow, 2006).

In earlier explanation of the schema theory, Bartlett (1932) defined it as “an active organization of past reactions, or of past experiences, which must always be supposed to be operating in any well-adapted organic response” (p. 201). Reason (1990) further explained Bartlett’s definition by stating that there are three different aspects that are fundamental to understand schemata theory. First, schemata are “unconscious mental structures.” Second, “old knowledge is the essence by which schemata are constructed.” Third, “long-term memory consists of active knowledge constructs rather than passive images” (p. 25).

Furthermore, Brewer and Nakamura 1984 explained that schema theory is “higher-order cognitive structures that serve a crucial order on giving an account of how old knowledge interacts with new knowledge in perception, language, thought and memory” (p. 120). In a more precise explanation, schemata can be brought up by the existence of a particular aspect or elements of that schema and, on the other side, mentioning schemata can bring up those particular elements of schemata. As a result, schema is “an abstract knowledge structure that sum up what is known about a variety of cases that differ in many particulars” (Anderson & Pearson, 1984, p. 259).

As an example of schema, a person can think of a bank and a variety of different particular aspects will be brought up. A person can think of check, deposits, customer service, money, statements, credit cards...etc. When a person heard the word *deposit*

he/she will be probably thinking about a bank. So, the bank here functions as the *abstract idea* while *deposit* functions as a particular component of this abstract idea.

There is an abundance body of research concerning schema in the field of psychology. Most of the research revolves around the notion that recalling of schema-related information is more effective than recalling of schema-unrelated information. Smith, Adams, and Schorr 1978 conducted a study using in order to explain this case of schema by presenting the subjects two pairs of unrelated sentences:

- a) *Roger remained expressionless.*
- b) *Roger found mistakes were expensive.*

Then they presented the following sentence which is integrated with the previous pair of sentences:

- c) *Roger was learning to play poker.*

Finally, the subjects studied an unrelated sentence that is not integrated with first pair of sentences:

- d) *Roger was expecting to meet somebody.*

The results revealed that it is easy to learn the sentences that are characterized by a level of integration within them and schema-related information. On the other hand, the sentence that does not have a level of integration to the theme or schema was difficult to learn because of the lack of relation among them.

Similarly, Goetz, Anderson and Schallert 1981 conducted a study where they came up with results that showed learning schema-related information is easier than learning schema-unrelated information. The difference between this study and Smith et al (1978) is that Goetz et al (1981) used words that are schema-related in a sentence rather

than whole different sentences related by a schema. For example, look at the following sentences:

a) The leaves fell during a storm in the autumn.

b) The accountant lay in the garden in the mall.

We can see in sentence (a) that the words are constructed together to form a coherent meaning, while in sentence (b) the words are unrelated schematically which make them non coherent in meaning.

The subjects were presented with sentences similar to the sentences above and then were tested to recall information. The results showed that learning words in schema-related sentences is more learnable than words in schema-unrelated sentences and recalling whole integrated sentences is easier than recalling unintegrated sentences, though the difference was not significant in the latter case.

In the pedagogical context, especially in the field of second language acquisition, schema theory has been studied in order to show how it can effectively assist the acquisition of a second language. Mostly, research concerning schema is conducted in the field of reading comprehension. In a study conducted by Carrell (1987), she investigated the role of content schemata and formal schemata in reading comprehension. Content schemata refer to the reader's previous knowledge about the content of a text, while formal schemata refer to the reader's knowledge of the rhetorical patterns and construction of the text.

The subjects consisted of two culturally different groups and they were in a high-intermediate level of English as Second Language proficiency. Every group was given two texts to read. Within each group, half of the texts were culturally familiar content

while the other half were of culturally unfamiliar content and the texts were of organized format or unorganized format as well. In the results, it showed that the subjects used both types of schemata; formal and content measured by a multiple-question test and a questionnaire. Also, the results revealed that subjects were affected by the levels of familiarity with either the content or the format.

Summary

The body of research in light of the previously discussed theories has led the current study to assume that highly associated lists of vocabulary presentation can lead to impede learning and the acquisition of vocabulary. The interference theory provides assumptions that learning semantically-related lexical items is not effective way of presenting vocabulary. In addition, the schema theory that explains how knowledge is structured in the brain provides justifications to support the thematic structure of knowledge into the human brain. This leads to assume that the presentation of lexical items based on thematic ideas can be an effective way to facilitate learning. The research in this field can also be supported by theoretical works that explore the semantic fields and semantic frames. This leads to hypothesize that thematically-related clustering of lexical items can be better acquired and later recalled when needed.

In addition to the research in light of the theories of interference and schema, there are some researchers who conducted empirical research comparing various methods of the presentation of vocabulary. First, there is a body of research concerning semantically-related and semantically-unrelated presentation of words. Second, there is another type of research which investigates which method is effective: semantically-related or thematically-related presentation in teaching and for the learners to acquire.

The following section explores the empirical research in the effectiveness of semantic/thematic clustering of words in presentation of vocabulary pertaining to the current study.

2-3: Semantic clustering vs. thematic clustering

Numerous studies have investigated the effectiveness of the methods of presenting vocabulary to learners. Some of these studies focus on the SR sets of lexical items versus the SU categorization of lexical sets. Other studies aim at investigating the SR versus TR categorization of lexical items. In the following section, the two types of studies will be discussed starting with the SR versus the SU categorization of lexical sets.

2-3-1: Semantic clustering vs. semantically-unrelated clustering

The research about the effectiveness of lexical sets either in semantically-related or semantically-unrelated sets started with Higa (1963). Higa conducted a study in which he investigated how semantic relations between words can affect the recalling process. He tried to explore whether or not, it is easy to learn lists of words that are highly associated or a list of low-associative words. The lists of words were developed according the criterion of (1) antonyms, (2) coordinate words, (3) strong direct associates in free associations which are neither antonyms nor coordinates, (4) nonstrongly-associated words but have high proportions of common responses in a free-association test, (5) connotatively and denotatively, and (6) only connotatively similar words. The subjects were college students without regard to age range or sex. The results showed that lists of strong association and antonyms were the most difficult to learn besides the list of synonyms. The results mean that strong relationship between words can hinder the learning of new vocabulary even with variety in terms of the type of association.

In another study, Tinkham (1993) conducted a study to find out about how presenting highly-related words is difficult to learn by learners. He conducted the study on 20 students. The study employed two experiments; (1) the use of highly-related words, (2) the use of unrelated words. For example, a list of words contains three associated words such as (*shirt, jacket, sweater*) and unrelated words such as (*rain, car, frog*) the lists of words were associated with artificial words. The results indicate that learning highly-associated words is slower and more difficult than learning the unrelated lists of words. However, the number of the subjects in the study was quite small, and the creation of artificial words in the experiments can lead to question the validity of the test especially because of artificial words creates an unnatural setting to generalize the results.

Kroll and Stewart (1994) conducted a study in which they employed three experiments in which picture naming and bilingual translation was performed in categorized and random conditions. In the experiments subjects had to name pictures in two languages English and Dutch and these pictures were listed in either categorized lists or random lists. The aim of the experiments is to examine the interference effects and which conditions revealed the highest level of interference. The results showed that overall it is harder to name pictures or translate in the categorized lists due to the interference process, and that translation process is different in either L1-L2 or L2-L1 direction, which suggests that both directions of translation invokes different interlanguage connections. Generally, the results can show how semantic grouping of words can be slower and interference is likely to happen in this situation.

Waring (1997) replicated Tinkham (1993) study, by employing the same experiments on Japanese subjects. Waring study employed two experiments. The first

experiment tried to find out about learning a test of six pairs consisted of three related word-pairs (*clothes*) mixed with three unrelated word-pairs. The second experiment employed two tests of both six words; the first test had six related word-pairs (*fruit*) and the second test had six unrelated words. Measured by a trial-to-criterion test, the results showed that learning the related sets of words was slower and more difficult than learning the unrelated words and it proved that sets that share a common superordinate head can interfere in learning.

Altarriba and Mathis (1997) also conducted a study to examine the conceptual and lexical representations in bilingual memory of novice and expert bilinguals. They employed three experiments. In the first experiment, the subjects had to perform a translation recognition test after learning a set of Spanish-English translation. The results showed that response times were longer for the orthographically-related foils than for the unrelated set. The second phase of the first experiment showed that interference occurred in semantically-related set of words. Overall, the different experiments revealed that there is a negative effect with similarity either semantically or formally, on the sets of word with varying degrees of significance between the two groups of novice or expert bilinguals.

Finkbeiner and Nicol (2003) addressed the issue also, by conducting a similar type of study. The subjects in the study had to learn 32 new artificial L2 words in different semantic categories. The semantic categories were divided into two groups; (1) semantically-related and, (2) semantically-unrelated. The new L2 words conform to English phonotactic constraints, for example a category of animals consist of these words (*cat, cow, dog*) and the word corresponding to these words were (*Birk, Gorb, Floop*). The

subjects were tested by two-direction translation test. The results showed that, interference occurred during the encoding of information stage and during the retrieval of information in translation. Finkbeiner and Nicol (2003) summarized that “overall... presenting semantically grouped L2 words to learners has a deleterious effect on learning” (p. 376).

Hashemi and Gowdasiaei (2005) conducted a study on 60 adult EFL students in Iran in intermediate level institute of English language. The aim of the study was to examine the effect of semantic clustering on learning and acquisition of vocabulary. The subjects had been taught 100 words and expressions from 13 different lexical sets contextualized in sentences. The subjects were divided into two treatment groups; first group learned semantically-related sets of words and the second group learned unrelated sets of words. The results led to the conclusion that both groups of learners gained significant amount of information in both treatment procedures. However, the results of this study, measured in terms of vocabulary breadth and vocabulary depth, opposed the previously mentioned studies and it showed that semantically-related presentation of vocabulary helps to facilitate learning rather than presenting unrelated sets of words. Nonetheless, the procedures of presenting vocabulary and the methods of measurements can lead to some biases regarding the results. First, the two groups received different types of instruction rather than one group. Second, the two groups each consists of two different levels, one of them is upper intermediate and the second lower intermediate level.

Erten and Tekin (2008) conducted a study in which they tried to explore the effects of semantic clustering on learners. The study was carried out with two intact

groups of 4th grade students in Turkey to whom 80 carefully selected words were presented to them in either semantic clustering or unrelated semantic clustering. Throughout two weeks of instruction of both groups and the two types of clustering. The subjects then were tested by matching words with pictures. The results showed that, test completion time for the semantically-related set was longer than in the semantically-unrelated test, and also the results of vocabulary learning showed that semantically-related clustering sets were harder to learn than the set of unrelated vocabulary.

The last study in this section is conducted by Papathanasiou (2009).

Papathanasiou also examined the two methods of presenting vocabulary to learners. The subjects were two groups of EFL Greek students. The subjects were 31 intermediate children students and 32 beginner adults in a setting of EFL classrooms. The lexical items presented to the subjects were of semantically-related nature and unrelated. For example, topic related items such as (*mugging, forgery*) besides synonyms and antonyms in the related set, and the unrelated set such as (*carpenter, tornado, sage*). Throughout three weeks each group was given one type of lexical sets, then short-term and long-term tests were given to the students. The results showed that the adult beginner group achieved better in the unrelated lexical set than in the related set, while the children group had no significant difference. Papathanasiou (2009) stated that “one probable reason for the adults achieving higher scores was motivation”, and goes on to explain another reason for achieving better “adults, in general, can master certain aspects of a foreign language even well into adulthood”, for example, “lexical and syntactical competence becomes easier for them in contrast to phonology, which becomes very difficult to acquire” (p. 319).

The empirical studies conducted regarding SR and SU clustering showed general results that support the hypothesis that SR clustering of vocabulary is not an effective method in presentation, and that learners will have difficulties in recalling or retrieving information. These results lead to hypothesize that SU clustering is more effective than SR clustering.

The following section seeks foundations in previous research which include thematic clustering as a factor to be compared to SR and SU. A number of empirical studies investigate the effectiveness of TR clustering compared to SR and SU.

2-3-2: Semantic clustering vs. thematic clustering

This section deals with studies that investigate the effect of semantic versus thematic clustering of lexical items on the learning process. There are numerous studies concerning this type of presentation of vocabulary to learners. The boundaries between semantic clustering and thematic clustering are that semantic clustering is generally a clustering of words on linguistic basis which compromised of homogenous nature of word classes and semantic features. On the other hand, thematic clustering is based on cognitive nature of structuring the lexical items into the human mind without emphasis on semantic features or syntactic relations within the lexical items.

The call to initiate the research concerning thematic clustering in vocabulary teaching started with Tinkham (1997). Tinkham conducted a study in which he compared various methods of vocabulary presentation to learners. Most importantly is comparing thematic and semantic clustering and their effect on learning new lexical items. Tinkham employed two experiments in order to examine the effectiveness of the different types of clustering. In the first experiment, four separate studies were employed which in each

study a particular condition was examined; (1) linguistically related ‘semantic clusters’: words of the same form-class which directly descend as co-ordinates under a common superordinate concept, (2) linguistically unrelated sets: words of the same form-class which do not directly descend from a common superordinate concept, (3) cognitively associated ‘thematic clusters’: words of different form-classes that, in accordance with the intuition of the author, were likely to be associated with a shared thematic concept, (4) cognitively unassociated sets: words of different form-classes that were judged not to be associated with a shared thematic concept. All of the different studies or conditions were followed by artificial words. The second experiment was similar to the first one except with different materials. The results measured by two modalities, one of them is oral modality and the second is written modality, showed that semantic clustering of words impede learning, on the other hand thematic clustering was more of a facilitator to learning. The artificial words were difficult to learn in semantically-clustered set than in the thematically-clustered set and the artificial words paired with thematic clustering were easier to learn than in the unassociated clustered set.

In another study following the steps of Tinkham (1997) to study the effect of semantic and thematic clustering of words, Hippner-Page (2000) conducted a study on third, fourth, fifth grade students. There were two experiments employed in the study, the first presented semantic clustering of lexical items and, the second presented thematic clustering of lexical items. Each group received instruction on 10 words by matching words to pictures. In the first treatment, students in each group practiced by filling in missing proper words from a list into the right position in sentences. In the second treatment, each group was given a different type of clustering. The results indicated that

both groups achieved better in either of the treatments thematic clustering or semantic clustering. Hippner-Page justified that by relating the results to the “task-learning effects” (Hippner-Page, 2000, p. 41), because both groups achieved better in the second treatment whether it was semantic or thematic clustering. Another reason was that “a student may already know some of the words in the semantic set, or theme, he/she was adding to a previous set instead of making a new set” (p. 42), for example a student may already know many words about the theme *clothes* and was asked to learn 10 new words, in this situation, it may be easier to learn since it is just adding some items to an already very well established inventory.

Al-Jabri (2005) conducted a study on 160 adult college students in English language department in a Saudi university. The study examined various methods of presentation of vocabulary to the subjects. The major goal of the study is to examine the effect of semantic clustering whether in related or unrelated sets using the methods of isolated vocabulary presentation or vocabulary in context, unrelated semantic set of words, semantically-related clustering and, finally thematically-related set. After having the subjects study the new words, immediate and delayed tests were employed to measure the effects of the types of clustering the words. The results showed that thematic clustering of words proved to be the most effective while the semantic clustering was the least effective way of presentation especially in lower proficiency levels in lower proficiency levels while higher proficiency levels the difference is not significant.

Some questions rose from previous research of TR versus SR or SU. One of the questions is the variety of subjects, differentiation among subjects in terms of proficiency

and age can be also a factor in determining the effectiveness of type of clustering in presentation.

Another question is the type of materials. The lexical items associations are based on different types of categories. There are associations based on coordinating and other associations are based synonyms and antonyms. The current study employed coordinating type of words association to represent the SR clustering. See chapter 3 for details.

To conclude, the topic of clustering words thematically versus semantically is a relatively new phase in the research for the best methods of presenting vocabulary to EFL/ESL learners either in textbooks or in pedagogical contexts. It is clear that teaching practitioners, textbooks developers, and researchers have assumed that clustering words semantically would lead to a better ground for learners to learn and acquire new lexical items in a new language. Their justification was mainly revolved around semantic clustering providing an organized method to the learners where they can have a sense of order that facilitate learning of new vocabulary.

But in light of the interference theory and distinctive hypothesis, another opposing perspective to the semantic clustering was established. Interference theory provides us with insights into how similarity can impede rather than facilitate the learning of new information, while the distinctive hypothesis provides insights into how differentiation within information can make them easily obtained and retrieved when needed. This leads researchers in the field of vocabulary to propose the opposite direction of semantic clustering; that is semantically-unrelated clustering of vocabulary.

Research in the fields of semantics, specifically semantic fields and semantic frames, proposed and gives information on how lexicons are stored in the human brain, as well as how lexicons can be described and perceived by humans. Besides the schema theory that goes along with the semantic frames theory, they explained how semantic information is structured. These theories explained that information is stored along with previously established knowledge of information to form an overall perception of surrounding environment.

Finally, several studies concerning the effectiveness of semantic clustering versus the use of semantically-unrelated words showed that it is harder for learners to acquire new vocabulary. Furthermore, a new phase of research which proposed that thematic clustering of words helps to facilitate the learning of new vocabulary, since this type of clustering is based more in cognitive relations rather than linguistic relations. This study will also examine the effectiveness of this hypothesis in order to reach a solid ground to make generalizations about this issue.

Based on the literature of the topic, this study seeks to answer the following questions:

1. *Is there a significant difference among SR clustering, SU clustering and TR clustering of vocabulary presented to EFL Arabic speaking learners?*
2. *What is the most effective way of presenting vocabulary to EFL Arabic speaking learners?*

and the research is based on also the following hypotheses:

1. *There is a significant difference among the types of clustering vocabulary to EFL learners.*

2. *The most effective way will be that TR clustering is the most effective way of vocabulary presentation, then SU clustering, and finally SR clustering is the least effective way of vocabulary presentation.*

The following chapter provides detailed descriptions of materials and methodology used to conduct the study. Based on the literature of studies and theoretical background related to the topic of the current study, the main goal is to investigate the effectiveness of the type of clustering on recalling new words by employing L2-L1 direction of translation. See Chapter 3 for more details.

Chapter III

Methodology

This chapter discusses the methodology of the study. The chapter includes detailed description of the setting where the study took place, subjects, materials, and the statistical procedures employed to analyze the data.

3-1: Setting

The study took place in Saudi Arabia in a leading higher education training institution. The institution main focus is to train both employees of the public sector in Saudi Arabia and new graduates of high school students.

One of the major departments of the institution is the English Language Center (ELC). The ELC English program is intensive, and it consists of four levels of English language. In each level, students have to go through eight weeks, 24 hours of English language classes including grammar, writing, speaking, listening and reading courses, besides Computer Assisted Language Learning (CALL) sessions.

The institution is equipped with the technology needed to have a successful language environment such as projectors, electronic boards and speakers for listening classes. The English instructors in the ELC are of different backgrounds. It includes Saudi instructors, native speakers from English speaking countries such USA and UK and other instructors who speak Arabic as their first language.

However, the ELC does not require a placement test for the newly admitted students, rather they depend on the students' averages in high school. Despite the fact that the admitted students take an admission test and it includes a section for English

language, these results do not determine the students' placement in the proper English language level in the ELC.

3-2: Subjects

Fifty-eight male new high school graduate subjects participated in the immediate test of the study, and in the delayed test the number decreased to 54. The subjects are admitted in the institute in order to pursue their studies in administrative fields such as banking, hospital records managements and statistics.

They are Saudi citizens speaking Arabic as their first language and their ages range from eighteen to twenty-six years old. They take the intensive English course in the ELC as a year required in order to continue in their majors later on in the institute. The subjects were randomly chosen to participate in the study and their level of English language in the ELC is advanced.

The study consists of two tests immediate and delayed, the total number of the participants in the immediate test is 58, while in the delayed test the number decreased to be 54. This is because some of the learners in the immediate could not attend the delayed test due to unknown excuses.

3-3: Materials

The study aims at investigating the effectiveness of three types of vocabulary clustering in vocabulary acquisition by Saudi Arabic-speaking learners in English as a foreign language (EFL) context. Thus, the study employed three lists of vocabulary in which each list represents a particular clustering.

The first list is *semantically unrelated* clustering (SU). The SU clustering list includes 15 selected nouns in which there is no semantic relationship among them. The

words were selected according to certain criterion. The major features of the SU words should be new to the subjects, and do not share semantic relationship. The list of words was provided with the Arabic equivalents. See Appendix I for the list.

The second list is *semantically related* clustering (SR). In order to have this type of word clustering, the study employed a list of 15 coordinate words under ‘animals’ as the headword of the list that share a common semantic relationship. Also, the words in the SR list share the same syntactic class that is nouns. The words in the list should be new to the learners and they were provided with the Arabic equivalents.

The third list is *thematically-related* clustering (TR). The TR list was selected randomly by an imaginative scene of a hospital and it contains words from various words classes, such as nouns, verbs and adverbs. After listing Arabic words that describe a scene in a hospital, Arabic-English Al Mawrid dictionary by Baalbaki and Baalbaki (2010) was used to find the equivalents in English. In addition to that, Black’s Medical Dictionary by Marcovitch (2005) was consulted for the accuracy of the medical terms used in the list. The words selected were basic words that are often familiar to non-professional individuals in hospital scenes.

The final step is to check the validity and reliability of the materials in measuring the effectiveness of vocabulary clustering in the experiment. The lists of the words were given to a total of 23 Saudi students who are studying in the USA to investigate their unfamiliarity with the English words presented in the lists. The Saudi students were randomly chosen according to certain criterion. Their English proficiency is assumed to be advanced level that is by choosing students who have already finished pre-college intensive English programs and already pursuing their academic studies in their

universities. The second part is by presenting them the words with the Arabic translation to check their familiarity with the words in their L1.

To sum up, the lists proved to be new to the students as English words, and the total number of the students approved their familiarity with the words in their L1.

3-4: Method

The data of the study was collected by administering an immediate test and a delayed test. Three groups of students in advanced level were the subjects of the study. The researcher contacted the management of the ELC of the academic institution in Saudi Arabia and acquired the necessary permissions to conduct the study and the permission from Colorado State University Institutional Reviewing Board (IRB).

Three instructors volunteered to administer the tests on the students. The students were divided into three groups: 1) semantically-related clustering group SR, 2) semantically unrelated clustering group SU and 3) thematically related clustering group TR.

The instructors distributed the consent forms to the subjects and read aloud to them the recruitment statement to participate in the study. After the subjects agreed to participate in the study, each subject received the list of words each group according to their type of clustering.

The subjects had two minutes for each word in the list to study carefully using every possible strategy to learn new vocabulary, and the instructors had informed the subjects that they will be having an immediate recall test and a delayed recall test in a week on the same lexical items in the list. The total time for each group is $15 * 2 = 30$ minutes.

After studying the words in the list, the subjects had to give the answers in L2-L1 direction of translation. The translation method was used because it “has the advantages of being quick, simple, and easily understood” (Nation, 2001, p. 86). Also, Liao (2006) concludes that learners believe that translation helps them acquire the necessary skills in the different language that they need. Moreover, Sunderman and Kroll (2006) state that L1 is active during second language processing from a psycholinguistic perspective. Considering the importance of the L1 in second language processing, the translation method of measuring vocabulary acquisition is employed in the study to figure out which presentation method is the most effective.

3-4: Data scoring procedures

In each type of clustering list, there are fifteen lexical items. So, the total score in every list is 15 points. In both the immediate test and the delayed test, every participant has to provide the Arabic equivalent for each lexical item. Each correct answer of a lexical item is considered as one point.

Since the study is concerned with three different types of treatments, a One-Way Analysis of Variance (ANOVA) was used in order to measure the effectiveness of the three different types of clustering in vocabulary presentation. The ANOVA is used to compare three or more testing parameters, in that it tests the claims concerning these parameters (Bluman, 2008). The ANOVA can determine if there is a statistical significant difference between three or more groups. Thus, we can infer from the results on ANOVA test if there is a significant difference between the three types of clustering.

In case that the ANOVA test reveals that there is a significant difference between the groups, a post-hoc can determine the difference among groups in details, and show it

one or more groups are different than the others. There are different types of post-hoc tests, but in this study Fisher's Least Significant Difference (LSD) is used to determine which group or groups are different. LSD test is used because it is the most powerful post-hoc test recommended if there are only three means in the dependent variable (Howell, 2002). The ANOVA test and the LSD post-hoc test were to be run on both the immediate test and the delayed test.

3-5: Research questions and hypotheses

The research questions are as following:

- 1- Is there a significant difference among SR clustering, SU clustering and TR clustering of presenting vocabulary to EFL Arabic speaking learners?
- 2- What is the most effective way of presentating vocabulary to EFL Arabic speaking learners?

The hypotheses of the study are as following:

- 1- There is a significant difference among the types of vocabulary clustering to EFL learners.
- 2- The most effective way will be the TR clustering, then SU clustering, and finally SR clustering is the least effective method of vocabulary presentation.

Conclusion

The goal of the study was to test the hypothesis that clustering vocabulary in three different ways would yield different results regarding the effectiveness of presentation in vocabulary acquisition. The experiment could lead to answer important questions

regarding vocabulary presentation in pedagogical contexts and in curriculum design as a major factor in language teaching success.

Chapter IV

Results

In this chapter, the findings and results of the data will be discussed in detail. Descriptive statistics along with a One-Way ANOVA test were run on the data in order to test the effect of the type of clustering in vocabulary acquisition. The statistical tests were analyzed by IBM Statistical Package for the Social Sciences (SPSS). The first part of the chapter will provide the results of the immediate test, and then the second part will provide the delayed test results.

4-1: Immediate test results

Three groups of participants were tested on three types of clustering. The first group is SU group, the second group is SR group and the third group is TR group. The first group SU scores showed that the group achieved ($M = 12.05$, $SD = 2.34$) and a total number of subjects is (19).

The second group SR scores showed the following statistics, ($M = 12.36$, $SD = 4.04$) and a total number of subjects is ($n = 22$). The descriptive results here showed that the mean score is slightly larger than the SU group, but the standard deviation is also relatively larger. Although the mean score is larger, still the standard deviation can lead to some insights into the effectiveness SU clustering over the SR clustering because a larger standard deviation means a large variation in the data.

The third group TR results showed the following statistics, ($M = 11.71$, $SD = 3.14$) and a total number of ($n = 17$) subjects. The TR group showed that it is the least

effective but considering the total number of subjects may have some effect on the mean of scores. See Table (1).

Table (1): Descriptive Statistics of the immediate test results:

Group	Number of Subjects	Mean of Scores	Standard Deviation	Minimum Score	Maximum Score
SU	19	12.05	2.34	8	15
SR	22	12.36	4.04	2	15
TR	17	11.71	3.14	4	15
Total	58	12.06	3.25	2	15

Figure (1) showed that SR group had the largest variation, and that 50 % of the subjects successfully recalled 15 words from the list, while the TR group had the lowest median of the three groups. Furthermore, the SR group had the lowest value in the data among the three groups. The SU group showed a consistency in terms of scores as showed in its symmetric shape.

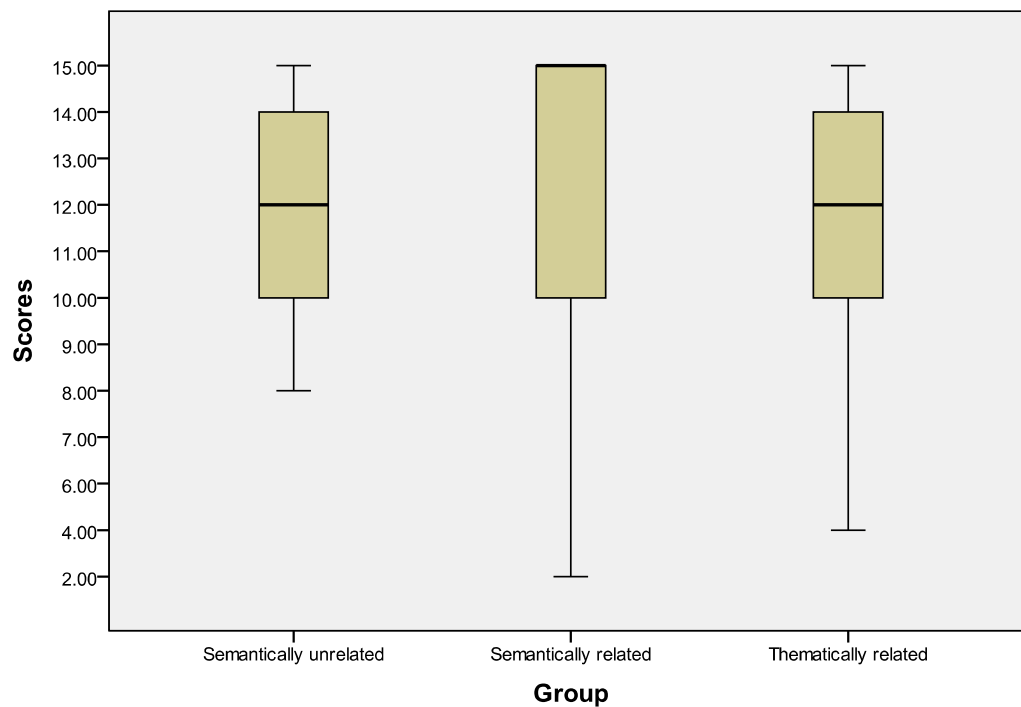


Figure (1): Box-plot of immediate test results:

In order to determine whether there was a statistically significant difference among the three groups; A One-Way ANOVA test was run. Since the ANOVA tests the assumptions regarding hypothesis, the study considered the following *Null Hypothesis* and *Alternative Hypothesis*:

H_0 : There is no significant difference among the three methods of presentation.

H_1 : at least one method is different from the other methods.

The ANOVA test of the hypothesis regarding the immediate test scores showed that there was no statistically significant effect of the type of clustering on vocabulary acquisition, $F(2, 55) = .191, p > .05$, at alpha level ($\alpha = .05$). Thus, the null hypothesis which states that all methods are equal is retained; therefore there was no effect of the type of clustering on vocabulary acquisition. See Table 2 for the ANOVA results.

Table (2): ANOVA results of the Immediate Test.

	Sum of squares	DF	Mean Square	F	Sig.
Between Groups	4.156	2	2.078	.191	.827
Within Groups	599.568	55	10.901		
Total	603.724	57			

4-2: Delayed test results

The results of this section shed light on data collected from the delayed test of the effects of vocabulary type of categorization on acquisition. Also, the same statistical tests were applied on the delayed test scores to detect if there is any effect of vocabulary clustering on the acquisition process of new lexical items.

Table 3 shows the descriptive statistics of the delayed test. First, the results of the SU group shows that they achieve ($M = 10.00$, $SD = 2.87$) and a total number of subjects is ($n = 18$).

Second, the SR group results shows that the group achieved ($M = 11.25$, $SD = 3.80$) and a total number of subjects is ($n = 22$). The results shows here that the SR group achieved better in the delayed test than the SU group.

Third, the TR group results shows that they achieved ($M = 7.44$, $SD = 4.16$) and a total number of subjects is ($n = 16$). The descriptive statistics of the results shows that the TR group achieved the lowest mean scores while the best achievement goes to SR group.

Table (3): Descriptive statistics of the delayed test.

Group	Number of Subjects	Mean of Scores	Standard Deviation	Minimum Score	Maximum Score
SU	18	10.00	2.87	6	15
SR	22	11.25	3.80	5	15
TR	16	7.44	4.16	3	15
Total	58	9.70	3.90	3	15

Figure (2) showed the box-plot that shows a visual description of the delayed test results. The box-plot showed that the TR group had the lowest median, while the SR group has the highest. Moreover, 50 % of the SR group achieved score 14, which is considered a high score compared to the other groups. There are clear variations in the distribution of the data among the three groups. The SR group showed the highest variation in scores, followed by the TR, then the SU. As it is shown in the box-plot, the SU group has shown consistency in both the immediate test and the delayed test which a symmetric shape in both tests.

In the delayed test, the TR group achieved the lowest value of scores, while the SU had 6 as the lowest value. The variation is clear among the three groups, which can be assessed for more accuracy by the ANOVA to determine whether there is a statistically significant difference among the three different methods.

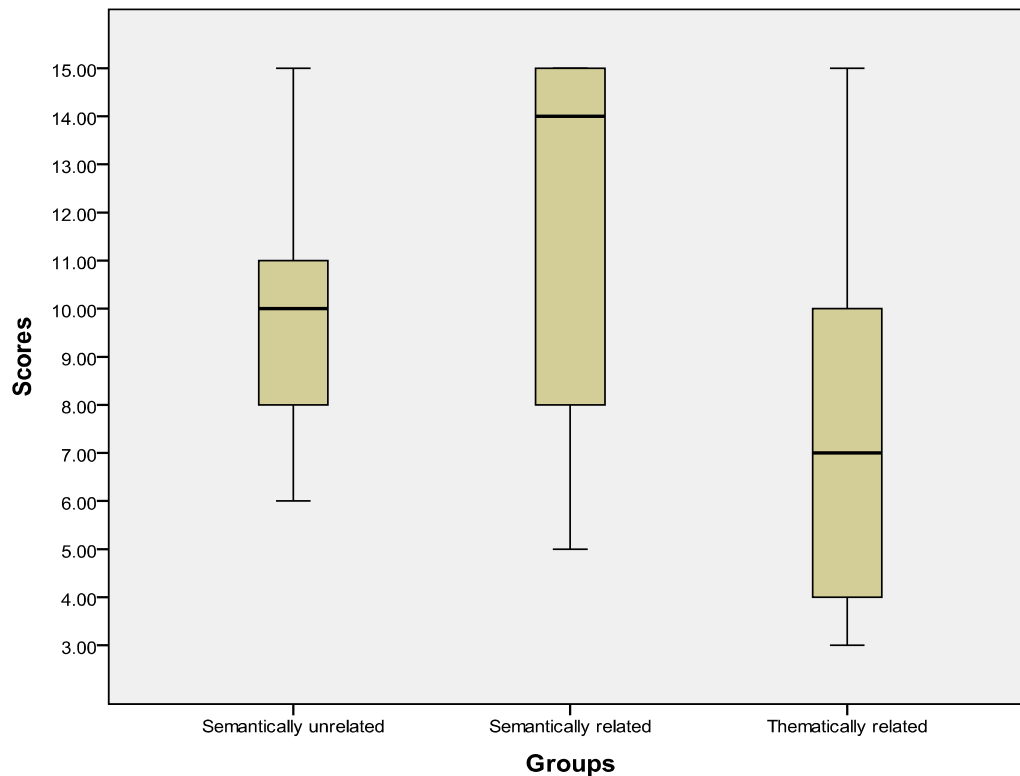


Figure (2): Box-plot for the delayed test.

Further statistical analysis by using ANOVA to test the hypothesis was run to detect if there a significant difference among the groups. See Table 4.

Table (4) : ANOVA Results of the Delayed Test.

	Sum of squares	DF	Mean Square	F	Sig.
Between Groups	131.572	2	65.786	4.98	.011
Within Groups	673.688	51	13.210		
Total	805.259	53	805.259		

ANOVA test showed that there is a significant difference among groups, $F(2, 51) = 4.98, p < .05$, at alpha level ($\alpha = .05$). Consequently, the null hypothesis that there is no significant difference between the groups is rejected and the alternative hypothesis that at least one group is different is retained. In order to test which group or groups have the most important effect on the acquisition scores, LSD post-hoc test was employed to identify the detailed difference among groups. Table 5 shows the results of the LSD post-hoc test used to detect the differences among the three groups.

Table (5): LSD post-hoc for Delayed Test

(I) Groups	(J) Groups	Mean Difference (I-J)	Std. Error	Sig.	95% confidence interval	
					Lower bound	Upper Bound
SU	SR	-1.25000	1.18082	.295	-3.6206	1.1206
	TR	2.56250*	1.24878	.045	.0555	5.0695
SR	SU	1.25000	1.18082	.295	-1.1206	3.6206
	TR	3.81250*	1.21905	.003	1.3652	6.2598
TR	SU	-2.56250*	1.24878	.045	-5.0695	-.0555
	SR	-3.81250*	1.21905	.003	-6.2598	-1.3652

* The mean difference is significant at the 0.05 level.

The post-hoc test showed, in multiple paired comparisons, that there is no significant difference between SR clustering group and SU, ($P > .05$), at alpha level ($\alpha = .05$). On the other hand, comparing TR clustering group to SU there is a significant difference in favor of SU group, ($p < .05$), however the difference is relatively small but statistically significant.

Moreover, comparing SR and TR groups showed that there is a significant difference, ($p < .05$). This leads us to assume that thematic clustering is the least effective of vocabulary presentation to EFL learners by using translation method.

The Eta squared for the relationship can provide estimates of how much the scores the study obtained are attributed to the effect of the methods of clustering vocabulary. Eta squared for the delayed test is $\eta^2 = .16$, which means that (16%) of the variation in the scores of the three groups is attributable to the clustering method. However, $\eta^2 = .16$ means that the association between vocabulary clustering and vocabulary acquisition is relatively small but the statistical test of the difference is significant.

To summarize, the results showed no significant difference among the three types of clustering in the immediate test. On the other hand, a week-late delayed test showed that there was no significant difference between SR and SU clustering, but the significance appeared in that the TR clustering showed less effectiveness compared to SR and SU.

In the following chapter, the results showed more analysis of the results compared to other studies related to the topic. Moreover, the chapter discusses the results along with pedagogical implications, limitations of the study, and suggestions for future research.

Chapter V

Discussion and Conclusion

This chapter discusses the results in light of previous research in the topic. Also, it provides the answers for the research questions and discussion of the hypotheses. It includes limitations and suggestions for future research. Finally, a conclusion is presented to sum up the work in general.

The results and the statistical analysis of the data show, in the immediate test, that there is no statistically significant difference among the three types of clustering vocabulary to adult EFL Arabic-speaking Saudi learners. This leads to the assumption that in terms of immediate testing of vocabulary acquisition it is not clear if we can have an important effect of vocabulary clustering in presentation of new words.

5-1: Interpretation of the research questions

To answer the first question of the study, the results showed that there was a significant effect of vocabulary presentation method on recalling words.

Surprisingly, the study showed, contrary to Al-Jabri (2005) and Tinkham (1997) which supported TR clustering of words, that TR clustering is the least effective compared to SU and SR clustering. The study also reveals contrary results to Hippner-Page (2000). Hippner-Page showed that both methods of SR and TR can be equally effective in gaining vocabulary for learners of third, fourth and fifth grades.

However, there was no statistically significant difference between the results of SR and SU clustering which is contrary to Hashemi and Gowdasiaei (2005) which suggests that SR grouping is significantly more effective than SU grouping. This also

contradicts (Altarriba & Mathis, 1997; Erten & Tekin, 2008; Finkbeiner & Nicol, 2003; Papathanasiou, 2009; T. Tinkham, 1993; Waring, 1997). Therefore, TR clustering is weak in terms of using L2-L1 translation method of vocabulary teaching for Advanced Arabic-speaking learners.

Comparing the results to Al-Jabri (2005), which has similarities with the current study in some points, Al-Jabri immediate test results for level 1 showed that in the immediate test the learners achieved better in TR clustering as compared to SR set, while the SU versus TR was not significantly different.

For the Level 2 in Al-Jabri, the results showed that there is no significant effect of vocabulary clustering on acquisition. In Level 3 learners, the results showed that TR and SU clustering were similar but SR was the least effective. In his study the results showed contradicting results as which method is the best because of proficiency level variations. Compared to the current study, Al-Jabri used only six words in each list which is smaller than the lists in this study but there is a larger number of subjects which can lead some insights into the effectiveness of the thematic grouping.

Higa (1963) study showed that it is not likely interference could take place in coordinating lists which goes in accord with this study since the grouping of SR was entirely coordinates of animals. Also, Nation (2000) suggested that presenting coordinating words (words that share a common headword) is very helpful to acquire new vocabulary.

So, to answer the second question of the study, yes it happened that TR clustering is the weakest method of presenting vocabulary to learners while SR and SU are equally effective but better than TR clustering.

5-2: General discussion of the results

The overall purpose of the study was to examine which method is the most effective for vocabulary presentation using L2-L1 translation method for advanced Arabic-speaking adult learners. Surprisingly, the results showed that TR clustering is the least effective while SU and SR are better to gain new vocabulary.

The studies concerned about the thematic clustering are relatively small in number and they showed contradicting results. While there are larger numbers concerning SR and SU methods of presentation. Thus, there is a need for further research on the topic in order to show the results from different perspectives.

The findings of this study revealed the importance to define thematic clustering more clearly since the difference between semantic relations and thematic are partially vague and needs more clear-cut defining.

Generally, the difference is relatively small, compared to other studies in the topic, between the three types of clustering, and several factors can determine why there is a difference between SR and SU on one side and TR on the other side. Familiarity with the topic can be an important factor in determining vocabulary gain in this test. For the SR list, the words are connected to compose coordinates of animals, which is usually a familiar topic to learners.

On the other hand, the SU list is a random selection of unrelated words. While the TR grouping seems to be the least familiar to learners, despite the fact that most of the reliability and validity test subjects showed familiarity with the topic in their L1. However, this can be an important factor in determining the variance in the results, and it

is one of important factors to consider when developing lists of words in the research related to this topic.

Tinkham (1997), for instance, was based on artificial words which do not represent natural settings of real language. In Al-Jabri (2005) the study showed contradicting results between the different levels of learners, which revealed that as level of proficiency increased the need for making the difference in categorization of words decreased.

In view of that, levels of proficiency can have an important role in determining which method is effective as well as learners' age levels such as children and adults.

Regarding the semantic and lexical parts of the study, measuring the association of words can be divided into different levels. Coordinating words are one part, on the other hand, superordinates and subordinates are also level of associations in words lists (Nation, 2000).

5-3: Pedagogical implications

It is important to find effective methods and strategies of presenting new vocabulary to learners of languages in general. Thus, practitioners of language pedagogy should find the best methods in order to facilitate the process of acquisition of vocabulary and language skills as well.

Based on the findings of this study, arranging and organizing vocabulary is important in many different ways. In this study, SR clustering proved to be the most effective especially in terms of coordinate sets. Finding proper ways to present words in SR clustering can be an effective method towards achieving better results in language acquisition.

SU is equally important in order to increase the learners' ability to acquire and learn. However, it is rare to find in textbooks words that are not related directly or indirectly to certain topics. However, in terms of enriching learners' vocabulary with essential words lists such as the 3000-defining-words are included in Longman Dictionary of Contemporary English and in other dictionaries to have the subjects increase their vocabulary size which can affect their overall vocabulary knowledge and skills.

For language teachers, dictionary developers, and curriculum designers, TR method can be an important factor in increasing learners' vocabulary size. For example, there is Arabic-English Thematic Lexicon by (Newman, 2007) as an example of thematic dictionary for English language learners. It can be useful to develop such materials in textbooks, pedagogical practice and dictionaries that refer to materials in such a thematic organization in order to facilitate learning.

However, based on findings from other studies, as the level of proficiency increases, it is less likely categorization of vocabulary into the three types of clustering can be effective for teaching.

5-4: Limitations of the study

There are some limitations of the study which can be concerned in the future research. First, the sample size of the study is relatively small which can lead some issues regarding the effect size of the sample. Also, the variations in the total number of participants in each group could have been a factor in determining the results of the study since there is at least one member in each group of participants that could not attend the delayed test.

Second, the proficiency levels of the students could not be tested formally by using data from proficiency tests such TOEFL or ILETS. Furthermore, the institution where the study was conducted does not organize students according to their proficiency levels.

Third, the study was conducted only on advanced level students which can be a factor in finding a particular pattern of results than if there was other proficiency levels included. Thus, testing various levels of students and having proficiency level data can lead to some insights into the results and interpretation of the study.

5-5: Suggestions for future research

There are many perspectives and issues that can be addressed in future research in order to discover a full picture and generalizations on the topic.

Researchers can pursue research by including different levels of proficiency levels and age in order to find out about the effects of clustering vocabulary on extended grounds. As some studies showed (e.g. Al-Jabri (2005), Papathanasiou (2009) that proficiency levels and age variations can lead to different results.

Furthermore, the method of measuring vocabulary acquisition can be achieved by many different tools. The current study employed L2-L1 translation method in order to measure vocabulary acquisition; but other methods can be used. Aspects of word knowledge and receptive/productive elements in vocabulary can be useful measurement tools in order to test various aspects of word knowledge.

Using pictures, words definitions, contexts, and other methods during vocabulary presentation can also lead to important insights into the topic. Additionally, testing the receptive/productive aspects by creating authentic or real situations where learners can

use newly-learned words can be an important element to answer questions regarding the research in this field.

5-6: Conclusion

The current study revealed various points in the field of vocabulary acquisition in ESL/EFL discipline. The main finding of the study showed that TR clustering is the weakest method of vocabulary presentation to Arabic –speaking EFL learners compared to SR and SU clustering. Nevertheless, based on findings of Al-Jabri (2005), it showed a significant gain in vocabulary using the translation method which is a common method of vocabulary teaching especially in EFL contexts where often the teachers share a common language with learners.

In lights of previous research in topic and the theoretical work underlining it, the research showed that many factors lead to the acquisition of words. The methods of clustering vocabulary are important factors, but the strategies of delivering new words to learners can play a major role in the acquisition process.

This research can be expanded by adding proficiency levels, age factor, and different strategies of delivering in order to have a clear picture of how lexicons are processed by ESL/EFL learners. We can figure out that interference can be a different a factor in case of bilingualism.

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Appendix I: The lists of words:

Part 1

Semantically-related list:

1- Raven	غراب
2- Ostrich	نعامة
3- Hare	انثى الارنب
4- Ram	الماعز
5- Skunk	الضربان
6- Jackal	ابن اوى
7- Walrus	حصان البحر
8- Finch	عصفور
9- Oryx	المها
10- Hawk	صقر
11- Antelope	البقر الوحشي
12- Chipmunk	سنجاب
13- Rhinoceros	وحيد القرن
14- Mule	البغل
15- Seal	الفقمة

Part 2

Semantically-unrelated set:

1- Hamper	يوم السبت
2- Pismire	نملة
3- Portico	مدخل ذو اعمدة
4- Pothole	اخدود
5- Confectioner	حلواني
6- Aries	برج الحمل
7- Chancellor	مستشار
8- Alluvium	وحل
9- Affidavit	شهادة محكمة
10- Abyss	هاوية
11- Cherub	طفل جميل
12- Batean	قارب ركاب
13- Capsheaf	متطرف
14- Bollix	خليط
15- Doty	ناعم

Part 3

Thematically-related set:

1- Bandage	ضمادة
2- Infirmary	مستشفى
3- Alleviate	يسكن ، يخفف الالم
4- Drip	يضع المغذية في الوريد
5- Thorough	مكثف
6- Consent	يسمح بـ، يوافق
7- Sanitize	يخدر
8- Suture	خيطة الجراحة
9- Balm	مرهم عطري
10- Convalescence	نقاهاة
11- Incise	يشق
12- Syringe	يحقن
13- Debilitated	مريض
14- Nourish	يغذي
15- Wail	يبكي

Appendix II: Tests

Part 1

Semantically related test

Please give the Arabic translation for the following words:

1- Raven	
2- Ostrich	
3- Hare	
4- Ram	
5- Skunk	
6- Jackal	
7- Walrus	
8- Finch	
9- Oryx	
10- Hawk	
11- Antelope	
12- Chipmunk	
13- Rhinoceros	
14- Mule	
15- Seal	

Part 2

Semantically unrelated test.

Please give the Arabic translation for the following words:

1- Hamper	
2- Pismire	
3- Portico	
4- Pothole	
5- Confectioner	
6- Aries	
7- Chancellor	
8- Alluvium	
9- Affidavit	
10- Abyss	
11- Cherub	
12- Batean	
13- Capsheaf	
14- Bollix	
15- Doty	

Part 3:

Thematically-related test.

Please give the Arabic translation for the following words:

1- Bandage	
2- Infirmary	
3- Alleviate	
4- Drip	
5- Thorough	
6- Consent	
7- Sanitize	
8- Suture	
9- Balm	
10- Convalescence	
11- Incise	
12- Syringe	
13- Debilitated	
14- Nourish	
15- Wail	