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# **Vocabulary Recognition and Memorization: A Comparison of Two Methods**

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## **Abstract**

The present study investigates which of two vocabulary learning methods best promotes long-term retention of the meaning and spelling of words. The first method is rote learning, i.e. learning by word lists, which requires pupils to memorize the meaning of new words by L1 translation. The second method is learning by sentence writing, which requires pupils to memorize new words by making up their own sentences in order to establish links between old and new knowledge.

16 pupils took part in the experiment; all were approximately 11 years old. The participants were randomly assigned to two groups. All the participants were given one receptive and one productive recall test, both in the immediate and delayed post-tests. The result demonstrates that pupils who learn words using word lists only remember words in the short-term retention, while the sentence writing method results in greater long-term retention.

**Key words:** vocabulary learning; learning by word lists; learning by sentence writing; retention

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## 1. Introduction

Little can be conveyed if one does not know grammar, but nothing can be conveyed if one does not know any vocabulary (Wilkins 1972: 111). The importance of vocabulary learning can be seen. Listening, speaking, reading and writing vocabulary items can help pupils learn new words. Vocabulary knowledge is an essential element of language learning. Thus, in the last 25 years, vocabulary learning has received increasing focus in the field of second language acquisition. The vast majority of students and teachers believe that vocabulary learning plays an important role in second language acquisition. However, it is not easy to acquire a sufficient number of words. Nation (2006), for example, claims that the base line of learning L2 words is 2000 word families, and if the learner wishes to read newspapers or novels, s/he must know 8000 to 9000 word families (2006: 59-60). This study has investigated two ways to learn meaning and form (spelling) of words. A comparison has been made between learning by word lists and sentence writing (semantic elaboration). Although a number of studies demonstrate that learning by word lists is an effective way of learning vocabulary (Ehri and Wilce's, 1980; Randall, 2007; Fitzpatrick, 2008), sentence writing promotes better long-term retention of words (Wittrock, 1974; Angela, 1998; Webb, 2005).

Currently, learning vocabulary in context is attracting considerable attention (see, for example, Oxford and Scarcella, 1994, and McCarthy, 1990). Learning vocabulary out of context is gradually losing favour (Milton 2009: 229). Little attention has been given to learning vocabulary by word lists since the 1970s. However, sentence writing has been mentioned frequently in recent years, and many theories have been promoted to explain why sentence writing could promote learning: Cases I, Wittrock's (1974) and Slamecka and Graf's (1978) "generative model", and Cases II, Craik and Lockhart's (1972) "depth of processing hypothesis". The "involvement load hypothesis", proposed by Laufer and Hulstijn (2001), is a further example. Sentence writing is usually studied independently the two methods are seldom compared. This study is an exception as it investigates the effect of learning by word lists and learning by sentence writing on memorizing the meaning and form of words.

In this study, the processes of learning new words are discussed first, followed by the factors affecting word learning and what “knowing a word” actually entails. Some theories about memory and its mechanism are discussed in a detailed way, and then studies and analyses which are related to learning words by word lists and sentence writing are discussed, respectively.

### ***1.1 Aim***

The aim of the present investigation is to compare two systems of learning: learning by word lists, i.e. receptive learning, and sentence writing, i.e. productive learning in terms of their potential to promote the longer retention of meaning and spelling of words. The methods are compared in terms of the scores from two post-tests after two different ways of learning new words.

### ***1.2 Material and Method***

The primary material in this investigation is a learning paper and a test paper (see Appendix 1); the participants took the test after a self-learning period. More information about the participants and the target words memorized are demonstrated in the following in a more detailed way.

#### **1.2.1 Participants**

The participants were sixteen primary school ESL learners from the same language background (Swedish) in Kristianstad. The participants were eleven years old pupils, and they were in the same grade. The pupils were randomly assigned to two groups, each group has eight pupils. Hence no differences in English proficiency were expected between the pupils in the two groups (Group A and B). A pre-test was given to all participants one week before the learning session. Besides, all the participants are anonymous.

#### **1.2.2 Selection of words**

In this experiment, six words, five nouns and one verb (those words were selected after the pre-test), were taken from Cambridge Young Learners English Test (CYLET) Vocabulary list. There are three reasons to choose CYLET to test pupils. First, CYLET vocabulary list is suitable for learners between the ages of 7 and 12 (Atay & Kurt 2006); second, Nagy and Anderson (1984) claimed that people could learn almost 8 words per day from context; word acquisition is not a

once-in-a-while thing (1984: 304); third, nouns and verb were used here because nouns and verbs are the most common components of speech in everyday communication (Webb 2005: 37). Read (2000) argues that it is better to focus on nouns and verbs and other content words when doing research on vocabulary (2000: 18).

The pre-test was given to the participants one week prior to the learning session, because Hulstijn (2003) argues that a pre-test carried out at least one week before the experimental treatment will not influence the investigation process (2003: 370). Six unfamiliar words were picked out from the pre-test, and those six words were used by Group A and B in the learning session. The six target words in the experiment were: *course, desk, fork, lake, note, pet*. All were listed in a paper, English target words to the left and L1 translation to the right.

### **1.2.3 Tests**

Two tests were given to both groups (Group A and Group B): an active (receptive) and a passive (productive) recall post-test. The criterion for active recall test: to recall of the meaning (L1 translation) of the L2 word without a context. The criterion for the passive recall test is the other way around (translate L1 word into L2). Both of the tests contained six target words, in English and Swedish, respectively. The instruction was printed on the top of the test papers: “Translate the following English words into Swedish” and “Translate the following Swedish words into English”. The order of the words differed from the order of the word list used in the learning session.

In the tests, in order to avoid a serial learning effect, keep changing the order of the words in the pack. This will avoid serial learning where the meaning of one word reminds you of the meaning of the next word in the pack (Schmitt 2002: 40). In order not to overestimate the retention is the reason to change the order of the word list, i.e. pupils may recite the L1 translation on the right side without looking at the L2 words to the left if the word list used in the test paper has the same list order as the word list used in the learning paper. In that case, the pupils will perhaps write down the L1 translation in their recited order instead of recognizing the words and giving the translation. For example, *course, desk, lake*, and the pupils will just recite the L1 translation in

this order. If the words are listed in a different order, for example, *lake, course, desk*, the pupils will probably not be able to recognize them.

### **1.2.4 Procedure**

The study has a learning session followed by an immediate post-test and an unannounced delayed post-test which is carried out two weeks later. Pupils were randomly assigned to one of the two groups. The experiment took place during the regular English classes.

#### **Pre-test**

A pre-test was given to the participants (Group A and B) one week prior to the learning session to avoid generating any memory traces. All the participants were given a test, that is, they were given 40 words to see how many words they could recognize, and provide the meaning of those words. The target words were not taught previously, and those words do not appear in their current text book. All the participants were given 15 minutes to finish the test.

#### **Learning session**

The words lists used in the class were prepared by the author, and were distributed at the beginning of the learning session. The word lists were collected before the post-test. For Group A, they were required to learn the word list only, writing sentences was not allowed. 10 minutes were allowed for learning the words, that is, about one and half minutes per word when learning the words list, according to the experiment carried out by Jan-Arjen Mondria and Boukje Wiersma (2004). For Group B, pupils were required to make up sentences by using target words on the paper. 10 minutes was allowed for learning the words and using the target words to make up sentences.

#### **Post-tests**

The participants received two vocabulary post-tests: one immediately after the learning session and the other two weeks later. Besides, “the bound between short-term memory and relative long-term memory was considered as a week according to the Forgetting Curve” (Baddeley et al. 2009). The purpose of the study devises two post-tests is to test whether the two different

vocabulary learning ways have different effect on retention (duration). The immediate post-test took 4 minutes, as did the delayed post-test. Questionnaires have been given after each post-test.

## **2. Previous Research / Theoretical Background**

In this part, some theoretical background of learning by word list and learning by sentence writing will be introduced in a detailed way. Firstly, the process of vocabulary learning and factors affecting word learning will be introduced. Secondly, some theories related to the memory will be presented. Thirdly, some theories and previous researches which related to learning by word list and learning by sentence writing will be discussed.

### **2.1 Vocabulary in language learning**

Learners do not usually memorize a new word as soon as they first meet the word. Memorizing a new word requires a process. Nation and Gu (2007) define this process in five stages (Kersten 2010: 63): encountering new words; getting the word form; getting the word meaning; consolidating word form and meaning in memory; using the word.

The process list above indicates stages in a general process of learning vocabulary. When learning vocabulary, learners often adopt different vocabulary strategies. This study will focus on the fourth step in vocabulary learning as identified above. Some strategies for consolidating words will be demonstrated in the following section.

### **2.2 Factors affecting word learning**

Pronounceability, orthography, length, morphology, synformy, grammar, and semantic features of the word are seven factors that affect word learning (Schmitt & McCarthy 1997):

Pronounceability refers to English sound system, English writing is a recording of sound system. A researcher carries out an experiment and finds that, if one can pronounce a word correctly, then s/he can spell the word correctly (Rodgers 1969: 329). Orthography, the correct spelling of the word, and a different L1 writing system will affect L2 orthography. Concerning length, there is no conclusive results that show that the length of a word will affect the acquisition of it.

Morphology: a word will be more difficult to learn if the word has a more complex morphology, such as irregularity of plural, and gender of inanimate nouns (Schmitt & McCarthy 1997).

Synformy: learners confuse words that sound or look alike (Schmitt & McCarthy 1997).

Grammar: grammatical categories, such as nouns, adverbs, verbs and adjectives are difficult to learn. Semantic features of the word: semantic properties include abstractness, and register restriction; idiomaticity and multiplicity of meaning are said to affect the learning of words (Schmitt & McCarthy 1997).

## **2.3 Definition of “knowing a word”**

Different researchers give different definitions of how to “know a word”. Kersten (2010) defines knowing a word as including knowing its form and meaning (2010: 52). Nation (2001) defines “knowing a word” from receptive and productive knowledge. Besides, active vocabulary knowledge and passive vocabulary knowledge are often distinguished as receptive and productive knowledge (Kersten 2010: 53). Word knowledge includes many components: the word’s pronunciation, spelling, morphology, syntax, meaning, lexical relations and so on (Nation 2001: 33). However, some researchers contend that the knowledge of the form–meaning relation is the most important component of word knowledge (Laufer & Girsai 2008). To define the form—meaning relation in a more detailed way is the ability to retrieve the meaning of a given word form, and the ability to retrieve the word form of a given concept (Laufer & Girsai 2008). Both recall of meaning and recall of form will be tested in this study by active and passive recall tests. The active and passive recall test, also called receptive and productive test, has also been studied by many other researchers (Mondria & Wiersma 2004)

### **2.3.1 Linking meaning and form**

No matter how learners access the meaning of new words, they must consolidate the memory of words’ form-meaning pair. Conscious and strategic processes should be used to facilitate the memory process, so some vocabulary learning strategies are proposed as I will presented in the following part (Schmitt & McCarthy, 1997). Bower and Winzenz (1970) have subjects do a vocabulary learning task which contains 15 words under one of four conditions (Bower & Winzenz, 1970):

- 1) Repetition: subjects were asked to verbally rehearse each pair (form-meaning pair).
- 2) Sentence reading: subjects observed each pair of words in a simple sentence, and read the sentence.

3) Sentence generation: subjects were asked to make up their own sentences by using target words.

4) Imagery: subjects were asked to see the picture or image of target words.

The meaning recall results in four conditions are different: Repetition 5.6, Sentence Reading 8.2, Sentence Generation 11.5, and Imagery 13.1. From this experiment, imagery and semantic-mnemonic strategies are proved as more effective in long-term L1 pair-associate learning.

Neglecting the L1 will lead to ‘burying your head in the sand and hoping that effortless acquisition will take place in time’ (James 2005: 11). Just as Laufer and Girsai (2008) point out “there is indeed a place for contrastive analysis and translation activities in L2 teaching” based on considerable evidence from grammar studies. This thesis focuses on translation (L1 to L2, L2 to L1) to evaluate whether pupils know or do not know the meaning of the selected words (2008: 712).

## **2.4 Vocabulary learning strategies (VLS)**

A number of attempts have been made to propose a comprehensive taxonomy of vocabulary learning strategies. Schmitt (1997) developed a vocabulary learning strategy (VLS) taxonomy on the basis of the five stages (mentioned in section 2.1), but he sorted all the learning strategies into two main categories: strategies for discovering and consolidating a word. Those two categories include five groupings: determination, social strategy, memory strategy, cognitive and metacognitive strategies (1997: 142-9). According to Schmitt (1997), those five groupings will be adopted either in discovering and consolidating a word.

Two strategies are discussed in the present study: Learning new words from word lists, and learning new words through using the words in sentences. The former strategy can be classified as cognitive; and the latter is related to memory.

## **2.5 Cognitive perspective on L2 vocabulary learning**

According to Nation and Gu (2007), vocabulary learning requires memory, processing, storing, and using L2 words in productive ways (2007, 85). Rehearsal and elaboration are two ways to facilitate recall (Baddeley 1997: 116-19). In the present study, learning by word lists is the rote

rehearsal learning style, and sentence writing is semantic elaboration learning style, and those two learning styles will be discussed from a cognitive perspective, and this will be discussed in detail in 2.5.2 section.

### 2.5.1 Memory and its mechanisms

Learners can use many strategies to promote memory of vocabulary, as already established (see Schmitt, 1997). Memory refers to the mental processes of retaining information for later use and retrieving (R. Loftus & F. Loftus 1976). Atkinson and Shiffrin (1968) first proposed a systematic and comprehensive information processing model. That model includes a three-scale processing model of memory: sensory memory, short-term memory, and long-term memory, as demonstrated in the figure on the following page:

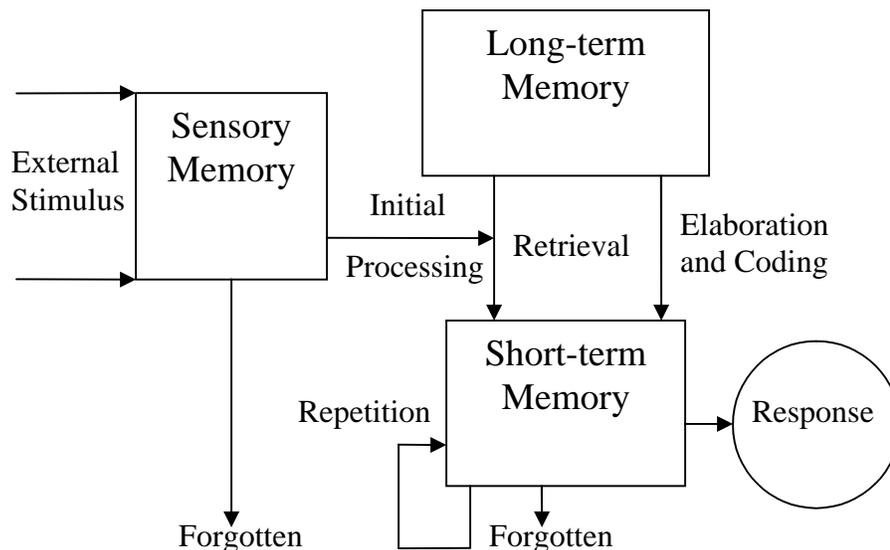


Figure 1 Stage model of information processing based on the work of Atkinson and Shiffrin (1968). This figure was adapted by Huitt (2003).

The process of information entering into the short-term memory is called ‘working memory’ (Baddeley 1999: 10). Even if the short-term memory and long-term memory are not static systems, one cannot say that knowledge can never be forgotten when it enters into the long-term memory. Although forgetting could happen in any stage of memory, there are many ways to facilitate the memorization of knowledge. As Figure 1 above demonstrates, repetition, retrieval and elaboration and coding can be regarded as different ways to facilitate the memorization of

knowledge. This study investigates the effect of repetition and elaboration on remembering meaning and spelling words.

Craik and Lockhart's depth of processing hypothesis (1972) is also applied in this study and described in detail below. They claim that the deeper the processing, the longer the retention (Baddeley 1999: 40). In this study, different levels of processing have been investigated. Words learned by word lists are stored in the mind by means of rehearsal, and words learned by sentence writing are stored with the aid of semantic elaboration, that is word meaning and form learned through semantic elaboration give longer retention according to Baddeley (1997: 123).

When it comes to research on retention, another concept borrowed from psychology is introduced here in order to illustrate the relationship between retention and memory clearly. A retention interval according to Loftus (1976) is defined as the period of time between the presentation of the word and the next rehearsal. One sees, for example, a word, then four seconds later, the word is rehearsed; the four seconds are the retention interval. Of course, a retention interval can be longer than four seconds. "A long retention interval tends to result in the poor retention known as forgetting" (King, Jones, al. 2002), but if one word is rehearsed after a longer interval (more than 15 seconds), it is more likely to enter into the long-term memory (R. Loftus & F. Loftus 1976).

Different levels of processing will result in different retention intervals. Levels of processing are essentially concerned with the role of coding in learning; the material should first be processed in different ways so it can be remembered. Although "shallow", "richness", and "breadth" processing are proposed in Baddeley's work, depth of processing is still regarded as an oversimplified view of processing information (Kersten 2010: 65). In the field of linguistics, researchers propose other concepts, such as involvement load hypothesis and the generative model. These will be discussed in the following section. Learning by word lists discussed in the present study is a pure rote repetition learning style, whereas sentence writing requires relatively more cognitive involvement; as for level of processing, sentence writing requires deeper processing than learning by word lists. That is to say, words learned from sentence writing will be remembered more easily than words learned in lists. The following section discusses in detail the strategy of learning words in lists.

### **2.5.2 The Effect of Rehearsal and Elaboration in Vocabulary Acquisition**

Learning by word lists is a form of explicit learning. Learners should focus their mind on the words, and read or write the words repeatedly, or read them aloud or silently. Learning by sentence writing, on the other hand, requires pupils to think about whether the target word they have used in a sentence is correct, both grammatically and semantically.

To some extent, the definition of rehearsal is similar to the definition of repetition. Rehearsal means the mental techniques for helping learners remember information; repetition is one such mental technique. There are two kinds of rehearsal according to psychologists (Baddeley 1997: 116), maintenance rehearsal and elaborative rehearsal. Maintenance rehearsal means just remembering or maintaining information without any deeper encoding (such as rote repetition), information processed by maintenance rehearsal is assumed to prevent forgetting, but that information will not lead to long-term learning (Baddeley 1997: 116). Elaborative rehearsal involves deep semantic processing (such as sentence writing), and elaborative rehearsal is more likely to lead to long term memory than maintenance rehearsal (Baddeley 1997: 123). Moreover, elaborative rehearsal is a complex process. Learners should connect old knowledge with new knowledge during the elaborative rehearsal process (Sousa 2006: 86).

Sperling (1967) gives a model of short-term storage to demonstrate the relation of short-term store and rehearsal. The visual input information enters directly into the iconic store (iconic store refers to the memory trace which produced when one read something by eyes), and then enters into Scanner which involves attention and pattern recognition, and then rehearsal is the next component of this model. Rehearsal will help the information enter into the long-term store, so rehearsal is a necessary part of the short-term store (for further details, see Loftus, 1976).

The processing theory has provided evidence to support the assumption that “knowing” something is easier than recalling it. That is to say, one can easily know a word by learning by word lists, but when one is asked to recall it, it requires deeper processing. In short, elaborative rehearsal (sentence writing) and maintenance rehearsal (learning by word lists) will lead to different length of retention according to the processing theory.

### 2.5.3 Declarative and procedural translation strategies

Long-term memory includes declarative and procedural memory, Figure 3 on the next page shows the connections between declarative and procedural memory (Randall 2007: 132-4).

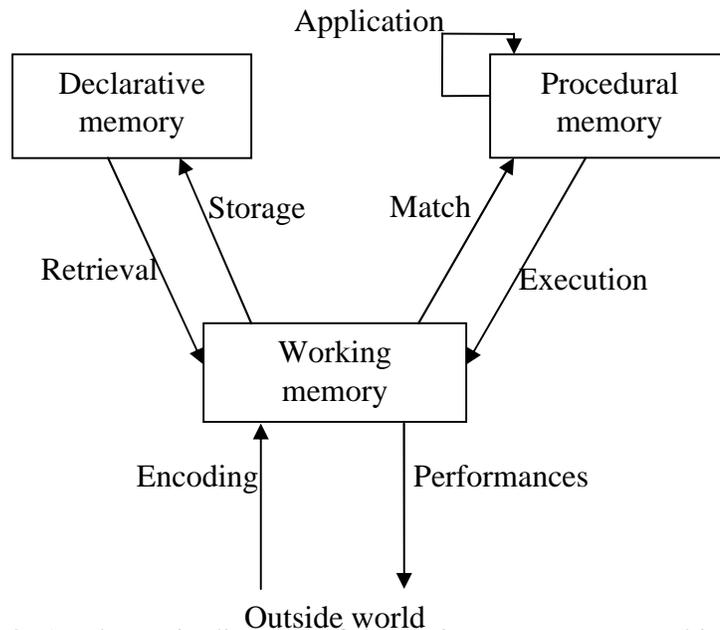


Figure 2 A schematic diagram of the major components and interlinking processes in Anderson's (1983, 1993) ACT models. From Eysenck & Keane, 1995, p. 386

Knowledge can be stored in the declarative memory or procedural memory when it enters into the long-term memory. Furthermore, declarative memory can be further classified into semantic memories and episodic memories (Samura & Hattori 2004: 37). Semantic memories are independent of any particular context, time or place. However, episodic memories are influenced by time, place, context, organization. The reason for learning the particular information also affects one's episodic memories (Tulvillg 1983: 352). Figure 3 below demonstrates the mechanism of the declarative and procedural translation strategies.

### 2.6 Learning by word lists—deliberate vocabulary learning

Although learning words from lists is considered to be a rather traditional way to learn vocabulary, and most researchers claims that teaching vocabulary in a communicative way is the most effective way to learn vocabulary, some researches indicate that “studies comparing

incidental vocabulary learning with direct vocabulary learning show that direct learning is more effective” (Schmitt, 2002). The reason is that more attention is given to language learning, which makes learning more effective (Schmitt, 1995). In view of the bilingual mental lexicon, Krashen (2008) claims that the relation between L1 and L2 words is probably a three types organization of the mental lexicon. The types are compound, coordinate and subordinate. No matter what type L1 and L2 words belong to, L1 and L2 words are connected. As Singleton (2003) states, “L2 word forms are connected to L1 meanings via primary connection to L1 forms” (2003: 169)

### **2.6.1 Krashen’s Input Hypothesis**

Krashen’s Input Hypothesis is an important theory in L2 acquisition study. Krashen claims that “[h]uman acquire language in only one way—by understanding message or by receiving ‘comprehensive input’” (that is to say, human learn language only by receiving message, they do not need any output practice)(Lightbown & Spada 1997). Krashen also proposes learning material should be “i+1”, that is to say, learning material should be difficult to the learner’s current level, but it should not be too difficult for the learner (Lightbown & Spada 1997). Learning by word lists is a kind of comprehensible input. Word lists with L1 translation on the right side can link L1 concept to L2 words; L2 words learned in this way can be regarded as comprehensible input. Although the L2 vocabulary is new, one can know what the new words mean by translation.

### **2.6.2 Empirical evidence of learning by word lists**

Traditional vocabulary learning is based on the definitional approach; vocabulary learning might be carried out by looking up in a dictionary or glossary or drill (Behlol 2010: 127). Recently, learning vocabulary from bilingual wordlists is regarded as an unfashionable method to learn vocabulary; many teachers are likely to adapt the communicative method to teach vocabulary. In fact, learning vocabulary from wordlists is a simple enough way. Fitzpatrick (2008) studies the effectiveness of the method, and learning by word lists turns out to be an effective way to learn vocabulary; learners can learn a large amount of words very quickly in learning word lists (Miltion 2009: 231).

Learning by word lists is regarded as rote learning by some researchers. For Carter (1998), he named the way that words are learned in lists of paired words as pair associates. The most common form of word lists can often be found in the form of a target item on the left side and the L1 translation equivalent on the right. Perhaps a short example sentence which contains the target word would be provided. Some researchers think that vocabulary learned from learning by word lists is memorized by repetition. Peter Yongqi Gu (2003) investigates four questions about learning by word list: the number of repetitions needed to remember a word list; the optimum number of words to be studied at one time; the timing for repetition; and repeating aloud versus repeating silently.

Many studies have been conducted on both learning words in and out of context but there is little agreement about the best way to learn new vocabulary. In the previous researches, some argue that contextualized vocabulary learning is more effective than de-contextualized vocabulary learning. Oxford and Scarcella (1994) argue that de-contextualized learning (word lists) could help pupils memorize vocabulary in the short term, such as for tests, but pupils will forget words learned from word list quickly, that is to say, de-contextualized learning (word lists) promotes short-term rather than long-term memory. McCarthy (1990) contends that words would be best assimilated and remembered when they are learned in a meaningful context or in a communicative context. However, there are some researchers who claim that they could not find enough evidence to support the idea that context-based vocabulary learning is the best way to learn new vocabulary (see Tudor and Hafiz, 1989; and Hulstjin, 1992).

Coady (1997b) believes that learning words from list (intentional study) is a necessary process in second language learning. “How can they learn enough vocabulary acquisition through extensive reading when they do not know enough words to read well?” (1997b: 229). If the learner does not have enough vocabulary, s/he cannot acquire vocabulary by extensive reading (incidental vocabulary learning). Besides, Laufer (1997) states that a learner needs a vocabulary size of about 3,000 word families to be able to carry out reading comprehension tasks (1997: 23). So “with rank beginners, it is probably necessary to teach all words explicitly until pupils have enough vocabulary to start making use of the unknown words they need in context” (Schmitt 2000: 145).

Above all, far from being out of fashion and ineffective, learning by word lists can be seen to be as a necessary process of vocabulary learning; words lists are “effective in acquiring large amounts of vocabulary very quickly” (Milton 2009: 231). Learning using a word list belongs to the cognitive technique, and sentence writing (also known as the Sentence Generate Method) belongs to the non-mnemonic technique. There are many other de-contextualized vocabulary learning strategies, such as the Keyword Method and semantic mapping and ordering, but this study focuses on word lists and sentence writing.

### **2.6.3 The deficit of primary studies**

There are many other researchers who have studied the effect of learning by word lists from context or incidental study perspectives, but no study has examined learning by word lists in connection with the involvement load hypothesis. In primary studies, word lists usually are used to test how many words advanced learners could learn at a time. However, in the present study, word lists are investigated under the involvement load hypothesis, and is applied to young learners. Theoretically speaking, learning by word lists is not as effective as learning words by sentence writing in terms of the involvement hypothesis (the next section will explain this in a more detailed way). So this study will find out whether the prediction of the involvement hypothesis is true.

## **2.7 Researches on sentence writing**

Several theories related to sentence writing will be introduced in this part. Output hypothesis and generative model claim that knowledge will be learned better when there is output practice. Depth of processing hypothesis claims that knowledge will be remembered longer after the knowledge experience deep process. Involvement load hypothesis claims that whether tasks are helpful to improve acquisition or not can be predicted.

### **2.7.1 Swain’s Output Hypothesis**

According to the output hypothesis (Swain 1985: 159), language acquisition will take place through producing language, either spoken or written. Because using target words to produce sentences is an output process, sentence writing could help the vocabulary learning in terms of

the output hypothesis. As Swain (1985: 159) claims: “[w]hat comes to mind immediately is that language production provides the opportunity for meaningful practice of one’s linguistic resources permitting the development of automaticity in their use”. So output practice can improve automaticity.

Swain (1985) lists three important functions of output, and she claims that output can facilitate the SLA process from three aspects. The aspects are as follows: 1) The noticing/Triggering function; 2) Hypothesis testing; 3) Metalinguistic function (see more details in Cook & Seidlhofer 1995). Sentence writing in the present study is an output way to learn second language vocabulary, so when the learner creates sentences, s/he must pay attention to the form and meaning of target words, and then s/he acquires target words by this way. A similar study was carried out by Izumi (1999). He testifies the third function of the output hypothesis, that is, learners’ output promote the noticing of the linguistic form when relevant input is subsequently provided, i.e. when the target word and the L1 translation are provided, then learners are required to make sentences. At this moment, the output (making sentences) will promote acquisition of the target words form (spelling) and meaning.

Kitajima (2001) argues that vocabulary learned by output (such as sentence writing) will get longer retention than vocabulary learned by input (such as learning by word lists) (2001: 470). Kitajima’s study investigates five Japanese pupils in two ways, output vocabulary learning and input vocabulary learning; he finds that pupils who learn words the output way could remember the words two and a half months after the learning session, whereas pupils who learn vocabulary the input way could not. Another researcher, Barcroft (2006), investigates two ways of output: output with access and without access to meaning. The former is an example of sentence writing; the latter is learning by word lists. However, Barcroft (2006) claims that teachers should encourage pupils to make up their own sentence rather than force pupils to make up sentences (2006: 487).

### **2.7.2 The Depth of processing hypothesis**

Proponents of the “depth of processing hypothesis” (Craik and Lockhart, 1972) argue that the different ways in which input is processed will promote different levels of memory: deeper

processing or deeper cognitive processing will bring deeper memory trace. Some knowledge will reach the short-term memory only and then be forgotten by the learner, but some will enter the long-term memory. Different memories depend on the different levels of processing. Activities, such as analysis, organization, and recognition of meaning are regarded as deeper processing; the “shallow” level of processing consisting of the recognition of stimuli through perceptual analysis, on the other hand, often promotes short-term memory (Lefrancois, 2006).

Knowledge without any deep processing, e.g. learning words from lists, will be easily forgotten. Proponents of the “depth of processing model for language learning” argue that the depth of processing that takes place will affect the durability of memory traces. Based on the depth of the processing model, Craik and Tulving (1975) propose that retention has a close relation with encoding: the richer the encoding, the better the knowledge will be remembered. Many studies (e.g. Sokmen 1997; Laufer & Hulstijn 2001; Folse 2004; Lefrancois 2006) have demonstrated that the deeper the processing, the better the learning. Thornbury (2002) also argues that the more cognitive effort is required when one learns a new word, the better the word is remembered (2002: 25). In this study, the depth of processing model refers to the learning of vocabulary. The generative model (Wittrock, 1974; Slamecha & Graf, 1978) and the involvement load hypothesis (Laufer & Hulstijn, 2001) are two adaptations of the depth of processing model. Sentence writing investigated in the present study is a generative task, and both learning words from list and sentence writing will be analyzed within the frame of the involvement load hypothesis. So these two concepts will be introduced in a more detailed way in the following part.

Sentence writing is a kind of deep processing. As Borer (2003: 276) “deep processing refers to any elaborative semantic and syntactic focus deployed to assist learners in understanding, recalling, and reconceptualizing words for use in new contexts”. Borer (2007) also proposes three terms: repetition, manipulation, and generation to describe three levels of word-focused processing. Sentence writing belongs to the generation level; sentence writing is regarded as the deepest level of processing.

### **2.7.3 Involvement load hypothesis**

Laufer & Hulstijn (2001) propose a “motivational-cognitive construct of involvement, consisting of three basic components: need, search, and evaluation” (2001, 2). The “need” component refers to the “need to achieve”. This component belongs to the motivational dimension of involvement. The last two components, search and evaluation, are two cognitive and information processing dimensions of involvement.

Search (Laufer & Hulstijn, 2001) refers to the search for the meaning of an unknown word, and evaluation refers to compare a word or meaning with other words or meanings. A student, for example, is asked to look up a word’s meaning in a dictionary by his/her teacher. At this time, the need of learning that word is moderate as it is teacher-induced, but when a student wants to look up a word that s/he wants to use in his/her writing composition, the need here is regarded as strong according to the involvement load hypothesis. Finding the L2 translation of an L1 word by looking up in a dictionary or using any other method is labeled “searching”.

When it comes to evaluation (Laufer & Hulstijn, 2001), the most common form is when one uses a word to express a particular concept. The subject will think about all the words which have the same meaning, and pick out the most suitable one in the context; in short, the evaluation is strong when one needs to judge how to combine the word with other words properly in a sentence. Tsubaki (2004) provides a clear form which demonstrates the components of the involvement load hypothesis (2004: 178). According to the table below, the index of learning vocabulary from word lists and sentence writing is 0 and 2, respectively.

**Table 1** The Degrees of the Components in the Involvement Load Hypothesis  
(The source of the table: Tsubaki (2004, 178))

| Components | Degrees of the Involvement Load | Explanations   |
|------------|---------------------------------|--|
| Need       | Index 0 (None)                  | The learner does not feel the need to learn the word.          |
|            | Index 1 (Moderate)              | The learner is required to learn the word.                     |
|            | Index 2 (Strong)                | The learner decides to learn the word.                         |
| Search     | Index 0 (None)                  | They do not need to learn the meanings or forms of the word.   |
|            | Index 1 (Moderate)              | The meaning of the word is found.                              |
|            | Index 2 (Strong)                | The form of the word is found.                                 |
| Evaluation | Index 0 (None)                  | The word is not compared with other words.                     |
|            | Index 1 (Moderate)              | The word is compared with other words in the provided context. |

|  |                  |   |
|--|------------------|---|
|  | Index 2 (Strong) | The word is compared with other words in self-provided context. |
|--|------------------|---|

Empirical studies have been carried out by Yaqubi, Rayati, and Gorgi (2010). They contend that the output-oriented task has the best effect on vocabulary learning among the following three tasks: Task 1, reading comprehension plus multiple-choice items; Task 2, comprehension plus filling in suitable target words; Task 3, writing composition with the target words.

Laufer & Hulstijn (2001) carry out an experiment which contains three tasks: Task 1 is reading comprehension with marginal glosses, Task 2 is a comprehension text plus filling in suitable target words, and Task 3 is a composition-writing with target words. The writing task in the experiment is proved to be the most effective way to learn vocabulary as the index is the highest in the context of the involvement load hypothesis.

Keating (2008) also uses three tasks: Task 1, reading passage with marginal glosses; Task 2, reading comprehension plus fill-in suitable target words; Task 3, using target words to write original sentences to investigate the predictive nature of the involvement load hypothesis (whether the Involvement Load Hypothesis is suitable for the low-proficiency learners). His conclusion is that the higher involvement load index task, the higher is the mark the one will gain in one's passive and active recall test. So Keating (2008) supports that the involvement load hypothesis is suitable for the young learners.

#### **2.7.4 The generative model**

As with the involvement load hypothesis, the generative model (Wittrock, 1974 and Slamecka & Graf, 1978) adapts the depth of the processing model. The generative model focuses on developing the semantic processing level, whereas the depth of the process model is used to explain the different levels of cognitive processing. The generative model is proposed by Wittrock (1974) to promote long-term vocabulary retention by integration of old and new knowledge. "When a response word bearing an orthographic, acoustic, or semantic relation to a stimulus word is generated rather than read, later recall is enhanced" (Hirshman & Bjork 1988). This is called Generation Effect by Hirshman and Bjork (1988). Using target words to compose sentences is a kind of generation task, because the semantic connection between the target word

and the whole sentence has been built, i.e. the learner uses a target word to compose a sentence, then s/he should think about how to use the word in a sentence and how to combine the target word with other words in the sentence.

Studies of the generative model have been carried out by among other Angela (1998). He claims that generative tasks (retelling the text) have better effect (longer retention) on vocabulary learning than just learning words from list. Webb (2005) has tested word knowledge (orthography, meaning and form, association, syntax, grammar) learning using sentence writing (Experiment 2) and word list. His results suggest that word knowledge learned by sentence writing is better acquired than just reading the word list. In the present study, two different tasks will be investigated: learning words form list, and using target words to create sentences. According to the involvement load hypothesis, the index of learning by word lists task is 0, and the index of sentence writing is 2, that is to say, sentence writing will an more effective in word meaning learning in terms of the prediction of the involvement load hypothesis. This study, however, will investigate whether the prediction of the involvement load hypothesis is true or not.

### **3. Analysis and Discussion**

The following analysis seeks to demonstrate which of the two methods, word lists or sentence writing, best promotes vocabulary retention. The results of the immediate post-test (16 participants in both) (Post-test One) and the result of the two delayed post-tests (16 participants in both)(Post-test Two) are analyzed in terms of comparison by the scores of the two groups. The following tables display the data collected from the two post-tests. These have been supplemented by questionnaires, as mentioned in the method section, i.e. to provide additional information in the form of combining the questionnaire with the data collected in the two tests.

The analysis is divided into three parts: in the first, the results of the immediate post-tests and delayed post-tests are compared. And in the second, the delayed post-tests will be demonstrated and analyzed. The results of the tests of the two groups are then compared. In the third part of the analysis, the results of the immediate post-tests will be demonstrated and analyzed. Finally, some reflections on future research are discussed.

The contents of the immediate post-tests and delayed post-tests are the same, i.e. they are divided into a receptive and a productive test; both tests required the pupils to write down the English and Swedish translation of different words. And both are recall tests. If the pupils translate the words correctly, they are considered to know and have remembered the meaning of a word. The Keating (2008) system of scoring was adopted for the purposes of the study.

In the passive recall post-test, correct translations of the target words received one point. A certain type of translation received half a point, according to Keating's criteria: "A semantically acceptable equivalent of the target word receives half of a point, i.e. translating *choya* as 'forest' instead of 'jungle'" (Keating, 12). Words not translated or translated incorrectly received no score. If a subject wrote the same English translation for more than one target word, e.g., if a pupil wrote that the Swedish equivalent of the English word *unhappy* was *olycklig*, but also writes that *olycklig* was the Swedish equivalent of the English word *bathtub*, it is clear that the candidate has guessed and no score was given.

In the active recall post-test, the subjects were required to provide the written form of the target words. A lexical production scoring protocol (Barcroft 2001: 335) was adopted. The lexical production scoring protocol (see Appendix 2) is an analytical scoring tool. Scores for individual words written by subjects are determined by whether subjects write the correct letter of a word in its correct position or not. For example, for the word *course* in the experiment, if the subject wrote nothing or *baffin*, then no score was given. If subjects wrote *c...* or *...e* or *tear*, they received a score of 0.25 because they can either write at least one letter which is correct in its position or write at least 25% but less than 50% (2 of 6=33.3%) of the letters in the word. A score of 0.5 will be given if subjects write *cou...* or *...rse* or *oughse*, because at least 25% but less than 50% of the word is correct, or at least 50% but less than 75% of the word is correct. One full score was only given. Scoring was blind.

### **3.1 Comparison between the immediate post-tests and delayed post-tests**

Table 2 below compares the score collected from Group A and Group B pupils in the immediate post-tests and the delayed post-tests.

Table 2 Scores in the immediate post-tests and the delayed post-tests

|                     | Group A   |         | Group B   |         |
|---------------------|-----------|---------|-----------|---------|
|                     | immediate | delayed | immediate | delayed |
| Passive recall test | 6         | 4.9     | 5.7       | 5.9     |
| Active recall test  | 5.9       | 4.7     | 5.6       | 4.7     |
| total number        | 11.9      | 9.6     | 11.3      | 10.6    |

Table 2 presented above demonstrates that both Groups A got lower scores in the delayed post-tests than in the immediate post-tests. Forgetting happens when memory fails, the forgetting curve has been discovered by Ebbinghaus, who stated that the longer the retention interval, the more information will be forgotten (Baddeley, 169-172). As to the Group B pupils, they achieved higher score in the delayed passive recall test than in the immediate passive recall test, but they got lower score in the delayed active recall test than in the immediate active recall test.

In the passive recall test, the score achieved in learning by word lists is 5% higher than the score achieved in learning by sentence writing; in the active recall test, and the score achieved in learning by word lists is 6% higher than score gained in learning by sentence writing. So learning by word lists got better effect on remembering the meaning and spelling of words than learning by sentence writing does. According to the model of short-term memory, as mentioned in section 2.5.2 of the theory part above, words learned by visual input first enter into the iconic store, and then into the echoic store by means of rehearsal. When this process is complete, words are stored in the short-term memory. Words learned by sentence writing do not, however, provide sufficient opportunity for rehearsal and are often quickly forgotten.

However, when it comes to the delayed post-test results, the average score of the Group B pupils is 17% higher than the average score of the Group A pupils in the passive recall test; in the active recall test, average scores of both Group A and Group B are the same. This implies that learning by sentence writing, which establishes a semantic connection between words, promotes a relatively longer retention than learning by word lists does. From memory and its mechanism point of view, learning by word lists is the maintenance rehearsal and learning by sentence writing is the elaboration rehearsal. Compared to the elaboration rehearsal, maintenance rehearsal

is unlikely to lead to long-term learning. Furthermore, elaboration rehearsal connects the knowledge that is already known with the new knowledge. So knowledge learned by sentence writing has more chances to be activated than knowledge learned by word lists according to the procedural and declarative memory which was explained in the 2.5.3 section of the theory part above. Learning by sentence writing belongs to Strategy 1 and learning by word lists belongs to Strategy 2. As discussed in the theory part above, Strategy 1 involves deeper cognitive processing than Strategy 2, so learning by sentence writing is more likely to lead to longer retention than learning by word lists.

In view of the input hypothesis (Lightbown & Spada, 1999: 39), the input knowledge is the source of knowledge acquisition, but the input knowledge will be forgotten easily if there is no output. Based on the output hypothesis, learning by word lists which lacks a comprehensible output is not an effective way to learn new ideas or words, since knowledge learned without comprehensible output will easily be forgotten by learners. Moreover, according to the processing hypothesis, knowledge that is processed more deeply is retained for a longer period of time and has a greater chance to enter into the long-term memory than knowledge that is processed for a shorter period of time. According to the prediction of the involvement hypothesis (see the theory part above), learning by word lists belongs to shallow processing (index 0) in comparison with sentence writing (index 2), so the higher the index, the longer retention the knowledge will get. From the generative model's point of view, if the learner generates his/her own sentences or production by using target words, he or she has more chance to connect new knowledge with old knowledge, so that the new knowledge is retained for a longer period of time.

### 3.2 Data from the immediate post-tests

Sixteen test papers of immediate post-test were collected. The average number of correct answers which Group A and Group B pupils gave is demonstrated in the table below.

Table 3 Pupils' translation accuracy in the immediate post-tests

|                     | Group A |      | Group B |     |
|---------------------|---------|------|---------|-----|
| Passive recall test | 6       | 100% | 5.7     | 95% |
| Active recall test  | 5.9     | 99%  | 5.6     | 93% |
| Total number        | 11.9    |      | 11.3    |     |

The above table shows the average number of correct answers in the two types of recall test. It shows that the Group A pupils who used word lists gained higher scores than those in Group B, they used the sentence writing method. Learning by word lists has a more positive effect on remembering the meaning of words than semantic elaboration (learning by sentence writing). This result complies with Ehri and Wilce's (1980) research findings, because "which aspect gets learned depends upon how the words are practiced" (Ehri and Wilce, 1). Learning by word lists requires pupils to remember the meaning and form of words directly, but learning by sentence writing requires pupils to establish the connection between the new words and the old knowledge. Although maintenance rehearsal is unlikely to lead to long-term learning, "it may be useful for certain purposes" (Baddeley, 123), like, for example, learning words from word lists is useful for preparing for tests.

Another researcher, Randall (2007), also favours learning by word lists. He claims that it is not only just reciting or "mindless repetition" (Randall, 169); however, from the Confucian point of view, it involves thinking words over, and depth of processing and practice. So pupils using word lists to learn new words are not just mindless repetition of the words. Pupils do think about the words because association is one of the aspects of vocabulary knowledge (Nation, 70), the relationship form-meaning can be memorized easily if learners memorize new words in lists where the target words' L1 equivalent translation has been given. The finding in this study is in line with O'Malley and Chamot's (1990) argument, that is, pupils can perform well by using rote memorization to learn new words. Fitzpatrick (2008) also concludes that learning by word lists is a valuable way to learn new words. Furthermore, the questionnaire (see Appendix 3) also shows that rote memorization is the method pupils use daily.

In Group A, the scores in the active recall test are a little higher than those gained in the passive recall test. The average score in the active recall test was 6; the average score in the passive recall test was 5.9. In Group B, the average score of the passive recall test (5.7) is a little higher than the score gained in the active recall test. In general, Group A's scores are higher than Group B's, both in the passive and active recall tests.

The questionnaire of eight pupils from Group A may give some explanations concerning the test results. Some statistics will be presented below:

Table 4 Question from questionnaire for Group A pupils after the immediate post-test

|              |  |
|--------------|--|
| The question | Could you remember the meaning (translation) and the form (spelling) of the words on the list after you had memorized the list for ten minutes and do a test, why?   |
| Student 1    | Yes, because those words are not quite difficult for me.   |
| Student 2    | Yes, I can recite those words, and the test is posed just after the learning, so it is not difficult for me to translate those words into English or Swedish.  |
| Student 3    | Yes, when I recite those word, I image an picture in my mind, and I also draw an picture after each words, so I can remember those words by drawing picture.   |
| Student 4    | Yes, I have read those words many times in the learning part, I have read both Swedish and English, and I focus my mind on those words, so I can write the accurate translation of each words.   |
| Student 5    | Yes, I have written both English and Swedish words repeatedly in the learning session. So it is easier for me to remember those words when I read and write those words repeatedly.  |
| Student 6    | Yes, I have read both English and Swedish words repeatedly in the learning part, and then I wrote those words repeatedly. Because I understand the meaning of those words in Swedish, when I do the test I can write down the translation. |
| Student 7    | Yes, I usually use word lists to learn words. I just cover English words, and then look at Swedish to recall English words, and then I cover Swedish words, and then look at English words to recall Swedish words.                        |
| Student 8    | Yes, when I see the Swedish translations, I can understand the meaning of those words, and then I wrote English words on the paper repeatedly, so I can remember the English words.  |

The above table shows that the Group A pupils memorized words by rehearsal (repeating the words) and mnemonics, they repeated target words again and again until the words were learned by heart, or they used pictures to help them to recite the words. Thus, it is reasonable to argue that the pupils in Group A stored the words in their declarative memory; they did not use them and neither did they connect the words with previous knowledge, they simply memorized everything on the script. As Gairns and Redman (1993) claim, learning by word lists gives pupils “the opportunity to manipulate the oral and written forms of language items, and many learners derive a strong sense of progress and achievement from this type of studying” (Gairns & Redman, 93).

As for the Group B pupils, their scores in the immediate post-tests were lower than those of Group A. The Group B pupils scored an average of 5.7 points in the active recall test, and 5.6 points in the passive recall test. With regard to the test scores both in Groups A and B, the passive recall test points are higher than in the active recall test. One possible reason is that pupils are only familiar with the translation of the new words; they do not know how to use words in sentences. As mentioned above, to “know a word” involves knowing the word’s form, position, function, and meaning according to Kersten (2010: 52). Because using a word in a sentence requires more knowledge than just knowing the words’ meaning and written form, sentence writing may not be so helpful for pupils when learning new words. Pupils need more input or receptive information about words they have learned so that they can make grammatically and semantically correct sentences. The questionnaire presented below, encompassing eight pupils from Group B, explains why pupils give more correct translations of the words in the productive recall test than in the receptive recall test.

Table 5 Question from questionnaire for Group B pupils after the immediate post-test

|              |   |
|--------------|---|
| The question | Could you remember the meaning (translation) and the form (spelling) of the words on the list after you had made up your own sentence in ten minutes and do a test, why?                  |
| Student 1    | Yes, I can remember all the words in the list, some words I cannot make up sentence, but I can remember the translation and spelling, because I am familiar with the Swedish translation. |

|           |   |
|-----------|---|
| Student 2 | Yes, I can remember the meaning of all the English words, but some words I cannot remember the spelling, because I do not know how to use it to make up sentence.   |
| Student 3 | No, I can remember the spelling of English words, some of English words' meaning I cannot remember, and there are similar Swedish translations to the same word, so I just make up sentence in Swedish way. |
| Student 4 | Yes, of course. I can remember both the spelling and meaning of English words. And I can use all the words to make up sentences. Because I am good at English.  |
| Student 5 | No, I cannot remember most of the spelling and some of meaning of the English words. I do not like to study English. It is difficult for me.  |
| Student 6 | Yes, I can remember most of words' meaning and spelling. But some of words are difficult to remember, because I am not familiar with them, I do not use that words often.                                   |
| Student 7 | Yes, I can remember all of them. The words are easy for me. I know the Swedish and I know the meaning, and the English words are short, and then I can remember the spelling.                               |
| Student 8 | Yes, I can remember all the words on the list, both the spelling and meaning, I have good memory, I use words to make up sentence and then I remember them, I am good at studying.                          |

The above table shows that the eight pupils from Group B gave different reasons to those of the pupils in Group A. Most of the pupils think they can remember the spelling and meaning of the words if they can use those words to make up sentences. However, words they cannot put into sentences are easily forgotten.

Consequently, it can be seen that learning by word lists (rote learning) is more effective than sentence writing (semantic elaboration) for consolidating the meaning and form of words at the beginning stage of memorizing words.

### **3.3 Data from the delayed post-tests**

Two weeks after the immediate post-test, another sixteen test papers of the delayed post-test were collected. The results of the delayed post-test are presented in the table below.

Table 6 Pupils' translation accuracy in the delayed post-tests

|                     | Group A |     | Group B |     |
|---------------------|---------|-----|---------|-----|
| Active recall test  | 4.9     | 81% | 5.9     | 98% |
| Passive recall test | 4.7     | 78% | 4.7     | 78% |
| Total number        | 9.6     |     | 10.6    |     |

The table above demonstrates the average number of scores from the two different recall tests. The pupils in group B who memorized words by sentence writing scored higher than the pupils in group A who used words list to memorize words for the purpose of the delayed post-test. The data collected in this experiment demonstrate that sentence writing is a more effective aid in the long-term in memorizing the meaning of words and their spelling than learning words in lists (rote memorization). This finding complies with the work of other researchers, like Oxford and Scaerella (1994), discussed in the theory section, who believe that learning by word lists is helpful for pupils to learn new words quickly, but new words learned in this way are quickly forgotten, this is to say, words are only remembered for a short period, such as for a test, but are subsequently quickly forgotten. Based on the so-called "depth of processing model", Craik and Tulving (1975) propose that retention has a close relation with encoding: the richer the encoding, the better the knowledge will be remembered. Sentence writing provides an opportunity for pupils to encode new words with the old knowledge. According to the involvement load hypothesis, the higher involvement load index, the longer retention the knowledge will get. Sentence writing (index 2) has higher index than learning by word lists, so words learned by sentence writing will be better memorized than learning by word lists. Words learned by sentence writing which involves a deeper encoding process will be memorized longer than words just learned in lists.

For the Group A pupils, the score is higher in the passive recall test than it in the active recall test. They gained 4.9 points in the passive recall test, and 4.7 in the active recall test. This result is in line with Mondria and Wiersma's (2004) finding that the average score in a receptive recall test is

higher than the average score in a productive recall test. Schmitt (2010) also claims that learners can remember receptive knowledge more efficiently than they can remember productive knowledge. When pupils use word lists to learn L2 words, they could understand new words by L1 translation. As mentioned in the theory part above, “L2 word forms are connected to L1 meanings via primary connection to L1 forms” (Singleton, 169). Thus, pupils can recall the meaning of L2 words. As for the spelling of words (form), it is easier for pupils to remember the spelling of L2 words when the L2 words’ pronunciation or spelling is similar with L1 words’ pronunciation or spelling. That is to say, pupils can recognize words more easily than recall the exact spelling of the words. Furthermore, the question in the questionnaire (question three), could perhaps provide explanation of the results of the delayed post-test.

Table 7 Answers (Group A) for question in the questionnaire after the delayed post-test

|              |  |
|--------------|--|
| The question | After you do the same test for the second time, do you still remember the meaning and form of the words you learned two weeks before, why?   |
| Student 1    | Yes, I can remember most words in the list I learned last time, and some of them, I cannot remember, but I don’t know why, I just forgot them.   |
| Student 2    | Yes, I remember all of words, I am quite familiar with those words, I learned them in some other places, and I meet those words frequently in books, TV and Computer.  |
| Student 3    | Yes, I remember all the words’ spelling, but I cannot not remember the meaning of some English words, if I only looking at the English words, I just do not know what them meaning in Swedish, I think it is easier to learn words from Swedish to English than learn words from English to Swedish. I am familiar with Swedish but English. |
| Student 4    | Yes, I just forget one word in receptive test paper, I know how to spell that word but I cannot remember what does it means in Swedish.  |
| Student 5    | Yes, of course. I am always good at English, and my English is really good. I learn and recite those words, and I meet those words   |

|           |   |
|-----------|---|
|           | often in TV, so I understand them well.   |
| Student 6 | Yes, I remember all words but one word, because it looks similar with Swedish words, I always mix it with the Swedish word, and cannot remember what does it means. |
| Student 7 | Yes, I think I have some problem about remembering the meaning of English words, it is so different from Swedish words, I cannot remember.                          |
| Student 8 | Yes, because I have good memory, I can remember how to spelling those words, but I cannot remember some words' Swedish translation, I am not familiar with.         |

The data displayed in Table 5 above show that although pupils gain a relatively higher score in the receptive recall test, they can still recall most of the words' spelling in the productive test. The reason provided by researchers is that receptive learning will lead to a certain amount of productive knowledge (see Griffin & Harley, 1996; Waring, 1997; Schneider, 2002). However, in this study, the extent to which receptive knowledge will promote productive knowledge is not the main research question and is thus not taken into consideration. Another explanation for the score of the active recall test being higher than the score of the passive recall test is provided by Nation (2001), who claims that activation for the active vocabulary (receptive vocabulary) can be much easier than activation for passive vocabulary: "active vocabulary can be easily activated by other words" (Kersten, 55), but passive vocabulary can only be activated by hearing of seeing the form. So when words are learned by word lists, only form and meaning can be learned from the word list, and the pupils could not establish any connections between target words and old knowledge. That is probably the reason why the pupils gave more correct answers in the passive recall test instead of the active recall test. Productive vocabulary needs deeper processing than receptive vocabulary.

As for the Group B pupils, they also gained a higher average score in the passive recall test than in the active recall test. Group B pupils' answers in the questionnaire are displayed in the table below. The data presented below explain why the average score in the passive recall test is higher than the average score in the active recall test.

Table 8 Question in the questionnaire of Group B pupils after the delayed post-test

|              |   |
|--------------|---|
| The question | After you do the same test for the second time, do you still remember the meaning and form of the words you learned two weeks before, why?  |
| Student 1    | Yes, because I still remember sentences which I made last time, I can remember the meaning of all the words; but I cannot remember the spelling of the words. When I see the Swedish words on the left side, I just forget the English words although I know I learned that word. |
| Student 2    | Yes, I remember all the words, both the meaning and spelling. Because I learned those words last time, I think I learned those words well, I am good at English.  |
| Student 3    | Yes, tests for me are very easy. I think I understand all the words' meaning, but the spelling sometimes is difficult to remember, because some of them seem like Swedish.  |
| Student 4    | Yes, just forgot one word's spelling, I don't know why, I think word's meaning is much easier to remember than word's spelling. I can use all the words to make up sentence.  |
| Student 5    | Yes, I can remember all the words' meaning easily, but not the spelling. Because I can understand it in Swedish, I can remember words' meaning. But English word is quite different from Swedish; it is different to remember different written form for the same word.           |
| Student 6    | Yes, but I have problem in words' spelling, it is difficult to remember English words' spelling within ten minutes, I just use every word to make up sentence for one time.   |
| Student 7    | Yes, English words' spelling is difficult to remember, but I can remember all the words' meaning, because I use all the words to make up sentence, I understand all the words' meaning.   |
| Student 8    | Yes, I can remember the meaning of words but I cannot remember the spelling of words, because I learn those words for first time, I do  |

|  |                           |
|--|---------------------------|
|  | not use those word often. |
|--|---------------------------|

As the above table demonstrates, most pupils consider that remembering the meaning of words is easier than remembering the spelling of words. The pupils believe that a Swedish translation and writing sentences can help them understand words. Two pupils believe that English orthography is different from Swedish, so they cannot remember the spelling of words. Two pupils think that they just learn words for the first time; there is not enough time and chance for them to remember the correct spelling of words.

**3.4 Other factors affecting the results of the present study**

As mentioned in the section above, there are many other factors than those discussed here influencing the outcome of vocabulary learning, e.g. using different learning strategies, and the length of the target words. In addition, learning results also will be affected if the target words are too easy or difficult for learners. In this investigation, the target words were chosen according to the participants’ level of English. The words selected in the study are understandable for pupils whose age is 7 to 12. However, the words selected after the pre-test turned out to be a little too easy for the participants, so only six words could be chosen for the learning and post-test sections. Two learning strategies are investigated in this study, namely learning words from word lists and learning words from sentence writing. Participants were required to use the two methods to memorize the meaning and spelling of words. The present study did not take into account individual learners’ differences, or the number of words used in the experiment. The reason will be presented below in a more detailed way.

Learners’ motivation and preferences, according to Lightbown & Spada (1999), affect the learning of new vocabulary. The learners’ motivation and preferences are thus important factors influencing the results of the study. The questionnaire confirmed that some participants like to learn words by word lists, whereas some do not. Some participants stated that they like to learn English while others do not. Other factors that might affect the results of the study are the learners’ intelligence and general aptitude. These are not significantly affected in the short-term memory. Some of the pupils are good at memorizing, so they gave more correct answers in the tests. If one is good at memorizing, it is difficult to say whether it is the sentence writing that help

the pupil to memorize the word, or that it is his/her own intelligence that helping him/her to remember the word.

The restricted number of words used in the study may have affected the result of the study since “the more items that you have on a test, the more reliable that test will be” (Hughes, 44).

Although there are many factors that might influence the results of the present study, it should be remembered that the purpose of this study is to investigate learning by word lists and sentence writing from the point of view of retention of meaning and spelling of words in the short-term memory. Additional factors could be included in a study investigating long-term results.

#### **4. Summary and Conclusion**

Vocabulary is a fundamental component of language proficiency. Learning words from word lists is a traditional method whose efficiency has been questioned (Oxford & Scarcella, 1994; Hoshino, 2010). However, in this investigation, learning by word lists has been short to have certain advantages: learning by word lists is effective in the short-term memory, and for specific purposes such as passing a test. Sentence writing, on the other hand, has greater benefits in the long-term memory.

In this investigation, the effect of two methods on remembering meaning and spelling of words is investigated by means of receptive and productive recall tests. Some concepts have been introduced in this study; rehearsal is a necessary component of short-term memory, and rehearsal can be divided into maintenance rehearsal and elaboration rehearsal. And long-term memory can be further divided into declarative and procedural memory. Several theories have been applied in analyzing the results of investigation: the depth of processing, the involvement load hypothesis, and the generative model have also been applied to analyze retention intervals when learning by word lists as against learning by sentence writing. Theoretically speaking, learning by sentence writing involves deeper processing than learning by word lists from the declarative and procedural memory perspectives; elaboration rehearsal is more likely to lead to long-term retention than maintenance rehearsal.

The main conclusions of the present study are: in the short-term memory, memorizing meaning and spelling by learning by word lists have a better effect than memorizing new words by using sentence writing; rote memorization is a quick and easy way to learn new words; and in the relatively long-term memory, learning by sentence writing (semantic elaboration) is more effective than memorizing by learning by word lists.

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## Appendices

Appendix 1

### Post-tests

Productive test part (4 minutes) Name: \_\_\_\_\_

Translate the following Swedish words into English

sjö

kurs

husdjur

observera

gaffel

skrivbord

Receptive test part (4 minutes)      Name: \_\_\_\_\_

Translate the following English words into Swedish

note

lake

pet

fork

desk

course

## Appendix 2

### Lexical Production Scoring Protocol (Barcroft, 2000, 2002)

| 0.00 points   | 0.25 points                            | 0.50 points                            | 0.75 points                                     | 1.0 point  |
|---|--|--|---|--|
| None of word is written; this includes:                 | 1/4 of word is written; this includes: | 1/2 of word is written; this includes: | 3/4 of word is written; this includes:          | Entire word is written; this includes:               |
| Nothing is written                                      | Any 1 letter is correct                | 25-49.9% of letters correct            | 50-99.9% of letters correct                     | 100% of letters correct                              |
| The letters present do not meet any 'for 0.25' criteria | 25-49.9% of the letters are present    | 50-74.9% of letters present            | 75-99.9% of letters present                     | 100% of letters correct with accent added or omitted |
| English word only is written                            | Correct no. of syllables               |  | 100% of letters correct but other letters added |  |

“Instructions: (1) ‘Correct’ refers to any letter written and placed in its correct position within a word; ‘present’ refers to any letter written but not placed in its correct position. (2) Determine percentages by dividing letters correct and letters present by the number of letters in the target word. If more letters are written than are in the target word, divide by the larger number. (3) If the same target is written more than once, score it only once in the space where it should be written or, if it is not written in the correct space, score it in the first space where it is written based upon the target word for that space” (Keating, 386)

## Appendix 3

### Questionnaire after the immediate post-test

Group A

Name:                      Age:

1. Do you want to learn new English words such as (pet, lake, note, fork, desk, course)?  
A. Yes. B. No. C. Other answer

---

2. Are you willing to recite the meaning and spelling of the new words from words list,  
**why?**

A. Yes. B. No. C. Other answer \_\_\_\_\_

**Reason:**

---

3. Could you remember the meaning (translation) and the form (spelling) of the words on  
the list after you had memorized the list for ten minutes and do a test, **why?**

A. Yes. B. No. C. Other answer \_\_\_\_\_

**Reason:**

---

4. Usually, you learn English words from

A. word lists B. sentence writing C. Other ways

---

5. How many times you read the word before you can remember it?

A. one B. two C. three or more than three times

6. How many words can you remember from words list every time?

A. less than ten B. about ten C. more than ten

7. What do you think is the most difficult in English study?

A. new words B. grammar C. making sentences D. understanding texts E. Other  
answer

Group B

Name:                      Age:

1. Do you want to learn new English words such as (pet, lake, note, fork, desk, course)?  
A. Yes. B. No. C. Other answer

---

2. Do you want to know how to use those words in sentences when you meet new words, **why**?

A. Yes. B. No. C. Other answer \_\_\_\_\_

**Reason:** \_\_\_\_\_

3. Usually, you learn English words from

A. word lists B. sentence writing C. Other ways  
\_\_\_\_\_

4. What do you think is the most difficult in English study?

A. new words B. grammar C. making sentences D. understanding texts E. Other answer

5. Could you remember the meaning (translation) and the form (spelling) of the words on the list after you had made up your own sentence in ten minutes and do a test, **why**?

A. Yes. B. No. C. other answer \_\_\_\_\_

**Reason:** \_\_\_\_\_

#### Questionnaire after the delayed post-test

Group A

After you do the same test for the second time, do you still remember the meaning and form of the words you learned two weeks before, why?

A. Yes. B. No. C. other answer \_\_\_\_\_

**Reason:** \_\_\_\_\_

Group B

After you do the same test for the second time, do you still remember the meaning and form of the words you learned two weeks before, why?

A. Yes. B. No. C. other answer \_\_\_\_\_

**Reason:** \_\_\_\_\_