

## Memory and the Challenge of Lexis<sup>1</sup>

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### Introduction

Considering the imposing quantity of new vocabulary that a learner must confront when studying a language, how and why some words are remembered and some are forgotten are pertinent questions for anyone involved in language teaching. As teachers, our goal is to bring about learning, and learning implies remembering. Beyond facilitating the acquisition of new knowledge, the real challenge in teaching is that this information be retained by the students in their memory for as long as possible, and kept available for future retrieval.

Vocabulary, often considered easier to learn and less important than grammar, is gaining more attention recently with the growing emphasis on fluency and meaning in the classroom. Vocabulary learning does not necessarily follow generative systems as does grammar, and thus is often accomplished piece-meal with the aid of memory. Considering the arbitrariness of lexis, its context-specific usage, overlapping semantics and sheer quantity, it would seem that memory, even more than functional understanding, does lie at the heart of second language learning. The Greek word "lexicon," meaning dictionary (Aitchison, 1994), provides us with a useful metaphor for our mental store of words. In what ways is memory defined and how is this "mental lexicon" stocked and organized?

In this paper, I will first attempt to describe different existing concepts of memory. I will then present some of the difficulties students have in remembering vocabulary. I will discuss how the form, sound and meaning of words affect retention and retrieval of memory, and how the student's first language may play a part in these processes. Later, I will describe how certain learning conditions and strategies can be applied to aid memory in its daunting task of remembering lexis.

### What is Memory?

*Language...is a mystery linking one entire person to other entire persons over space and time. To learn a second language is to move from one mystery to another...But language...rides on a deeper broader mystery called 'memory'.*

(Stevick, 1996, p.3)

Remembrances are not the actual objects or events being recalled, but are rather our abstract mental representations of these. How I remember an event can be very different from how someone else remembers the same event because of our different personal traits and histories, associative contexts, degrees of attention paid to the event, moods, etc. Furthermore, the meanings of the words remembered, as perceived by each person, vary according to the difference made by those words in that person's life (Stevick, 1996). More valuable than looking for meaning in objective isolation, is analysing what people

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<sup>1</sup> This is a refereed article

believe about meaning. This is particularly true of more abstract notions. For example, in 1937 Stuart Chase asked nearly a hundred people what they thought fascism was. The answers varied from "a coercive capitalistic state" or "a dictatorship", to the "same thing as communism" (Chase, 1938, p.188). The answers shared many inferences, such as dislike, but on a descriptive level they revealed at least fifteen different distinguishable concepts. Thus, belief systems are embedded along with the memory of certain lexical items. This would be an example of one type of semantic association. Many other types of associations play important roles in memory, as outlined in the following discussion.

According to Gairns and Redman (1986), there are three basic systems of associative networks through which memory data is organized and retrieved: the system of semantic relationships (the fascism example above), the phonological system and the spelling system. An example of a phonological association could be how the sounds of a hiccup or a yawn actually resemble the words that represent those acts, or 'onomatopoeias' (Mathews, 1997), therefore making it quite easy to remember them. Children's rhymes, a peculiar-sounding word or the melody behind the lyrics of a song are other examples of how sound can assist memory. Orthographic associations can help our memory through visual characteristics, such as similarly spelled words, or through the logical-deductive process of using spelling rules to remember a word.

Nevertheless, it would appear that in most instances it is the actual meaning of a word that brings it to mind. When asked to remember items that were semantically related, research subjects could recall words faster than when the same words were given phonological or orthographic associations (Gairns & Redman, 1986). This would indicate that the stronger lexical associative system within memory is based on meaning rather than on word form or sound.

To take a step back and look at memory in a more technical sense, Stevick (1996, p.3) offers four definitions: memory as 'product', being 'what' we remember; memory as 'place', being a place of storage; memory as 'power', or a force within the nervous system; and memory as 'process', being an action following a series of steps. The simple word *memory* is thus commonly understood as representing any part, or parts, of this complex network of cognitive functions.

Another, more chronological, system of classification for memory defines three types: short-term memory, working memory and long-term memory (Robinson, 2001; Stevick, 1996; Thornbury, 2002). Short-term memory is limited in capacity and is only accessible for a brief time. This momentary storage of information is useful only when retrieval requirements are immediate. Further processing would be required for successful vocabulary learning to occur.

Working memory is an extension of short-term memory, where words are focused on long enough for reasoning and understanding to occur. This phase lasts for not more than twenty seconds and refreshes the short-term memory through the 'articulatory loop' (Robinson, 2001; Stevick, 1996; Thornbury, 2002). Here words are subvocally repeated, examined for meaning and compared with previously learnt information, thus creating associations that later aid storage in the long-term memory. Thornbury stated: "The holding capacity of the articulatory loop seems to be a determining factor in the ability to learn

languages: the longer the loop, the better the learner" (2002, p. 23). Therefore, retention capability for new information seems to be related to the capacity of working memory, and less successful language learners may not have learned how, or have the ability, to push new information through this system into long-term memory. It would seem that the articulatory loop within the working memory is the key element that bridges short and long-term memory, and should therefore be taken into consideration in teaching practices. Further on in this article, I mention some useful pedagogical techniques and strategies that can be used to enhance the working memory's capacity.

The final category within the chronological definitions of memory is long-term memory, which is a system that provides storage for an unlimited amount of information, and for differing periods of time along a continuum from temporary to permanent storage (Stevick, 1996). Learners battle constantly to reach this ultimate goal of long-term memory, and must overcome many obstacles to remembering, some of which I will describe in the following section.

### **Difficulties in Storing and Remembering Lexis**

As error-making is a natural and expected part of language learning, so is forgetting. Forgetting can occur due to insufficient exposure to or recycling of a word, which, according to the "decay theory" (Gairns & Redman, 1986), causes memory to be lost through lack of use. Memory loss can also occur due to "cue-dependent forgetting" (Gairns & Redman, 1986), which presumes that information has been stored in the memory but cannot be recalled without the correct associative prompts. This puts the blame for memory loss on a faulty retrieval system, rather than on storage.

Interference during the learning process can also affect the retention of new input. For example, mental distractions before information has entered the working memory can inhibit the assimilation of new information, and when mental distractions occur after learning input, they can prevent memory consolidation (Gairns & Redman, 1986). Effective classroom management can reduce the number and effects of these mental distractions.

Interference can also occur due to interlingual transfer between the student's first (L1) and second (L2) languages (Brown, 2000; Hatch & Brown, 1995; Oxford, 1990; Stevick, 1996; Thornbury, 2002). Languages such as English, French and Spanish that share lexical items derived from Latin and Greek have many similar-looking words with equivalent meanings. Structural features such as many common prefixes and suffixes are often shared among languages without changing meaning. Examples of these would be the English word 'emotion' and the Spanish 'emoción', the French 'traduction' and the Spanish 'traducción', or the English 'psychology' and the Spanish 'psicología', etc. These are very common and naturally lead students to initially apply L1 meaning to all new L2 words of similar structure or appearance. Although words of similar structure most often *do* have similar meanings (Lewis, 1997), cognates can occasionally lead to an erroneous assumption of meaning, or a "false friend" (Oxford, 1990; Thornbury, 2002). A few examples of these that I have encountered with my Mexican students are: 'discussion', thought to mean '*discusión*' in Spanish, which actually signifies an argument; 'library', understood

as '*librería*', or bookstore; '*sensible*', often misunderstood as '*sensible*', or sensitive; and '*actually*', frequently confused with '*actualmente*', which means at present.

The assumed collocation of related words in phrasal lexicon is also vulnerable to perceived correspondences between languages. Whether words are loosely or tightly associated (Aitchison, 1994), is dictated by customary use, something a learner is only gradually exposed to. This lexical "network building" (Thornbury, 2002) may or may not overlap semantically with the student's L1 networking associations of the same words, and can cause confusion. An example with our Mexican students would be the common error of saying '*depend of*' instead of '*depend on*'.

Also, "loan translation" (Hatch & Brown, 1995) is a common source of error. This happens when a new word is learned and its concept is applied in the same manner of usage as in the student's L1. An interesting example I have seen was "*She falls me good*", which the student obviously directly translated from the colloquial expression in Spanish, "*Ella me cae bien*", roughly meaning "I like her." Curiously, the same word in the expression "*falling in love*" would not be understood in Spanish, either, if translated literally.

New language can be built upon what has previously been learnt, either in one's first or second language. This creates a rich template of cross-references for vocabulary acquisition. However, whether through 'false friends', collocation errors or loan translation, previously acquired knowledge can and often does interfere with the correct intake of new lexis and new meaning in memory, and what is incorrectly stored is incorrectly retrieved for usage.

There are also certain characteristics of words that make them more likely to be difficult for learners to remember (Thornbury, 2002). These include words that are difficult to pronounce (such as '*clothes*'), that have confusing spelling (such as '*desert*' and '*dessert*'), words that are long or complex (like '*thorough*'), typical of English with its many silent letters), and those that have multiple meanings (such as '*like*', '*bore*' or '*ring*').

In this section I have explained a few of the obstacles to learning and remembering lexis that many of our students often confront. In the next section, I will describe various memory strategies that we as teachers, and our students themselves, can employ during the learning and remembering of new language.

### **Memory Strategies for Learning and Remembering Vocabulary**

To aid memory, learners and teachers can take advantage of many different learning conditions and mnemonic strategies which can help achieve long-term retention of information. These include repetition, not necessarily in the sense of rote learning that had been the mainstay of traditional methodologies such as audiolingualism, but rather repeated encounters with the word (Thornbury, 2002). Memory is shaped through experience, and repeated stimuli cause what is called the "repetition effect" (Stevick, 1996). This effect occurs when the delay between stimulus and comprehension, or encoding time, is reduced after each subsequent exposure. Retrieval practice (Schmitt &

Schmitt, 1995; Thornbury, 2002) is a more active type of repetition, where memory pathways are consolidated through repeated efforts to remember an item.

Another form of repetition is the calculated spacing of learning events, an important pedagogical technique where reviews of material are distributed at longer and longer intervals in order to stretch memory into long-term. Stevick states: "Some writers suggest that the superiority of distributed practice lies in the fact that it allows the mind to store a greater variety of cues instead of storing multiple copies of essentially the same image" (1996, p.112).

However, the afore-mentioned types of repetition may not result in long-term storage unless the material is organized in some meaningful way, as expressed by Kershaw:

*Much of the art of teaching...depends on making what needs to be learned meaningful in order to make it memorable, creating a dynamic of interaction between learner and the matter to be learned.*

(1997, p.165)

As we have seen, different associative contexts can be used to create meaningful mental linkages. Another example of these would be the "episodic memory" (Stevick, 1996) of the surrounding stimuli that are present at the time a word is being learned. Sensory or emotive experiences during learning create a personalized rather than purely factual knowledge, which helps in the recognition of the word on future encounters. The use of humour is a very effective way of doing this, as is employing physical action in the classroom, which is the basis of the Total Physical Response approach (Brown, 2000; Oxford, 1990; Stevick, 1996; Thornbury, 2002).

Mental imagery is particularly effective for remembering. When words are associated with images, research findings have shown that they are much more memorable for the learner (Oxford, 1990; Stevick, 1996; Thornbury, 2002). The more easily the image is visualised, the better the word is learned. These images could be of the item itself, or of a contextual clue relating its meaning or sound to something familiar to the learner, or to a keyword. These visual mnemonics, or memory 'tricks' (Hatch & Brown, 1995; Thornbury, 2002), can also be auditory. An example of a combined visual and auditory mnemonic might be the origin of the Mexican word 'gringo', which, according to one popular legend, uses the image of green-jacketed American soldiers being told "Green...go!" to leave the country (Holt, 1961).

The above types of associative contexts and systems can form the basis for creating 'schemata', or mental representations drawn from previous experiences and pre-existing knowledge. A familiar context can help us to remember, or even predict, the meaning of an unknown word or expression used within that context. Harmer explains how this works in the following quotation:

*When we are stimulated by particular words, discourse patterns, or contexts, such schematic knowledge is activated and we are able to recognize what we see and hear because it fits into patterns we already know.*

(2001, p.199)

Therefore, before presenting new material to our students, it is recommendable to create a pre-activity presenting familiar background or context material related to the topic that allows the students to collocate this new information within familiar territory and later remember it more easily.

Memory is greatly affected by different learning styles (Reid, 1995). Sensory preferences, such as visual, auditory, tactile or kinaesthetic, influence what material is more likely to be taken into the mental lexicon. These sensory learning styles, as well as social and affective factors, produce a variety of learning behaviours which should be taken into consideration in determining how our students can best remember different lexical items. Visual/nonverbal learners, for example, can be offered aids such as diagrams, maps, pictures, realia, films, or guided visualization, to introduce knowledge through their preferred "perceptual learning channels" (Reid, 1995). Students who are more auditive can recall vocabulary better when it is presented through this type of medium, such as film dialogues, music or other recorded materials. They can benefit greatly by participating in conversation groups, and by receiving information, such as activity instructions, commentaries or feedback from the teacher, in spoken rather than written form. On the other hand, certain students become distracted or restless when there isn't enough physical movement in the class, so they need kinaesthetic-type activities such as passing a ball around to prompt turn-taking, miming, 'walk and talk' activities, 'Simon says', or simply getting up to write on the board, in order to keep their memory channels receptive to new input.

All of these learning styles, while not always detected by the teacher, are usually present in any group of students and will affect how they absorb and retain new language, and should be taken into consideration during the course of teaching.

One strategy that can be used in order for new words to be caught up in the previously-mentioned 'articulatory loop' within the working memory is to write them down. For example, vocabulary notebooks are a useful means for the student to keep a record of new words as they are being learned. Writing words down provides a way of lengthening the learner's working memory's encounter with the words. At the same time, words are recycled within memory as they are organized within the notes, such as in the following ways: grouping words by semantic families, parts of speech, spelling, synonyms, antonyms, translations, paired words, opposites, roots and derivatives (Schmitt & Schmitt, 1995). There are various note-taking formats that can help learners sift through and organise new input. These include simple lists, clustering of related information in semantic maps, outline forms, hierarchical trees and summarised information (Lewis, 2000; Oxford, 1990).

Strategies for avoiding the confusion caused by 'false friends' could include pointing out contrasts between similar L1 and L2 words, using opposites, imagery or simply showing the humorous side of the misunderstanding. This could provide a new associative context that will hopefully help your student remember the real meaning of the word the next time it is encountered.

For avoiding cross-language errors, looking up unfamiliar words or refreshing the memory, the best and most underused resource, I believe, is the dictionary, both monolingual and bilingual. Increasingly, phrases and collocations are being included in dictionaries (Lewis, 1993), such as the *Cobuild Dictionary* (Sinclair, 1993), which make them an excellent learning resource. Logically, a dictionary is a very dense source of lexis, and very handy for the immediacy of communicative needs. The one book I used for becoming a fairly competent Spanish-speaker was the *University of Chicago English-Spanish Dictionary* (University of Chicago, 1977), which still serves me as a memory device after twenty-five years of speaking Spanish.

### Conclusion

Although vocabulary learning is sometimes thought of as easy, I think most teachers would agree that many of our learners have serious problems remembering much of what they are exposed to in class. Considering the thousands of words that must be learned to become fluent in a language, teachers should take into account how memory functions and what memory strategies can be implemented.

Memory decay can be avoided by providing situations for repeated and appropriately spaced exposure to new words, as well as opportunities for memory retrieval practice. Interesting associative prompts, or cues, can be thought up by a creative teacher, and students can be shown how to make them themselves. Interference can be minimized by effective classroom management and by managing the L1 of the students, while at the same time taking advantage of the learning opportunities it holds. Being aware of individual learning styles can help teachers to choose adequate learning materials and activities for their particular mix of students. Mnemonic devices such as vocabulary notebooks and dictionaries are immeasurably useful, although often overlooked and underused.

We have all been students at some time and we have seen how our own memory works, and fails, which can help us to understand the dilemmas faced by our students. We can look back and remember, (if we can remember!), the strategies that we used during our own language learning experiences, as well as search for new strategies to help our students retain as much of what we teach them as possible. These are only a few of the things we can do as teachers, when we begin to look at language teaching from the receiving end, which is the learner's memory.

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