

29 All those New Words: Now You See Them, Now You Don't

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29.1 The importance of vocabulary acquisition in language learning

Originally, language was conceived as a package of two areas of study: grammar and lexis. Learners, then, had to master a set of grammar rules on the one hand and a list of words on the other. Over the years, the grammar-lexis distinction has been discarded, as there were items, such as idioms, that did not fall well into either of the two areas, and has been replaced by a more realistic view of language as a continuum from simple to more complex units of language (Langacker, 1991). While approaches and methods to vocabulary teaching and learning differ, what most instructors agree upon is that the extent of students' understanding of a text has a close and vital relationship with their knowledge of the vocabulary it contains (Anderson & Nagy, 1991; Baker, Simmons, & Kameenui, 1998; Ouellette, 2006). The reason is simple: if students do not know the words in a text, they cannot decipher its meaning. Vocabulary is, therefore, critical for understanding and communicating effectively in a language. Deliberately teaching vocabulary may be one of the least efficient ways of developing learners' vocabulary knowledge, it is nonetheless an important part of a well-balanced vocabulary programme (Nation, 2005). Teachers should pay attention to the ways in which learning style preferences might affect vocabulary learning. Students who struggle to acquire new vocabulary may have generalized linguistic deficiencies, memory deficits, poor word learning strategies, or any combination of the three (Baker, Simmons, & Kameenui, 1995). Cultural and ethnic differences in learning styles may be very important and should be considered in understanding how people learn vocabulary. Sensory preferences, such as visual, aural, tactile, and kinesthetic, should be assessed (see Reid, 1987). Learners with a visual style are likely to enjoy visual imagery and semantic mapping, while aural learners might prefer aural imagery and the keyword, and kinesthetic-tactile learners might opt for physical response or physical sensation.

29.2 What is a word and what makes it easy or difficult to learn?

Words are the most important element in the human system of communication but it seems that while most people think they know what a word is, few of us actually consider their central role in everyday communication (Joannopoulou, 2000). A first difficulty lies in the ambiguity of the term 'word'. For example, a word may be seen as a form, either spoken or written, or it may also be considered as an expression combining both form and meaning. A first attempt to define the word concept has to do with the distinction of words as tokens or types (Lyons, 1995). The following well known expression "To be or not to be?" may be considered to contain either six words (to, be, or, not, to, be) or four words (to, be, or, not) since 'to' and 'not' occur twice. The first case is an example of words operating as tokens (actual instances of items) and the second case can be thought of as words operating as types (items which don't have similar identities). In everyday life, it is relatively straightforward to distinguish which sense of a 'word' is intended in everyday communication, for example, when discussing an SMS that consists of 50 words, it is clear to everyone that a reference is made to tokens and

not types. One of the definitions of a word comes from Carter (1987) who focuses on meaning and defines a word as 'the minimum meaningful unit of language'. On the other hand, Bloomfield's definition of the word (1984) as 'a minimum free form' stresses the distributional independence of words; a 'word' is a word if it can stand in isolation, if it can be a one word utterance. In this paper, the term 'word' will be used in the sense of a lexical item or a unit of meaning, that is, a phrasal or an idiom will be considered as one 'word'. The study of vocabulary is an essential part of language learning and the question of how much vocabulary a learner needs to know to achieve a particular purpose remains an important area of research and discussion. Whether the number of words in a modern language is 50,000 or 500,000 or somewhere in between, as variously claimed by different researchers using different counting units and methods, either of these numbers is daunting to an L2 learner. Acquiring a second lexicon is a daunting task for language learners, especially if the goal is to achieve literacy in the second language. But the task becomes more manageable if we know which words are more important to learn than others, or which words are most useful to know as a precondition to learning others. In English, computational studies of word frequency and text coverage, in conjunction with empirical studies of learner comprehension of texts with different lexical profiles, have provided valuable information for both course designers and independent learners. It has become clear that words of particular frequencies have predictable degrees of prominence in texts of particular genres. For example, the 1000 most frequent words, along with proper nouns, tend through repetition to make up about 90% of the running words in spoken conversations.

The vast majority of English words are found mainly in written texts, while a relatively small handful are encountered in daily conversation and watching television. This means that for the many learners who achieve conversational fluency in an L2 rather than full literacy, the vast majority of words are simply inaccessible for learning through naturalistic acquisition. (Cobb & Horst, 2004) From the learner's point of view, a crucial factor in L2 vocabulary acquisition regardless of word frequency, is word 'learnability'. This is the ease or difficulty with which a particular word can be acquired. (Bogaards & Laufer, 2004) Main factors regarding a word's learnability can be organized in four areas:

29.2.1 Phonological factors

Pronounceability: Levenston (1979) provides evidence through his research, which involved adult learners, to support the hypothesis of avoidance of phonologically difficult words. And although one could argue that this kind of avoidance might hinder only the production of words, but not their comprehension, evidence to the contrary can be found in the work of Gibson and Levin (1975). The result of their experiment on nonsense words showed that the pronounceable words were perceived more accurately than the unpronounceable ones. Phonological regularity, therefore, is a facilitator in comprehension. A foreign language learner, then, will have a better chance to perceive and produce words that follow a familiar phonological pattern and can be easily pronounced.

Length: it would seem reasonable to argue that the longer the words are, the more difficult they would be more difficult to learn. Research here is not conclusive and the answer seems to be heavily dependent on other factors. For example, Philips (1981) found that length did have a significant influence on learning but this decreased with the increase of the learner's proficiency. And in Stock's study (1976), three syllable Hebrew words had a higher retention of two syllable ones.

29.2.2 Grammatical factors

Part of speech: it is often supported that certain parts of speech are more difficult to learn than other. By experience, nouns seem to be the easiest, adverbs the most difficult; verbs and adjectives somewhere in between. In the previously mentioned experiment, Phillips found that nouns were easier to learn than verbs or adjectives but, again, this decreased as the learner's proficiency increased.

Inflexional complexity: Certain inflexional features can make an item more difficult to learn. Most common examples of this are the irregularity of the plural, or the gender of inanimate nouns.

Derivational complexity: the morphology of a word can often serve as a facilitator in the recognition of a new word and the subsequent production of it. So if learners are familiar with the suffix –ship and the word friend, they will be able to recognize the word friendship. However, lack of regularity with which morphemes can or cannot combine to create meanings can certainly be a source of difficulty. Moreover, there is also the case of ‘deceptive transparency’ which is a special case of morphological difficulty in comprehension, in which learners erroneously think they can interpret meaning from its parts because they look familiar. For example, under often means at a lower position of something and it is so in underpass, underground and even underclothes, but learners would have difficulty with undertake, underage and undergraduate or come to wrong conclusions about their meaning.

29.2.3 Semantic factors

Abstractness: Allen and Vallette (1972) report “Concrete words are the easiest to learn. Neither young, nor older students have trouble in learning numbers, days of the week, colours, names of objects and the like.” However, in certain cases, where there is lack of distinction between two words in a learner’s L1, there is a greater degree of difficulty in learning those two words in L2, for example two different kinds of ‘blue’ in Hebrew L2 would create difficulty in English L1 learners (Stock, 1976) and vice versa. So concreteness in itself cannot assure ease in learning, but it does seem to be a facilitator in this direction.

Specificity: in their study of simplification, Blum and Levenston (1978) conclude that “learners will prefer words that can be generalised to use in a larger number of contexts. In fact they will overgeneralise such words, ignoring register restrictions and collocational restraints, falsifying relationship of hyponymy, synonymy and antonymy.” From the learner’s point of view, of course, it is safer to use more general lexical items that cover a larger area of meaning and, thus, the risk of making a mistake with the choice of a more restrictive area of meaning and use is smaller.

Idiomacity: intuitively teachers would confirm that idiomatic expressions are much more difficult to for learners to understand than their non-idiomatic equivalents. Certain researchers go as far as supporting that idioms are the biggest obstacle to fluent comprehension in the L2, be it written or oral (Marton, 1977, Bensoussan & Laufer, 1984). Surprisingly enough, idiomacity seems to present a difficulty even when the L1 and L2 are similar in the use of the idiom. In Kellerman’s work (1978), with Dutch learners of English, even though the idioms investigated were semantically and formally equivalent in Dutch and English, there was only a limited facilitating effect of this similarity on learners’ performance.

29.2.4 Usage

Register: Register has been defined as “a variety of language distinguished according to use” (Halliday, McIntosh & Strevens, 1964). They mention three parameters of register: field of discourse (subject of matter under consideration), mode of discourse (spoken or written) and style of discourse (determined by the relation among the participants). L2 learners are very often unaware that the lexical items frequent in one field of discourse or mode of discourse may not be normal in another and that words acceptable when used with certain addressees may be unacceptable with others. Not surprisingly, “neutral” words, which can be used in all registers will be easier to learn, and more register specific words will be more problematic. The selections of register appropriate words would require that the learner needs to familiarise with extra-linguistic phenomena, such as socially defined relationships within a community.

Multiple meaning: In an ideal language each form would have only one meaning and each meaning would have only one form (Lyons, 1968). In practice, however, one form may have several meanings and several meanings may be represented by different forms. The first case refers to polysemy whereas the latter to homonymy. Polysemy is the property of a single lexeme to refer to several meanings often related to each other, e.g. “eye” could be a number of things, from a part of the body to the hole in a needle. Homonyms, on the other hand, are

separate lexical items with distinct meanings unrelated to each other; for example, “shoulder” as a part of a body or the side of a road. It is very hard to distinguish which meanings are related and which ones are not. As expected, in their study, Bensoussan and Laufer found that polysemy induced the largest number of error in comprehension of words. One of the main reasons being that learners who are familiar with one meaning of the word often do not abandon this meaning even if it does not make sense in context. For example, “since” in the sense of “because” instead of “from the time when”.

29.3 Cognitive Load Theory and Learning Burden

Learnability factors determine how easy or difficult a word would be for a learner, and thus affect the cognitive load of a word. Cognitive load (Sweller, 1988) refers to the total amount of mental effort being used in the working memory. Cognitive load theory was developed out of the study of problem solving and is based on a number of widely accepted theories about how human brains process and store information (Gerjets, Scheiter & Cierniak, 2009). These assumptions include that

- a) human memory can be divided into working memory and long-term memory
- b) information is stored in the long-term memory in the form of schemas (units of knowledge)
- c) processing new information results in ‘cognitive load’ on working memory which can affect learning outcomes. (Anderson 1977; Atkinson & Shiffrin 1968; Baddeley 1983)

According to George Miller's information processing research (1956), short term memory is limited in the number of elements it can contain simultaneously (the magical number seven). Therefore what the Cognitive Load Theory implies is that because short-term memory is limited, learning experiences should be designed to reduce working memory ‘load’ in order to promote schema acquisition.

Cognitive load theory differentiates cognitive load into three types: intrinsic, extraneous, and germane. Intrinsic cognitive load is the effort associated with a specific topic. Extraneous cognitive load refers to the way information or tasks are presented to a learner. And, germane cognitive load refers to the work put into creating a permanent store of knowledge, or a schema. Heavy cognitive load can have negative effects on task completion, and it is important to note that the experience of cognitive load is not the same in everyone. The elderly, students, and children experience different, and more often higher, amounts of cognitive load. Children have less general knowledge than adults which increases their cognitive load. Cognitive load theory has many implications in the design of learning materials which must, if they are to be effective, keep cognitive load of learners at a minimum during the learning process.

29.3.1 Learning burden

Turning to vocabulary teaching, the main problem is that only a few words and a small part of what is required to know a word can be dealt with at any one time (Nation, 2005). This limitation also applies to incidental learning from listening or reading, but it is much easier to arrange for large amounts of independent listening and reading than it is to arrange for large amounts of teaching. Teaching can effectively deal with only a small amount of information about a word at a time. The more complex the information is, the more likely the learners are to misinterpret it.

Part of effective vocabulary teaching involves working out what needs to be taught about a word. This is often called the learning burden (Nation, 2005) and is closely related to the cognitive load theory mentioned earlier. Naturally, learning differs from word to word according to the ways in which the word relates to first language knowledge and already existing knowledge of the second language and/or other known languages. The way to work out the learning burden systematically is to consider each aspect of what is involved in knowing a word. Table 1 (Nation, 2005) lists the kinds of questions that can be asked to discover the learning burden of a word. When asking the questions it is necessary to have a particular L1 in mind. If the teacher has a class of learners with a variety of L1s or if the teacher has no knowledge of the learners’ L1 then the best that can be done is to think if the word fits into

regular patterns in the L2. For example, is it regularly spelled? Does it fit into the same grammatical patterns as other L2 words of similar meaning? Does it have a narrow range of senses with a clear underlying core meaning?

Meaning	Form and meaning	Is the word a loan word in the L1? Is there an L1 word with roughly the same meaning? Does the word fit into the same sets as an L1 word of similar meaning?
	Concept and referents	
	Associations	
Form	Spoken form	Can the learners repeat the word accurately if they hear it?
	Written form	Can the learners write the word correctly if they hear it?
	Word parts	Can the learners identify known affixes in the word?
Use	Grammatical functions	Does the word fit into predictable grammar patterns?
	Collocation	Does the word have the same collocations as an L1 word of similar meaning?
	Constraints on use	Does the word have the same restrictions on its use as an L1 word of similar meaning?

Table 1

29.4 Vocabulary learning techniques – context oriented

Once a teacher has decided upon how many words are to be taught and which those words should be; another issue arises, that of how these should be taught. What is crucial about "knowing an L2 word" involves not just the ability to recognize the word or to match it with its L1 counterpart, if such exists; but also involves being able to use the L2 word communicatively in any of the four main language skills. So, to use Anderson's distinction (1980), it goes beyond merely "knowing that" (declarative knowledge of facts, definitions, or relationships) and includes "knowing how" (procedural knowledge, in this case the communicative use of L2 words). So what techniques should be used in order to achieve the best possible results?

The following techniques, by which vocabulary instruction has been handled, mishandled, or avoided almost entirely by L2 teachers, all have their advantages and disadvantages in L2 learning. They are classified into three groups: decontextualizing, semi-contextualizing, and fully contextualizing (Oxford, & Crookall, 1980). Decontextualizing techniques are those that remove the word as completely as possible from any communicative context that might help the learner remember and that might provide some notion as to how the word is actually used as a part of language. Semi-contextualizing techniques allow some degree of context but fall short of full contextuality; thus, new words may be linked with something that is meaningful to the learner, but they are not used as part of naturalistic communication. Fully contextualizing techniques are those that embed the new words in a more or less normal communicative context. These three types of techniques are not discrete but could instead form a continuum of contextuality.

29.4.1 Decontextualizing Techniques

The three techniques that seem to be the most decontextualizing are word lists with or without their L1 equivalents, flashcards, and conventional dictionary use. However, it is sometimes possible to modify these techniques to inject a bit of context.

29.4.2 Semi-contextualizing Techniques

A number of semi-contextualizing techniques exist for learning L2 vocabulary: word grouping, word or concept association, visual imagery, aural imagery, keyword, total physical response, and semantic mapping.

29.4.3 Fully contextualizing Techniques

Reading and Listening Practice

L2 reading practice can involve a vast variety of material: comic strips, advertisements, letters, articles, stories, newspapers, magazines, books, jigsaw reading exercises (Crookall & Watson, 1985), and so on. Some theorists believe that through reading practice students will absorb and retain vocabulary by osmosis, i.e., merely by reading words in context without any special training in either vocabulary learning or reading. For instance, Krashen (1982) recommends that students do "massive amounts of reading for pleasure," which he suggests will automatically increase their vocabulary (Krashen, 1988). He concedes that it is indeed possible to make small gains in vocabulary knowledge through large amounts of special vocabulary learning effort, but says that this is not worth the time involved and that better results can come through massive reading alone. However, though learners might be able to infer the meaning of a word read in context, this does not guarantee that the word is completely learned or known.

Writing and Speaking Practice

Some L2 teachers may feel that students learn vocabulary most effectively by practicing it through speaking or writing. Sufficient exposure to the new target language word in meaningful, communicative, oral or written contexts is no doubt essential. Simulation/gaming, small group discussions, project work, and other communicative techniques provide naturalistic, motivating practice in speaking and writing (Jones, 1982; Crookall & Oxford, 1990; Crookall & Saunders, 1989). The ability to productively use new vocabulary is extremely important.

Practicing the four language skills of reading, listening, speaking, and writing can provide full context. As teacher we might expect that practice is at the very core of L2 vocabulary learning techniques, and that nothing else might be necessary. There are indeed theories supporting that L2 practice, particularly naturalistic practice, is automatically equivalent to vocabulary learning. This has mostly been referring to the reading area, but the assumption also implies the other three skills.

29.5 Words as Tools – Engagement and motivation

The problem is that practice alone is not sufficient for vocabulary growth and retention. What is certainly also required is the learner's genuine personal interest in challenging tasks and activities that create the need for expansion of vocabulary, along with specific vocabulary learning techniques adapted to the person's needs and learning style. This adaptation should take into account the degree of difficulty of each task which, according to Csíkszentmihályi's "Theory of Flow" (1996, 2008), should balance the learner's skill with the challenge that a task presents. Flow is an optimal psychological state that people experience when engaged in an activity that is appropriately challenging to one's skill level, often resulting in immersion and concentrated focus on a task. This can result in deep learning and high levels of personal and work satisfaction. Flow is one of eight mental states that can happen during the learning process. In addition to flow, these mental states include anxiety, apathy, arousal, boredom, control, relaxation, and worry; they result when a learner experiences a combination of skill and challenge levels of a task in non-optimal combinations.

In their work on learning strategies for idioms, Boers, Demecheleer & Eyckmans (2004) concluded that vocabulary retention may also be enhanced by positive affect, for example when the learner finds the etymological explanations of a certain idiomatic expression that are offered surprising and/or relevant to the learning process. In sum, whether or not a particular idiom is retained well under etymological elaboration may depend on the complex interplay of at least three dimensions:

- (1) degree of cognitive effort,
- (2) likelihood of dual coding, and
- (3) affect (e.g. motivation, engagement)

Dual-coding theory is a theory of cognition hypothesized by Allan Paivio in 1971. In developing this theory, Paivio used the idea that the formation of mental images aids in learning (Reed, 2010). According to Paivio, there are two ways a person could expand on learned material: verbal associations and visual imagery. Ellis and Beaton (1993) support that verbs are more abstract than other categories and that is why they pose more problems than nouns. They state that vocabulary learning is greatly facilitated by the fact that learners create and use images when they learn new words and this is especially evident in the acquisition of nouns, but what is the case with other parts of speech or more complex lexical items?

As teachers we would like to engage learners in activities and genuinely enhance their personal interest. Intuitively, teachers would say that the more learners engage with a new word, the more likely they are to learn it. Certain researchers go as far as to support that the minimum number of contextual reading encounters for a new word/meaning to be learned is around ten (Saragi, Nation, & Meister, 1978). Craik and Lockhart's (1972) Depth/Levels of Processing Hypothesis laid the basic groundwork by stating that the more attention given to an item, and the more manipulation involved with the item, the greater the chances it will be remembered. According to Nation (2014), the two most important conditions supporting learning are spaced repetition and the quality of attention given to items. Similarly, Hulstijn and Laufer (2001) contend that the more the three components of hypothesis, i.e. need, search, and evaluation, are involved in a given task, the better it will result in word retention. Need, as one of the components, is defined as the requirement for a linguistic feature in order to achieve some desired task, such as needing to know a particular word to understand a passage. Search is the attempt to find the required information, for example, looking up the meaning of that word in a dictionary. Evaluation refers to the comparison of the word, or information about a word, with the context of use to determine if it fits or is the best choice. They also reviewed a number of studies and noticed that the tasks with relatively more need, search, and evaluation elements were more effective. However, there is a range of other factors such as increased frequency, attention, exposure, noticing, intention, interaction spent on the lexical items that recur throughout the literature as facilitating vocabulary learning.

Aristotle described all men as having an inborn desire to know. In social learning, Vygotsky cited the child's interests as the best source of engagement, going so far as to say that the child's interests should be our allies. Ausebel et al. (1978) believed that "motivation, although not indispensable for limited and short-term learning, is absolutely necessary for the sustained type of learning involved in mastering a given subject-matter discipline [with its effects] largely mediated through...attention, persistence, and increased frustration tolerance" (p. 397 in Weibell, C. J. 2011)). Words cannot be conceived of as mere signals of something but also as tools that allows us to operate in the world (Borghini, A. M. & Cimatti, F., 2009). Nagy and Townsend (2012) use the metaphor 'words as tools' in their understanding of academic vocabulary instruction where words are means of communicating content. According to McCarthy (1990) "no matter how well the student learns grammar, no matter how successfully the sounds of L2 are mastered, without words to express a wide range of meanings, communication in an L2 just cannot happen in any meaningful way". Through activities that stimulate an interest in words as tools for expressing opinions, knowledge and wonderings, students can be supported in developing a disposition towards examining word parts and how words are used in academic contexts—what they call 'word consciousness' by Scott and Nagy (2004).

"Vocabulary is not an end in itself but a rich vocabulary makes the skills of listening, speaking, reading, and writing easier to perform." Nation, P. (1994).

29.6 References

- Allen, E.D. & Vallette, R. M. (1972) *Modern Language Classroom Techniques: a Handbook*. Harcourt, Brace, Jovanovich Inc., New York
- Anderson, J. R. (1980) *Cognitive psychology and its implications*. San Francisco, Freeman
- Anderson, R. C. (1977) *Schema-directed processes in language comprehension*. In: Lesgold A.M., Pellegrino J.W., Fokkema S.D., Glaser R. (eds) *Cognitive Psychology and Instruction*. Nato Conference Series, vol 5. Springer, Boston, MA
- Anderson, Richard C. & Nagy, W.E. (1991) *Word meanings*. In Rebecca Barr, Michael L. Kamil, Peter B. Mosenthal & P. David Pearson (eds.), *Handbook of Reading Research* (vol. 2) 690-724. New York: Longman
- Atkinson, R. C., & Shiffrin, R. M. (1968). *Human memory: A proposed system and its control processes*. In K. W. Spence & J. T. Spence (Eds.), *The psychology of learning and motivation*. Vol 2, NY: Academic Press.
- Ausebel, D.P., Novak J., Hanesian H. (1978) *Educational Psychology: a cognitive view*. New York, Holt, Rinehart and Winston
- Baddeley, A.D. (1983). *Working Memory*. *Philosophical Transactions of the Royal Society of London. Series B, Biological Sciences*. The Royal Society Publishing
- Baker, S.K., Simmons, D.C. & Kameenui, E.J. (1998) *Vocabulary Acquisition: Synthesis of the Research*. Washington, DC: U.S. Department of Education, Office of Educational Research and Improvement, Educational Resources Information Center.
- Baker, S.K., Simmons, D.C., & Kameenui, E.J. (1995) *Vocabulary acquisition: Curricular and instructional implications for diverse learners*. [On-line]. Available:
- Bensoussan, M. & Laufer, B. (1984) *Lexical guessing in context in EFL reading comprehension*. *Journal of Research in Reading* Vol 7, UKLA
- Bloomfield, L. (1984) *Language*. University of Chicago Press
- Blum S. & Levenston E. A. (1978) *Universals of lexical simplification*. *Language Learning*, Vol 28 Issue 2 University of Michigan
- Boers, F., Demecheleer, M., & Eyckmans, J. (2004) *Vocabulary in a second language: selection, acquisition, and testing*. John Benjamins B.V.
- Bogaards, P., Laufer, B. (2004) *Vocabulary in a second language: selection, acquisition, and testing*. John Benjamins B.V. Publishing Company, Amsterdam/Philadelphia
- Borghi, A. M, & Cimatti, F. (2009). *Words as Tools and the Problem of Abstract Word Meanings*. *Proceedings of the Annual Meeting of the Cognitive Science Society*, 31. Retrieved from <https://escholarship.org/uc/item/58m9n8rp>
- Carter, R.A. (1987) *Vocabulary: Applied Linguistic Perspectives*. Allen and Unwin, London
- Cobb, T. & Horst, M. (2004) *Is there room for an academic word list in French?* John Benjamins Publishing Company, Amsterdam/Philadelphia
- Craik, F., & Lockhart, R. (1972) *Levels of processing: A framework for memory research*. *Journal of Verbal Learning and Verbal Behavior*, 11, 671 – 684
- Crookall, D., & Saunders, D. (1989) *Communication and simulation: From two fields to one theme*. Clevedon and Philadelphia: Multilingual Matters
- Crookall, D., & Oxford, R. (1990) *Language learning through simulation/gaming*. New York, Newbury House/Harper & Row
- Crookall, D., & Watson, R. (1985) *Some applied and theoretical perspectives on a jigsaw reading exercise*. *International Review of Applied Linguistics* Vol 69
- Csíksszentmihályi, M. (1996). *Flow and the psychology of discovery and invention*. New Yprk: Harper Collins. Chicago

- Csikszentmihályi, M. (2008). *Flow: The psychology of optimal experience*. New York, NY: Harper Perennial.
- Ellis, N. & Beaton, A. (1993) *Psycholinguistic Determinants of Foreign Language Vocabulary Learning*. *Language Learning*, Vol 43, University of Michigan
- Gerjets, P., Scheiter, K. & Cierniak, G. (2009) *The Scientific Value of Cognitive Load Theory: A Research Agenda Based on the Structuralist View of Theories*. *Educational Psychology Review* Vol 21
- Gibson, E. J. & Levin, H. (1975) *On the perception of words: an application of some basic concepts*. in *The Psychology of Reading*. MIT Press, Cambridge MA
- Halliday, M., McIntosh, A. & Strevens, P. (1964) *The Linguistic Science and Language Teaching*. Longman, London
- <http://idea.uoregon.edu/~ncite/documents/techrep/tech14.html>.
- Hulstijn, J. H. & Laufer, B. (2001). *Some empirical evidence for involvement load hypothesis in vocabulary acquisition*. *Language Learning*, 51, 539-558
- Joannopoulou, M. (2000) *The second language mental lexicon: some evidence from Greek advanced learners of English*. PhD - Aristotle University
- Jones, K. (1982) *Simulations in language teaching*. Cambridge: Cambridge University Press
- Kellerman, E. (1978) *Giving learner a break: native language intuitions as a source of predictions about transferability*. *Working Papers in Bilingualism* 15 Ontario Institute for Studies in Education
- Krashen, S. (1982) *Principles and practices in second language acquisition*. Oxford, Pergamon
- Krashen, S. (1988) *Research on second language spelling and vocabulary acquisition*. Presentation at the Symposium on Research Perspectives on Adult Language Learning and Acquisition, The Ohio State University, Columbus, OH
- Langacker, R.W. (1991) *Foundations of Cognitive Grammar. Volume II: Descriptive Application*, Stanford University Press
- Levenston, E. A. (1979) *Second language acquisition: issues and problems*. *Interlanguage Studies Bulletin* 4
- Lyons, J. (1968) *Introduction to Theoretical Linguistics*. Cambridge, Cambridge University Press
- Lyons, John. (1995) *Linguistic semantics: An introduction*. Cambridge, Cambridge University Press
- Marton, A.V. (1977) *Foreign vocabulary learning as problem No1 of language teaching at the advanced level*. *Interlanguage Studies Bulletin* Vol 2, Sage Publications LTD
- McCarthy, M. (1990) *Language Teaching: A Scheme for Teacher Education*. Oxford: Oxford University Press
- Miller, G.A. (1956). *The magical number seven, plus or minus two: Some limits on our capacity for processing information*. *Psychological Review*, Vol 63, 81-97
- Nagy, W., & Townsend, D. (2012). *Words as tools: Learning academic vocabulary as language acquisition*. *Reading Research Quarterly*, 47, 91-108. doi:10.1002/RRQ.011
- Nation, P. (2005) *Teaching Vocabulary*. *Asian EFL Journal* Volume 7
- Nation, P. (2014) *What do you need to know to learn a foreign language?* Available from <http://www.victoria.ac.nz/lals/about/staff/paul-nation>
- Nation, P. (1994). *New Ways in Teaching Vocabulary*. TESOL
- Ouellette, G. (2006) *What's meaning got to do with it: The role of vocabulary in word reading and reading comprehension*. *The Journal of Educational Psychology* 98(3), 554-566.
- Oxford, R. & Crookall, D., (1980) *Vocabulary Learning: A Critical Analysis of Techniques*. *TESL Canada Journal*, Volume 7, Issue 2
- Paivio, A. (1971) *Imagery and verbal processes*. New York. Holt, Rinehart, and Winston
- Phillips, T.A. (1981) *Difficulties in Foreign Language Vocabulary Learning and a Study of some Factors Thought to be Influential*. M.A Project, Birkbeck College, University of London

- Reed, S. K. (2010) *Cognition: Theories and application*. Belmont, CA, Wadsworth Cengage Learning
- Ried, J.M., (1987) *The Learning Style Preferences of ESL Students*. *TESOL Quarterly*, Vol 21, Issue 1
- Saragi, T., Nation, I. S. P., & Meister, F. (1978) *Vocabulary learning and reading*. *System*, 6, 72–78
- Scott, J.A. & Nagy, W. E. (2004). *Developing Word Consciousness*. In J. F. Baumann & E. J. Kame'enui (Eds), *Vocabulary Instruction: Research to Practice* (pp 201-217). New York: The Guilford Press.
- Stock, R. D. (1976) *Some Factors Affecting the Acquisition of a Foreign Language Lexicon in the Classroom*. University of Urbana, IL
- Sweller, J. (1988) *Cognitive Load During Problem Solving: Effects on Learning*. *Cognitive Science* Vol 12
- Weibell, C. J. (2011). *Principles of learning: 7 principles to guide personalized, student-centered learning in the technology-enhanced, blended learning environment*. Retrieved July 4, 2011 from [<https://principlesoflearning.wordpress.com>]