Reading, word-focused activities and incidental vocabulary acquisition in a second language

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ABSTRACT
Reading is claimed to be the major source of vocabulary growth in L1, but is it also the main source of L2 vocabulary? This paper surveys some experiments in acquiring L2 vocabulary from reading that report very small vocabulary gains from short and long texts. By comparison, reading supplemented with word-focused tasks yields better results. Similarly, when reading is compared with a word-focused activity alone, it is the latter that is more effective for L2 vocabulary acquisition. The hypothesis of ‘task-induced involvement load’ is suggested as an explanation and prediction of task efficacy.

Introduction
One of the basic questions in vocabulary research is: ‘What is the main source of L2 vocabulary knowledge?’ A very influential view of vocabulary acquisition claims that we acquire most words through exposure to language input, particularly reading input, rather than by deliberately committing words to memory. This position is usually referred to as the default hypothesis since it is justified in negative terms: the number of words that are learnt is too vast to be accounted for by instruction (Nagy et al 1985; Sternberg 1987). When we consider the number of words that people know in their native language, the hypothesis makes sense. According to modest estimates, the number of words that English-speaking high school graduates know in English is about 20 000 word families (Nation 1990). Less modest estimates claim the number is much larger – about 50 000. Such figures seem to support the default hypothesis. Yet these figures are very different from the vocabulary size of foreign learners. For example, Japanese college learners of English as a Foreign Language (EFL) were found to know 2000–2300 word families after receiving 800–1200 hours of instruction (Shillaw 1995; Barrow et al 1999). Indonesian EFL university learners knew 1220 word families after 900 hours of instruction (Nurweni and Read 1999); Israeli high school learners, studying the advanced curriculum in the Israeli school system, knew 3500 word families after 1500 hours of instruction (Laufer 1998).

In view of the number of hours of instruction that these students had received, we cannot dismiss the possibility that most of the words they knew
were taught rather than ‘picked up’, since it is not impossible to teach an average of 2–3 words per hour of instruction. If, however, the vocabulary was acquired mainly through input, the figures speak against the efficacy of this way of learning.

In this paper, I will survey and compare studies that investigate different sources of L2 vocabulary acquisition: reading, reading supplemented with word-focused activities, and word-focused activities alone. In the last part of the paper, I will suggest an explanation for task effectiveness.

**How many words are gained from reading?**

In evaluating the second language literature that reports on vocabulary gains from reading, we should distinguish between studies where the sole task of the learners was to read a text and studies where learners were allowed, or even asked, to carry out additional vocabulary work, such as consulting dictionaries, writing the new words down in lists or on cards. Experiments in reading demonstrated only very small word gains: 1–5 words from short texts of 1000–7000 words (Pitts et al. 1989; Day et al. 1991; Hulstijn 1992; Knight 1994; Paribakht and Wesche 1997). Slightly higher gains (six words) are reported by Dupuy and Krashen (1993), but this study included the use of video in addition to reading. In Cho and Krashen (1994), the subject who engaged in pleasure reading without using a dictionary learnt seven words from a booklet of 7000 words.

Experiments in reading together with another vocabulary activity yielded better vocabulary gains. Paribakht and Wesche (1997) compared learners in a ‘reading only’ condition with learners in a ‘reading plus’ condition. In the latter group, the task consisted of reading a text and doing a range of vocabulary exercises based on the text. The ‘reading plus’ group acquired significantly more words than the ‘reading only’ group. Luppescu and Day (1993) found that students who read a text and looked up unknown words in the dictionary remembered them better than students who read the text without a dictionary. Knight’s (1994) study compared learners who read a text and looked up unfamiliar words in an electronic dictionary with learners who read the same text without a dictionary, and presumably tried to guess some words from context. Two measures of retention (supply definition and select definition from several alternatives) showed that the dictionary group learnt more words. The difference was significant on both the immediate and delayed tests.

In Cho and Krashen (1994), the subject who did not use a dictionary at all acquired seven words, while both subjects who used the dictionary consistently and even wrote the words with example sentences in a booklet, acquired 17 and 34 words per book.

It is tempting to assume that if, for example, 5 words are learnt from reading 10 pages, then 50 words will be learnt from reading 100 pages. But there is no
evidence that this extrapolation is correct. Such calculation does not take into account memory fatigue and forgetting that might occur during a prolonged reading activity. Paying attention to a few new words may result in remembering them. An overflow of unfamiliar vocabulary, on the other hand, may have the opposite effect.

More realistic estimates of vocabulary learning through reading can be obtained from studies that used long texts. Yet most studies of extensive reading do not investigate vocabulary as such, but general improvement in reading and writing, and attitudes to reading and the language course (for examples of extensive reading studies, see Elley and Mangubhai 1983; Hafiz and Tudor 1989; Elley 1991; Mason and Krashen 1997). The studies compare the extensive reading method with more traditional teaching techniques, though it is seldom clear what is meant by these ‘traditional’ ways of teaching. When they examine the progress in vocabulary, they do not normally test the knowledge of particular words but measure vocabulary progress in general. Furthermore, it is not always clear how the learners deal with unknown words during the reading activity. If the words are underlined, written down and/or checked for meaning, then we cannot attribute the reported learning to reading only.

Studies that focus specifically on the acquisition of words encountered following book reading show very small gains. Horst, Cobb and Meara (1998) specifically looked at the number of words acquired from a simplified version of a novel, *The Mayor of Casterbridge*, which had 21 000 running words. The novel was read in class during six class sessions. It was found that the average vocabulary pick-up was five words. Two years earlier, Lahav (1996) conducted a study of vocabulary learning from simplified readers. She tested students who read 4 readers, each one of about 20 000 words, and found an average learning rate of 3–4 words per book.

The foregoing survey implies that reading is unlikely to be the main source of L2 learners’ vocabulary. If most words were indeed acquired from reading, learners would have to read approximately as much as L1 children do – that is, a million words of text a year (Anderson et al 1988). This would require reading one or two books per week (Nation and Wang 1999). If, however, teachers can expect only small quantities of reading, then word-focused activities should be considered as a means of increasing vocabulary.

**Are word-focused activities more effective than reading?**

Whatever the importance of reading as an educational activity and as a means of exposure to vocabulary, as far as incidental vocabulary acquisition is concerned, there is evidence for the superiority of word-oriented tasks over reading. (‘Activities’ and ‘tasks’ will be used interchangeably to mean a piece of work that has to be done.)
Incidental vocabulary acquisition is defined as the acquisition of vocabulary as a by-product of another activity. Intentional vocabulary acquisition, on the other hand, refers to an activity aimed at committing lexical information to memory (see Laufer and Hulstijn 2001 and Hulstijn, forthcoming, for an extensive treatment of this distinction). Incidental learning should not be confused with unattended learning. During the task, the learners may attend to the words by using them in sentences or by looking them up in a dictionary. Consequently, some of these words may be remembered even though the learners did not deliberately try to commit them to memory. Hence, this kind of learning is incidental.

Hulstijn et al (1996) and Laufer (2000) found that looking up new words in a dictionary during a reading task was more effective for incidental learning than reading with the same words glossed in the text margin by the researcher. Both studies used electronic dictionaries, and all the look-ups of the learners were registered in log files. This way, it was possible to verify that the acquired words had been looked up by the students.

Laufer and her students carried out studies with high school and university learners of English as a foreign language in which they compared word gains in a reading task with word gains from decontextualised word-focused activities. In the reading tasks, the learners had to answer general comprehension questions in order to make sure that they read the text for meaning. The word-focused activities differed from study to study. Word learning in all the studies was operationalised as the ability to supply the meaning (explanation in English or translation into Hebrew) for the target words chosen for investigation.

**READING COMPARED WITH SENTENCE WRITING**

In the first study, two groups of EFL university learners were compared on incidental acquisition of ten unfamiliar, low frequency, target words. One group encountered the words in a text. The words were glossed in the margin. The second group was given a list of the ten target words with explanation and translation of meaning, and was asked to write a sentence with each word. Producing original sentences is a difficult task, but the assumption was that a demanding task would yield good results. ‘Pushed output’ (Swain 1996) has been shown to improve learners’ grammar, and original uses of words has been shown to lead to retention of these words (Joe 1995, 1998). Upon the completion of the tasks, the subjects were given an unexpected test in which they had to provide the meaning (in L1 or L2) for the ten target words. Two weeks later, the same test was repeated. The ‘sentence writing’ group had significantly higher scores on the immediate test and on the delayed test.
READING COMPARED WITH SENTENCE WRITING AND WITH READING + SENTENCE WRITING

In the second study, learning of ten unknown words was compared in three conditions: reading, sentence writing and reading + sentence writing. The ‘reading’ group of EFL university learners read a text and used a dictionary to look up unknown words. The ‘sentence writing’ group received the target words with explanations and wrote a sentence with each word. The ‘reading + sentence writing’ group did both tasks. The learners read the text, looked up the target words in the dictionary and wrote sentences with them. On the immediate vocabulary test, the ‘reading + sentence writing’ group performed significantly better than the ‘reading’ group, and the ‘sentence writing’ group. Two weeks later, however, the picture changed. On the delayed test, the ‘sentence writing’ group and the ‘reading + sentence writing’ group were not significantly different from one another, but both significantly outperformed the ‘reading’ group. Thus, the advantage of reading, which group 3 (reading + sentence writing) had on the immediate test, disappeared. Two weeks after the vocabulary tasks, the contribution of writing sentences was the same as the contribution of sentence writing together with reading the text.

READING COMPARED WITH SENTENCE WRITING AND WITH FILL-IN TASK

The third study was conducted with high school learners – tenth graders, aged 16. One group read a text and looked up ten unknown words, the second group wrote sentences with the target words, and the third group filled in the target words in given sentences, one word in each sentence. To perform tasks 2 and 3, the groups received a list of the ten target words with explanations of their meaning. Both on the immediate and the delayed tests, the reading group performed significantly worse than the other two groups. On the immediate test, the sentence writing condition yielded the highest score. On the delayed test, the fill-in group performed best. What is important, however, is that, on the two tests, the reading group acquired the smallest number of words. (A detailed description of the studies can be found in Laufer 2001.)

READING COMPARED WITH COMPOSITION WRITING

In each of the following three studies, there is a comparison between a ‘reading’ group and a ‘composition’ group. The ‘reading’ group of Hulstijn and Trompetter (1998) read a text about the weather, looked up any unknown words in an electronic dictionary, answered comprehension questions and was subsequently tested unexpectedly on the recall of these words. Each subject was tested on the particular words s/he looked up. (The look-ups were recorded in the log file without the knowledge of the subjects.) The ‘composition’ group was asked
to write a composition about the weather and to look up any words they needed for the task in the dictionary. Each student in this group was also tested on the specific words s/he looked up. The ‘composition’ group was more successful in vocabulary gains than the ‘reading’ group.

Hulstijn and Laufer (forthcoming 2001) conducted two parallel studies in the Netherlands and Israel. The ‘reading’ groups received a text with comprehension questions. Ten target words were glossed in the margin. The ‘composition’ groups received the same target words with explanation and translation of meaning, and were asked to incorporate them in a composition about censorship of videos. (This was also the topic of the text that the reading groups read.) The subjects took two tests, immediate and delayed, on the recall of meaning of the target words. On both tests, the ‘composition’ groups remembered significantly more words than the reading groups.

SUPERIORITY OF WORD-FOCUSED ACTIVITIES

All the studies surveyed in this section demonstrated the superiority of word-focused activities over reading a text with new words, regardless of whether these words were glossed or had to be guessed. The more effective tasks involved looking up the words in a dictionary, filling the target words in given sentences, using them in original output in the form of isolated sentences, or a composition that incorporated all the target words under investigation. When reading together with looking up the words was compared with composition writing, it was the latter that fared better.

Studies that investigated vocabulary acquisition during oral tasks reached a similar conclusion – that is, doing something with the new words is more effective for learning than encountering them in the input. According to Newton (1995) and Ellis et al (1994), when the meaning of new words was negotiated during an oral activity, the words were remembered better than those whose meaning was not negotiated and possibly left to guesswork. A task requiring an output in which the new word is used yielded higher word retention scores than a task which did not require language production, even though the new words occurred and had to be understood in the oral input (Ellis and He 1999).

It is interesting to note that similar results, which point to the superiority of word-focused activities over reading, were obtained in studies conducted in different sociolinguistic contexts. The subjects of some of the studies surveyed here were learners who studied English as a Foreign Language in the classroom context. Subjects of other studies studied English in an English-speaking environment. It is often argued that the richer input which characterises second, as opposed to foreign, language contexts will provide enough repeated exposure...
to vocabulary for incidental learning. However, I am unaware of any empirical studies which show that a particular number of exposures to a word in communication is more effective than a word-focused activity. Until such studies appear, we cannot dismiss the conclusion that doing something with a word is more effective than simply coming across it.

**What makes some vocabulary activities better than others?**

**SOME SUGGESTED EXPLANATIONS**

Researchers have tried to explain why certain tasks were more effective than other tasks. Different researchers have made different claims. According to Altman (1977), an active search for a word will lead to its memorisation. According to Hulstijn et al (1996), perceiving the word as relevant to the task is what matters. Newton (1995) mentions that receiving clarifications of meaning during a communicative task was helpful in remembering new words. Ellis and He (1999) attribute successful learning of words to collaborative problem-solving activity in which the words are used. Joe (1995, 1998) found that words which were used in novel ways – that is, in new contexts – were remembered better than words used in contexts similar to those encountered in the reading material. Paribakht and Wesche (1997) claim that an effective task must involve the analysis of meaning and function of the new words.

Most researchers, though, have one claim in common. They argue that, for a task to be effective, it should induce a ‘deep level of processing’ of the new words, or a ‘high degree of elaboration’, or ‘richness of encoding’. This claim is related to Craik and Lockhart’s (1972) levels of processing depth theory, according to which the chance that some piece of new information will be stored into long-term memory is determined by the shallowness or depth with which it is initially processed. The problems with this theory lie in the difficulty of establishing what exactly constitutes a ‘level’ of processing, and with determining that one level is ‘deeper’ than another. Consider, for example, two tasks. In one, the learners have to read a passage and infer the meaning of several new words from context. In another, the meaning is provided by the teacher and learners have to write sentences with the words. It is impossible to decide which of the two tasks requires deeper processing. Only after we have compared learning in the two conditions can we say that the task which resulted in better learning required a deeper level of processing.

**THE HYPOTHESIS OF INVOLVEMENT**

Laufer and Hulstijn (2001) propose a motivational–cognitive construct of involvement, which they believe can explain and predict the degree of task effectiveness with regard to the retention of new words. ‘Involvement’ consists of three components: need, search and evaluation.
The ‘need’ component is the motivational dimension of involvement. Two degrees of prominence were suggested for need: *moderate* and *strong*. Need is moderate when it is imposed by an external agent, and strong when it is intrinsically motivated – that is, self-imposed by the learners. For example, a moderate need occurs when the teacher asks the student to fill a word in a sentence, while a strong need occurs when the learner decides to look up a word in an L1–L2 dictionary during composition writing. Search and evaluation are the two cognitive dimensions of involvement.

‘Search’ is the attempt to find the meaning of an unknown L2 word or trying to find the L2 word form expressing a concept (e.g., trying to find the L2 translation of an L1 word) by consulting a dictionary.

‘Evaluation’ implies some kind of selective decision in which a word’s context is taken into account. It entails a comparison of a given word with other words, a specific meaning of a word with its other meanings, or comparing the word with other words in order to assess whether the word does or does not fit its context. Two degrees of prominence were suggested for evaluation: *moderate* and *strong*. A moderate evaluation entails recognising differences between words (as in a fill-in task with words provided), or recognising differences between several senses of a word in a given context (as in the decision of the meaning of a homonym in a particular text context). Strong evaluation requires a decision as to how additional words will combine with the new word in an original (as opposed to given) sentence.

A real-life communicative situation, or a teacher-designed learning task, can induce any one, two or all three of the components of involvement for each word: need, search and evaluation. The combination of factors with their degrees of prominence in a task constitutes *task-induced involvement load*. The following two examples will illustrate the different involvement load of the respective tasks.

In task 1, the learners are asked to write original sentences with some new words. These words are translated or explained by the teacher. The task induces a moderate need since it is imposed by the teacher, no search since the words are glossed, and strong evaluation because the new words are evaluated against suitable collocations in the learner-generated context. In task 2, the learners are required to write a composition where they want to use concepts for which they possess no L2 form. They then decide to look up these L1 concepts for their L2 equivalence (in an L1–L2 dictionary) and use them in the composition. This task induces a strong need (self-imposed), search and a strong evaluation. Task 2, therefore, has a higher involvement load than task 1.

The hypothesis of involvement predicts that when word complexity factors are held constant, tasks with higher involvement load will yield better vocabulary learning results than tasks with lower involvement load.
Summary

In this paper, I suggested that reading is not necessarily the main, nor the best, source of vocabulary learning in a second or foreign language. Research shows that word gains from reading activities alone are very small, regardless of whether learners read short or long texts. In order to acquire a word without attempting to commit it to memory, word-focused activities are recommended. Experiments were presented that compared word gains from reading tasks with word gains from various word-focused tasks. Some of these types of tasks are: searching for the meaning or form of the target words in a dictionary; incorporating words in teacher-made sentences, or in original sentences, or in a composition. How do teachers know in advance which tasks will be effective for vocabulary learning? One proposal to explain and predict task effectiveness is the hypothesis of ‘involvement’. The hypothesis claims that the presence of need, search and evaluation, together with their degree of prominence, constitute task-induced involvement load, which is the determining factor in vocabulary retention. Further research will confirm or refute the basic assumptions of the involvement hypothesis. There is, however, ample evidence to suggest that, whatever the explanation, word-focused activities may be a very good source of L2 vocabulary learning.

REFERENCES


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