

A Review of Research into Vocabulary Acquisition through Dictionary Use

Part 1: Intentional vocabulary learning through dictionary use

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Introduction

Research into vocabulary acquisition through dictionary use has a relatively long history. Despite this, and despite the continued centrality of dictionary use to the language learning experience of many learners of a foreign or second language, interest from a research perspective has been limited and sporadic over the years. As a result, even after a period of over eighty years, the number of studies directly concerned with this topic remains small. The body of research in this field can be divided according to which of two types of vocabulary acquisition researchers investigated: intentional vocabulary learning or incidental vocabulary acquisition. Put simply, the difference between these is as follows. In studies of intentional vocabulary learning the main purpose of the learners, in whatever activity or task they are involved, is seen as learning vocabulary. For studies investigating incidental vocabulary acquisition, any vocabulary growth that does take place is incidental to another primary purpose for the learners, such as reading comprehension. As we shall see in the second part of this review, this distinction is often not as simple or straightforward as this; the researcher's perspective and purposes may often not coincide with those of the learners.

In this first part of the review, we will look in detail at five studies, span-

ning a period of eighty-five years. Despite the decades separating many of these studies, we will see how many of the researchers' concerns have remained the same over the year, and even the earliest of studies finds echoes in the most recent of those reviewed here. With the partial exception of two studies (Seibert, 1930 and Fischer, 1994), all five studies report the investigation of intentional L2 vocabulary acquisition through dictionary use. Full bibliographical details of the studies reviewed are given at the end of this review.

Grinstead (1915) *An experiment in the learning of foreign words*

In this very early study focusing on foreign vocabulary acquisition through dictionary use, the author compares two approaches: looking up unknown words encountered in the context of extensive reading and looking up unknown words from a list. Each set of words met through extensive reading was composed of the first 17 unknown words encountered during a one-hour reading session of a German text which could not be correctly guessed from the context and had been looked up in a dictionary. This represented about half of the unknown words encountered in a text of around 300 words per session. There is less information about the composition of the word lists. A word list was compiled by an assistant who was proficient in German, following which the subject looked over the list and deleted words already known to him.

The two types of words were tested in the same way. A short time after the completion of the reading or looking up session, the set of previously unknown words were read to the subject. He would then, as far as he was able, give the meaning of the words. If he was not able to, he would be told the meaning again. For this reason each test is referred to as a presentation of the target words: as much a learning session as a test of word

knowledge. The same set of words would be tested again in the same way 24 hours later.

There were two sets of words for each learning condition. For the first set of words encountered in context, 15 of the 17 words were correctly identified in the first test and all 17 in the second test. For the second set of words encountered in context, 13 of the words were recognised in the first test and 15 out of the 17 in the second test. For the first word list set, 14 words were known at the first test, rising to 15 of the 17 at the second test. The second word list scores were 13 at the first test and 14 at the second test.

The author's conclusion, based on the above results, is that words encountered in context then looked up were remembered better than words only encountered in word lists then looked up. We will now consider what objections there may be to arriving at such a conclusion.

Comment

This study is valuable principally for addressing various issues related to the effect of dictionary use and encountering words in context on vocabulary acquisition. Its main finding that there will be better retention of words encountered in context then looked up than of words only encountered in word lists then looked up does need further investigation. From the perspective of dictionary use behaviour we can see how the two types of encounter may affect dictionary use and, as a consequence, retention. Where a word has been encountered in a written context, the dictionary user first has to identify the sense of the word in the dictionary which seems most suited to that in the context and to focus on this. This means that all other senses will be ignored. For a word encountered in a list, the dictionary user's attention will not be focused on a particular sense in the

dictionary and neither will he or she be relating the information in the dictionary entry to that in a written context. It does appear likely that the focus on a specific sense within a dictionary entry would favour the learning of that one sense as compared with a less focused reading of the dictionary entry, and so may help retention where this is tested by the ability to supply one sense of each of the listed words.

Although Grinstead claims that the results are clearly and definitely in favour of learning looked up words encountered in context rather than from a list, this claim is based upon at least two premises which are open to question. One is that that looking up an unknown word in a dictionary will always be successful. The other is that retention of this word knowledge will be affected by the following factors: the circumstances of the original encounter, the time elapsed since the encounter, and the number of encounters. Subsequent research has shown that dictionary use is not infrequently unsuccessful, and that it cannot be assumed that all 17 words that were looked up were correctly understood. Also, in addition to the factors affecting retention identified by the author, the types of words being learned must also be taken into account. For example, at least some of the set of unknown words encountered in the text will probably share the same semantic field while there is no reason to expect this from a supposedly random list. The typical number of senses per word in each set of words will also probably differ as may the number of initially unrecognised cognates or, for example, the number of abstract nouns. Any of these factors could affect retention scores by one or two words. Since there is only a small difference between the two groups' scores, this difference could arguably be as easily attributed to any of the above factors as to the context in which the words were initially encountered.

As the author points out, the experiment described is relatively easy to

perform. He suggests that teachers can use this method to learn about the processes involved in vocabulary learning. While it may have some value in this respect, it is also clear that, as it stands, any results from an experiment of this kind would need to be treated with caution.

Seibert (1930) *An experiment on the relative efficiency of studying French vocabulary in associated pairs versus studying French vocabulary in context*

In this pioneering study, Seibert investigates the difference in vocabulary retention of previously unknown foreign words resulting from two different types of language data: a list of L1-L2 word pairs and the words presented in explanatory sentences. This research is not directly about dictionary use, but the two types of information under investigation mirror those found in many learner dictionaries, both bilingual and monolingual: translation equivalents and example sentences. The methods employed and the findings of this early study into vocabulary acquisition are clearly of direct relevance to the use of dictionaries in language learning and for this reason the study is included in this review.

Summary

The paper reports a study in which English-speaking students of French learn sets of 12 French words through studying different information. There were two basic learning conditions: learning from a list of French and English paired translation equivalents, and learning through sentences, one for each word, in which the meanings of the 12 words are presented in a very transparent way. In addition to these two conditions, two other hybrid conditions were investigated, in which both sources of information are studied. Here, we will just look at the two main conditions. For

these, groups of students were presented with one set of data and asked to study the words for nine minutes. Instructions as to how the words were to be learned are very precise: they were to be studied aloud and, for the sentence condition, that they had to read whole sentences each time they focused on a word to be learned. A total of sixty students took part in the study and all students experienced each of the learning conditions for different sets of words. The students were informed that they would be tested following the learning session, and that there would be two types of test: a no context test in which they would first be presented with the list of 12 English words for which they would be asked to give the French equivalents and a context test in which they would be presented with 12 French sentences in which the target words were substituted for their English equivalents and asked to provide the French words.

There were a total of four testing sessions for each learning condition: 50 minutes after the learning session, 2 days after, 10 days after, and 40 days after. Results for these tests show higher scores for the word pairs condition for both test types for all four testing sessions. For the tests 50 minutes after the learning session the word pairs condition responses showed an average of over 11 out of 12 correct answers, while the sentences condition responses showed about 9.5 correct answers. Two days later the sentence condition responses are largely unchanged, while for the word pairs condition, correct responses have fallen to 10.5. At 40 days, the word pairs condition responses have fallen to about 8.5 correct answers and the sentences condition responses have fallen a similar amount, to about 7 correct answers. In the first testing session, the sentences condition responses are slightly higher for the contexts test than for the no context test, with the opposite situation for the word pairs condition. This difference between the two groups fades over time, however, with both groups at 40 days show-

ing higher scores for the context test.

Comment

This early study bears surprisingly similarities to later studies into vocabulary acquisition through dictionary use, except that in this study there is no direct reference to dictionaries. Despite this, there are clear parallels between the two sources of information used in this study and those found in bilingual and monolingual learner dictionaries. The provision of word meanings through paired English and French words is basically the same as that found in bilingual dictionaries, while the explicit sentences for demonstrating word meaning within an L2 context are, to judge by the illustration provided, halfway between the sentence definitions and the example sentences found in some monolingual learner dictionaries, with the additional provision of the L1 equivalent.

Seibert suggests that all the example sentences used in the learning sessions provide a context in which it is easy to identify the meaning of the target word. This may or may not be so but, in any case, as the English equivalent is also provided, we may assume that all of the target words were understood. Why, then, would the provision of additional information impede the learning of the target words? If we consider the nature of the tasks presented by the two learning conditions, we may be better able to answer this question. For the learning session involving word pairs, the task is clear: to focus on each word pair, link the English and French word somehow, and memorise the form of the French word. For the sentences condition, although the same approach could be made as for the word pairs, the sentence may distract the students and diffuse the focus of their attention. This would mean that, to use the example in Seibert's paper — *'On met le mors dans la bouche du cheval'* — *'mors'* may be linked with

'*met*', '*bouche*' and '*cheval*' as well as with *bit* and, possibly, *put*, *mouth* and *horse*. Further, time may also be spent in making sense of, or translating, the example sentence, rather than memorising the target words. In any case, as the task of the student faced with the sentences is less focused than that for the student with just word pairs to learn, the nine minutes allowed for learning the words is less likely to be spent efficiently.

One related point about Seibert's aims in this study is that she claims to want students to show ability to actively use the words – but in fact she never tests this. The context test does not do this; it only requires the testee to provide the French words to fit the sentences provided. If she informed the students that ability to use the words correctly would be tested, this might provide additional support for the hypothesis that sentence condition students would spend time studying the contexts in which the words were presented at the expense of focusing on learning the L2 words.

Two issues that apply to many later studies, the small number of targeted items and the question of identifying pre-knowledge of the targeted items, also apply to this study. While there is no measurement of pre-knowledge of the words in this study, the potential problem of differential levels of lexical pre-knowledge between groups is averted through rotating groups of subjects and sets of test items. All sixty subjects experience all the learning conditions with different sets of words, and each of the sets of words are rotated among the learning conditions. This also means that there were more test items involved than might first appear. Although each word set only consisted of 12 words, since four sets of words were used for each condition this increased the total number of test items for each condition to 48 words. A disadvantage of this method is that analysis beyond the number of words known out of 12 test items for any condition would be largely

meaningless.

The overall findings of this study are that learning words in L1-L2 pairs is more effective than learning through focusing on the textual environment of target words. In this study, as indeed in many subsequent studies, at least part of the difference between the two conditions can be attributed to causes other than the learning conditions under investigation. In this case, the instructions about how to learn the words and the information suggesting that students would need to produce the words in context might both have caused the students to study the words in an untypical way and to lead the sentence condition students to use their learning time inefficiently.

Despite the limitations of this study, it is constructed with a degree of care found in few other studies in the field, and from a perspective that would remain largely neglected for almost seventy years.

**Black (1986) *The effects on comprehension and memory of
providing different types of defining information
for new vocabulary***

This paper reports two experiments into dictionary use: one focusing on comprehension of words through dictionary definitions and example sentences and one concerned with retention of knowledge about unknown words for which the different types of information had been provided. As our main interest is with vocabulary retention rather than comprehension, we will only focus here on the second of the experiments. It is worth noting here that although the focus of this study is rather different from Seibert's above, some of the research methods employed do bear remarkable similarities.

Summary

For Black's experiments, low-frequency, presumably previously unknown words were encountered by readers in the context of three short L2 texts. There were four learning conditions investigated, based on the following four sources of information about the words: the L2 texts alone, the L2 texts together with sets of made up example sentences for each word, the texts and dictionary definitions for the words, and the texts, dictionary definitions and example sentences.

A total of 24 advanced level learners of English were subjects for this study. Their average age was 22, and they had studied English for over six years on average. They were all studying at a language school in Britain for the Cambridge Proficiency Exam. Their language backgrounds were German, Romance languages, and Asian languages.

Three texts described as difficult, ranging in length between 306 and 463 words, were used in the experiment: two narrative passages and one expository passage. A total of 24 words from the texts, eight per text, were selected as target words. This was done by asking similar level students to underline unknown words that they felt were not easily inferred from the texts and which they would need to look up. The 24 words were randomly divided into four sets of six words, with the four learning conditions rotated among the four sets of words. This means that for each word six of the subjects experienced each learning condition.

The information for each word was written on a separate card, with only the targeted word written on the card for control condition items and definitions, example sentences, or definitions and example sentences for the other words. For polysemous words, information of each type was provided for each sense of these words.

All the subjects took part in the experiment in one room. They were

given the three texts and sets of cards and told to read the text in their own time. They were also told that a comprehension test would follow. This was in fact a test of vocabulary knowledge. When they were ready, the cards were collected and they were given a test booklet. During the test, the subjects kept the texts and were allowed to refer to them.

The test consisted of a multiple-choice vocabulary test for the 24 target words, testing some aspect of the meaning or pragmatic value of each of the words. For each multiple-choice question there was one correct answer and three distractors. In addition to choosing an answer for each question, subjects were asked to rate, on a scale of 1 to 5, how confident they were about the correctness of their answer.

The results of the test are as follows for correct responses for words in the four learning conditions: text only: 48%, text and combined definition and example sentences: 64%, text and definition: 67%, text and example sentences: 67%. We will discuss below what these figures represent and what implications they may have for the comprehension and retention of previously unknown L2 words.

Comment

Although in some respects Black's research is carefully planned and conducted, there are serious problems with at least three aspects of the study: the mismatch between the experimental procedure employed and the information sought through the study, the number of subjects and test items in this experiment, and the conclusions drawn from the data derived from the test.

The stated aim of this experiment is to examine the consequences, in terms of memory, of providing advanced learners of English with different types of defining information for previously unknown L2 words encountered

in reading texts. Yet these items are not simply encountered while reading; they are clearly identified as target words: underlined in the texts and with information provided only for these target items. Further, the stated purpose for the reading is to prepare for a comprehension test. In this respect, the study bears more similarities with Seibert's 1930 study reviewed above or with the second of Aizawa's experiments reported below than with other studies investigating incidental vocabulary acquisition through dictionary use while reading.

Another point is that what is being tested here is a fairly restricted interpretation of memory or retention. The test is conducted immediately after the defining information has been taken from the subjects and while they are still able to refer to the occurrences of the test items in the texts.

The nature of the test, too, will have a considerable effect on subjects' scores. The test questions are not standardised except as regards their format. Some of the questions test knowledge of the meaning of the word as used in the text, while others test awareness of the attitude behind the words. Further, various types of words were tested: concrete and abstract nouns, adjectives, verbs, and an adverb. These two distorting factors might help explain two counter-intuitive aspects of the results: that polysemous items were not significantly more difficult than single-sense items, and that items for which scores were low were so across all four learning conditions.

Twenty-four subjects took part in this experiment but because for any of the test items the subjects were divided into four groups, only six subjects gave answers for each word in each learning condition. Conversely, each subject only encountered six of the 24 items in any of the learning conditions. A similar rotation of learning conditions was employed here as in Seibert's 1930 study, with the exception that in Seibert's study all 60 sub-

jects answered each of the 48 test items, producing a total of almost 3,000 responses. In Black's study, there were only 576 responses in total, with 144 per learning condition.

The effect of the small numbers of subjects and test items is further compounded by the treatment of the data. Perhaps most problematic is the treatment of the raw scores for the multiple-choice test as data. In this forced choice test, since there were four choices of answers presented for each question, random responses for all items would produce an average of 25% correct answers. However, where 48% of answers for the control condition were correct, the researcher interprets this as follows: "Subjects in the control condition were able to understand half of the words without any defining information". She goes on to suggest that this score is a reflection of subjects' success in making inferences about the words from the text, despite stating earlier that the target words had been chosen for the difficulty with which their meaning could be inferred from context. However, with a score as low as 48% in a four-choice multiple-choice test, we can assume that an average of only 30% of items were actually known, leaving 70% of items guessed. This compares with an average of around 54% known and 46% guessed for the other three groups' scores of 64% to 67%. Although this is a simplification of the actual situation, since some items will be half-guessed while for others not all distractors will be equally effective, it does at least give a more accurate representation of the subjects' knowledge than the raw scores as used by Black.

Neither the test results nor the research undertaken in this study is as impressive as first appears. The author's conclusion is that there was no difference in the effect on memory for the different sorts of dictionary information; it might be more accurate to state that the experimental methods employed were insufficiently sensitive to identify differences between the

effects of the three types of defining information. The study did, however, show a clear benefit of all three types of dictionary information over the text only condition. This reflects the nature of this experiment and is in line with other research in which learners deliberately used dictionaries as a means of learning new words.

Fischer (1994) *Learning words from context and dictionaries: an experimental comparison*

The research described in this paper investigates how the use of different sources of information about previously unknown L2 words enables advanced German learners of English to understand, use, and remember the words. Retention scores for these words are not provided in this paper, and so discussion of these results is not possible, but it is still a study worthy of consideration in terms of the research goals and methods employed in the study.

Summary

The purpose of this study is to investigate the effect on the comprehension, use, and retention of 12 unknown L2 words of three different learning conditions. These were learning the target words through a set of monolingual dictionary entries, learning them by focusing on an extract of a novel in which the target words are imbedded, and by using both the dictionary entries and the text together. A total of 87 German high school students taking part were divided into four groups: one for each source of information and a control group receiving no information about the target words. The target words were selected as words that should be unknown to the subjects and that are difficult to understand.

The experiment lasted two hours and was composed of four parts. It

began with a pretest in which the subjects were asked to give the meaning of the target words if they could. This was followed by a learning condition phase during which they were given the learning materials and asked to write a sentence in English for each of the target words. Once they had all done this, they were asked to translate their sentences into their mother tongue. The learning materials were then taken away and the experiment ended with a posttest which was the same as the pretest. The role of the so-called control group was to test the comprehensibility of the text; they were given the text with the target words removed and asked to write a summary of the story.

The 12 target words were all low frequency items divided equally into nouns, verbs and adjectives. These were inserted into the text by replacing easier words for the target words or by adding a phrase containing a target word. Apart from the target words, the text was composed of relatively high frequency words.

Two raters evaluated the English sentences according to whether they were idiomatically meaningful, while two other raters evaluated the German translations according to whether they provided an accurate, partially accurate or inaccurate translation of the target word. Discernable strategies for the subjects' English sentences were also rated with reference to the learning materials to which they had access.

The pretest confirmed that very few of the target words were known. Only one word, *insidious*, was known to 13, or about 20%, of the 67 subjects.

The English sentences, and their demonstration of the use of the target words, were evaluated in terms of omissions, idiomatic correctness, and questionable or correct usage. Raters found no overall difference between the groups in this respect.

For the German translations, the mean number of adequate translations out of 12 per subject for the dictionary, text, and mixed groups were 5.13, 4.74 and 3.55 respectively, between about 40%. The dictionary group performed significantly better than the two other groups.

Results are also provided for assumed strategies employed in writing the sentences. As this is not the focus of our interest, we will not consider this aspect of the study further. As for posttest results, no information is provided in Fischer's paper about this aspect of the paper.

Comment

Although the title of the paper is "Learning words...", no report of learning or retention of the target items is made in this paper. It appears that understanding or comprehension is equated with learning but clearly, whether for contextual information or information contained in dictionary entries, unless some of this information is retained it would be hard to argue that the words had been learned.

Before we consider the results, we should consider the approach employed by Fischer and the target words used in this study. Here, the focus is clearly not on incidental vocabulary learning but on the deliberate use of words in a context and of monolingual dictionary entries as means of understanding the meaning of the target words. It also differs from most other studies in that it focuses on the productive use of the target words, which includes an evaluation of syntactic and idiomatic success in using these words in a sentence. This focus does not extend to the posttest but whether or not subjects are able to use the words appropriately while referring to the learning materials will surely be an indication of whether they might be able to do this when these materials are taken away.

There are only 12 target words. This is understandable when we con-

sider the demands required of the subjects of writing, then translating, an English sentence for each word. But when we consider that the 12 words are subdivided into 4 adjectives, 4 verbs and 4 nouns, we may ask what any results may tell us about these parts of speech or about the typical vocabulary learning load of the subjects as German students of English. This may not be the concern of the researcher, since we are told that the words were selected on the basis of their being difficult to comprehend. The learning of such words may differ from that of other words and, as a consequence, this will restrict what claims may be made for the results of the study. The small number of items are also likely to make the results of the study less reliable and the differences observed between groups less easily attributable to the different learning conditions.

When we turn to the results, the above fears about their reliability appear to be confirmed. Especially for subjects' German translations, through which they demonstrate whether they have understood the target word, scores for all three groups are low, suggesting that neither from context nor from a dictionary definition were most subjects able to work out the meaning of the majority of the target words. Further, subjects with access to both sets of materials do worse than both groups with access to only one type of material to assist comprehension. As it stand, this conclusion is counter-intuitive, and suggests that subjects with two sources of information may not have had time to make the most of them or to complete the writing and translation tasks. This in turn does raise questions about the efficiency of using the various resources and, in this context, about the validity of using more than one source of information, but these are not issues that are considered in this paper.

Almost exclusively, other studies have focused on the meaning of unknown words, in terms of comprehension and retention. As such, they

have ignored issues perhaps more relevant to productive language use, such as knowledge of syntagmatic, collocational, or pragmatic information about L2 words. This study does seek to address these issues but, in doing so, restricts itself to a very limited number of target words due to the time required for each item. This, coupled with problems of interrater reliability, in turn affects the value and reliability of the findings, leaving the questions posed through this study largely unanswered.

Iwai (2000) *Dictionary use in context and vocabulary retention*

In his research, Iwai asks what difference there is in the vocabulary acquisition of language learners reading an L2 text depending on whether or not they guess the meaning of unknown words from context prior to looking them up in a dictionary. Especially with the more widespread use of electronic dictionaries coupled with the absence of training in dictionary use for most language learners, this is an increasingly important issue that has been raised by a number of people but about which little other research has been conducted.

Summary

Twenty-four Japanese learners of English, in their final year of high school, took part in this study. They were all from the same class and were divided randomly into two groups. Class grades and a vocabulary test confirmed that the two groups were equivalent in terms of language proficiency. The experiment began with a questionnaire asking about dictionary use habits, followed by a reading passage of over 1,300 words from an English-language Japanese newspaper. Fifteen words in the passage were underlined and numbered. They were selected on the basis of being probably unknown to the students but among words that may be encoun-

tered in university entrance examinations. The two groups of learners were given different instructions about how to deal with the target words when encountered in the text. The Guessing group learners were asked to identify the part of speech, to look at the surrounding context in terms of syntax and semantic relationships, to guess the meaning from the context, and then to look up the word in their English-Japanese dictionary and write it down. The No Guessing group learners were simply asked to give the meaning of the word if known, and if not to look it up in their English-Japanese dictionary and write it down. Following the reading, the text and answer sheets for the targeted words were collected and the learners were given a simple test in which they were asked to give translation equivalents for the 15 target words. This test was administered three more times: one day, five days, and twenty days after the reading.

Reported prior knowledge of the target words averaged just over three words for the No Guessing group, 20% of the total, and just over two words (13.3%) for the Guessing group. Look-up figures are over 9.5 (63%) of new words were looked up by the No Guessing group and under six (38.9%) of new words looked up by the Guessing group.

For the test results, figures were adjusted so that results for previously known words could be discounted. The test results presented, then, are only for words that were looked up. At t1, there was an average 0.83 chance of Guessing group subjects giving the right Japanese equivalent for a looked-up word, compared to 0.47 for such words by the No Guessing group subjects. At t2, the respective figures were 0.75 and 0.40, at t3 0.79 and 0.37, and at t4 0.68 and 0.33. In other words, Guessing group subjects were, on average, able to give the Japanese equivalents for around twice as many looked-up target words as No Guessing group subjects and, overall, retention rates for both groups fell steadily over the four sets of tests. We

will consider these figures in more detail below.

Comment

The issue of how careful guessing of L2 word meanings from the context may affect acquisition has been addressed in other studies, but either not with regard to dictionary use (e.g., Schouten van Parreren, 1985) or only in terms of incidental acquisition (Aizawa, 1999).

For Iwai in this study, however, conscious language learning is the purpose of the task, with the focus on text comprehension and vocabulary acquisition. This is evident in the choice of target words — words that they may need in the approaching university entrance exams — and in the dictionary use training included in the instructions for the Guessing group. This study is also unusual in that it appears to show clear differences in learning from the two learning conditions investigated, despite the small numbers of subjects and the small number of target words. We will begin by considering how these results are arrived at.

Although the two groups are very similar in terms of language proficiency as far as can be judged by school grades, there are surprisingly large differences in the average number of words known prior to the experiment and in the number of words looked up. For the No Guessing group, an average of over three words, 20%, are correctly identified as previously known and over 9.5 (63%) of new words looked up. For the Guessing group, the figures are just over two words (13.3%) identified as previously known and under six (38.9%) looked up. The author explains this by pointing to the limited time available for the task and the longer time required for the guessing procedure prior to dictionary use as compared to using the dictionary without guessing. Iwai's response to this is to calculate scores for the two groups using only the data for words that were looked up. The prob-

lem with this is that, generally, no more than the first eight or so items were dealt with by the Guessing group. Words vary in the ease with which they may be learned, dictionary definitions in their clarity, and contexts in the extent to which they inform the reader about the targeted words. Since the numbers of test items are so small, and since the words covered by the two groups differ so considerably, any differences in retention may be attributable to the words looked up. One solution might be to take the first eight items and compare the data for these. This would further reduce the number of test items in the experiment, but at least the results for the same items for the two groups could be compared.

A further related issue is the differing learning load for the two groups resulting from the number of test items that were completed, with one group having the meanings of almost ten new words to remember and not confuse with each other and the other group having only six. Given this situation, it is also not unconceivable that highly motivated students would look up words between tests. With such a small number of test items, this could easily have a substantial effect on subsequent test results.

The above problems are not insurmountable. Basically, if the subjects were given more time they would all be able to finish the tests and the two groups' results would be comparable. This study does, however, illustrate how the use of a small numbers of test items can easily affect the reliability of a study of vocabulary acquisition.

Conclusion

All five studies reviewed above consider dictionaries, or dictionary entries, or the information in dictionary entries as tools by which L2 vocabulary may be increased. In various ways they compare learning from different sources of information, both within dictionary entries, such as

definitions, L1 translation equivalents, or example sentences, and beyond dictionary entries, usually in the context of a written passage. Although the studies span a number of decades and each differs from the others in significant respects, there are often shared perspectives and methods in the studies. Perhaps, though, what is most remarkable about these studies is that there are so few of them. Although there may be other studies on intentional vocabulary acquisition through dictionary use in existence, particularly written in languages other than English, it is still discouraging to reflect that there has been so little concern about an issue so central to the learning experience of so many language learners. This is especially true when we reflect on the burgeoning world of learner dictionaries over the past ten or fifteen years, both for monolingual and bilingual dictionaries; there is an ever-increasing range of dictionaries produced, with an ever shorter period before new editions are published. In the past decade, there has been an increased interest in the perspective and experience of the learner dictionary user, with the publication of a number of books and articles devoted to this topic. If we look at the five studies reviewed here, that two of them were conducted in the past decade is a further encouraging sign of renewed interest in this issue. As we shall see in the second part of this review, this increasing attention to dictionary use is even more evident in the context of incidental vocabulary acquisition through dictionary use.

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