# Defining and measuring selective dictionary use among L2 readers

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A review of relevant literature concerning second language dictionary use while reading suggests that *selective* dictionary use leads to improved comprehension and more efficient vocabulary development. This study aims to examine the dictionary use of Japanese university students to determine just how selective the students are when reading non-fiction English texts for general comprehension. The findings suggest that high-intermediate and advanced students are often selective when considering whether to look up a word. However, a quarter of the words looked up in the study were neither essential to the main points in the articles nor high frequency words, according to corpus research. It is concluded that students would benefit from training in selective dictionary use.

第二言語を読解する際の辞書の利用に関する研究によれば、辞書をいつ使うか（または使わないか）選択できるように指導すると（辞書の選択的利用）、読解力や語彙力が大いに増すことがあるようだ。そこで、日本の大学生がノンフィクションの英文記事や論文を最低限理解する際に、辞書を使うかどうかをどのように選びながら読んでいるかを調査した。その結果、中級上や上級レベルの英語力がある学生は、分からない単語を辞書で調べるかどうかを考えながら読むことが多い。しかし、調査対象の学生が辞書で調べた単語のうち四分の一は主題と関係がないばかりか、頻出単語でもなかったことが分かった。従って、辞書の選択的利用を指導することは、学生にとって有益である。

Language instructors, especially in Asian junior and senior high schools, often encourage learners to consult the dictionary whenever coming across an unknown lexical item while reading. On the other hand, university language teachers with training in applied linguistics tend to discourage dictionary use. To rid learners of their dictionary dependence, some intensive language programs even forbid dictionaries altogether in the reading classroom. Considering that learners are often taught opposing

strategies by teachers (and still other instructors ignore the issue altogether), it is extremely important that researchers determine and promote the most methodologically-sound reading and vocabulary strategies concerning dictionary use.

After presenting relevant literature on the pros and cons of dictionary use, this study aims to examine the dictionary use of Japanese university students of English to determine just how selective the students are in using their dictionary when reading non-fiction texts for general comprehension. The results could help teachers and material developers determine whether students might benefit from more detailed instruction on vocabulary strategies and dictionary use.

## Literature review

TESOL-trained educators often claim that using a dictionary while reading leads to inefficient reading and can undermine comprehension. Many instructors have noticed that second language (L2) readers often look up longer words despite the fact these words tend to be less common (Leech, Rayson, & Wilson, 2001). Teachers also may note that students who use a dictionary require more time to complete reading tasks and that students often do not even locate the correct definition. There is research that supports many of these claims. Compared to control groups who were not allowed to use dictionaries, L2 learners using dictionaries took twice as long to complete the reading task in one study (Luppescu & Day, 1993, p. 263) and nearly 50% longer in another (Knight, 1994, p. 295). Moreover, Luppescu and Day reported that learners in their study must have located the wrong dictionary definition since the students using dictionaries scored lower on certain post-reading vocabulary questions.

However, much of the research showing that dictionary use interferes with comprehension comes from L1 research (e.g., Crist, 1981). In fact, many studies have shown that dictionary use aids L2 reading comprehension and learners' lexical development. In a series of three studies, L2 English learners using a dictionary scored significantly better on both reading comprehension and vocabulary tests (Summers, 1988). In another study, which involved nearly 300 Japanese university students, the experimental group, which had access to bilingual dictionaries while reading, scored significantly better than the control group on a vocabulary posttest (Luppescu & Day, 1993). In a third study involving 112 learners of Spanish (Knight, 1994), readers who had access to a dictionary scored higher on both post-reading comprehension and vocabulary tests. Moreover, Bogaards (1998) found that learners were significantly more likely to guess the wrong meaning (when choosing to not consult a dictionary) than they were to identify the wrong dictionary definition while completing a translation task. In a study of 84 Flemish learners of German, Peters (2007) found that students more often looked up words relevant to comprehension questions, and that these words were more often retained based on immediate and delayed post-reading vocabulary tests.

Using a dictionary is not only beneficial, it may actually be necessary if a passage has too much unknown vocabulary. Many researchers (Laufer, 1997; Nation 1990, 2001) have claimed that L2 readers may have difficulty comprehending a reading passage if they understand less than 95% of the running words. This may explain why in Knight's study (1994) there was a significant correlation between the

number of words looked up and the comprehension scores of less proficient learners. For these students, using the dictionary may have helped them reach this 95% threshold. For higher level students in Knight's study and in another study of advanced learners (Bensoussan & Laufer, 1984), there was no significant difference in comprehension scores between the control and experimental groups. These students may have already known enough words in the passage to enable comprehension. Indeed, Hulstijin (1993) found that students with a larger vocabulary looked up fewer words.

In terms of lexical development, if the text is too difficult, unknown words are less likely to be inferred (Robinson, 2003). Further research shows that there is a correlation between comprehension and the gain and retention of new lexical items (Pulido, 2007). Research suggests that students may need to comprehend up to 98% of the vocabulary in order to accurately guess the meaning of unknown words from context (Coady, Magoto, Hubbard, Graney, & Mokhtari, 1993). If a student cannot infer the meaning of a word, using the dictionary may assist the learner in acquiring it. Noticing language is the first step to acquisition (Schmidt, 2001), and looking a word up in the dictionary calls more attention to the word, which increases the chances the word will be retained (Craik & Lockhart, 1972; Laufer & Hill, 2000; Peters, 2007; Pulido, 2007; Robinson, 2003).

## Selective dictionary use

Considering the benefits and drawbacks of dictionary use mentioned above, it could be rationalized that a form of *selective* dictionary use may be beneficial for vocabulary development and reading comprehension. Grabe and Stoller (2004) suggest that reading instructors focus students' attention on either words that are useful and frequent and/or words that are related to the main points of a reading passage. In terms of vocabulary acquisition of useful words, corpus research has highlighted how infrequent most words in English are. While the most common 3,000 word families cover roughly 95% of running words used in the average text, hundreds of thousands of less frequent words make up a tiny fraction of words used (Huckin & Coady, 1999; Nation 1990, 2001). As for reading comprehension, some words are clearly more essential to understand than others in a reading text. Words in a headline or the first few sentences of a news story, for example, are much more essential than words providing supporting details at the end of the article. This suggests that L2 readers encountering an unknown word whose meaning cannot be inferred need to consider the frequency and importance of the word to decide whether to spend time and effort consulting a dictionary.

Though the issue needs to be examined more extensively, this study defines selective dictionary use as looking up words that cannot be easily guessed from context and are either useful to learn or important to the main points of the passage. Since selective dictionary use may lead to increased comprehension, effective vocabulary development, and efficient use of study time, it could be promoted as a viable strategy to L2 learners as opposed to either looking up all unknown words or none at all. The implications section will examine how instructors can consider selective dictionary use in the classroom.

A survey of 850 Chinese English university students' reading strategies (Gu & Johnson, 1996) indirectly supports

the idea of selective dictionary use. Though correlation does not prove causation, *both* contextual guessing and skillful use of dictionaries correlated highly with proficiency scores and vocabulary size. In addition, Gu and Johnson also found that "selective attention" (p. 643) was one of two metacognitive strategies that correlated with proficiency. Identifiers of this strategy included that learners could sense when a word could be guessed from context, they knew when a word was essential to the passage, and they knew which words were important to learn. This suggests that the most proficient students may practice selective dictionary use by using the dictionary only when necessary or beneficial.

However, to the researchers' knowledge, no other studies have explicitly defined or measured selective dictionary use. Gu & Johnson's study (1996) does identify several key reading, vocabulary, and dictionary strategies, but it examines only students' *self-reported* behaviors. It is unclear whether learners can actually determine which words are important to the main point and/or which words are frequent and useful. Studies have shown that learners do not look up words at random. Hulstijin (1993) found that advanced learners were somewhat less likely to consult a dictionary if the meaning of the unknown word was salient. Moreover, studies have shown that students tend to look up "relevant" words (Hulstijin, 1993; Laufer & Levitzky-Aviad, 2003; Peters, 2007). However, relevant words in these studies were defined as words that were needed to answer comprehension questions, and most of these words were likely looked up not while reading the text initially but when answering the post-reading questions. This is manipulating the learners' dictionary use, and it does not measure students' behavior when reading for general comprehension in non-test-like, real-world settings (Bogaards, 1998).

## Methodology

This study examines the dictionary use of Japanese university students to determine just how selective the learners are when reading English texts. Thirty-four Japanese university students were asked to read and summarize three texts of various types. The words the participants consulted in an online dictionary while reading were recorded and later analyzed for their frequency and their relationship to the main points in the passage.

### *Participants*

The participants included 17 first-year and 17 second-year students in the highest level of the intensive English program at Ferris Women's University. Their TOEFL scores ranged from 457 to 600, with a median of 497 and a mean of 503 (s.d. 32). In previous reading courses, the curriculum focused on understanding the main points of passages and guessing vocabulary from context, but not selective dictionary use.

### *Materials*

The study involved three authentic reading passages of different types. The first reading was a short news item (382 words), the second was a section from a book (420 words), and the third was a longer feature news story (1,120 words). The three specific texts were chosen since they were

perceived to be the kind of passages the students might read for pleasure or in their academic studies. The short news story reports about a factory worker who had slipped in a tub of chocolate and was stuck for several hours. The book passage describes the rationale of the UN Millennium Goal to increase women's participation in politics. The feature news story discusses Japan's somewhat contradictory attitude on the environment and global warming.

### *Procedures*

In order to check the participants' receptive knowledge of the words in the target readings, one week before the pretest the students were given a list of the words in isolation and they marked whether they knew each words' meaning or not. Testing for deeper levels of lexical knowledge was not feasible due to the great number of words included in the study. On the day of the test, students opened a Microsoft Word document containing the articles saved on the Internet. The participants were then shown how they could check the definition of words while reading the passages. Most words, including all the words marked by one or more participants as unknown on the pretest, were linked using the Microsoft Word program to their definition on an internet-based English-Japanese dictionary <www.alc.co.jp>. When a participant pressed control and clicked on a word, an Internet browser window opened containing the translation in Japanese and an example sentence in English.

Based on previous experience with the participants, a time limit of 1 hour and 15 minutes was allowed for students to read the passages and to write a summary and reaction of a few sentences for each. Because this study aims to more accurately reflect authentic reading tasks for general comprehension and/or enjoyment, these tasks were chosen, rather than having participants answer specific comprehension questions (see Hulstijin, 1993; Laufer & Levitzky-Aviad, 2003; Peters, 2007) or complete a translation task (see Bogaards, 1998). When the participants were finished with the task, they printed out the article and gave it to the researcher. Since each word clicked on was automatically underlined by the Microsoft Word program as a followed link, the printed copy revealed which words were consulted in the online dictionary.

### *Analysis*

In order to determine whether the participants were using the dictionary selectively, the frequency and the context of the words looked up were examined to determine whether the participants matched the descriptors of selective dictionary use used in the study. The frequency of the words was analyzed through corpus data (Cobb, 2006; Coxhead, 2000; Heatley & Nation, 1994) to see if they were in the 2,000 Word List or the Academic Word List (AWL) versus being relatively infrequent off-list words. The context of the words was rated by the researchers to determine if they were in clauses that represented one of the passages' main points versus supporting details or examples.

Percentages were calculated by dividing the number of words looked up by each participant by the number of words marked as unknown in the pretest. The percentages were analyzed by paired, two-tailed t-tests to determine if the participants looked up significantly more (a) words in the 2,000 Word List or AWL compared to off-list words,

(b) words in the main points of the passages compared to supporting details and examples, or (c) words in the 2,000 Word List, AWL, or in the main points compared to off-list words in details and examples of the passages.

## Results

The participants varied greatly in terms of how many times they utilized the dictionary link. While 2 participants looked up no words at all, 3 other participants looked up 78, 66, and 62 words. The mean number of words looked up was 29.76 (s.d. 20.5), which was 1.5% of the total number of running words.

### *The frequency of words*

Over half (53%) of the words the participants looked up in the study were relatively infrequent off-list words (see Table 1). However, based on the pretest vocabulary survey, the participants already knew most of the frequent words contained in the study (88% of words in the 2,000 Word List and 78% of the words in the AWL, compared to 51% of the relatively infrequent off-list words). Considering this, the participants were actually more likely to look up unknown common words. They looked up an average of 72% of the number of reported unknown frequent words (s.d. 0.69), while just 34% of the total number of reportedly unknown off-list words (s.d. 0.23). The difference between these percentages is statistically significant ($p < .01$). Thus, it could be claimed that the group was using dictionary selectively in terms of more often looking up unknown *frequent* and useful words.

**Table 1. Frequent versus infrequent words**

| | Frequent Words | Infrequent Words |
|---|---|---|
| Percent of total dictionary uses | 47% | 53% |
| Percent of unknown words looked up | 72%* | 34%* |

*Significant difference ($p < .01$)

### *The context of the words*

As shown in Table 2, 57% of the words the participants looked up were rated by the researchers as being in clauses that are the main points of the passages. In terms of the number of previously unknown words, the participants showed a tendency of ignoring (or guessing from context) many words unrelated to the main points. They utilized the dictionary link for 36% of the number of reported unknown words that were in clauses outside the main points (s.d. 0.46) and 68% that were in the passages' main points (s.d. 0.25). The difference is significant ($p < .01$). It can therefore be claimed that the participants where selective in their dictionary use by focusing on unknown words in the passages' main points.

**Table 2. The context of the words**

| | Words in the main points | Words in supporting details |
|---|---|---|
| Percent of total dictionary uses | 57% | 43% |
| Percent of unknown words looked up | 68%* | 36%* |

*Significant difference ($p < .01$)

### *Frequency and context of the words*

Three-fourths of the words the students looked up in the dictionary fit into the definition of selective dictionary use (see Table 3). That is, 75% of the words looked up were common, useful words and/or words in one of the passages' main points.

Considering each participant's vocabulary level, the participants were much more likely to look up unknown words that fit in one or both categories. On average, they looked up one-fourth (26%) of the unknown off-list words appearing in the details or examples (s.d. 0.18) and 59% of the reported number unknown words that were either in the main points and/or in the common frequency bands (s.d. 0.45). The difference is significant ($p < .01$), and it could be claimed that the participants were selective in their dictionary use as a whole.

**Table 3. Selective dictionary use**

| | Frequent words and/or words in the main points | Infrequent words in supporting details |
|---|---|---|
| Percent of total dictionary uses | 75% | 25% |
| Percent of unknown words looked up | 59%* | 26%* |

*Significant difference ($p < .01$)

## Discussion

The findings suggest that high-intermediate and advanced students often use some of the selective dictionary use strategies mentioned above. They were significantly more likely to look up words that were related to the main points, and the same was true for the most frequent words. Contrary to expectations, most students did not focus on infrequent technical words contained in the passages. Three-fourths of the words the participants looked up were either frequent or in one the passages' main points, which is the descriptor of selective dictionary use.

Nevertheless, the data suggest that many of the participants could have been more selective in considering which words to look up. One-fourth (25%) of the words consulted in the dictionary were neither relevant to the passages' main points nor frequent words. The participants who relied on the dictionary could likely have finished the task much more quickly and efficiently by using reading strategies, such as guessing vocabulary from context and ignoring words not essential to the main points.

## Implications

The findings here suggest that some learners may benefit from training in selective dictionary use. When reading, students should be advised to use a dictionary, but only a limited number of times. This would encourage them to be selective, and this study suggests that the students often do have good judgment. One common post-reading task, especially in reading journals, is to have students identify unknown words and guess their meaning from context. A more methodologically-sound alternative would be to give the option of guessing the meaning, ignoring the word, or using a dictionary.

Explicit instruction may also be useful to help learners identify which words should be looked up. The students would likely benefit from understanding the organization of various passage types, but reading texts rarely mention where to find the main points in news articles, feature stories, and essays. Understanding transition words would also help students recognize possible main points versus supporting details and examples. Lastly, students (and teachers) also need to be aware of corpus data which show how infrequent most words are. Students could then be informed that research shows that shorter words tend to be more frequent and useful (Leech, Rayson, & Wilson, 2001).

## Conclusion

Many L2 teachers encourage students to rely on their dictionaries while other instructors encourage students not to use a dictionary at all. However, research suggests that selective dictionary use may actually improve L2 learners' comprehension of reading texts and also increase their receptive vocabulary. This study defines selective dictionary use as looking up words that are either useful to learn or relevant to a passage's main points. While instructors often claim that students do not use dictionaries efficiently, this study suggests that high-intermediate and advanced students are often selective when considering whether to look up a word or not.

However, some of the participants in this study could have been more selective. A quarter of the words looked up in the study were neither frequent words according to corpus research, nor essential to the main points of the passages. Though the topic needs to be examined more carefully, it could be concluded that students might benefit from training in selective dictionary use. In addition to the common activity of having students practice guessing words from context, students may need help learning to recognize a passage's main points and estimating the frequency and usefulness of unknown words.

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