Dictionary Use in L2 Learning: A Critical Review

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What is the role of dictionaries in L2 learning?

It has been widely assumed that dictionaries play a key role in foreign/second language (hereafter L2) learning. Nevertheless, despite its necessity, most of L2 learners are hardly ever aware of the specific purpose of dictionary use.

Nation (2001) summarized most purposes for dictionary use based on Scholfield (1982, 1997), who claimed that the different requirements and strategies for dictionary use in comprehension and production existed (see Table 1).

Table 1. *Purposes for Dictionary Use*

Comprehension (decoding)
- Look up unknown word met while listening, reading or translating.
- Confirm the meanings of partly known words.
- Confirm guesses from context.

Production (encoding)
- Look up unknown words needed to speak, write or translate.
- Look up the spelling, pronunciation, meaning, and grammar, constraints on use, collocations inflections and derived forms of partly known words needed to speak, write or translate.
- Confirm the spelling, pronunciation, meaning, etc. of known words.
- Check that a word exists.
- Find a different word to use instead of a known one.
- Correct an error.

Learning
- Choose unknown words to learn.
- Enrich knowledge of partly known words, including etymology.

Adapted from Nation (2001: pp. 281-282)

Considering these various aspects of dictionary use, reference skills are regarded as indispensable strategies when L2 learners encounter unknown words, and its importance has been emphasized in several studies (e.g., Cowie, 1999; Nation, 2001; Scholfield, 1982). Yet, despite this perspective, the training of dictionary use has been neglected. What is behind this trend?

In the recent L2 acquisition theories, the vast majority of vocabulary is considered to be learned gradually through repeated exposures in various discourse contexts. This "Incidental Vocabulary Learning Hypothesis" is proposed on the basis of the first language (hereafter L1) acquisition, in which how children acquire their native language (Nagy & Herman, 1985). On this view, extensive reading is considered to be effective vocabulary learning strategy for L2 learners. There exists another popular L2 vocabulary acquisition theory called an "Input Hypothesis", in which learners acquire vocabulary and spelling most efficiently by receiving comprehensible input while reading and listening (Krashen, 1989). Originally, Krashen postulated this hypothesis for oral language acquisition, and later he claims that extensive reading also enables L2 learners to acquire a larger vocabulary. However, Coady (1997) asserts that "Research that positively supports Krashen's claims as regards L2 vocabulary acquisition is still very limited" (p.226), as most of his studies involved native speakers rather than L2 learners. On the basis of these theories, contextual guessing without using dictionaries has been encouraged to gain a large amount of vocabulary while reading. An account supporting this notion is that contextual guessing (or "inferring") from clues in a text helps learners retain large vocabulary, since it seems to require L2 learners to have an extra work. This account appears to accord with psychological literature on "depth of processing", which was originally advocated by Craik and Lockhart (1972).

There is also concern which many educators and researchers express: frequent interferences by looking up unknown words in a dictionary are considered to prevent learners from comprehending texts. Putting it in other words, using a dictionary may disrupt the comprehension process of learners.

Empirical evidence to back up these assertions above, however, has not been sufficiently proven so far (Carter & McCarthy, 1988). Thus, this notion appears to be based on a sort of conjecture. In fact, two conflicting aspects of contextual

guessing exist (e.g., Bensoussan & Laufer, 1984; Sternberg, 1987), as well as to incidental vocabulary acquisition in L2 learning (e.g., Day, Omura, & Hiramatsu, 1991; Hulstijn, 1992). The advantage of contextual guessing in reading a text is claimed by Sternberg (1987), while Bensoussan and Laufer (1984) reported the difficulty in inferring correct meaning of unknown words from the context. Hulstijn (1992) performed five experiments of adult L2 learners who were assigned a reading comprehension task, and investigated the difference in retention of looked-up words between inferred and given word meanings. He concluded that "the retention of word meanings in a true incidental learning task is very low indeed" (pp. 121-122). Consequently, no concrete evidence that comprehension suffers as a result of dictionary use has been shown so far.

Are dictionaries useful for L2 learning?

On the other hand, there are a large number of studies to examine the effect of dictionary use in L2 learning (e.g., Luppescu & Day, 1993; Hulstijn, 1993; Hulstijn, Hollander, & Greidanus, 1996; Night, 1994), in which most studies have generally focused on reading comprehension and vocabulary acquisition.

Luppescu and Day (1993) attempted to confirm the effectiveness of bilingual dictionary use in L2 learning. In the study, a total of 293 Japanese university students were divided into two groups (dictionary and no dictionary groups), and each group read a short story containing 17 target words. Their retention of the target words was investigated by a multiple-choice test immediately after reading. As a result, the dictionary group got a higher score on the vocabulary test than no dictionary group did. This means that learners did not forget the words in the time between reading the text and taking the test. Additionally, the results in their study also indicated that a dictionary might be helpful to disambiguate word meanings when learners could not infer them completely from the context. Another important finding was that the dictionary group more incorrectly answered some of the target words, which have a large number of alternative meanings in a dictionary, as compared with no dictionary group. Besides, the students who used dictionaries needed nearly twice as long to read the passage as the students who did not. From these findings, the students in their study seemed not to have effective retrieval strategies. Consequently, Luppescu and Day

concluded that the use of a bilingual dictionary while reading could facilitate L2 learners' vocabulary learning, and seemed to help L2 learners who could not infer word meanings from the context with comprehending texts. At the same time, they admitted that there existed some disadvantages such as lower reading speed and choosing incorrect definitions, which were caused by a lack of reference skills of dictionary users. Thus, they also emphasized the necessity for teaching effective strategies to L2 learners.

Hulstijn (1993) investigated L2 learners' look-up behavior by using an on-line observation technique. He conducted two experiments with 82 Dutch high school students enrolled in two different grade levels of English classes, and found a wide range of amount of look-ups among L2 learners. On one hand, the students who had high verbal abilities seemed to ignore the words irrelevant to the reading comprehension, and look up more frequently the words which were relevant to the assigned task; on the other, they tended to confirm their inferences with the dictionary on the computer, even though they could guess meanings from context. This tendency was also found in Night (1994).

Night (1994) performed an experiment with 105 university students learning Spanish as a second language. To record students' actual look-ups correctly, all the reading and testing materials including a dictionary were programmed on the computer. She found: 1) students who used a dictionary not only learned more words but also attained higher reading comprehension scores than those who guessed from context, 2) the students with low ability in Spanish were at a disadvantage when they were told to guess from the context, and 3) the students with high proficiency in Spanish referred to the dictionary, even though they have already correctly guessed the meaning. In summarizing these findings, Night put emphasis on the effects of dictionary use on comprehension and vocabulary acquisition for L2 learners. Besides, she suggests that teachers assist different types of learners with teaching various strategies for dictionary use.

Further support for the effects of dictionary use has been provided by Hulstijn et al. (1996). In the study, they aimed to explore how the generally low incidental vocabulary learning can be improved, based on the finding in Hulstijn (1992). From their findings, they advocate that repeated exposures with useful information on words meaning (through marginal glosses or dictionary

use) will promote incidental vocabulary learning. Additionally, they reported that "when readers *do* use the dictionary, the incidental vocabulary learning will be as good as, or even better than, when they are provided with marginal glosses" (Hulstijn et al., 1996: p.336).

To repeat the major point argued above, use of dictionaries can provide learners with the obvious advantages for effective L2 learning, and it is useful for learners with different proficiency levels.

Do learners use dictionaries effectively?

A brief review on the effects of dictionary use in L2 learning has been made so far. Now, let me direct my attention to the argument about the actual reference skills of L2 learners.

Several studies have been conducted to investigate how L2 learners use dictionaries (e.g., Nesi & Meara, 1994; Tono, 2001). For instance, Bensoussan, Sim, and Weiss (1984) reported that no significant differences in reading comprehension test scores were found between Israeli students who used dictionaries and those who did not. Bensoussan et al. interpreted the findings to mean that the students could not use dictionaries effectively, while they expressed a preference for using bilingual dictionaries in the reading comprehension test.

A study examining learners' retrieval strategies was made by Lantolf, Labarca, and Tuinder (1985). Lantolf et al. found two separate strategies for interacting with bilingual dictionaries in an experiment with 89 students enrolled in beginning, intermediate, and advanced undergraduate Spanish classes. They revealed that the students of beginning and intermediate levels appeared to favor a search strategy based on lexical form, while advanced students were able to employ a more successful semantic-based strategy.

Admittedly, an effective use of dictionary is regarded as one of the essential strategies for L2 learning, and its importance has been claimed by many studies (e.g., Barnett, 1989, Bishop, 1998, 2000, 2001; Carduner, 2003; Wingate, 2004). However, neither learners nor teachers seem to realize it (Scholfield, 1982). Few learners, therefore, are considered to be capable of fully exploiting the advantages of dictionary use, for "the task of finding the meaning of a word in a dictionary is a complex process" (Luppescu & Day, 1993: p. 274). In fact, Herbst

and Stein's asserted (1987, cited in Cowie, 1999: p. 188) "successful use of a dictionary calls for a special 'competence' which for want of appropriate training, many students do not possess". Scolfield (1982) also claimed that the reference skills for dictionary use required a certain strategies, and he made a detailed description of an effective dictionary use for L2 learners. Nation (2001) briefly outlined Scolfield's strategies for dictionary use (see Table 2).

Table 2. *Basic Skills for Using a Dictionary*

Receptive use (listening and reading)
1. Get information from the context where the word occurred.
2. Find the dictionary entry.
3. Choose the right sub-entry.
4. Relate the meaning to the context and decide if it fits.
Productive use (speaking and writing)
1. Find the wanted word form.
2. Check that there are no unwanted constraints on the use of the word.
3. Work out the grammar and collocations of the word.
4. Check the spelling or pronunciation of the word before using it.

Adapted from Nation (2001: pp. 285-288)

Consequently, the effective reference skills should be acquired and developed for better L2 learning, and they ought to be learned in various kinds of situations.

How does media technology change dictionaries?

Dictionaries have been commonly regarded as abundant language resources printed on fine paper. With the development of digital technology, however, types of learners' dictionaries have been widely diversified during the last two decades. Digitized dictionaries such as those on CD-ROM and the Web have become widespread. McArthur (1998, cited in Jackson, 2002: p. 159) indicates that the electronic medium opens up new possibilities for dictionary use.

Since learners' searching behavior can be digitally recorded, some L2 studies in using dictionaries on the computer have been carried out in recent years (e.g., Hill & Laufer, 2003; Hulstijn, 1993; Hulstijn, Hollander, & Greidanus, 1996; Iwasa, 1990; Laufer & Levitzky-Aviad, 2003; Night, 1994). For instance, to construct CAI

courseware for EFL learning, Iwasa (1990) investigated learners' searching behavior under rigorous conditions. She built a computer-assisted reading system accompanied by an electronic-based dictionary, and reported that a positive correlation was observed between time for word retrieval and the accuracy of selecting L1 equivalent, while no significant relationship obtained between reading comprehensions and searching time.

During the last decade, empirical studies compared these electronic-based dictionaries with conventional printed ones (hereafter PD) have also appeared (e.g., Aust, Kelley, & Roby, 1993; Bhatia, 1991; Inami, Nishikata, Nakayama, & Shimizu, 1997; Koga, 1995). Bhatia (1991) compared students' look-up behavior in a computer-based Kanji dictionary with PD. Since "the Kanji Finder" induced learners' look-ups and gave them correct information they needed, Bhatia concluded that an electronic-based dictionary might enhance learners' motivation to study Japanese.

Aust, Kelley, and Roby (1993) argue that an online electronic dictionary (hyper-reference) can offer many advantages to learners, because it provides immediate access to the target information, compared with PD which requires learners to tackle an arduous task (Keller, 1987). In the study, consultation frequency, reading time, efficiency, and comprehension were investigated respectively under four conditions (an electronic text with a bilingual or a monolingual hyper-reference dictionaries/a printed text with a bilingual or a monolingual printed dictionaries). They found; 1) learners consulted hyper-references much more frequently than PD, 2) no significant difference in comprehension was found between hyper-references and PD, 3) learners showed a preference for bilingual dictionaries. Based on these findings and a result of the exit interviews, Aust et al. concluded that hyper-references could lower the "consultation trigger point", as they offered more efficient access than PD did.

Koga (1995) claimed that the use of an electronic dictionary on a computer in understanding materials on CAI (Computer Assisted Instruction) /CAL (Computer Assisted Learning) was more efficient than that of PD because a computerized retrieval system did not cause interference to learners' reading process.

Research on comparing CD-ROM dictionaries with PD was conducted by

Inami et al. (1997). In the study, the percentage of correct answers and time for word retrieval were examined between a CD-ROM dictionary and PD groups. Subjects' retention of looked-up words was investigated with a recall and a recognition tests as well. They also conducted a factor analysis based on a result of a 40-item questionnaire, and reported that a significant correlation between the factor of "easy to memorize" and the percentage of correct answers was found. To sum up the major findings of the study, Inami et al. insisted the effectiveness of a CD-ROM dictionary in L2 vocabulary learning.

All studies described above came to the conclusion that electronic-based dictionaries on the computer were more effective than PD in L2 learning, as they can reduce the time for word retrieval. It must be noted, however, that their subjects read an electronic text by using an electronic dictionary on the computer. Although the findings under such an artificial situation provide abundant evidence in support to an effect on the use of electronic-based dictionaries, they seem not to apply to teaching in a regular classroom and studying at home.

Now let me turn to another type of an electronic dictionary, which is rapidly replacing PD among Japanese L2 learners.

The advent of hand-held electronic dictionaries

When the first model of a hand-held electronic dictionary (hereafter ED) appeared in Japan approximately twenty years ago, it was no more than a word-to-word translator. During the latter half of the 1990s, with an advent of a full-content-type of ED, the number of L2 learners using ED has been rapidly expanding in Japan. According to market research in recent years, there is a considerable demand for ED in universities, colleges, and even in high schools (Nakamura, 2003). Actually, the ED market has grown approximately fourfold in the last five years (Yagi, 2004). Despite its popularity, the number of studies on its effect on EFL learning is still small (e.g., Koyama & Takeuchi, 2003; Osaki, Ochiai, Iso, & Aizawa, 2003; Shizuka, 2003).

Koyama and Takeuchi (2003) was one of the first attempts to compare ED with PD, focusing not only on reduction of search time or the number of words searched but also on learners' retention of words and their impressions of dictionaries. In the study, they found that some relations existed between the

dictionary's interface design and the learners' impression of each dictionary. They also reported that the number of look-ups in using ED was not necessarily proportional to the retention of looked-up words, and claimed that the traditional interface design of PD might lead to higher word retention. To confirm these findings from another perspective, Koyama and Takeuchi examined learners' verbal protocols relating to searching behavior, which were extracted by the think-aloud technique (Ericsson & Simon, 1993). They concluded that learners could only obtain limited information concerning the target word at once in using ED, while they were able to get other related information such as usage examples about the word at once from PD.

Osaki et al. (2003) also compared the differences in learning effect, focusing on finding appropriate meaning and word retention between ED and PD. They also investigated learners' reading comprehension in using two types of dictionaries. The experiment was conducted with 167 Japanese university students, who were divided into two proficiency groups: upper and lower. Each group was instructed to read a text under three conditions (ED, PD, and no dictionary), and asked to answer comprehension and vocabulary tests after reading. Their findings were: 1) ED helped the learners find the appropriate meanings better than PD did, 2) ED facilitated better reading comprehension, compared with PD, and 3) dictionary types did not affect the retention of newly learned vocabulary. Eventually, they concluded that, although the use of ED temporary increased the number of look-ups, it did not guarantee the better text comprehension nor retention of the target words. However, there is considerable inconsistency between the conclusion and the second and third findings above, and thus their assertions were obviously misleading.

To compare the efficiency of two types of dictionaries, Shizuka (2003) undertook a study of 77 university students. Based on the result of the study, he maintained that ED was superior to PD in accessing words and identifying their meanings more quickly. He also insisted that EFL learners tended to look up words more frequently in using ED, as they were less reluctant to use them. His assertion stems from the viewpoint in Aust et al. (1993), which claimed that an electronic-based dictionary could lower the "consultation trigger point", thereby offering the learners more frequent and efficient access.

As have been described above, there is very little agreement concerning the decisive effect of ED on L2 learning. All the studies, however, seem to agree that the marked difference in intreface design between ED and PD existed. For example, since dictionary data is stored in an electronic medium, learners are hardly aware of a large amount of information concerning headwords. Nevertheless, learners are able to obtain a lot of information such as meanings, usage examples, and even homonyms of headwords on the same page in using PD. How do these differences affect searching behavior of L2 learners? Besides, learners can quickly obtain relevant information concerning target words without any effort in using ED, while they have to turn over the pages of PD frequently. Does this difference have any effects on L2 learning? Furthermore, as Shizuka (2003) claimed, if learners tend to consult ED more frequently than PD, how does this tendency influence L2 learning? These questions are still open.

Conclusions

The roles of dictionaries in L2 learning have been outlined so far in this article, and it have been emphasized from the review of empirical studies that the effective reference skills should be needed for better L2 learning. Then a survey of the transition from dictionaries printed on paper to those in an electronic medium during the last two decades has been indicated. Subsequently, with the advent of ED, how media technology diversified types of learners' dictionary has been shown.

Compared with a thick printed dictionary, ED is compact and easy-to-carry, even though it contains so many kinds of dictionaries. Moreover, ED seems to enable L2 learners to look up words more quickly. Thus, it is quite natural that ED gains strong support from not only learners but educators. As has been noted in the previous section, however, studies on the effect of the use of ED for L2 learners are still lacking. Considering the rapid increase in the number of ED users in Japan and the importance of the role of dictionaries, more empirical studies should be conducted. For better learning in using ED, therefore, the essential points we shall focus on are: 1) to clarify the differences in learners' searching behavior between ED and PD, 2) to investigate how the differences affect retention of looked-up words and reading comprehension in L2 learning, and

3) to find out effective strategies for ED use.

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