NOTE

Dictionary Use and Reading Comprehension

Kathryn Zidonis Dilenschneider
Robert F. Dilenschneider

In recent years, several studies have been conducted with regard to second language learners learning the unknown words they encounter through the use of dictionaries, vocabulary strategies and guessing from context (Fan, 1998, 2003; Harley & Hart, 2000; Hayati & Fattahzadh, 2006; Loucky, 2002; Qian, 2004). Overall, the general findings suggest that rather than consulting a dictionary, language learners elect to guess the meanings of unknown words from context. Unfortunately, learner guesses of unknown words are not consistently correct (Kaivanpanah & Alvai, 2008). To confirm that the meanings of unknown words from passage content are accurate, some researchers suggest that learners consult their dictionaries (Hayati and Fattahzadh, 2006) in order to become more independent and confident language learners (Gu, 2003). However, as technology continues to develop, more conditions to learn new words while reading a passage for comprehension have become available to learners. Therefore, this paper aims to review previous studies that have examined the effect that dictionary use has had on reading comprehension and, based on these findings, offer pedagogical implications for language instructors to consider when they deliver lessons.

Dictionary vs. No Dictionary

Findings of previous studies are mixed with regard to using a dictionary to aid

reading comprehension.　On one hand, some earlier studies involving dictionaries found that learners who used a dictionary while reading had better comprehension compared to learners who did not use a dictionary.　For example, Knight (1994) conducted a study that examined the effects of dictionary use on vocabulary acquisition and reading comprehension.　The study involved 105 English-speaking second year students learning Spanish who were divided into a low verbal ability or high verbal ability group.　All students read four separate 250-word articles that contain 12 unknown words on a computer.　However, half of the students were afforded the use of a dictionary programmed into their computer.　After reading each article, all students were asked to write down everything they could remember from the article.　The results of the study found that the overall mean for reading comprehension scores for both low and high verbal ability students who used a dictionary were higher than compared to students who did not use a dictionary.

Goyette (1997), in a study involving 24 English speakers of high intermediate and advanced learners of French as a second language in the Canadian armed forces, compared learners' comprehension of L 1 and L 2 texts with the following conditions:　no dictionary access, hard-copy dictionary access, and on-line computerized dictionary access.　Results showed that although there was no main effect for type of dictionary used for either the L 1 or L 2 texts, texts read with an on-line or a hard-card-copy dictionary produced higher comprehension recalls than the no dictionary access group ($F(1, 22) = 51.80, p < .001$).

On the other hand, more recent studies suggest that dictionary use while reading for comprehension is not necessarily significant.　For instance, Al-Sheri and Gitsaki (2010) examined whether using on-line dictionaries when reading in an integrated format was more effective than in a split-attention format with 20 intermediate level students from a variety of countries studying ESL in Australia. Students were randomly assigned to two settings of either using or not using an on-line dictionary in addition to two formats of answering comprehension questions either next to or separate from a reading text for a total of four conditions.　For example, for formats involving comprehension questions on a separate page, in the Split-Attention On-

line Dictionary (SAOD) condition, students read an on-line text with the use of an on-line dictionary and then transferred to answer comprehension questions on a separate page. However, in the Split Attention No Dictionary (SAND) condition, students read an on-line text without the use of a dictionary and then transferred to answer comprehension questions on a separate page. Concerning formats involving answering comprehension questions on the same page, for the Integrated Format On -line Dictionary (IFOD) condition, students read an on-line passage with the use of an on-line dictionary and then answered comprehension questions on the same webpage, while in the Integrated Format No Dictionary (IFND) condition, students read an on-line text without the use of a dictionary and answered comprehension questions on the same page.

A one-way ANOVA revealed no significant difference among the four format groups, $F = 0.368$, $df = 3$, $p = .78$, for reading comprehension. Participants in both split-attention formats had similar mean scores. However, among the four conditions, the Integrated Format On-line Dictionary (IFOD) condition scored the highest and the Integrated Format No Dictionary condition (IFND) scored the lowest. The researchers speculated that an interaction effect took place between the use of the on-line dictionary and format. That is, the Split-attention formats of both the SAOD and SAND conditions decreased performance because they both placed a high cognitive load on subjects, which reduced the effectiveness of the on-line dictionary. However, the IFOD condition had a more distinct effect on performance than the IFND condition because its integrated format reduced the cognitive load on subjects which increased the effectiveness of the on-line dictionary.

Prichard et al. (2011) examined how dictionary use increased lexical coverage and comprehension of a short text. Their study involved 103 lower-intermediate and intermediate first-year students studying at a Japanese women's university. The students were divided into a Control Group ($n = 49$) and a Dictionary Group ($n = 54$). The Dictionary Group read a 650-word passage and clicked on unknown words in order to access their meanings in a bilingual English-Japanese dictionary. After reading the passage, students from both groups received a comprehension test that

consisted of eight multiple-choice questions.

The mean comprehension score for the Dictionary Group (6.22) was higher than that of the Control Group (5.86), yet the difference was not significant ($p = .27$). This occurred because just 23 of the 54 learners (42.5%) in the Dictionary Group had scores of 7 or better compared to 12 of the 49 learners (25%) in the Control Group that did not use a dictionary. Although the Dictionary Group used dictionary links that increased the lexical coverage from 92.5% to 94.3%, the authors stated that if learners had used more links and achieved a coverage of at least 96%, they might have obtained a significant difference in comprehension between the two groups.

Dictionary Type and Comprehension

The findings from comparing the effect between computer-based dictionaries and traditional book-based dictionaries on reading comprehension is also mixed. For instance, on one hand, Aust, Kelly, and Roby (1993), who conducted a study involving 80 undergraduate university students learning Spanish as a foreign language, compared clicking on hyper-references directly linked to an on-line electronic aid to the use of conventional paper dictionaries and found no significant differences for comprehension. The authors noted that, the number of consultations for using hyper-references was more than double the number for paper references. Due to such ease of access, the authors explain that hyper-references increased learner desire to acquire more information. However, because learners repeatedly looked up familiar information, this might have reduced the amount of study time to learn the content of the reading passage

Goyette (1997), mentioned previously, found that there was no main effect for type of dictionary used when he compared learner comprehension of L 1 and L 2 texts between on-line computerized dictionary access and hard-copy dictionary access. The author stated that there was a benefit of using a dictionary versus not using a dictionary. However, the features offered from an on-line dictionary (ease of access, accessing the stems of words automatically, the ability to remain in context while reading) were not an advantage even though participants expressed that the

ease of using an on-line dictionary led to faster and better text comprehension. As a result, the author concluded that, although on-line dictionaries may be as effective as hard-copy dictionaries, their access to information does not necessarily improve comprehension.

Similarly, Liu and Lin (2011) conducted a study examining the effects of using a computer pop-up dictionary, a computer type-in dictionary, a book dictionary, and no dictionary on reading comprehension. The participants were 80 first-year Mandarin Chinese college students studying English as a second language. The results revealed no significant differences among the pop-up, type-in, and book dictionaries on comprehension scores and not having an aid to look up unknown words, $F(3,76) = 1.53$, $MSE = 646.09$, $p = .21$. When examining the three dictionary groups, the authors found a positive correlation between longer reading times and higher comprehension. In addition they stated that when participants spent more time searching and reading vocabulary, they devoted less time to comprehending the passage. As a result, the authors suggested that long periods between learning the meanings of a word and reading a text can be disruptive.

Internal vs. External Resources

There have been a couple studies that suggest that looking at definitions from a computer dictionary while simultaneously reading passage content is beneficial for comprehension. Chun (2001), for example, examined the conditions of when learners consulted an internal glossary in which they mouse-clicked on hyperlinks to access an internal glossary compared to how frequently learners consulted an external on-line dictionary in which they had to copy and paste or type words into the dictionary. Twenty-three students studying German as a foreign language in Southern California participated in this study. While reading Text 1, the students were able to click on a highlighted glossed word which led them to the internal glossary, or highlight and click on a word that led them to an external on-line German-English dictionary. When reading Text 2, however, the students were only able to use the external on-line dictionary. For the assessment, the students' written

summaries were scored for the number of propositions recalled and a computer program tracked and noted the number of words looked up as well as the amount of time learners spent on reading and writing tasks. In addition, learners were interviewed about their strategies after reading the two texts.

Significant differences were found in a paired sample *t*-test between the internal and external look-up behavior and for the number of propositions recalled from the two texts. The mean number of words looked up, for example, was 11.04 for the internal glossary compared to 4.48 for the external dictionary, t (22) = 7.702, $p <$ .001. The mean number of propositions correctly recalled was 3.70 for Text 1 compared to 1.74 for Text 2, t (22) = 5.806, $p <$ .001. Overall, the learners were able to recall more important ideas when they read a text and had access to both an internal gloss and external dictionary compared to when they only had access to an external dictionary. With regard to the preference between the two resources, Chun reported that learners tended to look up a word if it could be done simply and that glossing might have sped up the reading because it provided instant access to definitions whereas typing in or copying and pasting words into an on-line dictionary required more effort.

Al-Sherhri and Gitaski (2010), mentioned previously, examined the effects of split-attention and integrated formats on vocabulary learning using an on-line pop up dictionary and reading comprehension task. Twenty intermediate ESL students were randomly assigned to four conditions : Split-Attention No Dictionary (SAND), Split-Attention with On-line dictionary (SAOD), Integrated Format No Dictionary (IFND), and Integrated Format with On-line Dictionary (IFOD). Students in the on-line dictionary conditions read a text and then answered comprehension questions ; however, students using the integrated formats answered comprehension questions that were included in the text. Mean scores revealed that access to an on-line dictionary was better for vocabulary learning and the integrated format promoted better reading comprehension.

Pedagogical Implications

Although the previous studies involving the use of different types of dictionaries while reading for comprehension have presented mix findings under several conditions and formats, they are useful for language instructors to keep in mind in the planning and designing their lessons both in and outside of the classroom. First, from the research that has been conducted thus far it seems that both Knight (1994) and Goyette (1997) found reading comprehension for learners who used a dictionary was significantly better compared to learners who did not use a dictionary. Also, although not significant, both Al-Sheir and Gitsaki (2010) and Prichard et al. (2011) found learners who used a dictionary achieved higher comprehension scores compared to learners who did use a dictionary. Therefore, for the traditional classroom, it appears that having access to a dictionary, whether computer-based or book-based, is beneficial for student comprehension and thus instructors should stress the importance of bringing a dictionary to every class session.

Second, with regard to comparing dictionaries and reading comprehension, previous studies from Aust, Kelly and Roby (1993), Goyette (1997) and Liu and Lin (2011) did not find significant differences between learners who used computer-based on-line dictionaries and learners who used traditional book-based dictionaries. Interestingly, however, the findings from both Chun (2001) and Al-Sheri and Gitsaki (2010) seem to suggest that comprehension is greater when learners read a passage and simultaneously view word definitions from a gloss or on-line dictionaries compared to when learners transfered away from a passage to access word definitions in an external on-line dictionary. As a result, for practical study both inside and outside of the classroom, instructors could, for example, consider assigning reading assignments via the Internet in the form of a PDF. In such a case of a digital reading document, by simply touching on word displayed on a smart phone or tablet computer, students can simultaneously read a passage while they access the meaning of an unknown word and thereby increase their comprehension of a reading passage.

REFERENCES

Al-Shehri, S., & Gitsaki, C. (2010). Online reading : A preliminary study of the impact of integrated and split-attention formats on L 2 students' cognitive load. *Recall*, *22*, 356-375.

Aust, R., Kelly, M., & Roby, W. (1993). The use of hyper-reference and conventional dictionaries. *Educational Technology Research and Development* ,*41*, 63-73.

Chun, D. (2001). L 2 reading on the web : Strategies for accessing information in hypermedia. *Computer Assisted Language Learning*, *14*, 367-403.

Fan, M. (2003). Frequency of use, perceived usefulness, and actual usefulness of second language vocabulary strategies : A study of Hong Kong learners. *The Modern Language Journal*, *87*, 222-241.

Gu, Y. (2003). Fine brush and freehand ; The vocabulary-learning art of two successful Chinese EFL learners. *TESOL Quarterly*, 37, 73-104.

Goyette, S. (1997). The effects of dictionary usage on text comprehension. *Humanities and Social Sciences, 57*, 42-64.

Harley, B., Hart, D. (2000). Vocabulary learning in the content-oriented second language classroom : Student perceptions and proficiency. *Language Awareness*, *9*, 78-96.

Hayati, M., & Fattahzadh, A. (2006). The effect of monolingual and bilingual dictionaries on vocabulary recall and retention of EFL learners. *The Reading Matrix*, *6*, 125-134.

Kaivanphanah, S, & Alavi, M. (2008).   Deriving unknown word meaning from context : Is it reliable? *RELIC Journal*, 39(1), 77-95.

Knight, S. M. (1994). Dictionary use while reading : The effects on comprehension and vocabulary acquisition for students of different verbal abilities.   *Modern Language Journal, 78*, 285-299.

Liu, T., & Lin, P. (2011).   What comes with technological convenience? Exploring the behaviors and performances of learning with computer-mediated dictionaries. *Computers in Human Behavior, 27*, 373-383.

Loucky, J. (2002).   Improving access to target vocabulary using computerized bilingual dictionary. *ReCALL, 14*, 293-312.

Prichard, C., & Matsumoto, Y. (2011). The effect of lexical coverage and dictionary use on L 2 reading comprehension.   *Reading Matrix : An International Online Journal, 1533242 X, 11*.

Qain, D. (2004). Second language lexical inferencing ; preferenes, perceptions, and practices. In P. Bogaards, & B. Laufer (Eds.), *Vocabulary in a second language : selection, acquisition, and testing* (pp. 155-169).   Philadelphia : John Benjamins Publishing Company.