L2 Lexical Growth through Extensive Reading and Dictionary Use: a Case Study

James Ronald
Hiroshima Shudo University,
1-1-1 Otsuka-higashi,
Asaminami-ku,
Hiroshima,
Japan 731-3195
ronald@shudo-u.ac.jp

Abstract

While it is widely accepted that language learners do increase their vocabulary through using monolingual learner dictionaries, there has been little evidence produced to support this belief. Problems with research into vocabulary acquisition from dictionary use in the context of extensive reading are various. They include the small levels of learning to be expected from single brief encounters with unknown words while reading, problems with pre-selecting a small set of unknown target words, and the danger that the focus on the target words will contaminate the incidental nature of the vocabulary acquisition being investigated. This paper reports a case study in which these difficulties are, partially at least, overcome: using a method in which a very long text is read a number of times, in which word knowledge for hundreds of words is elicited, and in which a more sensitive measure of word knowledge is employed. Case study results confirm the possibilities offered by this method and point to ways in which its reliability may be improved.

Introduction

There is widespread consensus in foreign language teaching that both extensive reading in the foreign language and monolingual dictionary use lead to L2 vocabulary growth, but there has been little reliable evidence to support either claim. In the case of extensive reading, this lack of evidence appears to be due to a combination of too few items being tested, too little contact with unknown words for a measurable amount of learning to take place, and the use of insufficiently sensitive instruments for measuring incremental vocabulary growth. As regards dictionary use in EFL settings, the lack of evidence of vocabulary growth, as opposed to word comprehension or production, appears to be also due to the fact that very few studies have been conducted in this particular area; see, for example, reviews of research in the field by Nesi [2000] and Tono [2001].

Horst and Meara [1999] report on the use of a model for measuring and predicting lexical growth through extensive reading that aims to overcome the obstacles listed above. In this model, about 300 target words are selected rather than just 20 or 30. In addition, the participant reads the text in question a number of times, ensuring multiple encounters with the same word (although admittedly in only one context for each word). Further, participants class their knowledge of target words as being in one of four states of word knowledge ranging between *"I definitely don't know this word"* and *"I definitely know this word"*.

This paper describes a case study investigating vocabulary growth as a result of using a monolingual EFL dictionary. In the study, a Japanese adult learner of English read a book-length English text seven times: three times without access to a dictionary and four times using a monolingual learner dictionary as she needed. Before and after each reading, she evaluated her level of word knowledge for each of 300 words which appear in the text.

Three related questions were addressed through this case study. They were:

1. Does the model provide a suitable vehicle for the measurement of L2 vocabulary growth through the two learning conditions of reading an L2 text without access to a dictionary and reading the same L2 text with a monolingual learner dictionary?
2. Are there indications that the vocabulary of the participant increased through multiple readings of the L2 text?
3. Are there indications that the participant's vocabulary benefited from her using a learner dictionary while reading the L2 text?

Case Study

A case study investigating vocabulary learning from extensive reading with and without access to a monolingual learner's dictionary was undertaken using the model proposed by Horst and Meara [1999]. Apart from the benefits listed above, the use of multiple readings allows for comparison of vocabulary growth through two learning conditions with one participant: predicted vocabulary growth in one condition to be compared with actual vocabulary growth in a second condition. Here, the first condition is reading a long English text without using a dictionary and the second condition is reading the same text with a monolingual dictionary.

For this experiment, one intermediate level learner of English was asked to read a book-length text once a week for a total of seven weeks. She was given a vocabulary test before and after each reading. Because the reading of the whole text generally took the participant between eight and ten hours, no specific time was set for the reading other than that it would be read in the seven days following the test. Given the time required for reading and testing (about 80 hours in total), a case study with a single willing, and paid, participant was selected as the most suitable method for this project.

The participant

The participant asked to take part in this study was a 20-year-old 3rd year student majoring in English at a middle-ranking Japanese university. Almost all her experience of language learning had been in a formal context: in class, doing set homework, or preparing for exams. She had not been abroad or spent any time in an exclusively English-speaking environment. She had very little previous experience of extensive reading: only one graded reader eighteen months previously. Her knowledge of English would be rated as intermediate, equivalent to a TOEFL score of around 500.

Text

The text used for reading and as the source for 300 of the 320 selected words was the children's book *The Lion, the Witch and the Wardrobe* [Lewis 1980]. This book tells the

story of the adventures of four children who enter another world. The book was chosen for the following reasons:

1. As a children's book, with 30 pages of pictures, it would be relatively easy to read.
2. As it is a book that can be read at different levels it was felt that, in terms of interest, it would support multiple readings.
3. A vocabulary pre-test in which a similar level student was asked to identify unknown words in the book suggested that 96-98% of the text would be known. This is in line with that required for optimum comprehension [Laufer 1992; Hu and Nation, in press].
4. In terms of size, (about 140 pages of text, equating to 40,000 words), the text was long enough to provide a sufficient number of probably unknown target items for the test: at least 300 words which occur only once in the text.

Target word selection

The whole text was scanned into a computer and a program which includes a word frequency count, Wordsmith, v.3 [Scott 1999], was used to identify words which occur only once in the text. Of a total of over 3,000 word forms occurring in the text, 1,546 occur only once. Over half of these, however, were excluded as there were members of the same lemma or word family in the text, or were proper nouns; this left about 700 single-occurrence words. Of these, about 300 were judged to be probably known by the participant, leaving something in the region of 400 hundred words which could be included as words to be tested. The final selection from these was made to present a variety of words to the participant, so where two similar words occurred, such as *chirping* and *chirruping*, only one was selected. An additional 20 low frequency words were drawn randomly from The Longman Dictionary of Contemporary English, 3rd Edition [Summers 1995] (henceforth LDOCE), as a control.

Dictionary choice

From the fourth reading onwards, the participant was encouraged to use a monolingual EFL dictionary, and LDOCE was chosen for this purpose. This dictionary was chosen because it is said to be the monolingual learner dictionary which is closest in format to the bilingual dictionaries with which Japanese learners of English are familiar, and because the case study participant already owned this dictionary and was, to some degree, familiar with it.

Vocabulary evaluation method

A computer program called V_States (v.03) [Meara 2001] was used for this case study. The program presents the target words on the computer screen, one by one, in random order and records the participant's responses. For each target word that appears on the screen, the participant rates her knowledge of the word by clicking on one of the four buttons on the screen, labelled as follows:

0 – I don't know this word	1 – I'm not sure I know this word
2 – I think I know this word	3 – I definitely know this word

This approach, with the participant rating her knowledge of the target words, is valuable in two ways; through it, it is it possible for a test of over 300 words to be completed in about 20 minutes. Also, as Horst and Meara note [1999], the large number of target words and the very short time spent focusing on each word in the test (under 4 seconds per word, including

clicking on the button to bring up the next word and the buttons for rating word knowledge) keep the participant's focus on each individual target word to a minimum and so, as far as possible, preserve the condition of incidental vocabulary learning from reading. After the experiment was completed, a final test was conducted to check whether the participant could give the meanings of the words she had rated as definitely known. The results of this test, and those of the rating sessions will be discussed below.

Procedure

Before reading the text, the participant rated her knowledge of the 320 selected words. In the following week, she read the text, without referring to a dictionary. The first reading took almost 10 hours, over a period of seven days. The participant was then tested again on her knowledge of the words. This reading and testing cycle continued for two further cycles.

From the fourth reading onwards, the participant was allowed to use a monolingual EFL dictionary – LDOCE. At this point, she was given a brief guide to using the dictionary, based on guidelines suggested by Nation [1990: 136]. She kept a record of the words she looked up during each reading, using Post-it® tabs inserted in the dictionary. This method of recording words was chosen as it is quick and involves no activity which might affect retention, such as writing down looked up words. She was also advised not to look up too many words as she was to aim to keep within the 10 hours that it took her to read the text on the first reading.

Prior to the first reading and after every reading, the participant took the V_States Test, evaluating her knowledge of the 300 words selected from the text and the 20 control words. Using the responses from the first four tests, the participant's learning after subsequent readings could be predicted. This prediction could then be compared with the scores given by the participant after reading the text with the help of a dictionary. The difference between the predicted scores and the actual scores can be attributed to the participant's use of the dictionary.

Results

There are three types of results from this case study that are of particular interest: the actual numbers of words at each level for the two learning conditions of reading without and with a dictionary, the predicted scores for the two learning conditions, and the accuracy of the participant's answers in the final meaning test, when asked to give the meaning of the words she marked as state 3 ("definitely known").

Table 1 shows the changes between states of items over the eight tests. The t2–t3 matrix was used to generate a prediction of how word knowledge would be rated in subsequent tests if the learning condition of reading without access to a dictionary were maintained. The t4-t5 matrix was also used to generate a prediction for subsequent tests with the learning condition of reading the same text while using a dictionary. This purpose of this latter prediction is to serve as a control for the actual data from tests 6 – 8. Figure 1 shows the number of actual and predicted state 3 words ("definitely known") for the participant through the eight tests.

Test no.	state 0	state 1	state 2	state 3
1	263	42	16	9
2	123	144	47	16
3	180	76	48	26
4	153	86	61	30
5	121	88	85	36
6	93	111	83	43
7	63	123	76	68
8	41	118	78	93

Table 1: States of target words for each test

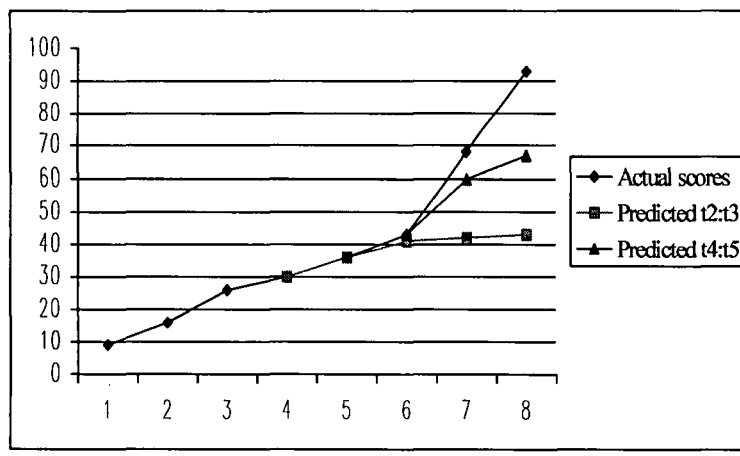

Figure 1. Actual and predicted numbers of state 3 rated items

In addition to the eight computer-based States tests, the participant took one final test, in which she was asked to provide Japanese meaning equivalents for the words she had rated as state 3 ("I definitely know this word") in test 8. She only achieved an accuracy level of 56% for the 93 state 3 items, even with a lenient rating of the translation equivalents. However, when the state 3 responses from test 7 rather than test 8 were used, a much more acceptable 72% of equivalents (for 68 items) were acceptable. Possible factors accounting for these results are proposed below.

Discussion

Perhaps the first issue that needs addressing is the very poor score (56%) for the post-study meaning test. One factor that may account for this result is the same as that for the sudden jump in the level 3 ratings for the final levels test; a desire by the participant to show a good result for the case study. The participant was chosen for her reliability and willing; and perhaps a desire to "please the teacher" resulted in this overstatement of her knowledge of the target words in the final test. This is confirmed by the degree to which prediction and actual scores diverged between t7 and t8. Were it not for the inflated t8 score, it would have

been closer to that predicted for the eighth test, based on the t4-t5 matrix (with the condition of using a dictionary while reading).

There are two further problems related to that discussed above. One is that the participant's awareness of what, here, knowing a words means may have slipped over the period of the experiment. Although it was explained that "knowing a word" meant knowing its meaning, this understanding may have become closer to meaning how familiar the word is to the participant. The second problem is the high number of words that were misread in the final test, and presumably all the other eight tests. Many target words were mistaken for more common words spelled or pronounced similarly: examples are *flashed* for *flushed*, *pray* for *prey*, *motor* for *mortar* and *slice* for *sluice*. This appears to be due to a combination of the isolated presentation of the words in the tests and the "Japanisation" of English words, so that both spelling and pronunciation become "fuzzy" in the learner's mental lexicon. In addition, the relative opacity of the orthography-to-phonography mapping for English as compared to Japanese *kana* [Kess & Miyamoto 1999] will undoubtedly affect ability to recognize English words under pressure and out of context. In one sense, the V_States test is a test of orthographic lexical decisions for English words. Although research is limited [Wydell & Butterworth 1999], it does seem that, for the reasons cited above, Japanese learners of English tend to perform poorly in such tests.

Conclusion

As the case study reported here focuses on the vocabulary development of only one language learner, in many respects claims for the results cannot be made beyond that one person. Specifically, the learner's L1 writing system, general L2 ability and vocabulary size, overall L1 and L2 reading proficiency, dictionary use skills, and ability in guessing from context are all factors which will affect various aspects of the research described here. In this respect, the study was largely exploratory; seeking to determine what the model employed may be able to show about vocabulary development through extensive reading and monolingual learner dictionary use.

To return to the three questions addressed through this case study, the results confirm that, for this participant, vocabulary growth did result from extensive L2 reading, both with and without the use of a monolingual learner dictionary. It also confirms that for the participant there was a clear benefit in terms of vocabulary growth attributable to dictionary use over and above that attributable to extensive reading alone. It should be noted, too, that this improvement was gained with a level of text difficulty (around 95% of text known) for which comprehension without a dictionary should be possible. Most foreign language learners, outside the sheltered environment of the classroom, have to cope with texts which contain a higher proportion of unknown words. In such cases, we should expect the benefit from dictionary use while reading to be greater. Research is continuing with more difficult texts to investigate whether this expectation will be confirmed.

As for the suitability of the model and methods employed to investigate the learner's vocabulary development with the two learning conditions, further refinements of the method are clearly necessary to increase the reliability of participant's responses. In addition, further research is needed to investigate the overall validity of the method employed with other

language learners and other texts. In conclusion, then, the method used in this case study does show considerable promise for the identification of vocabulary development growth through reading, both with and without the use of a monolingual dictionary, and the case study confirms the widely held belief that monolingual dictionary use while reading, in addition to guessing from context, aids vocabulary comprehension and retention.

References

[Horst 1996] Horst, M. & Meara, P.M., 1999. Test of a model for predicting second language lexical growth through reading. *The Canadian Modern Language Review*, 56, 2.

[Hu in press] Hu, M. & Nation, I.S.P. (in press) Vocabulary density and reading comprehension, *Reading in a Foreign Language*.

[Kess 1999] Kess, J.F. & Miyamoto, T., 1999. *The Japanese Mental Lexicon: Psycholinguistic Studies of Kana and Kanji Processing.* John Benjamins, Amsterdam.

[Laufer 1992] Laufer, B., 1992. How much lexis is necessary for reading comprehension?, in: P.J.L. Arnaud & H. Béjoint (eds.) *Vocabulary and Applied Linguistics*. Macmillan, London.

[Lewis 1980] Lewis, C.S., 1980. *The Lion, the Witch and the Wardrobe.* HarperCollins, London.

[Meara 2001] Meara, P.M., 2001. *V_States v0.3* [software]. University of Wales, Swansea.

[Meara 1994] Meara, P.M. & Rodriguez Sanchez, J., 1994. Matrix models of vocabulary acquisition: an empirical assessment, *CREAL Occasional Paper No. 1*. University of Ottawa, Ottawa, Canada.

[Nation 1990] Nation, I.S.P., 1990. *Teaching and Learning Vocabulary.* Heinle & Heinle, Boston, Mass., US.

[Nesi 2000] Nesi, H., 2000. *The Use and Abuse of EFL Dictionaries: how Learners of English as a Foreign Language Read and Interpret Dictionary Entries.* Niemeyer, Tübingen.

[Summers 1995] Summers, D. (ed.), 1995 *Longman Dictionary of Contemporary English. (Third edition.)* Longman, London.

[Tono 2001] Tono, Y., 2001. *Research on Dictionary Use in the Context of Foreign Language Learning.* Niemeyer, Tübingen.

[Wydell 1999] Wydell, T.N. & Butterworth, B., 1999. A case study of an English-Japanese bilingual with monolingual dyslexia, in: *Cognition, 70,* pp. 273-305, Elsevier Science.