

A Case Study of Developing a Vocabulary Testing (2): A progressive report

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Abstract

The aim of this study is to develop a vocabulary test for testing the depth of vocabulary knowledge which is related to semantic and syntactic restrictions in the process of L2 vocabulary.

In this study¹, we chose collocations for developing the test items. The targeted collocations are *verb+noun* patterns. The verbs and nouns are high frequency words and familiar to the L2 learners: for example, verbs are *make, take, do, get, become* and so on. We conducted a vocabulary test to 150 Japanese university students. These items require the test takers to distinguish conceptual differences between L1 (Japanese) and L2 (English). We selected the items based on the item difficulties by IRT and report a newly created vocabulary test.

Many types of vocabulary tests for second language learners have been developed.

233 Japanese university students participated in the test session. The collected data were analyzed by Winsteps 3.61.2. Items were selected based on the results of the analysis. We made 8 items for Group 1, 20 items for Group 2 and 23 items for Group 3. In each test item, there is a blank to be filled in by the most appropriate verb(s). 280 university students participated in this test session. We selected the items by Winsteps and created a new vocabulary test with 37 test items.

Keywords

Language testing, vocabulary test, vocabulary acquisition

Introduction

Many types of vocabulary tests for second language learners have been developed: for example,

Nation's Vocabulary Levels Test (Nation, 1990) and Lex 30 (Meara & Fitzpatrick, 2000). Ueda et al have been developing a vocabulary test to examine the depth of vocabulary knowledge. In Ueda et al. (2009, 2010), we reported a developed vocabulary test on some basic verbs and adjectives, which is related with semantic and syntactic restrictions in choosing words in a context (the depth of vocabulary knowledge, as proposed by Richards (1976)).

1 Vocabulary knowledge in Vocabulary Test

Many types of vocabulary tests for second language learners have been developed. However those vocabulary tests do not examine the same ability about vocabulary. This is because there are various definitions on vocabulary knowledge. In the first section, we will review what characteristics are hypothesized as vocabulary knowledge from different academic fields: applied linguistics and psycholinguistics.

1.1 Vocabulary knowledge in SLA

Many researchers have discussed vocabulary knowledge, or vocabulary competence. Some researchers define vocabulary knowledge as complex of various dimensions. Richards (1976) described vocabulary knowledge as knowledge with various aspects:

1. The native speaker of a language continues to expand his vocabulary in adulthood, whereas there is comparatively little development of syntax in adult life.
2. Knowing a word means knowing the degree of probability of encountering that word in speech or print. For many words we also know the sort

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of words most likely to be found associated with the word.

3. Knowing a word implies knowing the limitations on the use of the word according to variations of function and situation.
4. Knowing a word means knowing the syntactic behaviour associated with the word.
5. Knowing a word entails knowledge of the underlying form of a word and the derivations that can be made from it.
6. Knowing a word entails knowledge of the network of associations between that word and other words in the language.
7. Knowing a word means knowing a semantic value of a word.
8. Knowing a word means knowing the different meanings associated with a word.

Henriksen (1999) depicted vocabulary knowledge with three dimensions: partial-precise knowledge dimension, a depth of knowledge dimension, and a receptive-productive dimension. There are more simple definitions proposed. For example, Meara (1996a) proposed from the practical viewpoint 'size' and 'organization'. 'Organization' means associations between words. Read (1993) defined vocabulary knowledge by 'depth' and 'breadth' of knowledge: 'depth' of knowledge means 'the quality of the learner's vocabulary knowledge' and 'breadth' of knowledge, 'the size of a learner's vocabulary'.

1.2 Reorganization of Concepts in L2 mental lexicon.

There are many psycholinguistic studies on vocabulary relations between concepts, and words both in L1 and L2, in L2 acquisition process in bilingual studies. It is hypothesized that in the process of L2, L2 learners should integrate the conceptual differences between two languages. And also it is proposed that when bilinguals acquire L2 words, which have concepts roughly equivalent to L1 but have different conceptual boundaries, or where one conceptual domain of L1 words is divided into two or more in L2, bilinguals have to restructure the L1 concepts to L2, or adjust the concepts of L2 to L1. (Ameel, Malt, Storms & Assche, 2009; Dong, Gui, & MacWhinney, 2005, Ijaz, 1986; Ueda, 2007).

2 Vocabulary tests

Many vocabulary tests have been developed to evaluate learner's vocabulary competence and knowledge. These developed vocabulary test examine different aspects of vocabulary knowledge

because each researcher depend on "their view of vocabulary knowledge..., their preference for a particular dimension of knowledge, and their interest in either size or depth" (Laufer & Goldstein, 2004). Generally, however, these tests can be categorized into two types: One type is for testing the breadth of vocabulary knowledge and the other, for testing the depth of vocabulary knowledge. We will review how these two types of vocabulary tests have been made to evaluate breadth and depth of vocabulary knowledge in the next section.

2.1 Tests for breadth of vocabulary knowledge

Tests for breadth of vocabulary knowledge intend to evaluate how much the learners retain in their mental lexicon. The width of vocabulary knowledge is estimated by word frequencies.

In Vocabulary levels test (Nation, 1990), for example, items are randomly selected from each word frequency level: 2000-word level, 3000-word level, 5000-word level, the university word level, and 10000-word level.

Each section of Vocabulary levels test consists of six words and three word definitions. The definitions in one section come from the words which are included in the higher level of the word frequencies: for example, the words from the 2000-word level use words in the first 1000 words for the definitions. In this test, the vocabulary levels of testees are estimated by the scores.

2.2 Tests for depth of vocabulary knowledge

Tests for depth of vocabulary knowledge intend to evaluate paradigmatic (synonyms), syntagmatic (collocations) and analytic knowledge (associations which represent one aspect or components of the meaning of the stimulus word and is likely to form part of its dictionary.) of vocabulary. (Read, 1993).

The main issue of vocabulary tests to examine the depth of vocabulary knowledge is to evaluate the learner's knowledge on word association. Many vocabulary tests have been developed for evaluating learner's vocabulary size or knowledge. (Laufer & Goldstein, 2004): For example, Nation (1990) developed Nation's Vocabulary Levels Test to evaluate width of vocabulary, and Meara & Fitzpatrick (2000), Lex 30 to evaluate depth of vocabulary., for example, developed Lex 30 to evaluate depth of vocabulary. The format of LEX 30 is a word association task.

3 A case study of developing a test for depth of vocabulary knowledge

We developed a vocabulary test to examine the

depth of vocabulary knowledge. However, we did not adopt the format of word association task like in Lex 30. This is because we tried to examine from the viewpoint of psycholinguistics as well as SLA. In our previous studies, we include syntactic and semantic aspects, as Richards (1976) pointed out (Vocabulary knowledge 3, 4, 6, 7, and 8 in his list), especially in the tests for vocabulary depth knowledge in order to examine integration of conceptual differences between two languages in the acquisition process, which can show L2 learners' proficiency level to some extent. This is because associations are just one aspect of depth of vocabulary knowledge.

We have developed two sets of vocabulary tests to examine the depth of knowledge in the second language learners of English. In two tests, the subjects were required to distinguish synonyms by using syntactic and semantic knowledge (Ueda et al. 2009, 2010). The aim of this study is to develop and add vocabulary test items to examine L2 learner's depth of vocabulary knowledge on collocations. The targeted collocations are *verb+noun* patterns. The items developed in this study can examine not only one aspect of vocabulary knowledge in Richard's list but the integration of conceptual differences between two languages.

3.1 Subjects

181 university students participated as test subjects. They were from two different universities and they had various academic backgrounds: 18 subjects majors in architecture technology; 29, in nursing; 61, in Pharmaceutical Sciences; 16, in psychology; 23, in engineering; 34, in English literature and language.

3.2 Test items

As the test items, we chose collocations consisting of basic verb and nouns. The verbs in each group have similar meanings but occur in different syntactic or semantic circumstances. The subjects were required to know the rules of selectional restriction. The verbs and nouns are high frequency words and familiar to the L2 learners: for example, verbs are *make, take, do, get, become* and so on. 22 items were developed. (See Appendix).

The CGI on the internet was made for this test, and subjects accessed the internet and answer all the items.

3.3 Method

The subjects were asked to answer the all the questions. There was no time limitation for answering the items.

All the items were analyzed to calculate infit and

outfit by Winsteps 3.68.1., an IRT software, to select good items. All the test items, in fact, consisted of multiple choices (or the test items developed here were not simple one answer to one test item). This type of test items could not be calculated by Winsteps. Hence we counted one choice as one test item: For example, in a question like (Sarah will () a good doctor. [turn, make, be, become]), we regarded this as four test items. Then, the total number of items were 53.

3.4 Results

We used Rasch Modeling to evaluate item fit for each test item. In McNamara (1996), mean square (MNSQ) values greater than 1.3 show significant misfit, and the values below 0.75, significant overfit. (Winsteps adopts the criterion that MNSQ values between 0.5 and 1.5 are productive.) We adopted criteria proposed by McNamara. The results showed no misfit items.

The items with the poor percentage of questions answered correctly (less than 30%) are 6. (Table) Considering the items with the poor percentage of questions answered correctly, answering these items require that the learners should know one conceptual domain of L1 (in this case, 'naru' or 'toru' in Japanese) is divided into two or more in L2 ('be', 'become', and 'make' for 'naru', 'take', 'have' and 'get' for 'toru') and also that they should have collocational knowledge. And these items are very difficult for the participants to acquire.

Table: Items with poor percentage of correctness.

Item	% of correctness
Becky will () a good doctor. [Choice: become]	11%
Things are () worse. [Choice: becoming]	25%
The leaves are () red in fall. [Choice: becoming]	23%
The signal () red. [Choice: became]	28%
Kim () a picture of the castle. [Choice: got]	29%
John () a vacation. [Choice: got]	27%

4 Conclusion

In this case study, we report the new items dealing with the depth of lexical knowledge. This kind of test is very rare and very important to estimate L2 learner's correct vocabulary knowledge. This study can contribute very much to teaching setting. The

multiple choices we adopted in this vocabulary test are difficult to calculate by Winsteps. However, to consider the guess ratio by three parameter model, we have to gather more than 1000 subjects. This point is still left to evaluate, so we will explore the better items in further study.

References

Ameel, E., Malt, B. C., Storms, G., & Van Assche, F. (2009). Semantic convergence in the bilingual lexicon. *Journal of Memory and Language* 60, 270-290.

Dong, Y., Gui, S. and MacWhinney, B. (2005). Shared and Separate meanings in the bilingual mental lexicon. *Bilingualism: Language and Cognition* 8, 3, 221-238.

Henriksen, B. (1999). Three dimensions of vocabulary development. *Studies in Second Language Acquisition*, 21, 303-317.

Ijaz, H. (1986). Linguistic and cognitive determinants of lexical acquisition in a second language. *Language Learning*, 36, 401- 451.

Laufer, B. and Goldstein, Z. (2004). Testing Vocabulary Knowledge: Size, Strength, and Computer Adaptiveness. *Language Learning* 54:3, 399-436.

Read, J (1993). The development of a new measure of L2 vocabulary knowledge. *Language Testing*, 10, 355-371.

Richards, J. (1976). The role of vocabulary teaching. *TESOL Quarterly*. 10-1, 77-89.

McNamara, T. (1996). *Measuring Second Language Performance*. Addison Wesley Longman.

Meara, P. (1996a). The dimensions of lexical competence. Retrieved 1 July from <http://www.logistics.co.uk/vlibrary/mea/ra1996a.pdf>

Meara, P. and Fitzpatrick, T. (2000). Lex 30: an improved methods of assessing productive vocabulary in an L2. *System* 28, 19-30.

Nation, I. S. P. (1990). *Teaching and Learning Vocabulary*. Boston: Heinle and Heinle Publishers.

Ueda, N. (2007). Developmental Processes in the L2 Mental Lexicon. Unpublished M.Sc. Dissertation: The University of Edinburg.

Ueda, N., Eiichiro, T., Kondo, Y., and Nakano, M. (2009). A Case Study of Developing a Vocabulary Testing. *Proceedings of the 14th conference of Pan-Pacific Association of Applied Linguistics*.347-359.

Ueda, N., Eiichiro, T., Kondo, Y., Oya, M., and Nakano, M. (2010). A Case Study of Developing a Vocabulary Testing: a Progressive Report. *Proceedings of the 15th conference of Pan-Pacific Association of Applied Linguistics*.

Applied Linguistics.

Appendix: Test items

1. Becky will () a good doctor.
[be, become, turn, make]
2. Things are () worse.
[becoming, getting]
3. becoming
[becoming, being, getting, turning]
4. The signal () red.
[became, turned, made]
5. Kim () a picture of the castle.
[got, took]
6. John () a vacation.
[had, got, took]
7. Please () the box for me.
[get, take, reach]
1. Please () the box to me.
[get, take, reach]
2. Please () me the box.
[get, take, reach]
10. Mary will () the degree.
[get, take]
11. Mary will () a math course.
[get, take]
12. Let's () lunch.
[have, get, take]
13. Let's () a break.
[have, get, take]
14. Naomi will () a high score.
[get, take]
15. Sarah () a decision.
[did, made]
16. Tom () sports regularly.
[does, makes]
17. Mike will () some exercise tomorrow.
[do, make]
18. Donald will () an effort to spend more time with his family.
[do, make]
19. Victoria will () a speech at the party.
[do, make]
21. Blair () some reading.
[did, made]
22. Takashi () some research about the college.
[did, made]