Teaching L2 Vocabulary Knowledge

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L2 learners of English need to learn a large amount of vocabulary to read authentic texts and to communicate in the target language. Schmitt (2008) suggests that L2 learners are required to know 2000–3000 word families to understand spoken English, and 6000–7000 word families to cover 98% of texts. Because of the limited time for which L2 learners are exposed to the target language, to gain the enough amount of vocabulary is not a piece of cake. Along with broadening vocabulary size, L2 learners are required to deepen their vocabulary knowledge. Vocabulary knowledge includes the different aspects of word knowledge such as grammatical features, word associations, register constraints, syntactic features, and so on. In this regard, how effectively should vocabulary be taught and tested has been the center of the research of vocabulary acquisition. In the present paper, several issues in learning L2 vocabulary knowledge and pedagogy are mentioned.

I. INTRODUCTION

Vocabulary is the backbone of reading, listening, writing, and speaking in L1 and L2. Especially, vocabulary learning can be the dispensable part of the second language acquisition. In the L2 context, vocabulary knowledge is considered a trustworthy predictor of learners' proficiency (Stæhr, 2009). L2 learners need to know 8000–9000 word families to gain the control of reading authentic texts like novels or newspapers (Nation, 2006). Considering the limited time that L2 learners are exposed to the target language, it is not easy for L2 learners to attain the level of the vocabulary size. Laufer (1989) suggests that around 95% coverage of vocabulary is sufficient to comprehend the written texts, but other research suggests that more than 95% coverage of vocabulary is needed to understand the written discourse (Hu & Nation,
To achieve the level of vocabulary size, the traditional vocabulary teaching and learning placed emphasis on increasing learners' vocabulary size. In the perspectives of increasing learners' vocabulary size, linking meaning and form is the main goal of learning vocabulary. The majority of past research has assumed that gaining in knowledge of meaning is the sign of vocabulary acquisition (Webb, 2007). Yet, knowing the definition of a word can be the point of departure in the continuum of acquiring all aspects of word knowledge. Along with the mastery of connecting meaning and form, learners are required to learn the essential aspects of vocabulary. The essential aspects of word knowledge can be grammatical features, word associations, register constraints, syntactic features, and so on. In the context of L2, increasing vocabulary size and deepening vocabulary knowledge at the same time are very demanding job for L2 learners. Even though teaching and learning vocabulary in L2 context are focused on high frequency words, the amount of learning and teaching vocabulary is burdensome for both teachers and learners.

II. ASPECTS OF VOCABULARY KNOWLEDGE

Knowing a word involves complex other knowledge as well as connecting meaning and form. To completely know a word, different types of knowledge need to be acquired: spoken form, written form, grammatical features, collocational behaviors, frequency, register constraints, and associations with other related words (Nation, 1990). Nation (2001, p.27) arranged the aspects of word knowledge that learners are asked to know (Table 1). The various aspects of word knowledge cannot be acquired in a short time. Some aspects that are likely to be learn in a certain context such as collocation and intuitions of frequency are mastered later than other aspects along with connection meaning and form.

Table 1 What is involved in knowing a word
<table>
<thead>
<tr>
<th>Form:</th>
<th>Spoken</th>
<th>R</th>
<th>What does the word sound like?</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Written</td>
<td>R</td>
<td>What does the word look like?</td>
</tr>
<tr>
<td></td>
<td>Word parts</td>
<td>R</td>
<td>What parts are recognizable in this word?</td>
</tr>
<tr>
<td></td>
<td></td>
<td>P</td>
<td>How is the word written and spelled?</td>
</tr>
<tr>
<td>Meaning:</td>
<td>Form and meaning</td>
<td>R</td>
<td>What meaning does this word form signal?</td>
</tr>
<tr>
<td></td>
<td></td>
<td>P</td>
<td>What word form can be used to express this meaning?</td>
</tr>
<tr>
<td>Concept and referent</td>
<td></td>
<td>R</td>
<td>What is included in the concept?</td>
</tr>
<tr>
<td>Associations</td>
<td></td>
<td>P</td>
<td>What items can the concept refer to?</td>
</tr>
<tr>
<td>Use:</td>
<td>Grammatical functions</td>
<td>R</td>
<td>In what patterns does the word occur?</td>
</tr>
<tr>
<td></td>
<td></td>
<td>P</td>
<td>In what patterns must we use this word?</td>
</tr>
<tr>
<td>Collocations</td>
<td></td>
<td>R</td>
<td>What words or types of words occur with this one?</td>
</tr>
<tr>
<td></td>
<td></td>
<td>P</td>
<td>What words or types of words must we use with this one?</td>
</tr>
<tr>
<td>Constraints on use (register, frequency…)</td>
<td></td>
<td>Where, when and how often would we expect to meet this word?</td>
<td></td>
</tr>
</tbody>
</table>

Schmitt and Meara (1997) investigated achievement on two types of word knowledge that were word associations and grammatical suffix knowledge over the period both receptively and productively. Three intact classes of Japanese students participated in this study. Two of the classes were a freshmen class of 36 students, and a sophomore class of 31 students in English department of women's university. The other class was made up of 28 senior students of high school. Considered the widest variety of suffixes,
20 verbs were selected from Brown frequency list (Francis & Kučera, 1982). The criteria of choosing verbs were a variety of suffixes; the verb and its related noun did not use a identical form; some suffixes from the higher Bauer and Nation (1993) difficulty levels were represented; verbs of varying frequency were included; the verbs required a one-letter change to take a suffix. 18 native speakers were asked to determine allowable suffixes for each of 20 verbs, and 30 native speakers listed 3 word associations for each of 20 verbs to make the instrument of word association.

Based on these data, the test instrument was developed including a productive section, a receptive section, and two vocabulary-size tests. The participants were asked to write any suffixes of 20 verbs they thought possible and three word associations in the productive section. Options were given for the participants to circle possible suffixes and word associations in the receptive section. The Levels test (Nation, 1990) was used to evaluate the participants' vocabulary size. In addition, the participants from high school took a computerized vocabulary-size test called the EVST (Meara & Jones, 1990) and the TOFEL language proficiency test (Educational Testing Service, 1987). Test 1 was conducted to the three classes before the beginning of their school year, and test 2 which was identical with test 1 was administered at the end of school year.

For the scores of test 1 and test 2, the descriptive statistical analysis and the paired samples $t$-test between tests were performed. From the result of vocabulary-size test, the average gain from test 1 and test 2 was about 330 new words, and the gain seemed to be spread out among the five frequency levels evaluated. The participants improved their knowledge of verbal suffixes modestly gaining highest, 25 percentage point increase in the production of -ment. The scores of inflectional suffixes that are rule-based were increased more than derivative suffixes. On average, the participants could produce 3 more associations even though there was no statistically significant change in receptive associations showing considerable individual variations. Pearson's correlation coefficient was conducted to find the relationship among suffix knowledge, association knowledge, vocabulary size, and language proficiency. The result revealed that word association knowledge has some relationship with overall vocabulary size and general language proficiency when measured by the TOEFL test. There were weaker
correlations between derivative suffix knowledge and vocabulary size. Derivative suffix knowledge and word association had weak correlation with each other. This research showed that there is relationship between two kinds of word knowledge: suffix knowledge and word association knowledge. In addition, these aspects of word knowledge have a relationship to vocabulary size and language proficiency as measured by the TOEFL test.

Even though all aspects of word knowledge are interrelated, vocabulary instruction needs to cover the essential aspects of word knowledge separately to know a word totally. Most vocabulary instructions have been centered on linking meaning with form, and there have been little effort on how to teach other information of a word such as grammatical features, register constraints, and associations with other related words. Schmitt (2008) suggests that at the beginning, establishing the link between meaning and form is focused with an explicit approach, and later the exposure approach can be effective in the mastery of contextual knowledge.

III. L2 VOCABULARY KNOWLEDGE IN PEDAGOGY

In the context of L2, increasing vocabulary size and deepening vocabulary knowledge at the same time are very demanding job for L2 learners. To alleviate the burden of learning a large amount of vocabulary for L2 learners, many studies have tried to find better ways to learn and teach vocabulary.

L2 learners are required to know a large amount of vocabulary to read and to communicate in a target language. Because only limited vocabulary could be covered in vocabulary instructions, how effectively should vocabulary be taught has been one of the main issues in the research of vocabulary acquisition. Of the many studies of the issue, whether new vocabulary should be presented in semantically related sets or semantically unrelated sets has been a controversial issue. Erten and Tekin (2008) investigated the effect on vocabulary recall of introducing new words through semantically related sets and semantically unrelated sets with Turkish elementary students. 60 participants from two intact groups of a state primary school in western Turkey took part in this study.

This study adopted a one-group quasi-experimental research model with an alternating time series design measuring the effects of two methods
(semantically related sets and semantically unrelated sets) on the same participants. The participants were presented with four 20 word sets which were two semantically related and two semantically unrelated sets for two weeks. During the first week, the participants had four lessons: one lesson for presenting the related set 1, one lesson for practicing the related set 1, one lesson for presenting the unrelated set 1, and one lesson for practicing the unrelated set 1. Same types of lessons were carried out for the related set 2 and the unrelated set 2 during the second week. 80 words used in this study were taken from an initial list of 100 words where students were supposed to match words with corresponding pictures. The vocabulary used in the study was all concrete words and controlled in the number of letters and syllables. The participants were presented the target words with flashcards, and practiced the words with activity sheets that required the participants to match the written form of the words with the corresponding pictures. Before and after the four lessons for presenting the target words, pre-tests and immediate post-test were conducted. The same tests were repeated for a delayed post-test that was administered on the third week. Test completion time was also recorded by an electronic chronometer for all tests.

For the scores of immediate tests and delayed tests, the descriptive statistical analysis and the paired samples t-test between the related sets and the unrelated sets were performed. The results revealed that learning vocabulary in semantically unrelated sets is more effective in the recall of vocabulary than learning vocabulary in semantically related sets. In both immediate tests and delayed post-tests, words that were learned in semantically unrelated sets were recalled a lot better than words that were learned in semantically related sets. There were also noticeable differences in students' test completion time. The semantically related sets took more time to complete the tests indicating the sets need more cognitive processing that makes the recall of vocabulary slower. The researcher provided possible explanations why students recall vocabulary presented in semantically unrelated sets better than vocabulary presented in semantically related sets. Students could have difficulties in discriminating between similar semantic properties causing longer mental processing to differentiate. Another explanation is that deeper mental analysis of similar words involves mostly
semantic discrimination rather than consolidating vocabulary in memory. In short, presenting new vocabulary in semantically related sets that are exemplified in synonyms, antonyms, or hyponyms can cause interference and confusion while learning requiring more time and effort.

L1 and L2 studies have found that learners may acquire knowledge of words incidentally through reading. Because formal instructions can cover only limited vocabulary, incidental vocabulary learning through extensive reading is necessary for learners to arrive the threshold level of vocabulary. However, there has been no consensus on how many times learners have to be exposed incidentally to a word in order to gain sufficient knowledge of the word. Webb (2007) investigated quantitative data from Japanese university students concerning on how the number of repetition affects knowledge of orthography, syntax, association, grammatical functions, and meaning and form. The main focus of this study was the effects of different repetitions (1, 3, 7, and 10) on knowledge of orthography, syntax, meaning and form, association, and grammatical functions on vocabulary learning. Participants were randomly assigned to four experimental groups and one control group. Only experimental groups performed a vocabulary comprehension task. The task was designed for the participants to be exposed to the artificial ten target words in contexts taken from the graded readers of the Oxford Bookworm series one, three, seven and ten times respectively. Four minutes were allocated to each exposure, from 4 minutes for one repetition group to 40 minutes for ten repetition group. After the treatment was completed, the participants were given the surprise tests. The tests were aimed to evaluate 10 dependent measures: productive and receptive knowledge of orthographic form, grammatical functions, syntax, association, receptive recall of meaning and form, and receptive knowledge of meaning and form. The test formats varied according to the dependent measures. For the scores of 10 dependent measures, the descriptive statistical analysis and the multivariate analysis of variance (MANOVA) among groups were performed. The results revealed that repetition had significant effect on vocabulary knowledge. Scores in all aspects of knowledge were likely to increase as the number of repetition went up.

After three repetitions, receptive knowledge of orthography, grammatical functions, and syntax, and productive knowledge of association significantly
improved indicating those aspects of knowledge developing earlier than meaning. After seven repetitions, larger gains in productive knowledge were demonstrated for all aspects with little difference showed on the receptive measures. After ten repetitions, considerable learning gains for both receptive and productive knowledge in all aspects were achieved indicating more than ten encounters are needed to gain full knowledge of a word. In sum, repetition affects incidental vocabulary learning from reading, and the more times learners encountered an unknown word, the more aspects of vocabulary knowledge they gained. This study shows me how different kinds of word knowledge could be tested. Ten tests on the productive and receptive knowledge of orthographic form, grammatical functions, syntax, association, receptive recall of meaning and form, and receptive knowledge of meaning and form have very detailed and useful formats.

There have been robust evidences that comprehensible input and meaning-centered instruction are not sufficient approaches for language acquisition, and L2 learners should attend to form to achieve high levels of linguistic competence. In this respect, form-focused instruction has been advocated as a modification of communicative language teaching. Empirical research of form-focused instruction has been centered on teaching grammar. It is not until recently that form-focused instruction is linked to vocabulary teaching. Laufer and Girsai (2008) investigated the effect of explicit contrastive analysis and translation activities on the incidental acquisition of single words and collocations. 75 tenth graders who were Hebrew native speakers took parts in the experiment. Participants were divided into three groups according to instructional conditions: meaning focused instruction (MFI), non-contrastive form-focused instruction (FFI), and contrastive analysis and translation (CAT). Two weeks before the treatment, two written pre-tests were conducted to ensure that the target vocabulary was unknown to the participants. The pre-tests were writing the Hebrew translation of 50 English words, and translating 41 Hebrew phrases into English to check active collocational knowledge.

In the first stage of the treatment, all the participants of three groups were asked to read the given passage and to answer 13 true or false statements. There was no difference in the treatment between groups. The second stage of the treatment was conducted on the following day for 90
minutes. Each group received a different treatment according to the experimental conditions it was assigned to. The MFI group was given two communicative tasks: reading comprehension task and discussion with a partner and group members. The FFI group was given two form-focused tasks: meaning recognition of the target vocabulary and a text fill-in activity with the target words provided at the end of the text. The CAT group received two translation tasks in which the participants were asked to translate an English phrase in a sentence into Hebrew, and brief explicit contrastive instruction. The day after the treatment, all the participants had a surprise test on the target vocabulary. The first test was on the ability to provide L2 single word and L2 collocatinal phrase in response to Hebrew translations, which could be called active recall test. In the second test, the participants were required to write the meaning of L2 single word and L2 collocational phrase in Hebrew or in English, which could be called passive recall test. A week later, the same tests were done in the same manner to check how much the participants still remembered the target words.

For the scores of the MFI, the FFI, and the CAT, the descriptive statistical analysis, one-way ANOVA, and Turkey’s post-hoc tests were performed. The test results revealed that the CAT group scored significantly higher than the two other groups on all tests. The MFI group didn’t show any evidence in learning the target vocabulary. It was also notable result that the scores of passive recall higher than the scores of active recall. This result could come forth because vocabulary learning is an incremental process and learners are likely to obtain passive knowledge of a word prior to acquiring its active knowledge. In sum, this study suggests that contrastive analysis and translation could positively affect the development of L2 vocabulary acquisition, and L2 learners may benefit from contrastive form-focused instruction because of raising their awareness of gaps between L1 and L2.

IV. TESTING L2 VOCABULARY KNOWLEDGE

It has been one of the main research issues in L2 vocabulary teaching and learning to measure learners’ vocabulary knowledge in terms of how many words they know, vocabulary size, and how well they know those words, depth of vocabulary knowledge. Both vocabulary size and depth of vocabulary
knowledge need to be tested for evaluating learners' vocabulary knowledge on the whole. However, few test batteries have been developed that can combine learners' vocabulary size and depth of vocabulary knowledge in one test battery. Ishii and Schmitt (2009) developed one size-depth vocabulary test battery for Japanese university students, and presented an integrative way of interpreting the scores of the test battery. The different meanings of polysemous words, derivative word forms of a word's family, and differences between near-synonyms were tested for assessing learners' depth of vocabulary knowledge along with vocabulary size. 523 university students in Japan took the four diagnostic vocabulary tests: the vocabulary size test, the test of multiple meaning senses for words, the test of derivative word forms, and the test of lexical choice between near-synonyms.

The vocabulary size test was a receptive matching test for 75 words from the list of the British National Corpus (BNC). The test had five frequency bands or levels (2000, 300, 4000, 5000, and 6000), and 15 words from each band were tested respectively. The test of multiple meaning senses for words was designed for the test takers to choose two correct meanings of a word out of five options. Test takers were awarded a point only if they choose both of the correct answers. 30 items from the first 2000 lemmas of the BNC were tested. The test of derivative word forms tested 15 words from the most frequent 2000 lemmas in the BNC. Test takers were asked to write the noun, verb, and adjective derivative forms of a word. The test of lexical choice between near-synonyms was intended for test takers to figure out the difference between near-synonyms which may have the same L1 translation. Test takers compared two near-synonyms and chose the one that fits better in the given context. 18 pairs of near-synonyms on this test were chosen from the first 2000 lemmas in BNC list and each pair had three sentences making the total number of items was 54.

For the scores of four aspects of vocabulary knowledge, the descriptive statistical analysis and Pearson's correlation coefficient between aspects were performed. The test results showed vocabulary size and the three types of vocabulary knowledge were highly interrelated. As vocabulary size grows, three aspects of vocabulary knowledge grow accordingly. After the descriptive statistical analysis, test scores were interpreted in an integrated manner considering both vocabulary size and depth competences.
simultaneously. The scores of the four tests were interpreted in comparison with the typical performance of the group of students of a similar size of vocabulary. From this comparison, each student's performance could be analyzed showing in which test the student's score is higher or lower than the mean score of the group that the student is in.

This study has shown depth of vocabulary knowledge should be taken into consideration along with vocabulary size. Interpreting the scores from different tests of vocabulary knowledge in an integrative manner, teachers could figure out whether a student's score is higher or lower compared to other students with a similar vocabulary size. This integrative interpretation makes it possible to diagnose any vocabulary weakness of a student.

V. CONCLUSION

The aspects of word knowledge develop hand in hand interrelating with each other. In the continuum of vocabulary acquisition, learning different aspects of word knowledge can help L2 learners go further to the advanced positions. "If all of these types of word knowledge are mastered, then a speaker should be able to use that word in a nativelike and fluent manner" (Schmitt & Meara, p. 18). In terms of pedagogical implications, word knowledge as well as definitions can be taught in the vocabulary instructions. In addition to this, the aspects of word knowledge should be included in the vocabulary tests with vocabulary size because word knowledge is a key component of overall lexical competency (Ishii & Schmitt, 2009).

The vocabulary acquisition can be facilitated under the condition of learning the aspects of word knowledge one by one with repetition. Therefore, learning small amount of word knowledge for a short time repeatedly can be the better way to obtain the word knowledge than learning large amount of word knowledge for a long time.

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