A Study of Relationship Between Depth of Vocabulary Knowledge and Semantic Set in Iranian EFL Learners’ Vocabulary Used in Writing

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Abstract
This study investigated the Relationship between Depth of Vocabulary Knowledge and Semantic Set in Iranian EFL Learners’ Vocabulary Used in Writing. The purpose of this study was to see the role of depth of vocabulary knowledge in making appropriate choices among words in a semantic set in EFL learners’ writing performance. 70 lower-intermediate and upper-intermediate learners of English as a foreign language (EFL) from the language learners of English institute in Bandar Abbas, Iran participated in this study. Instruments for the data collection include Word Association Test (WAT), Vocabulary Knowledge Scale (VKS), and four writing tests. In the first phase, using MANOVA statistical procedure for data analysis, the role of depth of vocabulary knowledge in writing performance and appropriate use of words in a semantic set in overall writing quality was investigated. The second part of the study attempted to explore the role of appropriate use of words in a semantic set in the participants’ overall writing performance using independent sample t-test. Finally, attempts were made to identify the role of depth of vocabulary knowledge and appropriate use of words in a semantic set in the overall use of words in the participants’ writings using a two-way ANOVA as the data analysis technique. The results of the data analysis provided empirical evidence supporting that: a) depth of vocabulary knowledge played a fundamental role in appropriate use of words in a semantic set in lower-intermediate level but not in upper-intermediate level, b) depth of vocabulary knowledge has a significant role in overall writing performance only in upper-intermediate level, c) using words appropriately in a semantic set played a significant role in writing performance of the lower-intermediate participants, while the opposite was revealed for the upper-intermediate group, d) the upper-intermediate learners could benefit from their knowledge of depth of vocabulary in using words, in general, correctly and appropriately. The findings promise some pedagogical implications for vocabulary and writing curriculum development, material development, and course designing.

Keywords: depth of vocabulary knowledge, paradigmatic relation, semantic set, syntagmatic relation

1. Introduction
As Mezynski (1983), Laufer (2001) and Bell (2003) claim, knowledge of vocabulary is multifaceted and from a varying of degrees. In one classification word knowledge is categorized into two main groups: breadth and depth of vocabulary knowledge. These aspects of vocabulary, especially depth of vocabulary, has been reported to have interaction with other language skills especially reading comprehension (Qian, 1998; Shen, 2008), writing performance (Laufer and Nation, 1995), reading tests (Qian and Shedl, 2004), and even mental lexicon (Wolter, 2001).

In this proposal, a brief review of the depth and breadth of vocabulary knowledge and the related empirical research will be covered. Then, writing, which was a neglected language skill in relation to depth of vocabulary (Qian, 1998) will be discussed in detail. Finally, the concept of semantic set will be examined in relation to depth of vocabulary and writing skill and the relevant empirical research in this line will be briefly reviewed.

Vocabulary acquisition was given less priority in the past, but recently second language learners become aware of the fact that limitations in vocabulary may cause less effective communication in the target language since words carry the fundamental information in the expressed message (Read, 2004). To sum up the role of vocabulary in language development, McCarthy (1990, p. viii) argues that “no matter how well the students learn grammar, no matter how successfully the sounds of L2 are mastered, without words to express a wide range of meanings, communication in an L2 just cannot happen in any meaningful way.”
This study aims at investigating the role of depth of vocabulary knowledge in making appropriate choices among words in a semantic set in EFL learners’ writing performance. More specifically, this study assessed the relationship among depth of vocabulary knowledge, semantic set and vocabulary use in writing performance in lower-intermediate and upper-intermediate EFL learners in three main phases.

1.2 Depth and Breadth of Vocabulary and Language Skills

Vocabulary, as the fundamental building block of language skills (Schmitt, 1999), was attracted researchers’ attention in the field of language skills especially reading, listening and writing. These studies tried to address the role of vocabulary in language skills acquisition and make a link between vocabulary and different aspects of language skills.

In this regard, breadth of vocabulary is reported to correlate well with reading comprehension in that a certain threshold level vocabulary is needed for comprehension to take place. Nation (1990) mentions that EFL learners need knowledge of at least 3000 high frequency words in a productive way to be able to deal with academic reading tasks (cited in Qian, 1998) and Laufer (1994) estimated knowledge of 5000 words to read independently. Studies on the effect of vocabulary on listening comprehension focus on vocabulary preparation prior to the listening task. Chang (2007) reported improvement of vocabulary knowledge of learners as a result of such preparation, mostly based on both breadth and depth of knowledge, but their listening comprehension did not improve significantly. He reported that vocabulary preparation enhanced learners’ confidence and willingness to complete the listening task. Confirming Chang’s results, Mehrpour and Rahimi (2010) in an investigation of the effect of general and specific breadth of vocabulary knowledge on reading and listening comprehension came to the conclusion that vocabulary knowledge was only a deciding factor in reading comprehension and no significant effect was found on listening comprehension. However, in another phase of the research it was concluded that gaining familiarity with the difficult lexical items lead to a significant effect on both reading and listening comprehension performance and that this effect was stronger in reading than listening comprehension.

Vocabulary knowledge influences productive skills, especially writing as Grabe and Kaplan (1996) state that ‘‘vocabulary development not only supports reading and writing, it also promotes syntactic flexibility and creates a foundation for further learning’’ (p. 275). The analysis of L2 writers’ text revealed that breadth of vocabulary plays a deciding role in L2 writing performance and that more proficient learners use more varied vocabulary than less proficient learners (Harley & King, 1989; Linnarud, 1986). The effect of vocabulary on writing is not limited to writing as product. In a study to find out the usefulness of process writing approach (see section 2.4 for a discussion on process approach to writing) to improve vocabulary, Muncie (2002) analyzed the timed composition and the first and final drafts of a process-based approach composition with Lexical Frequency Profile (LFP). Results revealed more use of sophisticated vocabulary between the first and final draft of the composition in comparison with the timed composition. This was, as Muncie claimed, the result of the revisions, time and some other sources (like reading materials, discussions, etc.) available to the learners during the act of writing the drafts that will help students “to stretch their vocabulary, although it is suggested that explicitly concentrating on vocabulary in the pre-writing stage may encourage even greater vocabulary development” (p. 225). This claim was later supported by Coxhead and Byrd (2007). They believe that writing teachers need the necessary tools, including new ideas in teaching vocabulary like vocabulary software and websites, to teach vocabulary and grammar of academic prose in writing classes. This effect of vocabulary on the use of words in writing can be enhanced during the task of writing composition, as well. East (2006) reported an increase in lexical sophistication and appropriate word choice when the learners were allowed to use bilingual dictionaries while writing. This also positively affected the writing quality in comparing to ‘without dictionary’ writing tests. Although knowledge of vocabulary has been found to contribute to writing performance in the aforementioned studies, Schoonen et al. (2002, 2003) maintain that the effect of vocabulary knowledge on writing performance is overshadowed by other linguistic or metalinguistic abilities that share common cognitive knowledge or skills.

As it was reviewed in this section, depth and breadth of vocabulary contribute to language skills performance since words are the language users’ main tool to convey their message and to use it appropriately and consequently will lead to effective language communication. This effectiveness will enhance if learners are careful especially about depth of vocabulary and how to treat it in different language skills.

1.3 Research Hypothesis

Furthermore, the current study aims to discuss the following hypothesis:

Alternative Hypotheses1: Depth of vocabulary knowledge has significant relationship in EFL learners’ appropriate use of words in a semantic set in writing performance.
Alternative Hypotheses 2: Depth of vocabulary knowledge has significant relationship in EFL learners’ writing performance.

Alternative Hypotheses 3: Appropriate use of words in a semantic set has significant relationship in EFL learners’ writing performance.

Alternative Hypotheses 4: Depth of vocabulary knowledge and appropriate use of words in a semantic set has significant relationship in EFL learners’ vocabulary use in writing performance.

2. Methodology
The design of this study is descriptive. First, participants take part in the writing exams. Then, WAT and VKS administer to the participants. The rationale behind this order of test administration is to prevent sensitization of students to the purpose of the research. While administering WAT papers, participants are encouraged to give as many answers as they can, even if they are not sure whether the given answer is correct or not (Read, 1993).

2.1 Instruments
The following instruments will be used to gather data in this study:

(a) Oxford quick placement test (2004) to assure that the participants are at the lower-intermediate and upper-intermediate level of English language ability. This test consists of 60 items to which participants are to answer in 30 minutes.

(b) Word Association Test (WAT) developed by Read (1993) to test the depth of vocabulary knowledge of the participants. There are two formats of WAT available in literature with different purposes. The first is a list of prompt words in a multiple response format to which learners should provide three associative words for each prompt word. This test is usually used for assessing the ability of learners to produce words related to the different prompt words. As the test is in an open ended format, the choice of prompt words is important because learners may produce different associative words for different prompt words (Randall, 1980, cited in Wolter, 2002). Attempts will be made to monitor the choice of prompt words to avoid using two classes of words, namely the words that “tend to elicit a very high proportion of primary responses and much lower proportions of secondary, tertiary, and other responses (e.g., black) [and] words that tend to have a low proportion of all responses (e.g., trouble), finally resulting in a number of idiosyncratic responses” (ibid, p. 318). The other type which is used in the current study is a list of 40 prompt words, each followed by a list of eight words four of which are related to the prompt word semantically while the others are not. The four related words will be selected to represent three semantic relations, namely paradigmatic, syntagmatic and analytic. Read (1993) reported its reliability (KR-20) as .092 and Nassaji (2006) reported its split half reliability as .089.

(c) Vocabulary Knowledge Scale (VKS) to find out the participants’ level of depth of vocabulary knowledge. This test originally was developed by Paribakht and Wesche (1993) to differentiate stages in learners’ developing knowledge of words. This instrument is designed to show self- perceived and demonstrated knowledge of specific words in written form. Learners should indicate their level of knowledge about the target words in a likert scale ranging from total unfamiliarity to the ability to use the words in context. The instrument enjoys a high reliability estimate as Paribakht and Wesche (1997) asserted that “a reliability estimate for the VKS was established through test-retest administration of a word list (N = 32) to 93 students at 6 different proficiency levels in the 1992 ESL summer school program. The resulting Pearson correlation was .89 for scores on the 24 content words, and .82 for scores on the 8 discourse connectives, indicating that the instrument can elicit acceptably reliable responses” (p. 180). The present researcher will intend to use both tests of depth of vocabulary knowledge (i.e. WAT and VKS) due to the fact that having more than one measure of the same words provides much richer knowledge, allows strength of knowledge to be measured, and prevents unreliability of results due to the bias effect of using only one model of depth of vocabulary knowledge (Zareva, 2005).

(d) Writing tests: All the aforementioned measures for the productive vocabulary in writing measured the vocabulary size or breadth of vocabulary in the compositions written by the language learners and no specific writing test which can reflect depth of vocabulary knowledge and its manifestation in writing is found. This few of research may be due to the difficulty of controlling all of the contributing factors regarding vocabulary simultaneously (Silva and Matsuda, 2002). Thus, it is required to design, develop and validate four writing tests, for each proficiency level. For each writing test, a list of words will be given to the learners coupled with a particular topic. They will be asked to write a short essay using the given words in at least 100 words for lower intermediate level and 250 words for upper-intermediate level. Among the given words there are words in a particular semantic set (including, metonymy, synonymy, etc.) but learners are expected to choose only five of them and use them appropriately in their essays. The theme of the writing tests are chosen from the range of topics
covered in the language learners’ main course books (i.e. *Top Notch* series) which do not need any expert knowledge. Also, the target words will be selected from among the ones participants had covered in their previous course books to make sure that they know the meaning of the words and to prevent them from using avoidance strategy in word selection when they do not know the meaning of a word. To improve the reliability of the writing tests, another rater rated the essays written by the participants based on Jacobs et al.’s (1981, cited in Weigle, 2002) scoring scheme. The resulting Pearson correlations were .802 and .715 (N=20) for the first and second topic of the lower-intermediate writing tests respectively and .849 and .813 (N=20) for the first and second topic of the upper-intermediate writing tests respectively.

2.2 Procedure

First, participants took part in the writing exams. Then, WAT and VKS administer to the participants. The rationale behind this order of test administration is to prevent sensitization of students to the purpose of the research. While administering WAT papers, participants encouraged to give as many answers as they can, even if they are not sure whether the given answer is correct or not (Read, 1993).

2.2.1 Scoring Writing Tests

Scoring subjects’ writings done in two phases. In the first phase, the writing papers scored based on the scoring scheme to assess overall ability of the subjects in writing skill. Following Bacha (2001), whose findings indicate that analytic scoring schemes is more beneficial for the EFL program than the holistic criteria, the Composition Profile of Jacobs et al. (1981, cited in Weigle, 2002) used in the present study to measure the learners’ writing ability. This scheme of writing assessment is an analytic one. The writing tests are assessed according to five aspects: content (30 points), organization (20 points), vocabulary (20 points), language use (25 points) and mechanics (5 points). The rationale behind using this scale of writing evaluation is that in the vocabulary section, it puts emphasis on ‘effective word choice and usage’ and ‘appropriate register’ which are both fundamental aspects of depth of vocabulary knowledge. In the second phase of scoring writing papers, the essays are assessed based on the appropriate use of five of the given words in the test items as are explained above. The target vocabulary items are scored as appropriately used if it is appropriate regarding a) variations of function and situations, b) syntactic behavior, c) forms of derivations, and d) different layers of meaning according to Laufer’s (1990), Nation’s (1990), and Richards’ (1976), taxonomy of the components of knowing a word. Participants are given 1 point for the appropriate use of each of these four components (adding up to 40 points per participant). To make sure about the decisions made as to the appropriate use based on the categories mentioned, use of words is checked against what is suggested in *Oxford Advanced Learners’ Dictionary* (2008), *Longman Dictionary of Contemporary English* (2005), and *Oxford Collocation Dictionary* (2009) for these words used by the learners in their essays. To do so, a mini dictionary is designed by the researcher as for the words and situations used with each target word in the writing tests.

2.2.1.2 WAT and VKS

The WAT papers of the participants scored with the exact scoring method based on the answer key developed by Read (1993). The final score for each participant is in percentile rank. Also, to score VKS papers, the scheme suggested by Wesche and Paribakht (1996) was used.

3. Results

3.1 Data Analysis and Results for the First and Second Research Questions

The first two alternative hypotheses were concerned with the role of depth of vocabulary knowledge in appropriate use of words in a semantic set and writing performance. A MANOVA procedure was run to compare the means of scores in writing performance and appropriate use of words in a semantic set, as the two dependent variables, of learners who were categorized into high and low level of depth of vocabulary knowledge, as the independent variable. The following is the detailed results of data analysis in the two proficiency levels chosen for this study, namely lower intermediate and upper intermediate.

3.1.1 Lower – Intermediate Level

To check whether the data in the lower-intermediate level did not violate the assumption of homogeneity of variance-covariance matrices the Box, Test was run. Table 1 shows the results.
Table 1. Box’s Test of covariance matrices (lower-intermediate)

| Box’s M | F   | df1 | df2   | Sig. |
|---------|-----|-----|-------|------|
| 1.302   | .3999 | 3   | 7.016 | .754 |

As the results of Box’s Test of Equality of Covariance Matrix display, the Box’s M statistic (1.302) has a probability of .75. Since this probability level is higher than the .05 significance level set by the researcher, it can be concluded that the model consisting depth of vocabulary knowledge, appropriate use of words in a semantic set and writing performance is a good model and both uni-variant and multi-variant results can be reported. Table 2 presents descriptive statistics of between subject factors.

Table 2. Between Subject Factors for the independent variable and its values (lower intermediate)

| Info. | Value Labels | Values | Total Nr. |
|-------|--------------|--------|-----------|
| DVK   | Lexically skilled (high depth) | 1 | 26 |
|       | Lexically less skilled (low depth) | 2 | 11 |

As mentioned in the previous chapter, participants were divided into two groups based on their scores in WAT; that is, those with scores of 50 percent and above were considered as lexically skilled (high depth) and those with scores below 50 were considered as lexically less skilled (low depth). In lower intermediate level, 26 learners were lexically skilled and 11 learners were lexically less skilled.

To find out whether depth of vocabulary knowledge has a significant role in appropriate use of words in a semantic set and overall writing performance of lower-intermediate learners the MANOVA procedure was applied to the data. Tables 3 summarizes the multivariate tests checking whether the combined dependent variable, appropriate use of words in a semantic set and overall writing performance, is different across the depth of vocabulary knowledge, i.e. high depth and low depth, of the participants.

Table 3. Multivariate tests for the independent variable (lower-intermediate)

| Effect | Value Labels | Values | F   | Sig. | Partial Eta Squared |
|--------|--------------|--------|-----|------|---------------------|
| DVK    | Wilks’ Lambda | .846  | 3.097 | .058 | .154                |

As Table 3 shows, for depth of vocabulary knowledge (DVK) Wilks’ Lambda = .846, F = 3.097, p > .05. Therefore, depth of vocabulary knowledge did not play a significant role in the combined dependent variables. As it is indicated in the Table 4.3, the partial eta squared is .154 which shows that about 15 % of the variance in the combined dependent variable can be accounted by depth of vocabulary knowledge.

In order to detect the significant role of depth of vocabulary on each dependent variable separately, test of between subject effects was run (Table, 4).

Table 4. Test of between subject effects (lower-intermediate)

| Independent variable | Dependent variable | F   | Sig. | Partial Eta Squared |
|----------------------|--------------------|-----|------|---------------------|
| DVK                  | Semantic Set       | 6.0484 | .019 | .147                |
|                      | Writing Performance| 2.371 | .133 | .063                |

The results indicated that depth of vocabulary knowledge, with F = 6.0484, p = .019 (p > .05), has a significant role in appropriate use of words in a semantic set, but not a significant role in writing performance, F = 2.371, p = .133 (p < .05).

Comparison of the means (Figure 4.1) reveals that participants with high depth of vocabulary knowledge (Mean = 28.308) were more successful in using appropriate words in a semantic set than those with low depth of vocabulary knowledge (Mean = 23.636).

Therefore, in the lower-intermediate level, the first alternative hypothesis, predicting significant role of depth of vocabulary knowledge in appropriate use of words in a semantic set, was retained. However, the second alternative hypothesis, predicting a significant role of depth of vocabulary knowledge in overall writing performance, was retained, too.
3.1.2 Upper-Intermediate Level

In the upper-intermediate, like the lower-intermediate level, a MANOVA procedure was run to compare the means of scores in writing performance and appropriate use of words in a semantic set. This data analysis procedure was done across high and low depth of vocabulary knowledge. The results of the data analysis are summarized in Table 5.

Table 5. Box’s Test of covariance matrices (upper-intermediate)

| Box’s $M$ | $F$ | $df_2$ | sig |
|------------|-----|--------|-----|
| 3.670      | 1.126 | 3      | 1.783 | .337 |

As the results of Box’s Test of Equality of Covariance Matrix (Table 5) display, the Box’s $M$ statistic (3.670) has a probability of .337. Since this probability level is higher than the .05 significance level set by the researcher, it can be concluded that the model consisting depth of vocabulary knowledge, appropriate use of words in a semantic set and writing performance is a good model for the upper-intermediate level as well, and both uni-variant and multi-variant results can be reported.

The division of the participants in the upper-intermediate level was done following the same procedure we followed for the lower intermediate level. This time there were 12 lexically skilled learners and 11 lexically less skilled learners. The results of the MANOVA procedure can be summarized in Tables 6 and 7.

Table 6. Multivariate tests for the independent variable (upper-intermediate)

| Effect | Value Labels | Values | $F$ | Sig. | Partial Eta Squared |
|--------|--------------|--------|-----|------|---------------------|
| DVK    | Wilks’ Lambda | .740   | 5.101 | .013 | .260               |

According to Table 6, for depth of vocabulary knowledge (DVK) variable Wilks’ Lambda = .740, $F = 5.101$, $p > .05$. Therefore, depth of vocabulary knowledge played a significant role in the combined dependent variables. As it is indicated in the Table 6, the partial eta squared is .260 which shows that 26% of the variance in the combined dependent variable can be accounted by depth of vocabulary knowledge.

To detect whether the role of depth of vocabulary knowledge in each dependent variable was significant, test of between subject effects was run to the data. Table 7 illustrates the results of data analysis.

Table 7. Test of between subject effects (upper-intermediate)

| Independent variable | Dependent variable | $F$ | Sig. | Partial Eta Squared |
|----------------------|--------------------|-----|------|---------------------|
| DVK                  | Semantic Set       | 2.806 | .104 | .086               |
| DVK                  | Writing Performance | 10.004 | .004 | .250               |

As the Table 7 displays, depth of vocabulary knowledge did not play a significant role in appropriate use of words in a semantic set, $F = 2.806$, $p = .104$ ($p > .05$), but had a significant role in writing performance with $F = 10.004$, $p = .004$ ($p < .05$).

3.2 Restatement of the Third Research Question and Alternative Hypothesis

Does appropriate use of words in a semantic set have any significant role in EFL learners’ overall writing performance?

Based on the above research question, the following alternative hypothesis was formulated:

Appropriate use of words in a semantic set has significant role in EFL learners’ overall writing performance.

3.2.1 Data Analysis and Results for the Third Research Question

3.2.1.1 Lower-intermediate Level

To probe the third alternative hypothesis, which was concerned about the role of appropriate use of words in a semantic set in writing performance, the means of writing scores were compared using independent t-test. Table 8 depicts the results of the data analysis.
Table 8. Descriptive statistics of learners’ writing scores categorized based on appropriate use of words in a semantic set (lower-intermediate level)

| Semantic set          | N  | Mean   | SD    | SEM   |
|-----------------------|----|--------|-------|-------|
| Appropriate users (1) | 25 | 28.7200| 5.16817| 1.03363|
| Inappropriate users (2)| 12 | 24.4167| 5.26495| 1.51986|

In this phase, participants in the lower intermediate level were divided into two groups based on their scores of appropriate use of words in a semantic set. Those who gained at and above 30 (out of 40) were considered as ‘appropriate users’ (N = 25) and those with scores of below 30 were considered as ‘inappropriate users’ (N = 12) with the means of 28.7200 and 24.4167, respectively. The effect size was large (d = 2.7). This shows that appropriate users did better in overall writing performance than inappropriate users. To probe the significance of this difference in the means of the two groups, a t-test procedure was applied to the data. Table 9 represents the results of the independent sample t-test on the means of writing scores for these two groups.

Table 9. Independent sample t-test for writing performance (lower-intermediate level)

| Independent variable | F     | Sig.  | t     | df | sig. (2-tailed) |
|----------------------|-------|-------|-------|----|----------------|
| Writing              | .017  | .898  | 2.929 | 35 | .006           |

The results of the independent t-test show that the significant index of the comparison of EFL learners’ mean scores of writing performances with high and low level of appropriate use of words in a semantic set is .006, which at 35 degrees of freedom and 2.929 t-observed value, is much lower than the .05 level of significance set for this study. In other words, appropriate use of words in a semantic set has a significant role in writing performance of intermediate language learners.

3.3.1.2 Upper-Intermediate Level

The third alternative hypotheses was probed in the same way as was done following the same procedure we went over in the lower – intermediate level, i.e. an independent t-test was run to. Tables 10 and 11 summarize the results of the data analysis.

Table 10. Descriptive statistics for learners’ writing scores categorized based on appropriate use of words in a semantic set (upper-intermediate level)

| Semantic set          | N  | Mean   | SD    | SEM   |
|-----------------------|----|--------|-------|-------|
| Appropriate users     | 20 | 81.1000| 10.44232| 2.33497|
| Inappropriate users   | 12 | 76.3333| 12.85113| 3.70980|

Again, parallel to the analytical procedures in the lower- intermediate level, participants in the upper intermediate level were divided into two groups based on their appropriate use of words in a semantic set. Doing so, 20 learners were regarded as ‘appropriate users’ and 12 learners as ‘inappropriate users’. The effect size was rather small (d = .41). This shows that appropriate users did not do better in overall writing performance than inappropriate users in the upper-intermediate level and the mean difference was not effective. Table 11 represents the results of the independent sample t-test on the means of writing for these two groups.

Table 11. Independent sample t-test for writing performance (upper – intermediate level)

| Independent variable | F     | Sig.  | t     | df | sig. (2-tailed) |
|----------------------|-------|-------|-------|----|----------------|
| Writing equal variances assumed | .272  | .606  | 1.147 | 30 | .261           |

In upper-intermediate level, the significance index of the comparison of language learners’ mean scores of writing performances with high and low appropriate use of words in a semantic set is .261, which at 30 degrees of freedom and 1.147 t-observed value, is higher than the .05 level of significance set for this study. In other words, appropriate use of words in a semantic set does not have a significant role in overall writing performance of upper-intermediate EFL learners. Therefore, the third alternative hypothesis was retained for the upper-intermediate level.
3.4 Restatement of the Fourth Research Question and Alternative Hypothesis

Do depth of vocabulary knowledge and appropriate use of words in a semantic set have any significant role on EFL learners’ vocabulary use in writing performance? Based on the above research question, the following alternative hypothesis was formulated:

Depth of vocabulary knowledge and appropriate use of words in a semantic set have significant role on EFL learners’ vocabulary use in writing performance.

3.4.1 Data Analysis and Results for the Fourth Research Question

3.4.1.1 Lower-intermediate Level

To probe the fourth alternative hypotheses, predicting significant role of depth of vocabulary and appropriate use of words in a semantic set in vocabulary use in writing, a two-way ANOVA was applied to the data. Table 12 illustrates the results of the two-way ANOVA test.

Table 12. Analysis of variance on the role of depth of vocabulary knowledge and semantic set on vocabulary use in writing (lower-intermediate)

| Source                | SS      | d.f. | MS     | F       | Sig. |
|-----------------------|---------|------|--------|---------|------|
| Semantic Set          | 36.472  | 1    | 36.472 | 5.527   | .025 |
| DVK                   | 5.773   | 1    | 5.773  | .875    | .356 |
| Semantic Set * DVK    | 3.546   | 1    | 3.546  | .537    | .469 |
| Error                 | 217.750 | 33   | 6.598  |         |      |
| Total                 | 8619.000| 37   |        |         |      |
| Corrected Total       | 294.900 | 36   |        |         |      |

As the table shows, the significant level for appropriate use of words in a semantic set is .025 at 1 degree of freedom and 5.527 F-observed value which is lower than the significant level of .05 chosen for this study. However, no significant level was found for depth of vocabulary knowledge and the interaction of semantic set and depth of vocabulary since the P-value of both were .356 and .469, respectively, which are higher than .05. Therefore, the fourth null hypothesis, predicting no significant role of depth of vocabulary and appropriate use of words in a semantic set in vocabulary use in writing, was partially rejected in lower-intermediate level (only for semantic set and not for depth of vocabulary and its interaction with semantic set).

3.4.1.2 Upper-intermediate Level

The same procedure as followed in the data analysis of lower-intermediate was run to the data in the upper-intermediate level. Table 13 reports the result of the analysis.

Table 13. Analysis of variance on the role of depth of vocabulary knowledge and semantic set on vocabulary use in writing (upper-intermediate)

| Source                | SS      | d.f. | MS     | F       | Sig. |
|-----------------------|---------|------|--------|---------|------|
| Semantic Set          | 2.534   | 1    | 2.534  | .566    | .458 |
| DVK                   | 20.235  | 1    | 20.235 | 4.519   | .042 |
| Semantic Set * DVK    | 8.051   | 1    | 8.051  | 1.798   | .191 |
| Error                 | 125.389 | 28   | 4.478  |         |      |
| Total                 | 8983.000| 32   |        |         |      |
| Corrected Total       | 171.719 | 31   |        |         |      |

As Table 13 indicates, in the upper-intermediate level, the significant level for appropriate use of words in a semantic set is .458 at 1 degree of freedom and .566 F-observed values. This significant level is, unlike the lower-intermediate level, higher than the significant level of .05 set for this study. On the other hand, the significant level for depth of vocabulary knowledge is .042 at 1 degree of freedom and .4.519 F-observed value which is a bit lower than .05. However, like the results of lower-intermediate level in this phase of data analysis, the significant level for the interaction of semantic set and depth of vocabulary is .191, which is higher than .05. Therefore, the fourth alternative hypothesis, predicting significant role of depth of vocabulary and appropriate use of words in a semantic set in vocabulary use in writing, was again partially retained in upper-intermediate level.
3.5 Regression Analysis

Due to the fact that WAT is a receptive test of depth of vocabulary knowledge and VKS is a mostly productive one, it is possible that this contrast may affect the results of this study which addresses productive aspect of vocabulary knowledge. However, almost all the previous studies on depth of vocabulary knowledge reported above used WAT as the single measure of depth of vocabulary knowledge regardless of its receptive nature. Therefore, to compare the results of this study with those of others, the researcher used WAT scores in the main phases of the study. Meanwhile, to control for the possible receptivity and productivity effect of the two tests, a regression procedure was run with the scores of WAT and VKS. Using the enter method, a significant model emerged: F (1, 46) = 70.549, p < .0005. The model explains 60% of the variance (Adjusted R2 = .597). Table 14 tabulates and summarizes the results.

| Variable | B     | SEB | β     |
|----------|-------|-----|-------|
| WAT      | .734  | .087| .778  |

The documented regression between the two tests of depth of vocabulary knowledge revealed that the two tests provide the same information and the scores of WAT can predict the scores of VKS. However, care should be taken in interpreting results of WAT in relation to writing skill and productive vocabulary. As it was mentioned in chapter 3 rather implicitly, the first two columns of VKS assess the receptive aspects of depth of vocabulary knowledge and the other three columns focus on the productive aspect. Therefore, the high regression may be because of the partiality of assessing receptive / productive depth of vocabulary by VKS and not only assessing productive knowledge of depth of vocabulary. However, the high regression provides us with a deeper understanding of the participants’ depth of vocabulary knowledge from two distinct perspectives.

4. Discussion

Considering the aforementioned results, it is now possible to ponder the first and second research questions in light of empirical evidence and compare or contrast the present study in this phase with the similar ones to make the results more meaningful.

Regarding the first research question, analysis of data revealed the significant role of depth of vocabulary knowledge in choosing and using words in a semantic set appropriately in compositions. This means that having knowledge about different aspects of depth of vocabulary, i.e. different meanings of a word, syntactic functioning and collocational behavior (Read, 2004), contributes to selecting and using the best words in a semantically related set. In other words, when an EFL learner encounters a set of words with a shade of similar meaning, this depth of knowledge can be of help in finding nuances of differences in word usage. However, the present study documented this significant role in lower-intermediate and not in upper-intermediate level. The reason may be hidden in the fact that upper-intermediate participants focused more on derivational and syntactic behavior of individual words among the criteria of word appropriateness set for this study. On the other hand, lower-intermediate learners might pay more attention to the semantic aspects of words (cf. section 4.3.2.1). Also, the results of this part are related to the findings of Hashemi and Gowdasiaei (2005). Their study revealed that teaching words in a semantic set may result in increase in both depth and breadth of vocabulary knowledge. Considering this, side by side the result of the present study, it can be pointed out that the relationship between depth of vocabulary knowledge and semantic set is a bidirectional one. In other words, both of these concepts can work as to the betterment of the other. However, this bidirectional relation may be only for lower-intermediate level due to the fact that no significant relationship was found in the present study between depth of vocabulary and use of words in a semantic set in upper-intermediate level. But presenting words in a semantic set was shown to be effective in augmenting depth of vocabulary knowledge in Hashemi and Gowdasiaei (2005). As it was reported about the second research question, depth of vocabulary plays a significant role in writing performance of the upper-intermediate participants but not so in writing performance of the lower-intermediate ones. This contrast can be scrutinized in light of what Shoonen et al. (2002, 2003) refer to as overshadowing the effect of vocabulary knowledge on writing performance by linguistic and metalinguistic abilities of writers which need common cognitive skills. In other words, when it comes to use words in writing in general, lower-intermediate language learners try to focus on linguistic abilities such as grammar and syntactical knowledge or metalinguistic abilities like the content of the composition more than upper-intermediate ones. It is probable that upper-intermediate EFL learners think about which words to choose in a semantic set due to their more advanced knowledge of language in terms of vocabulary, i.e. different...
layers of meaning and functional behavior of words. This difference may make the effect of depth of vocabulary in their (lower-intermediate participants) compositions less significant than that of other linguistic abilities. Results also enrich Grabe and Kaplan’s (1996) study on the role of breadth of vocabulary on the writing performance. Their results indicated that learners with higher proficiencies used a variety of words in their compositions far and above learners with lower proficiencies. This study strengthens their findings in that depth of vocabulary can also play a role in compositions of higher proficiency learners in comparison to lower proficiency ones. Also, this contrast in the role of depth of vocabulary in compositions of the two levels may be because of genre sensitivity of lower-intermediate learners in language skills especially in writing. This is in line with Baba (2009) who found a high level of contribution of definition writing of the intermediate Japanese learners, as a measure of depth of vocabulary knowledge, to summary writing than reading comprehension. During summary writing tasks, EFL learners have access to the original source and can reflect on different words in the text to be summarized and consequently choose the best among a set of words in their summaries; however, during descriptive writing, which was the genre of writing tests in the present study, they do not have such access and their knowledge may not be manifested due to their relative weakness in active vocabulary knowledge.

In addition, results of the present study in the upper-intermediate level support Baba’s (Baba, 2009) claim that knowledge of semantic relations, viz semantic set, will improve the quality writing. However, the result of this study speak against Batty (2007) who found a significant relationship between WAT scores and scores of the written section of Kanda English Proficiency (KEPT) of the Japanese intermediate EFL learners and not the upper-intermediate ones.

As was reported above, those lower-intermediate EFL learners who used words in a semantic set appropriately could achieve higher scores in their compositions. This appropriateness helps them to use a variety of words correctly related to a certain concept. This is in line with and enriches Engber (1995) who investigated the extent to which lexical richness and accuracy were related to writing quality of intermediate learners. She found that those who used a variety of different words appropriately were given higher scores on their composition. She also highlighted the fact that the scorers of L2 compositions were negatively affected by using a word inappropriately and that they, i.e. the raters, take the lexical errors into account during the act of scoring the compositions. She concludes that “the diversity of lexical choice and the correctness of lexical form have a significant effect on the readers of timed compositions written by L2 writers at an intermediate to high-intermediate level of proficiency” (p. 150). In line with this, East (2006) asserted that allowing learners to use bilingual dictionaries may result in an increase in lexical sophistication, measured by LFP based on variety of lexis used, and this “has potentially positive benefits in terms of enhancing writing quality” (p. 194). In other words, one way of improving appropriateness of use of words in a semantic set may be, according to East (ibid), use of bilingual dictionaries while writing.

However, in the upper-intermediate level, using words appropriately in a semantic set does not play a role in participants’ achievement of higher writing scores. This contradiction with the results obtained in lower-intermediate level may confirm the effect of proficiency level in role of appropriate use of words in a semantic set in overall writing performance. It means that, using a variety of words appropriately related to a certain concept brings coherence to lower-intermediate participants’ writing performance and this may affect scores on writing quality (Mc Carthy, 1991).

For compositions written by upper-intermediate learners, however, this coherence might be the consequence of good content arrangement and topical knowledge and not because of use of words in a semantic set appropriately in writing performance.

As was indicated in the result section of the fourth research question, for lower intermediate level appropriate use of words in a semantic set has a significant role in vocabulary use in writing and in upper-intermediate level depth of vocabulary knowledge has such a significant role. Few research studies were engaged with vocabulary use in their (lower-intermediate participants) compositions less significant than that of other linguistic abilities. Results also enrich Grabe and Kaplan’s (1996) study on the role of breadth of vocabulary on the writing performance. Their results indicated that learners with higher proficiencies used a variety of words in their compositions far and above learners with lower proficiencies. This study strengthens their findings in that depth of vocabulary can also play a role in compositions of higher proficiency learners in comparison to lower proficiency ones. Also, this contrast in the role of depth of vocabulary in compositions of the two levels may be because of genre sensitivity of lower-intermediate learners in language skills especially in writing. This is in line with Baba (2009) who found a high level of contribution of definition writing of the intermediate Japanese learners, as a measure of depth of vocabulary knowledge, to summary writing than reading comprehension. During summary writing tasks, EFL learners have access to the original source and can reflect on different words in the text to be summarized and consequently choose the best among a set of words in their summaries; however, during descriptive writing, which was the genre of writing tests in the present study, they do not have such access and their knowledge may not be manifested due to their relative weakness in active vocabulary knowledge.

In addition, results of the present study in the upper-intermediate level support Baba’s (Baba, 2009) claim that knowledge of semantic relations, viz semantic set, will improve the quality writing. However, the result of this study speak against Batty (2007) who found a significant relationship between WAT scores and scores of the written section of Kanda English Proficiency (KEPT) of the Japanese intermediate EFL learners and not the upper-intermediate ones.

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For compositions written by upper-intermediate learners, however, this coherence might be the consequence of good content arrangement and topical knowledge and not because of use of words in a semantic set appropriately in writing performance.
4.1 Implications of the Study

Based on the results reported above, some pedagogical implications can be made as the following:

1. Vocabulary and writing curriculum developers and course designers should put an emphasis on depth of vocabulary knowledge and words in a semantic set to empower and strengthen the validity of their programs and curricula.

2. There is a lack of emphasis on depth of vocabulary in the current materials on writing instruction. Material developers and should include some sections related to depth of vocabulary knowledge in writing course books and even in writing sections of EGP (English for General Purposes) course books. Such a focus, however, should emphasize the appropriate use of words in the compositions based on the knowledge of depth of vocabulary and the topic of the composition.

3. Writing instructors, especially in higher proficiency levels, should concentrate more on teaching different aspects of words, i.e. depth of vocabulary knowledge, with focus of semantic sets, than work on breadth of word knowledge to enrich language learners’ writing quality in terms of vocabulary. However, due to the fact that the knowledge of vocabulary of the lower proficiency levels may not be manifested in writing performance, focus on depth of vocabulary should be with caution.

4.2 Suggestions for Further Research

The process, results and conclusion of the present study lead to some further lines of research. First of all, other studies can be done with the same objectives and aims in other proficiency levels like lower and upper advance to cross check the findings among different proficiency levels. Second, following Read (2004) who argued for distinguishing among different aspects of depth of vocabulary with different measures, the same study can be run with other measures of depth of vocabulary knowledge like elicitation of word definition or test items requiring precision of word knowledge. Third, the role of depth of vocabulary knowledge and semantic set can be investigated in other skills such as listening and speaking. More specifically, the role of depth of vocabulary knowledge in writing can be assessed in comparison with the role of breadth of vocabulary. This comparison will be deepened if the future researchers focus on other genres of writing other than descriptive type.

Reference

Adolph, S., & Schmitt, N. (2003). Lexical coverage of spoken discourse. Applied Linguistics, 24(4), 425-438. https://doi.org/10.1093/applin/24.4.425

Baba, K. (2009). Aspects of lexical proficiency in writing summaries in a foreign language. Journal of Second Language Writing, 18(3), 191-208. https://doi.org/10.1016/j.jslw.2009.05.003

Batty, O. (2017). Vocabulary depth in written and oral assessment. In K. Brandford-Watts (Ed.), JALT 2006 Conference Proceedings. (pp. 1100-1108), Tokyo: JALT.

Cumming, A. (2002). Assessing L2 writing: Alternative constructs and ethical dilemmas. Assessing Writing, 8(2), 73-83. https://doi.org/10.1016/S1075-2935(02)00047-8

Dolch, E. W., & Leeds, D. (1953). Vocabulary tests and depth of meaning. Journal of Educational Research, 47, 181-189. https://doi.org/10.1080/00220671.1953.10882095

Greidanus, T., & Nienhuis, L. (2001). Testing the quality of word knowledge in a second language by means of word associations: Types of distracters and types of associations. Modern Language Journal, 85(4), 567-577. https://doi.org/10.1111/0026-7902.01126

Henriksen, B. (1999). Three dimensions of vocabulary development. Studies in Second Language Acquisition, 21(2), 303-317. https://doi.org/10.1017/S0163669X99002089

Hoey, M. (2013). Lexical priming and the qualities of text. Retrieved May 17, 2009 from http://www.monabaker.com/stresources/LexicalPrimingandthePropertiesofText.htm

Hunt, A., & Beglar, D. (2012). Current research and practice in teaching vocabulary. In Richards, J.C. and Renandya, W.A. (Eds.), Methodology in Language Teaching: An anthology of current practice (pp 268-266), Cambridge: Cambridge University Press.

Lee, S. H. (2003). ESL learners’ vocabulary use in writing and the effects of explicit vocabulary instruction. System, 31(4), 537-561. https://doi.org/10.1016/j.system.2003.02.004

Leki, I., & Carson, J., (1994). Students’ perceptions of EAP writing instructions and writing needs across the disciplines. TESOL Quarterly, 29(8), 81-101. https://doi.org/10.2307/3587199
Linnarud, M. (1986). *Lexis in composition: A performance analysis of Swedish learners’ written English*. Malmo, Sweden: Liber Forlag Malmo.

Moir, J., & Nation, I. S. P. (2002). Learners’ use of strategies for effective vocabulary learning. *Prospect, 17*(1), 18-32.

Muncie, J. (2002). Process writing and vocabulary development: Comparing lexical frequency profiles across drafts. *System, 30*(2), 225-235. https://doi.org/10.1016/S0346-251X(02)00006-4

Nelson, M. (2006). Semantic association in business English: A corpus-based analysis. *English for Specific Purposes, 25*(2), 217-234. https://doi.org/10.1016/j.esp.2005.02.008

Nurweni, A., & Read, J. (1998). The English vocabulary knowledge of Indonesian university students. *English for Specific Purposes, 18*(2), 161-175. https://doi.org/10.1016/S0889-4906(98)00005-2

Qian, D. D. (2012). Investigating the relationship between vocabulary knowledge and academic reading performance: an assessment perspective. *Language Learning, 52*(3), 513-536. https://doi.org/10.1111/1467-9922.00193

Silva, T., & Matsuda, P. K. (2002). Writing. In Schmitt, N. (Ed.) *An Introduction to Applied Linguistics*. (pp. 251-266), New York. Arnold.

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