



Effect of Prototypicality VS Periphery on Language Transfer Across Lexical Collocations: A Corpus Based Study

Lotfollah Karimi

Hamedan Branch, Islamic Azad University, Iran

Introduction

At the outset it is important to define some key terms that will be used in this study. According to Granger (1998), *collocations* are words or phrases co-occurring in natural text in the form of certain syntactic patterns such as *verb + noun* and *adjective + noun*. Lewis (1997) describes collocation as strength of association, or the probability of co-occurrence of two words. Williams (2002) modifies this definition to: "two or three word clusters which occur with more than chance regularity" (p. 1). "Prototypicality" is the term used to refer to the fact that some members of a group are seen as more typical of that group than others" (Mitchell, Mylse, & Marsden, 2013, p. 109). Richards, Schmidt, Kendricks, and Kim, (2002) define it as "certain simple and/or core linguistic elements within and across languages" (p. 320). Greenberg (1966) considered *periphery* as less frequent linguistic components. Keshavarz (2011) defines *language transfer* as "the influence of linguistic features of one language on the learning of another, in contexts such as bilingualism and second language acquisition" (p. 169). Other terms for transfer are *linguistic interference*, *the role of mother tongue*, *native language influence*, *cross-linguistic influence*, or *language mixing* (Pokorná, 2014). According to Larsen (1984), "*literal translation* sounds like nonsense and has little communication value" (p. 15). According to Tomlinson (2011) "*corpus* is a bank of authentic texts collected in order to find how language is actually used" (p. x).

Based on markedness theory, prototypical linguistic elements are easier to learn than peripheral linguistic ones. The prototype theory was developed with an investigation on color identification. In a study by Berlin and Kay (1969), English speaking participants were exposed to a wide range of color chips. They found that all people agreed on the best example of a category of color. For instance, when asked for the best example of blue, people selected a chip of the same blue color. They called the best examples of a category of color *focal colors*. Based on the theory of markedness "within and across languages, certain linguistic elements can be seen as unmarked, i.e. simple, core, or prototypical, while others are seen as marked, i.e., complex, peripheral, or exceptional" (Richards et al., 2002, p. 320).

Farghal and Obiedat (1995) argued that learning collocations is of great significance and considered it essential in better comprehending and retaining vocabulary. Research on the acquisition and learning of these constructions are promising. This is because collocations are an important component of formulaic constructions and also because knowing collocations is a requirement for successful acquisition of language as well as communication (Bahns & Eldaw, 1993).

In addition, collocations make up one of the most significant parts of vocabulary knowledge in several

models of mental lexicon (Nation, 2001). Despite the rising recognition of the importance of knowing collocations as an inseparable element of second language acquisition, studies conducted on collocations show that these items pose inherent challenges and problems for second language learners (Howarth, 1998).

In the field of vocabulary learning, the learning of collocations is being given increasing significance. Both Nation (2001) and Thornbury (2002) have spent a lot of time and attention to the area. Teaching vocabulary contextually is more fruitful than the teaching of individual words (Thornbury, 2002). Several dictionaries of collocations have been published (Benson, Benson, & Ilson, 1997; Stockdale, 2000).

Inclusion of collocation in the curriculum is important for several reasons. The first reason is the great difficulty encountered by non-native speakers in how to combine words accurately. Even when learners know the individual words, collocations are still problematic. Secondly, as Lewis (1993) describes, learners need to get beyond the *intermediate plateau*. Such learners can cope in most cases, but they try to *avoid* the more challenging tasks of advanced language learning. Collocation teaching is especially interesting for upper level students (Williams, 2002). Thirdly, knowing frequently occurring collocates makes vocabulary knowledge deeper, and enhances fluency, stress and intonation (Williams, 2002). Finally, collocation errors disrupt communication more often than grammatical errors. Williams (2002) states that a non-native speaker with many collocation errors will *grate* on the listener or reader.

Kellerman (1978, 1986) studied the phenomenon of lexical transfer through using the prototypicality concept. In Kellerman (1978), the polysemous Dutch word *breken* (meaning *break* in English at its core sense) was examined to find how the prototypicality of the word's meanings is related with their transferability to English. It was therefore hypothesized that when meanings are closest to the core meaning, it is more likely that transfer occurs. It was found that the more Dutch speakers decided on the prototypicality of the words, there was more possibility of transferring that meaning to the equivalent English word. One interesting point in Kellerman's (1986) studies was that although many studies considered prototypicality in terms of closeness to the core meaning, he considered prototypicality in terms of frequency of different meanings.

Biskup (1992) and Bahns and Eldaw (1993) revealed first language interference in German speakers' English collocation production through translation. Those whose L2 collocation skill was limited clearly resorted to German, which was a major cause of the errors found. However, empirical evidence for such a conclusion is scant. The main problem in this respect is the fact that Iranian EFL teachers and learners may also grapple with the problem of inappropriate L1 transfer while teaching and learning collocations, respectively.

Yamashita and Jiang (2010) carried out a study using an acceptability judgment task to investigate the first language influence on collocation knowledge for ESL and EFL learners. As expected, ESL learners outperformed EFL learners. Seesink (2007) conducted a study to find out if vocabulary and collocation teaching could improve learners' writing. The results showed that taking collocations into account affected the learners' scores positively. For example, Gass and Selinker (2001) found that, firstly, lexical errors and meaning vocabulary errors, constitute most L2 errors and secondly, both learners and native speakers view lexical errors as the most serious and disruptive obstacles to communication (p. 372).

Zarei and Koosha (2002) examined Iranian advanced learners' problems with the production of English lexical collocations. Their study consisted of two phases: in the first phase, they concentrated on the collocational errors which were found from 2400 pages of materials written in English by Iranians. By analyzing the collocation errors extracted from the production of 27 high-proficiency level Iranians, they found five patterns of collocations which were more problematic. In the second phase, six cued production tasks were given to 64 participants. From their analysis they concluded that about 55% of Iranian advanced learners of English had problems in their production of English collocations. In another study by Delshad (1980), it was found that Iranian EFL learners had difficulties using collocations properly. Iranian students often misused or did not use the collocations at all.

One of the very interesting studies on cross-linguistic influence and collocation acquisition is one conducted by Koya (2003). In his study he focused on noun-verb combinations perceived and produced

by Japanese learners. Although low-proficiency learners were found to mainly rely on L1 knowledge in the process of L2 acquisition, Koya surprisingly found that it was high-proficiency learners who relied more on L1 transfer, whereas those with lower proficiency appeared to use an avoidance strategy.

Similarly, Nesselhauf (2003) has shown that L1 influence on the production of English collocations by German speakers was significantly high. Generally, the collocation problems seemed to come from L1 transfer. Nesselhauf maintains that the extent of difficulty of collocation learning is linked with the degree of congruence. In other words, congruent collocations, i.e., combinations which sound natural in both L1 and L2 apparently cause less problems than non-congruent ones. According to Nesselhauf (2003), the role of L1 in learning collocations should not be ignored.

L1 transfer was also very noticeable in Fan's (2009) study, which examined the use of collocations in writing by Hong Kong ESL learners. It showed that the production of collocations was adversely affected by the L1, Chinese. There were some combinations that seemed to emanate from word-for-word translation of Chinese collocations which are unacceptable or non-existent in the native corpus reference. These deviant collocations are claimed to result from L1 influence. For example, the non-standard collocation like *circle-eye*, as opposed to *round-eye*, could be attributed to the fact that the concepts of round and circle are expressed by the same lexical item in Chinese.

In the same vein, Talebi (2014) found that the degree of awareness of cross-linguistic transfer among Iranian learners of English was narrow in scope, covering mostly linguistic and rarely the cognitive and affective domains.

Almahammed (2016) found that language transfer (Arabic prepositions) influenced the acquisition of English prepositions by the Jordanian EFL learners. Finally, Deng (2016) came to the following conclusions:

The framework of prototypicality, based on cognitive theory, provides plausible elucidation for when language transfer will occur and what is most likely transferred in the process of SLA. It has solved the problems facing behaviorist and mentalist theories in language transfer and initiated a new era for researches on language transfer as well as second language teaching (p. 93).

Methodology

Research Questions

1. What is the effect of prototypicality on language transfer or literal translation?
2. What is the effect of periphery on language transfer or literal translation?
3. What is the difference between the effect of prototypicality and that of periphery on language transfer or literal translation?

Design of the Study

The research method being used in this study was true-experimental with pretest/posttest experimental group design as:

R	EG ₁	T ₁	X	T ₂
R	EG ₂	T ₁	X	T ₂

Participants

The participants were selected, through a simple random sampling method, from all the available freshmen EFL students (both male and female) majoring in translation at *Islamic Azad University of Hamadan, Iran*. The sample included 40 students whose ages ranged from 18 to 25.

Instrumentation

Concordancer

In order to find the frequency of collocations a concordancer available at <http://www.just-the-word.com/> was used. Through entering the selected words, the website would search for all instances of the collocations and give their frequencies in the corpus. The most frequent collocations were selected as prototypical and the least frequent collocations as peripheral collocations. The website does this through connecting to the British National Corpus.

Pretest

A test consisting of 30 items of prototypical and peripheral collocations selected by the researcher based on the corpus was administered to 15 students other than, but similar, to the target participants. Its reliability was estimated through the split-half method and 0.75. This test was used as the pretest.

Posttest

The posttest was parallel to the pretest. Its piloting was done using exactly the same procedures applied for the pretest. This time, however, the reliability was 0.79.

Procedure

After choosing the topic, to do the experiment the following steps were taken. First, the participants were selected and were assigned randomly to two equal experimental groups, 20 participants in each. In the second step, the pretest was administered to the groups. Then, intervention or treatment began. Over 8 sessions, each taking 60 minutes, one of the experimental groups, in a separate class, received the selected prototypical collocations, while the peripheral ones were taught to the other group. In both classes the focus was on translation, that is, finding Persian equivalents for the English collocations. After finishing the intervention or teaching the selected collocations to each group, the posttest was administered to the groups. The participants' performance on the tests was measured in a reversed way, that is, the more language transfer an individual committed, the higher he or she was scored. Finally, to analyze the data collected (the groups' scores on the tests), the researcher ran Analysis of Covariance (ANCOVA), the results of which are presented below.

Results

To analyze the data, first, descriptive parameters— mean, number, and standard deviation of the groups— before and after intervention were calculated (Table 1). Second, the assumptions of ANCOVA such as the normality of the data (Tables 2 and 3), the homogeneity of the slope of regression lines (Figure 1 and Table 3), and equality of variances (Table 4) were checked. Finally, ANCOVA was run (Tables 5, 6, and Figure 2).

Table 1 clearly illustrates various statistical parameters (number of cases, mean score, and standard deviation) of the group separately.

TABLE 1
Descriptive Statistics of the Groups

group		pretest	posttest
prototypicality	Mean	38.45	76.75
	N	20	20
	Std. Deviation	11.856	21.949
periphery	Mean	36.35	48.50
	N	20	20
	Std. Deviation	12.971	17.009
Total	Mean	37.40	62.62
	N	40	40
	Std. Deviation	12.312	24.089

The results of running One-Sample Kolmogorov-Smirnov Test and Shapiro-Wilk Test in Table 2 show that the prototypical experimental group's scores on both pretest and posttest were distributed normally ($p > 0.05$).

TABLE 2
The Normality of Prototypical Experimental Group's Scores on the Tests

group	Kolmogorov-Smirnov ^a			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
pretest prototypicality	.118	20	.200*	.965	20	.657
posttest prototypicality	.130	20	.200*	.955	20	.446

a. Lilliefors Significance Correction

*. This is a lower bound of the true significance.

The results of running One-Sample Kolmogorov-Smirnov Test and Shapiro-Wilk Test in Table 3 show that the peripheral experimental group's scores on both pretest and posttest were distributed normally ($p > 0.05$).

TABLE 3
The Normality of Peripheral Experimental Group's Scores on the Tests

group	Kolmogorov-Smirnov ^a			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
pretest periphery	.109	20	.200*	.938	20	.215
posttest periphery	.120	20	.200*	.952	20	.398

a. Lilliefors Significance Correction

*. This is a lower bound of the true significance.

Figure 1 shows the positive linear relationship between the scores of the pretest and posttest for all groups. The upper line is related to the prototypical experimental group; while the lower one is related to the peripheral experimental one. Since the lines do not cut each other, the slope of regression lines is homogeneous for all groups.

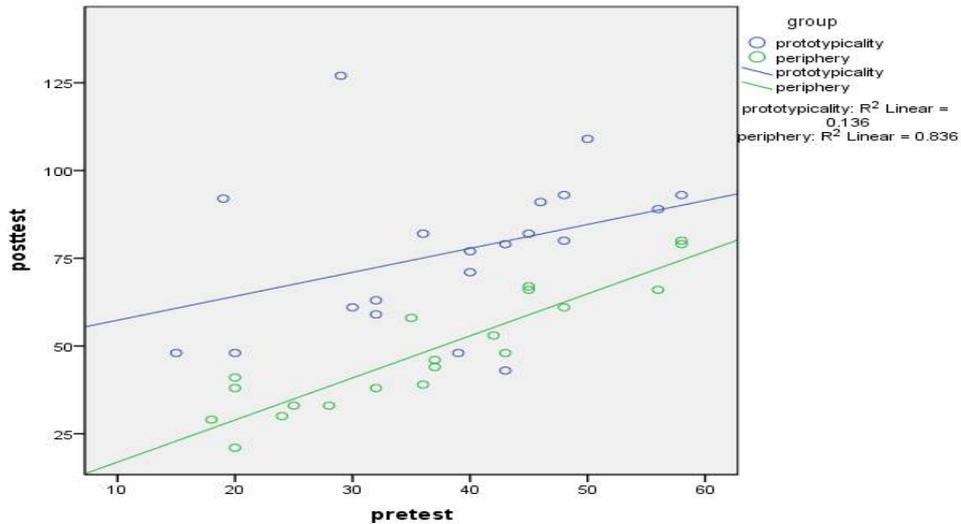


Figure 1. The linear relationship between the scores of pretest and posttest for all groups.

Table 4 indicates that the slope of the regression lines for both groups was homogeneous [$F(1, 36) = 1.587, p = 0.216, p > 0.05$].

TABLE 4
The Homogeneity of the Slope of Regression Lines

Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Corrected Model	13818.823 ^a	3	4606.274	18.817	.000
Intercept	2880.504	1	2880.504	11.767	.002
group	1948.972	1	1948.972	7.962	.008
pretest	5149.471	1	5149.471	21.036	.000
group * pretest	388.484	1	388.484	1.587	.216
Error	8812.552	36	244.793		
Total	179507.000	40			
Corrected Total	22631.375	39			

a. R Squared = .611 (Adjusted R Squared = .578)

Table 5 shows that the variances of the groups were equal [$F(1, 38) = 4.113, P = 0.050$].

TABLE 5
Levene's Test of Equality of Error Variances

F	df1	df2	Sig.
4.113	1	38	.050

Tests the null hypothesis that the error variance of the dependent variable is equal across groups.

The results of ANCOVA in Table 6 show that the main effect of the treatment was significant [$F(1, 37) = 27.453, p < 0.001, \eta^2 = 0.426$]. For the current study, as it is seen in Table 6, the effect size of 0.426 is fairly large. Expressed as a percentage (multiplying eta squared value by 100), 42.6% of the change on the dependent variable (language transfer or literal translation) has been due to the effect of the independent variables. The question of which variable caused more language transfer or literal translation has been answered in the discussion section.

TABLE 6
Tests of Between-Subjects Effects Showing the Main Effect of the Treatment

Source	Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared
Corrected Model	13430.339 ^a	2	6715.170	27.004	.000	.593
Intercept	2682.529	1	2682.529	10.787	.002	.226
pretest	5449.714	1	5449.714	21.915	.000	.372
group	6826.796	1	6826.796	27.453	.000	.426
Error	9201.036	37	248.677			
Total	179507.000	40				
Corrected Total	22631.375	39				

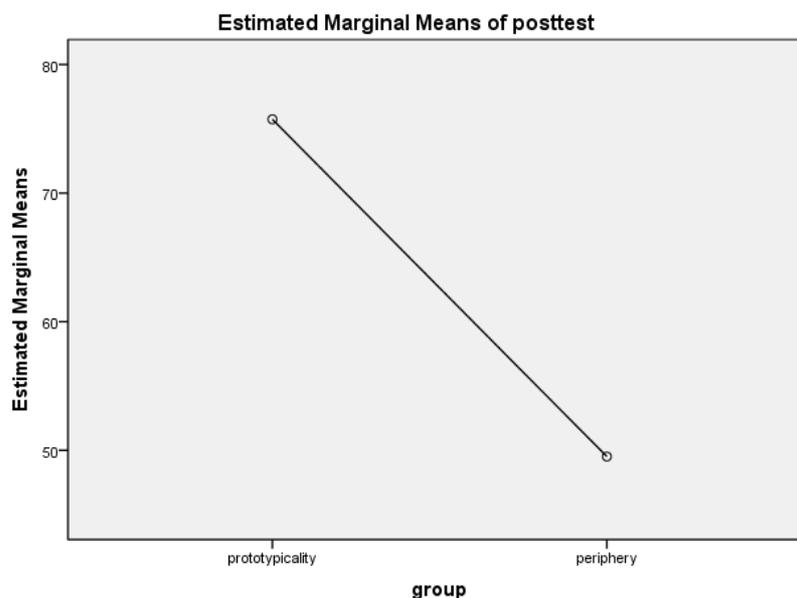
a. R Squared = .593 (Adjusted R Squared = .571)

Table 7 shows that the prototypical experimental group's adjusted mean score is 75.738 which is much higher than that (49.512) of the peripheral group. This difference between the means has also been depicted through Figure 2.

TABLE 7
Estimated Marginal Means of the Groups on the Posttest

group	Mean	Std. Error	95% Confidence Interval	
			Lower Bound	Upper Bound
prototypicality	75.738 ^a	3.533	68.580	82.896
periphery	49.512 ^a	3.533	42.354	56.670

a. Covariates appearing in the model are evaluated at the following values: pretest = 37.40.



Covariates appearing in the model are evaluated at the following values: pretest = 37.40

Figure 2. The estimated marginal means of the groups.

Discussion

While learning and/or translating a second language, the learners commit some linguistic errors whose one source may be the habits of the mother tongue or the first language of the learner (Corder, 1981; Keshavarz, 2011; Mitchell, Mylse, & Marsden, 2013). On this line of thought, the current study was conducted to see whether prototypicality or periphery causes second language learners to commit more

language transfer. The results of the overall analysis of the data showed that the main effect of the treatment was significant [$F(1, 37) = 27.453, p < 0.001, \eta^2 = 0.426$].

Regarding the first question of what the effect of prototypicality is on the EFL learners' language transfer, the findings revealed that prototypicality caused the learners to commit language transfer negatively, for their mean score on the pretest was 38.45, which increased to 76.75 on the posttest and when adjusted it was 75.738.

With regard to the second question, investigating the effect of periphery on language transfer, the results of the analysis revealed that periphery also caused language transfer negatively, because the participants' mean score on the pretest was 36.35 which fluctuated to 48.50 on the posttest and when adjusted it was 49.512.

The third question explored the difference between the effect of prototypicality and that of periphery on language transfer. The results of the overall analysis of the data showed that the two independent variables affected the participants' language transfer negatively. However, the experimental group who had received prototypicality significantly committed more negative language transfer or literal translation than the other experimental group who was exposed to periphery. After removing the effect of the pretest, the prototypical experimental group's adjusted mean score was 75.738, while that of the peripheral experimental group was 49.512. One explanation, perhaps, for the finding may be the participants' background knowledge created through the high frequency or prototypicality and the primary meaning of the head words in the co-occurring lexical items.

The findings of this study are consistent with those of some previous ones. For example, Berlin and Kay (1969) found that all people agreed on the best example of a category of color. Kellerman (1978) found that the more Dutch speakers decided on the prototypicality of the words, there was more possibility of transferring that meaning to the equivalent English word. Biskup (1992) and Bahns and Eldaw (1993) found first language interference in German speakers' English collocation production through translation. Zarei and Koosha (2002) concluded that about 55% of Iranian advanced learners of English had problems in their production of English collocations. Delshad (1980) found that Iranian EFL learners had difficulties using collocations properly. Koya (2003) found that it was high-proficiency learners who relied more on L1 transfer. Nesselhauf (2003) has shown that L1 influence on the production of English collocations by German speakers was significantly high. Fan (2009) showed that the production of collocations was adversely affected by the L1, Chinese. Deng (2016) found that prototypicality provides plausible elucidation for when language transfer will occur and what is most likely transferred in the process of SLA.

Many studies suffer from limitations of some sort. Hence, this study is not an exception. It was conducted under relatively controlled conditions, on the one hand, and the number of participants in the groups was limited, on the other. Therefore, its results should be used cautiously.

Conclusion

The evidence in the literature reviewed, the positive answer given to the research questions raised, and the rejection of the null hypotheses formulated all indicate that the prototypical meaning of the words, more than their peripheral meaning, causes the ESL learners and translation trainees to commit language transfer and/or literal translation. Thus, one solution may be the simultaneous teaching of both types of meaning to the learners. As a final remark, those who are interested in the area are recommended to examine the effect of prototypicality and periphery on learning other aspects of language, say, diatransitive construction.

The Author

Lotfollah Karimi holds a Ph.D. degree in TEFL and is a faculty member in the English Department, Hamedan Branch, Islamic Azad University, Hamedan, Iran. He has been teaching courses in TEFL to BA, MA, and Ph.D. candidates. His publications amount to 11 books and some 30 articles published in some vigorous journals such as the Journal of Asia TEFL.

References

- Almahammed, Y. S. O. (2016). *First language transfer in the acquisition of English prepositions by Jordanian EFL Learners* (Unpublished master's thesis). University Sains Islam, Malaysia.
- Bahns, J., & Eldaw, M. (1993). Should we teach ESL students collocations? *System*, 21(1), 101-114.
- Benson, M., Benson, E., & Ilson, R. (1997). *The BBI dictionary of English word combinations*. Amsterdam, The Netherlands: John Benjamins.
- Berlin, B., & Kay, P. (1969). *Basic color terms: Their universality and evolution*. Berkeley, CA: University of California Press.
- Biskup, D. (1992). L1 influence on learners' renderings of English collocations: A Polish/German empirical study. In P. J. L. Arnaud, & H. Bejoint (Eds.), *Vocabulary and applied linguistics* (pp. 85-93). London, UK: Macmillan Academic and Professional Ltd.
- Corder, S. P. (1981). *Error analysis and interlanguage*. Oxford, UK: Oxford University Press.
- Delshad, S. (1980). *Persian and English prepositions compared and contrasted from a pedagogical point of view*: Unpublished Doctoral Dissertation. University of Texas, USA.
- Deng, L. (2016). Cognitive theory of markedness and native language transfer. *International Research in Education*, 4(1), 86-96.
- Fan, M. (2009). An exploratory study of collocational use by ESL students: A task-based approach. *System*, 37, 110-123.
- Farghal, M., & Obeidat, H. (1995). Collocations: A neglected variable in EFL. *International Review of Applied Linguistics in Language Teaching*, 33(4), 315-331.
- Gass, S., & Selinker, L. (2001). *Second language acquisition: An introductory course* (2nd ed.). Mahwah, NJ: Lawrence Erlbaum.
- Granger, S. (1998). Prefabricated patterns in advanced EFL writing: collocations and formulae. In A. Cowie (Ed.), *Phraseology: Theory, analysis and applications* (pp.145-160). Oxford, UK: Clarendon Press.
- Greenberg, J. H. (1966) Studies in the psychological correlates of the sound system of American English. *Word*, 22, 207-242.
- Howarth, P. (1998). Phraseology and second language proficiency. *Applied Linguistics*, 19(1), 24-44.
- Kellerman, E. (1978). Giving learners a break: Native language intuitions as a source of predictions about transferability. *Working Papers on Bilingualism*, 15, 59-92.
- Kellerman, E. (1986). An eye for an eye: Cross linguistic constraints on the development of the L2 lexicon. In M. Sherwood Smith. & E. Kellerman (Eds.) *Cross linguistic influence in second language acquisition* (pp. 35-48). Oxford, UK: Pergamon Press.
- Keshavarz, M. H. (2011). *Contrastive analysis and error analysis*. Tehran: Rahnama Press.
- Koya, T. (2003). A study of collocation in English and Japanese noun-verb combinations. *Intercultural Communication Studies*, 7(1), 125-145.
- Larsen, M. L. (1984). *Meaning-based translation: A guide to cross-language equivalence*. Lanham Md: University Press of America, Inc.
- Lewis, M. (1997). *Implementing the lexical approach: Putting theory into practice*. Hove, UK: Language Teaching Publication.
- Lewis, M. (1993). *The lexical approach: The state of ELT and a way forward*. London, UK: Language

Teaching Publication.

- Mitchell, R., Mylse, F., & Marsden, E. (2013). *Second language learning theories* (3rd ed.). London, UK: Routledge.
- Nation, I. S. P. (2001). *Learning vocabulary in another language*. Cambridge: Cambridge University Press.
- Nesselhauf, N. (2003). The use of collocations by advanced learners of English and some implications for teaching. *Applied Linguistics*, 24(2), 223-242.
- Pokorná, P. (2014). An analysis of Czenglish in an error tagged learner corpus (Unpublished master's thesis). Masaryk University, Czech Republic.
- Richards, J. C., Schmidt, R., Kendricks, H., & Kim, K. (2002). *Dictionary of language teaching and applied linguistics*. London, UK: Pearson Education.
- Seesink, M. T. (2007). *Using blended instruction to teach academic vocabulary collocations: A case study* (Unpublished doctoral dissertation). West Virginia University, USA.
- Stockdale, J. (2000). *Mr. Stockdale's dictionary of collocations*. Oxford, UK; NC, Clearinghouse.
- Talebi, S. H. (2014). Cross-linguistic transfer among Iranian learners of English as a foreign language. *Issues in Educational Research*, 24(2), 212-227.
- Tomlinson, B. (2011). *Materials development in language teaching*. Cambridge, UK: Cambridge University Press.
- Thornbury, S. (2002). *How to teach vocabulary*. Harlow, UK: Longman.
- Williams, B. (2002). *Collocation with advanced levels*. Retrieved October, 23, 2010 from www.Teachingenglish.org.uk/think/vocabulary/collocation1.html
- Yamashita, J., & Jiang, N. (2010). L1 influence on the acquisition of L2 collocations: Japanese ESL users and EFL learners acquiring English collocations. *TESOL Quarterly*, 44(4), 647-668.
- Zarei, A., & Koosha, M. (2002). Patterns of Iranian advanced learners' problems with English collocations. *Iranian Journal of Applied Linguistics (IJAL)*, 6(1), 137-169.