

Investigating the Effect of Top-Down and Bottom- up Processing on Iraqi EFL Learners' Comprehension of Vocabulary

Asst. Inst. Farah Hafedh Ibrahim
College of Arts/ Mustansiriyah University
farahhafedh@uomustansiriyah.edu.iq

Received: 14/1/2020

Accepted: 9/2/2020



This work is licensed under a [Creative Commons Attribution 4.0 International License](https://creativecommons.org/licenses/by/4.0/)

Abstract

This paper investigates the role of bottom-up and top-down processing of Iraqi EFL learners' vocabulary comprehension. The researcher conducts two vocabulary tests to university level students. The first test is the *Academic Word List* test that is used to assess bottom- up vocabulary comprehension while the second one is the *Academic Vocabulary Size* test that is employed to assess learners' top-down vocabulary comprehension abilities and to find out whether proficient learners make use of the top-down approach to understand a specific lexical item more than the bottom-up approach. Analysis of the test scores reveals that the bottom-up group slightly outperforms the top-down group. The researcher concludes that employing a specific approach, whether top-down or bottom- up, depends on the level of proficiency and the nature of L2 vocabulary acquisition. The results also refute the aforementioned hypothesis of the study i.e. proficient learners make use of the top-down approach to understand a specific lexical item, while poor learners depend more on the bottom up approach to figure out the meaning of a given lexical item. The study further concludes that Iraqi EFL learners need an intensive and adequate training in top-down processing and bottom up processing to develop their comprehension skills.

Key words: comprehension, bottom-up processing, top-down processing

التحقق من تأثير النهج التصاعدي، والنهج التنازلي،

في استيعاب المعاني لمتعلمي الإنجليزية لغةً أجنبية

م.م. فرح حافظ ابراهيم

كلية الاداب الجامعة المستنصرية

farahhafedh@uomustansiriyah.edu.iq

المستخلص

يدرس هذا البحث دور النهج التصاعدي والنهج التنازلي في استيعاب المعاني لمتعلمي اللغة الإنجليزية بعدها لغة أجنبية. أجرى الباحث اختبارين في المفردات لطلبة الجامعة. الاختبار الأول هو اختبار قائمة الكلمات الأكاديمية الذي يستخدم لتقييم فهم المفردات وفق النهج التصاعدي و الاختبار الثاني هو اختبار حجم المفردات الأكاديمية الذي يستخدم لتقييم قدرات فهم المتعلمين وفق النهج التنازلي للتعرف على ما إذا كان المتعلمون الأكثر براعة يستفيدون من النهج التصاعدي لفهم عنصر معين أكثر من النهج التنازلي. يكشف تحليل درجات الاختبار أن المجموعة الأولى تتفوق قليلاً على المجموعة الثانية. وتوصل الباحث إلى أن استخدام نهج محدد ، سواء التنازلي أو التصاعدي ، يعتمد على كفاءة المتعلم وطبيعة اكتساب مفردات اللغة الثانية. تدحض النتائج أيضاً فرضية الدراسة التي تنص على أن المتعلمين الأكفاء يعتمدون على النهج التصاعدي في فهم المفردات ، بينما يعتمد المتعلمون الأقل كفاءة أكثر على النهج التصاعدي لمعرفة معنى مفردة معينة. وخلصت الدراسة كذلك إلى أن متعلمي اللغة الإنجليزية كلغة أجنبية يحتاجون إلى تدريب مكثف وكاف في مجال النهج التنازلي و التصاعدي لتطوير مهارات الفهم لديهم.

الكلمات المفتاحية: الفهم ، المعالجة من أسفل إلى أعلى ، المعالجة من أعلى إلى أسفل

Theoretical Background

1.1 Introduction

Comprehension is one of the subjects that are of crucial importance in measuring Iraqi EFL learners' proficiency and level of language development. Iraqi EFL learners differ in their comprehension skills and the approaches they depend on in comprehending meaning. It is believed that skillful learners depend on the top-down approach and make use of context more than less skilled learners who do not rely much on the context and hence they make use of the bottom-up approach. Thus, the following sections investigate the concept of comprehension by providing definitions as well as explanation of the terms bottom-up and top-down. The study further includes other sections that shed light on the tests conducted to measure Iraqi EFL learners' comprehension of vocabulary in addition to the scores obtained by learners along with some statistics and discussion.

1.2 Comprehension

Crystal (2003:97) gives a general definition of comprehension by focusing on the ability to interpret language. He (ibid.) defines comprehension as "the ability to understand and interpret spoken and written language; it is opposed to production".

Furthermore, Ranter and Gleason (1993:3) elaborate on the levels of interpretation i.e. (speech perception), (lexical access) and structural processing:

The comprehension process is investigated at many levels, including investigation of how speech signals are interpreted by listeners (speech perception), how the meanings of words are determined (lexical access), how the grammatical structure of sentences is analysed to obtain larger units of meaning and how longer conversations or text are appropriately evaluated. Concerns specifically of how written language is processed are also part of this domain.

To comprehend a specific sentence various sources of information of language units should be combined. Therefore, people should have the ability to recover; the semantic representation of each word in a sentence, the grammatical information that is held among these words, the syntactic information about other items with which they can be combined, and the type of dependencies that can be formed. Lastly, readers or listeners start to relate the representation that results from all these processes to the context of the whole text. That is to

say, the meaning that is allocated to a sentence depends to a great extent on the discourse environment that a given sentence appears in (Hatzidaki, 2007: 16).

In order for successful language processing (comprehension) to take place, hearers sometimes start with the semantic representation of words and go through the above-mentioned stages while other times they do the opposite and start with the context so as to comprehend the meaning. These two approaches will be illustrated in the following section (ibid.).

1.3 Bottom- Up vs Top Down Processing

Broadly speaking, the term bottom-up is associated with several branches of linguistics, to describe “any procedure or model which begins with the smallest functional units in hierarchy and proceeds to combine these into larger units”. Top-down processing, on the other hand, “begins with the analysis of a high-level unit into progressively smaller units. For example, in grammar, models which begin with morphemes or words are ‘bottom-up grammars’; those which begin with sentence, clause, or some discourse unit are top-down grammars” (Crystal, 2003: 58).

According to Wolf and Vellutino (1993:372), it is assumed that bottom-up or stimulus driven model basically rests on the information that the actual printed words contain rather than the linguistic context. It is further assumed that stages of recognition are discrete, non-interactive and hierarchically ordered. Alternatively, with a top-down or a context driven model, it is assumed that higher level contextual information “can directly affect the way lower level stimulus information which is perceived and interpreted”. The linguistic context has a vital role since word recognition is affected by semantic correspondence between the text and the target word.

Treiman (2003: 665) states that theories which focus on bottom-up processing stress how information is obtained by readers from the printed page, claiming that letters and words are dealt with in a comprehensive and systematic way. Such theories also claim that every letter in the last word of the sentence is processed by the reader irrespective of the word’s predictability. With top-down processing, on the other hand, “the uptake of information is guided by an individual’s prior knowledge and expectations”. Theories that stress the role of top-down processing claim that “readers form hypotheses about which words they will encounter and take in only just enough visual information to test their hypotheses”.

Accordingly, certain theories support bottom-up processing while others stress top-down processing. Thus, the difference between these theories can be illustrated in the following example. If a reader encounters the following sentence:

“Daylight savings time ends tomorrow, and so people should remember to change their_____.”

In accordance with the top-down perspective, the reader assumes that the next word in the sentence will be “clocks.” When the reader hears the first letter of the word which is “c”, and since “the hypothesis has been supported”, he will not wait to hear the remaining letters of the word i.e. he will retrieve the word before it is fully articulated. On the contrary, theories that stress the role of bottom-up processing hold all of the letters in the last word of the sentence are processed by the reader whether or not the word is predictable (ibid.: 665-666).

Clifton et al. (2003:523) believe that early language researchers considered “language as an autonomous system”, isolated from other cognitive systems. This is the modular view which was introduced by Chomsky’s work in linguistics (e.g., Chomsky, 1959). According to the modular theory, it is held that an advanced level of knowledge i.e. context does not influence the primary steps of word and sentence comprehension. Rather, information about context and real-world knowledge start functioning after the language module has completed its work. Top-down processing, on the other hand, is accounted for by parallel models which hold that “knowledge about language structure, linguistic context, and the world are processed at the same time in the comprehension of words and sentences”. Moreover, the parallel view is interactive in nature, since diverse sources of information affect each other in different ways so as to arrive at an interpretation of language.

Moskovsky et al. (2014:4) state that earlier studies prefer top-down processing. Since it is believed that “the background knowledge structures (or ‘schemata’) that the reader brings to a text are much more important than linguistic structures in the text” (cited in Tsui & Fullilove, 1998: 434), therefore, top-down processing seems to be favoured by proficient readers. Hildyard and Olson’s (1982) study (cited in Moskovsky et al., 2014:4) shows that skillful listeners depend on top-down processing whereas poor listeners mostly depend on bottom-up processing.

According to Fernandez and Cairns (2010: 183-184), when bottom-up information is inadequate to specify a word or phrase, top-down information can take place to help the

hearer select among the range of possibilities. But top-down information is not needed if bottom-up information is adequate. Field (2003:21) has a different view, he believes that top-down processing is not autonomous from bottom-up processing since higher-level information, i.e. context, can be used to complement and reinforce lower-level processes specifically word and phoneme recognition. In other words, both processes bottom-up and top-down are employed to make sure that all information is processed accurately and rapidly.

The dichotomy of top-down and bottom-up processing can be used to discriminate skillful or poor readers from less skillful or poor ones. According to this view, proficient readers are very sensitive to context and depend on it to understand a specific sentence, while poor readers face a difficulty in guessing the coming words in a sentence (Treiman, 2003: 665).

1. The Test

This section is concerned with the test that is to be administered to third year students. It focuses on the objective behind conducting the test, its format, the participants to whom it is administered as well as the procedures of scoring.

2.1 Test objective

The objective of this study is to find out which processing approach, bottom-up or top down, is more effective in vocabulary comprehension of Iraqi EFL learners. The study also aims to investigate the following hypothesis: proficient readers make use of the top-down approach to understand a specific lexical item, while poor readers depend more on the bottom up approach to figure out the meaning of a given lexical item.

Accordingly, the study involves administering two tests to learners of the third year to find out which approach students use more to understand vocabulary and whether the approach they use depends on their level of proficiency. The reason behind administering the test to learners from the third-year students is that those learners have studied more than half of their courses and they are supposed to have acquired a lot of vocabulary after studying for two years. Accordingly, they are supposed to have developed a high level of proficiency in using the two aforementioned approaches i.e. top-up and bottom-down.

2.2 Tests Format

Two tests are administered to two different groups. The first test is based on Coxhead's (2000) *Academic Word List*. The academic word lists consist of 570 words in English

arranged into nine lists. Each list contains fifty words except for the last one that includes thirty words only. The lists are organized according to words levels of frequency. The first list includes the most frequent words and the last one contains the least frequent words in English. In this study, list No. five is selected since it ranges in frequency between the most and least frequent words and hence, it is appropriate to learners who have studied half of their courses and are in the process of studying the second half. The first twenty-five words are selected from list No. five so that the time of conducting the test will not be long. Participants are given a list of 25 words and they are required to mark each lexical item with a (✓) if they think they know its meaning; with a (?) if they think they are acquainted with the word, but they are not sure what it means; or with a (×) if they do not know the meaning of the word at all. If participants choose the (✓) option, they are instructed to write the meaning of the word. Since the test-takers will provide the meaning of words and they are not presented with any context, this test is believed to measure bottom up abilities of learners to figure out the meaning of words.

The second test is adopted from Laufer and Nation's (1999) *The Academic Vocabulary Size Test (AVST)*. This is a controlled productive test which comprises 18 sentences containing one target lexical item each. The sentence context is provided and participants are asked to write the target word from the cue provided. The arrangement of sentences in (AVST) is based on the frequency level of words with the first 2000 being the most frequent ones in English. Accordingly, (AVST) focuses on the 3000, 5000, the University Word List Level (UWL), and the 10000-word level. In this study the University Word List Level (UWL) is selected since it contains words that vary in frequency between the most and least recurrent words and thus, it is suitable to learners of the third stage.

The validity and reliability of this test is attested by the test designers themselves who conducted a test-retest method to make the test reliable and affirmed that it has construct validity. The test designers affirmed that the test is practical as well since it can be easily conducted due to the fact that it requires a little time to answer its items. The test items can also be easily scored by the test conductor with correct or incorrect. Thus, the test designers Laufer and Nation (1999:44) affirm that "the test is a reliable, valid, and practical measure of vocabulary growth. It is an additional quantitative measure which enables us to research some important issues in vocabulary acquisition".

For each item a meaningful sentence is provided and the first letters of the intended word are presented so that the test-takers will not fill in another item which could give the same meaning in the same context. For example, participants might be asked to recover the word 'episodes' by depending on the context of the following sentence:

“The book covers a series of isolated epis_____ from history.”

Because the test that measures vocabulary ability is productive in nature, the minimal letters that would disambiguate the cue are provided. The test was first given to three native speakers by the test designers themselves Laufer and Nation (1999). In case two letters could start two possible words in the given sentence, an additional letter is added to eliminate the possibility of filling in another word. Given the fact that the test takers are asked to recover the words by depending on the context of the sentence, it is supposed to measure the extent to which learners rely on the top-down approach.

2.3 Participants

The test is administered to two groups of 40 students from the third year at the Department of English Language and Literature, College of Arts, Mustansiriyah University for the academic year 2018-2019. The (AWL) test is administered to 40 students from section (A) while the (AVST) test is administered to another group of 40 students from section (B). Learners from each group are of similar ages, similar educational background since they have studied English, as a foreign language, for eight years in school and the classroom has been their main source of exposure to the language. Learners also have the same level of English language proficiency based on the standards of the department in selecting learners according to an entrance exam.

2.4 Procedures

With the first test (AWL), the results are scored according to the following procedure. A lexical item marked with a (√) and that involves the correct meaning is given a score of 1, while an item marked with a (√) but involves the wrong meaning is given a score of 0.5. Items marked with a (?) are scored as 0.5, and items marked with a (×) are scored as 0. Participants could achieve a maximum score of 25 since the test comprises 25 items only.

With the second test (AVST), the grading is in terms of correct or incorrect. Spelling and grammatical mistakes are ignored so as not to violate the validity of the test by measuring more than one ability. Accordingly, participants can achieve a maximum of 18 scores as the test contains no more than 18 sentences.

3. Results

After shedding light on the test objectives, formats and procedures in the previous section, the researcher focuses, in this section, on the results of the test i.e. the scores obtained, the statistical analysis of the results as well as the discussion of the test scores.

3.1 Test Scores

Below is a table that shows the scores and percentages of both tests administered to two different groups from two different sections. The first column refers to the results of the *Academic Word List* test (AWL) which is used to measure learners' bottom-up abilities. The second column encloses the results of *The Academic Vocabulary Size Test* (AVST) that was conducted to measure learners' top-down abilities. The total scores of the two tests are different since the first test is scored out of 25 whereas the second one is scored out of 18; accordingly, the researcher has to use the following equation $\frac{x \times 25}{18} = ()$ to equalize the mean score or average of the two tests so that this mean score is used to count the standard deviation as will be shown in table (3). The scores obtained after administering the two tests are arranged from the highest to the lowest. Then, the average of each test is calculated and its percentage is given as well.

In addition to the results that Table No. (1) includes, Figure No. (1) shows the distribution of the test scores of the two groups. The grey line displays the test scores of the first test while the black line shows the test scores of the second test.

Table No. (2) contains a summary of the Group Statistics of the two tests which shows the number of participants, the mean score and the standard deviation. Finally, Table No. (3) contains the results of the t-test which is used to show whether the differences between the two tests are significant or not and to test the hypothesis of the study which is summarized as follows: proficient readers make use of the top-down approach to understand a specific lexical item, while poor readers depend more on the bottom up approach to figure out the

meaning of a given lexical item. Accordingly, participants of the second group are supposed to outperform participants of the first group.

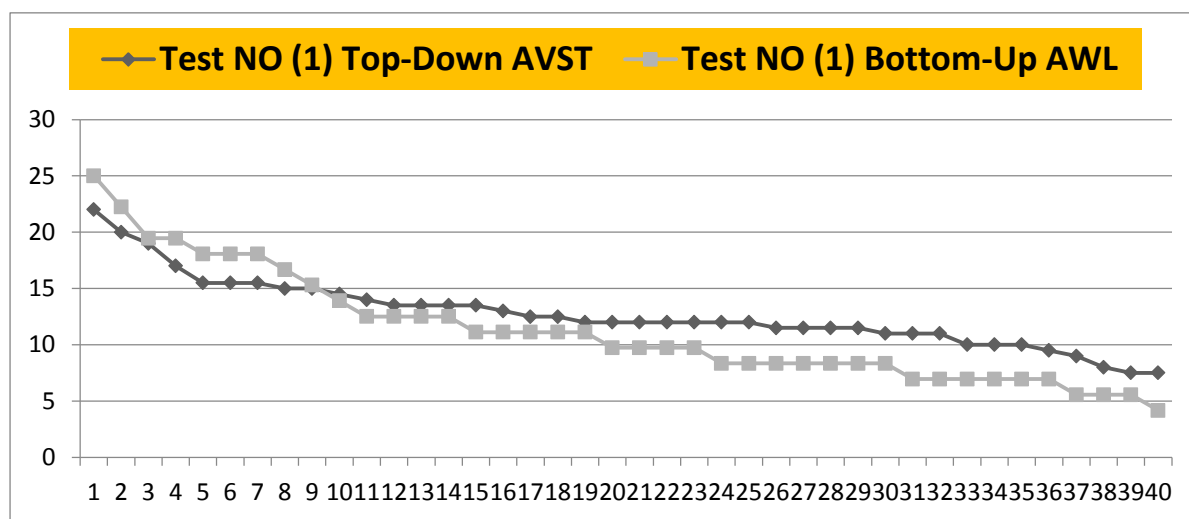


Figure (1) Distribution of Tests Results

Table No. (1) Tests Results

Test No. (1) Bottom- up AWL	Test No. (2) Top -Down AVST	
	Out of 18	Out of 25
22	18	25
20	16	22.22
19	14	19.44
17	14	19.44
15.5	13	18.05
15.5	13	18.05
15.5	13	18.05
15	12	16.66
15	11	15.27
14.5	10	13.88
14	9	12.5
13.5	9	12.5
13.5	9	12.5

13.5		9		12.5	
13.5		8		11.11	
13		8		11.11	
12.5		8		11.11	
12.5		8		11.11	
12		8		11.11	
12		7		9.72	
12		7		9.72	
12		7		9.72	
12		7		9.72	
12		6		8.33	
12		6		8.33	
11.5		6		8.33	
11.5		6		8.33	
11.5		6		8.33	
11.5		6		8.33	
11		6		8.33	
11		5		6.94	
11		5		6.94	
10		5		6.94	
10		5		6.94	
10		5		6.94	
9.5		5		6.94	
9		4		5.55	
8		4		5.55	
7.5		4		5.55	
7.5		3		4.16	
Average out of 25	12.7375	Average out of 18	8.125	Average out of 25	11.2847
Percentage	50.92%	Percentage	45.13%	Percentage	45.13%

Table No. (2) Group Statistics

Test	Groups	N	Mean	Std. Deviation	Coefficient of standard difference %
Test 1	1	40	12,7375	3,11939	24,49%
Test 2	2	40	11,2932	4,98739	44,16%

3.2 Descriptive Statistics

The Academic Word List (AWL) test is administered to third year students section A/ morning classes to measure learners' bottom-up vocabulary comprehension. Learners are given 15 minutes to finish the test. Table No. (1) illustrates the scores that learners obtained. The scores are arranged from the highest to the lowest ones. The maximum score was 22, while the minimum score was 7.5. The average of the scores is 12.73 out of 25 which amounts to the percentage of 50.92%. With this test learners can recognize a specific word that they have already memorized by depending on its phonological form rather than the linguistic context since words are presented in isolation without any surrounding words and this is what the bottom-up processing is about. Accordingly, it is noted that learners' have difficulty in distinguishing among words that share similar letters such as, estate- state, acknowledge- knowledge, trace- trick, abstract- obstacle, ministry- mystery and bond- bind as they depend on the phonological form in word recognition.

The Academic Vocabulary Size Test (AVST) is administered to third year students/ Section B/ morning classes to assess learners' top-down comprehension of vocabulary. Learners are given 15 minutes to finish the test. Table no. 1 above shows the scores that learners have obtained as they are arranged from the highest to the lowest ones. The highest score is 18 while the lowest score is 3. The average of the scores is 8.12 out of 18 which constitutes the percentage of 45.13%. With this test the learners depend on the context and their background knowledge in order to recognize the word in question and this is what the top-down approach is about. For example, the following sentence is given to learners from the second group "I have had my eyes tested and the optician says my vi_____ is good". The learner can guess that the word to be completed is "vision" by depending on the

context of the sentence and the background knowledge i.e. people go to the optician in order to have their eyes tested and to determine whether or not their vision is good enough.

Table (2) shows that the first group (Bottom-Up AWL) is better in vocabulary comprehension than the second group (Top-Down AVST) according to the mean score of the first group which is (12.7375) compared to the mean score of the second group (11.2847). The higher the mean score, the better it is when comparing totals.

Table (2) confirms that the first group (Bottom-Up AWL) is better in vocabulary comprehension than the second group (Top-Down AVST) based on the standard deviation scale, as the value of the standard deviation for the first group is (3,11939) compared to a standard deviation whose value is (4,98739) for the second group. The lower the standard deviation value, the better it is when comparing totals.

It is further concluded from Table No. (2) that the first group (Bottom-Up) is better in vocabulary comprehension than the second group (Top-Down) according to the scale of the standard difference coefficient, as the value of the standard difference coefficient of the first group (24.49%) compared to the deviation coefficient A normative value (44.16%) for the second group. The lower the standard coefficient of difference, the better it is when comparing totals. Thus, the statistical analysis of the test scores reveals that the bottom-up group slightly outperforms the top-down group which in return demonstrates that the first group (Bottom-Up) is better in vocabulary comprehension than the second group (Top-Down).

Table No. (3) T-Test Value

The researcher has tested the hypothesis of the study by making use of the T-test to compare two independent groups by using the SPSS V25 (Statistical Package for the Social Sciences) as is shown in Table No. (3). It is concluded from Table No. (3) that the main hypothesis is rejected with 95% of confidence. The hypothesis is rejected because the calculated T-value (1.553) is not significant since the corresponding potential value is recorded as (0.125) which is more than the level of significance used in the study i.e. (0.05) that represents the upper limit for the permitted error in scientific research. Hence, it is confirmed that there are no significant differences between the two groups of students in both tests (Bottom-Up) and (Top-Down).

3.4 Discussion

Independent Samples Test										
		Levine's Test for Equality of Variances		t-test for Equality of Means						
		F	Sig.	t	d.f	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
									Lower	Upper
TEST	Equal variances assumed	7,595	,007	1,553	78	,125	1,44425	,93012	-,40747	3,29597
	Equal variances not assumed			1,553	65,463	,125	1,44425	,93012	-,41307	3,30157

The comparison of the results of both groups reveals that the values of the bottom-up group are higher than those of top-down group. These differences can be attributed to a number of factors.

The first factor has to do with the nature of L2 language teaching in which explicit vocabulary instruction is considered instrumental in learning. Language teachers stress the importance of explicit and direct vocabulary teaching so as to develop vocabulary knowledge whether receptive or productive. Accordingly, learners depend on their teachers' direct

vocabulary instructions and do not try to develop their vocabulary knowledge by depending on context or by increasing their exposure to L2 outside the classroom.

The second factor is related to the way L2 learners acquire vocabulary which seems to be associated with the bottom- up approach. Jiang's (2000) model describes the lexical acquisition of a second language. According to this model, L2 lexical acquisition is characterized by three separate stages. At the first stage, an L2 lexical entry contains only the phonological and orthographic features of the second language, and L1 syntactic and semantic features of the first language. At the second stage, an L2 lexical entry starts to be linked to an L1 translation equivalent since exposure to L2 increases. Even though an L2 lexical entry is associated with an L1 translation equivalent, it still has the syntactic and semantic features of L1. At the third and last stage, L2 syntactic and semantic features start to replace the L1 syntactic and semantic features in the lexical entries, due to a more increased exposure and experience with L2 (Jiang, 2000:51). The three steps of L2 lexical vocabulary acquisition seem to be analogous with the bottom-up approach. In the bottom-up approach, the first stage is giving the phonological, morphological, and graphemic characteristics of the intended item. Then, an item's explanation or translation is introduced in the L1, followed by instruction targeting related forms.

Even though the bottom-up group slightly outperforms the top-down group, the difference between the results obtained by both groups is slight which means that learners' performance depends to a great extent on top-down approach in comprehending vocabulary. This result has to do with learners' L2 proficiency level since top-down processing is more common among high-proficiency learners as opposed to learners of low proficiency who favour bottom-up processing.

4. Conclusions

Based on the results, the researcher concludes the following:

1. Iraqi EFL learners depend on the bottom -up approach more than the top-down approach in comprehending vocabulary.
2. Depending on the bottom up approach is attributed to the nature of L2 teaching in which explicit vocabulary instruction is considered instrumental in learning.

3. Iraqi EFL learners depend on the bottom -up approach more than the top-down approach due to the way L2 learners acquire vocabulary which seems to be associated with the bottom-up approach.
4. Using a top-down vocabulary approach is related to the learners' level of proficiency. The more proficient a learner is the more he depends on the context to understand meaning.

5. Recommendations

In light of the obtained results, the following recommendations are put forward:

1. Iraqi EFL learners need an intensive and adequate training in top-down processing and bottom up processing to develop their comprehension skills so as to have a successful learning of a second language.
2. Teachers should not only focus on direct vocabulary instructions but they should try to focus their attention on developing learners' abilities to figure out the meaning of words form context and motivating learners to increase their exposure of L2.

References

Clifton, C, Jr., Meyer, A. S., Wurm, L., H. and Treiman, R. (2003) '*Language Comprehension and Production*' in Weiner, I. B. *Handbook of Psychology*. John Wiley & Sons, Inc. pp 523-540.

<https://psihologiapentrutoti.files.wordpress.com/2011/08/handbook-of-psychology-vol-04-experimental-psychology.pdf>

Coxhead, A. (2000). A new academic word list. *TESOL Quarterly*, 34, 213–238.

<http://www.englishvocabularyexercises.com/academic-word-list/#>

Crystal, D. (2008) *A Dictionary of Linguistics & Phonetics*. 6th edition. Oxford: Blackwell.

Fernandez, E., M., and Cairns, H., S., (2010) *Fundamentals of Psycholinguistics*. Oxford: Wiley-Blackwell.

Field, G. (2003) *Psycholinguistics: A Resource Book for Students*. London and New York: Routledge.

Hatzidaki, A. (2007) '*The Process of Comprehension from a Psycholinguistic Approach – Implications for Translation*' *Traductologie: une science cognitive* Volume 52, Number 1, mars 2007.

<https://www.erudit.org/en/journals/meta/2007-v52-n1-meta1613/014715ar/>

Jiang, N. (2000). Lexical representation and development in a second language. *Applied Linguistics*, 21, 47-77.

https://www.researchgate.net/publication/267683095_Lexical_Representation_and_Development_in_a_Second_Language

Laufer, B., & Nation, P. (1999). A vocabulary-size test of controlled productive ability. *Language Testing*, 16, 33 –51.

<https://www.victoria.ac.nz/lals/about/staff/publications/paul-nation/1999-Laufer-Productive-levels.pdf>

Moskovsky, C. Jiang, G. Libert, A. AND Fagan, S. (2014) '*Bottom-Up or Top-Down: English as a Foreign Language Vocabulary Instruction for Chinese University Students*'. *TESOL QUARTERLY* Vol. 49, issue 2 TESOL International Association.

https://www.researchgate.net/publication/264781280_Bottom-Up_or_Top-Down_English_as_a_Foreign_Language_Vocabulary_Instruction_for_Chinese_University_Students/download

Ranter, N. & Gleason (1993) “An Introduction to Psycholinguistics: What Do Language Users Know?” In Gleason, G. & Ranter, N. (1993) *Psycholinguistics*. Fort Worth: Harcourt Brace College Publishers p.p. 2-40.

Treiman, R. (2003) ‘Linguistics and Reading’ in Aronoff, M. and Rees-Miller, J. *The Handbook of Linguistics*. Oxford and Malden: Blackwell Publishers.

Wolf, M. and Vellutino, F. (1993) “A Psycholinguistic Account of Reading” in Gleason, G. & Ranter, N. *Psycholinguistics*. Fort Worth: Harcourt Brace College Publishers. Pp. 352-382.

Appendices

Appendix I

Test 1: Academic Word List

1. Please put a (√) after each word if you know its meaning. Then write its translation in Arabic.
2. Please put a (?) after each word, if you are not sure what it means.
3. Please put a (×) after each word, if you do not know the word.
 1. Abstract
 2. Attach
 3. Cooperate
 4. Enhance
 5. Fee
 6. Incidence
 7. Instruct
 8. Ministry
 9. Presume
 10. Tape
 11. Accurate
 12. Author
 13. Discriminate

14. Estate
15. Flexible
16. Incorporate
17. Intelligence
18. Motive
19. Rational
20. Trace
21. Acknowledge
22. Bond
23. Display
24. Exceed
25. Furthermore

(Coxhead, 2000)

Appendix II

Test No. Two

Complete the underlined words. The example has been done for you

He was riding a bicycle.

1. I have had my eyes tested and the optician says my vi_____ is good.
2. The anom_____ of his position is that he is the chairman of the committee but is not allowed to vote.
3. In their geography class, the children are doing a special pro_____ on north America.
4. In a free country, people can apply for a job. They should not be discriminated against on the basis of colour, age, or s_____.
5. A true dem_____ should ensure equal rights and opportunities for all citizens.
6. The drug was introduced after medical res_____ indisputably proved its effectiveness.
7. These courses should be taken in seq_____ not simultaneously.
8. Despite the physical condition, his int_____ was unaffected.
9. Governments often cut budgets in times of financial cri_____.
10. The job offer sounded interesting at first. But when he realized what it would involve, his excitement suds_____ gradually.
11. Research ind_____ that men find it easier to give up smoking than women.
12. In a lecture, most of the talking is done by the lecturer. In a seminar student are expected to part_____ in the discussion.
13. The airport is far away. If you want to ens_____ that you catch your plane, you have to leave early.

14. It's difficult to ass _____ a person's true knowledge by one or two tests.
15. The new manager's job was to res _____ the company to its former profitability.
16. Even though the student didn't do well on the midterm exam, he got the highest mark on the fi _____.
17. His decision to leave home was not well thought out. It was not based on rat _____ considerations.
18. The challenging job required a young, successful and dyn _____ candidate.

(Laufer & Nation, 1999; 50)