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Study of the Effect of Task Types on the Incidental L2 Lexical Acquisition

Jia Chen

**Foreign Language Department
Beijing Institute of Petrolchemical Technology
Beijing, China**

&

Chao Wang

**Foreign Language Department
Beijing Institute of Petrolchemical Technology
Beijing, No.19, Qingyuan North Road, Daxing District, Beijing, P.R. China.
Tel: 1-343-650-2487. E-mail: wangchao@bipt.edu.cn**

Abstract

There is a rising interest and emphasis for the lexical acquisition in the field of L2 teaching and training. It is often assumed that a certain part of one's second language vocabulary is acquired incidentally. This study is intended to explore the effect of task types on the incidental vocabulary acquisition.

This research employed the theory of involvement load hypothesis and the depth of processing theory. Ninety Chinese intermediate EFL learners at Beijing Institute of Petrol-chemical Technology (BIPT) in China participate in this study. All participants are non-English majors with an English proficiency of level B (the intermediate level based on the Entrance Level Test hosted by BIPT). The whole experiment is divided into three stages: treatment, immediate test and delayed test. Twenty students in other classes, who are not going to participate in the experiment, are required to underline any words in the passage that they do not know. Ten target words are selected from the passage. And then the participants were required to perform three different output tasks after reading the article. After experimental treatment, all participants accepted two unannounced tests. The instant test is conducted immediately after participants complete the required tasks. The delayed test is conducted one week after their completion of the tasks. The data collected through the vocabulary post-tests were analyzed after the empirical experiment.

The result of this study is in accordance with findings of previous researches and reveals some new findings. This empirical study reveals that written reconstruction output task plays an important role in promoting L2 incidental vocabulary acquisition. The research result shows that different types of tasks have different effect on the incidental vocabulary acquisition under the same involvement load and the deeper learners processed the reading materials, the better they performed in the incidental vocabulary acquisition. There still exist some questions to be settled. The task types discussed in this essay are not comprehensive. And the quantity of sampling is not large enough. That's the limitation. Second language teachers should choose proper reading materials and secure the involvement load of reading tasks. The other suggestions for the future study are presented in the main body.

Keywords: task types, incidental vocabulary acquisition, involvement load hypothesis, depth of processing theory

1. Introduction

1.1 Research background

1.1.1 The role of incidental vocabulary acquisition in the second language acquisition

People used to attach more importance to grammar than vocabulary. However, the position of vocabulary acquisition has become increasingly critical in learners' viewpoint. The fact that the amount of vocabulary decides learners' proficiency in the target language has been admitted by more and more people.

The notion of incidental vocabulary acquisition was presented by Nagy, Herman and Anderson. Moreover, many scholars have proved that vocabulary can be acquired incidentally through reading and other input. The research of incidental vocabulary acquisition has been fully studied abroad. While in China, it is just beginning to come up and most of them focus on the accomplishments abroad.

1.1.2 The role of the depth of processing theory and the involvement load hypothesis in the second language acquisition researches

The depth of processing theory was put forward by Craik and Lockhart, providing a standard to measure the acquisition of vocabulary. The theory has contributed a lot to the exploration of the relationship between acquiring and remembering. Experts suggested that it is the depth of processing instead of the length of time that causes the memory differences. The depth of processing is usually divided into three levels: phonological forms, orthographic forms and meanings of new words. Deeper processing may lead to longer memory of new information. The theory reveals that when a word is processed in terms of appearance, the level of processing is shallow; when it is processed in terms of pronunciation, the level of processing is deeper; when it is processed in terms of meaning, the level of processing is the deepest.

Although the depth of processing theory provides a relevant useful standard for measuring degree of processing, it does not supply a method for us to grasp the exact extent that one level is deeper than another (Laufer and Hulstijn, 2001). Therefore, Hulstijn put forward the involvement load hypothesis which provided a clearer measure for the degree of processing.

Involvement is the quantification of learners' effort in the process of learning new words. The hypothesis includes three factors: need, search and evaluation. There exist occasions in which these three factors present the same time while sometimes one or two of them may be absent. The total amount of the three factors is involvement load.

1.2 Research significance and purpose

The effect of output tasks on vocabulary acquisition has been studied by many researchers. However, the emphases that they attach importance to are limited. For example, some of them just studied the differences between input and output tasks or the differences between written and oral output tasks. Only a few of them focused on the disparities between diverse output tasks. Moreover, few researches cast light on the learning of incidental vocabulary acquisition with different output tasks.

This study will continue to explore the effect of diverse output tasks on lexical learning and put emphasis on incidental vocabulary acquisition based on the experience offered by former researches.

The present study can be a strong support for proven former studies and a supplement to the research of the effect of task types on vocabulary learning. The conclusion of this study may be helpful for second language learners to acquire unfamiliar vocabulary in an effective way. At the same time, the research result can also help teachers to employ an efficient method to teach students.

2. Theoretical foundation and literature review

In the second language acquisition area, many researchers hold the opinion that L2 learners' vocabulary is mostly acquired without deliberate concentration (Bao Gui 2016 : 56-65). Incidental acquisition is different from the intentional learning (Laufer & Hulstijn 2001 : 539-558). IVA is engaged in the case when learners get vocabulary unintentionally and focus on learning other abilities or needed fruits out of their inner motivation in reading, watching, or listening.

Nation (1990) suggests that it is necessary to make a distinction between intentional and incidental vocabulary learning. He points out that learners involved in the intentional vocabulary learning usually pay attention to the vocabulary instead of the whole context or exercise, and they often memorize a large amount of words on purpose. However, in incidental vocabulary learning, the learners pay their attention to some other factors, and usually the information will be better accepted when it is delivered by a speaker or a writer (Nation 1990). Also, Laufer & Hulstijn (2001) add that IVA should be closely interrelated with intentional vocabulary acquisition.

2.1 Incidental and intentional vocabulary acquisition

Teachers usually teach students to learn vocabulary by giving them a list of words or a context. The method which only involves words and their meanings is intentional learning. While when students acquire vocabulary through reading passages or watching videos, they are acquiring vocabulary incidentally.

The intentional vocabulary acquisition is learning words directly by remembering the vocabulary list. Learners usually combine meanings of words and their formations consciously through specific methods. Incidental vocabulary acquisition is opposite to intentional vocabulary acquisition.

2.2 The depth of processing theory

The depth of processing theory which was put forward by Craik and Lockhart in 1972 has made a breakthrough in finding the rule of memory in learning. It is suggested that it is the depth of processing that affects the effects of vocabulary retention, instead of the length of time. The deeper learners process the learning materials, the deeper impression of information they will have. The depth of processing divided into shallow, deep and deepest three levels, which respectively match appearance, sound and meaning aspect.

2.3 Task-induced involvement load hypothesis

In order to provide an observable tool to measure the “the depth of processing”, Hulstijn and Laufer proposed the involvement load hypothesis. Many researchers, both at home and abroad, have conducted a large range of studies to explore the incidental vocabulary learning.

Recently, Involvement Load Hypothesis of Laufer & Hulstijn was implemented by another method which was used by a large number of previous studies. The present study not only focused on the result of acquiring, but also paid attention to learners’ behavior in task-induced reading process. (Jiehui Li 2014:1385-1394)

The hypothesis quantified learners’ efforts for acquiring knowledge as involvement load, so that researchers can reveal the effects of different reading tasks on vocabulary acquisition by experiments (Laufer & Nation 1999:33-51). The hypothesis suggest that, the tasks with higher involvement load have better effects on improving vocabulary acquisition (Karim Jahangiri & Iraj Abilipour 2014 : 704-712). The higher the involvement load in the process of implementing tasks is, the better the effect of the initial vocabulary acquisition will be. While that advantage is not evident in the delayed lexical test.

Although scholars both at home and abroad all pay close attention to incidental acquisition and did a large number of researches with actual evidences, there is still little touch on the effect of different task-types on incidental acquisition with the same involvement load. Wu Xudong’s study shows that learners’ online learning behaviors are connected more closely to the types of tasks, not the involvement load. Moreover, the involvement load has no prominent influence on initial learning and memory keeping (Wu Xudong 2010 : 109-116). This research is rightly the stretch of the study on the effect of different task-types on incidental acquisition with the same involvement load based on the Processing Depth Theory and Involvement Load Hypothesis. Are the effects of the same involvement load on incidental acquisition with different task types the same? What are those effects respectively?

As the depth of processing theory is failed to provide a specific standard of memory degree, many researchers have question about it and put forward some better methods, such as the theory of involvement load hypothesis.

The hypothesis consists of three factors: need, search and evaluation. When a word is required to be known to finish the reading, then the reader has need on that word. Need is an emotional factor which depends on the learners’ motivation, not cognition. If the context is hard to understand and there is external stimulation on learners, then this kind of need is moderate. When the learners are able to understand the message that the article expresses but they have internal desire to acquire certain word, this kind of need is called strong need. Search and evaluation depend on the learners’ cognition. When the learners run into a word they are unfamiliar with and look up a dictionary or ask somebody else for help to acquire its meaning, search occurs. Evaluation refers to the learners compare several different meanings of a word or compare different words to evaluate whether a word is properly used.

There are also two types of evaluation. When the learners are required to recognize the differences among the words or the differences among several meanings of one word, the moderate evaluation occurs; when the learners have to grasp the usage of certain words to make sentences or write articles using the given words, the strong evaluation occurs.

In conclusion, the involvement load hypothesis quantifies the vocabulary acquisition which is determined by the degree of need, search and evaluation.

3. Methodology

On the ground of Noticing Hypothesis and the involvement load hypothesis, the present study is to further explore and testify the effects of task types on IVA.

3.1 Research questions

First, whether different task types with the same amount of involvement load play an equal role in the immediate and delayed acquisition of vocabulary?

Second, how do different task types influence the immediate and delayed acquisition of vocabulary?

3.2 Participants

Ninety Chinese intermediate EFL learners at Beijing Institute of Petrol-chemical Technology (BIPT) in China participate in this study. All participants are non-English majors with an English proficiency of level B (the intermediate level based on the Entrance Level Test hosted by BIPT). The age range of the students is between 18 and 20.

Two intact classes of second-year students (56 + 52) are selected for the experiment, respectively majoring in mechanical engineering and chemical engineering. Students in each class are randomly divided into three experimental groups. Each group is supposed to read the same selected passage and finish its specific task.

3.3 Instruments

3.3.1 Reading passage

Hu and Nation (2000) suggest that only when learners have an adequate comprehension of a text (containing 98% known vocabulary) is the incidental vocabulary acquisition likely to happen. The passage used in the present study includes 96% of words, which is assumed to be familiar to learners (confirmed by a trial test). This density was regarded as being at an appropriate level to make incidental vocabulary learning possible. The theme of this passage is How Hero Saved His Family from Killer Wave, which appeals to the college students in China. Therefore, in terms of the difficulty (containing 96% known vocabulary, a favorable theme) and length (512 words), participants are able to have an adequate comprehension of the selected reading material.

3.3.2. Target words

Twenty students in other classes, who are not going to participate in the experiment, are required to underline any words in the passage that they do not know. Ten target words are selected from the passage, including four nouns, two adjectives and four verbs. A pilot test is conducted among another twenty students of a similar English proficiency to make sure that students are not familiar with the selected target words. These words are: tsunami, hysterical, heroism, panic, religious, mode, recede, strap, survivor, tense.

3.3.3. Reading tasks

The present research investigated three different tasks with the same amount of involvement loads, but containing different factors. They are designed based on Hulstijn and Laufer's experimental framework (2001). Each task is described in the following details.

Task 1: Reading comprehension with True or False questions

Participants are supposed to read the selected passage (the Chinese meaning of the target words are not offered) and to finish ten true/false questions according to the information in the passage. For example,

When the tsunami struck, I tied my family to trees. (True/False)

Participants are allowed to use dictionary. In terms of the involvement load, due to the fact that the knowledge of target words is essential to understand the passage and the true/false statement, Task 1 induces strong need, moderate search but no evaluation. Its involvement index is $(2 + 1 + 0)$.

Task 2: Reading comprehension with multiple choices of the meaning of target words

Participants assigned to Task 2 are supposed to read the same passage (the Chinese meaning of the target words are not offered) and are required to choose among four choices the right Chinese meaning of the target word. For example,

When the tsunami struck, I tied my family to trees. ()

a. 暴风雨 b. 海啸 c. 洪水 d. 龙卷风

In terms of involvement load, participants are required to make clear the Chinese meaning of the target word by either consulting the dictionary or inferring through context, and decide which choice is the correct one. Therefore task 2 induces moderate need, moderate search, and moderate evaluation. Its involvement index is $(1 + 1 + 1)$.

Task 3: Reading comprehension with forming new sentences with the target words Participants assigned to Task 3 are also arranged to read the same passage (the Chinese meaning of the target words are offered) and are required to write original sentences using the ten target words. For example,

When the tsunami struck, I tied my family to trees.

Your own sentence: _____.

Similar to Task 2, need in Task 3 is moderate because it is imposed by the task and search is absent because the Chinese meaning is provided. Evaluation is strong because participants have to use the new words with previously known words in order to create original sentences. Thus, Task 3 induces moderate need, absent search, and strong evaluation. Its involvement index is $3 (1+0+2)$.

3.3.4. Testing and scoring

Two unannounced tests are conducted to evaluate the initial learning and retention of the target words among all the participants in different groups, under the condition that participants do not know when they are doing their respective tasks.

The instant test is conducted immediately after participants complete the required tasks. The delayed test is conducted one week after their completion of the tasks.

In both tests, participants are required to give the Chinese translation or English explanation to evaluate their learning and retention of the target words.

The scoring standard is adopted from Hulstijn and Laufer (2001), in which not translated or wrongly translated words got zero, a correct response received 1 point and approximately correct response obtained half a point.

3.3.5. Data collection and analysis

Participants read the selected passage and finished their respective tasks on the same day in their normal reading classes to make sure that the reading passage is fresh and the immediate vocabulary test is credible. The delayed vocabulary test was also conducted on the same day one week later.

Participants were divided into three groups in each class. Each group was given the same worksheet with one reading passage and one specific reading task. The time on task was not controlled, which means participants are allowed as much time as they like to complete the task, because the focus of the experiment is to investigate the involvement load instead of the quality and efficiency of reading. Once tasks are completed, the worksheets are gathered. Afterwards, participants were arranged to complete an immediate unannounced vocabulary test. A week later, the same unannounced test was conducted again. Both tests were scored by one experienced teacher according to the scoring standard mentioned above.

4. Results and discussion

This section is mainly devoted to the analysis about current status of students' incidental vocabulary acquisition and the effect of reading tasks on word retention.

In order to compare the effects of three tasks on word retention, the results of the immediate and delayed test of the three groups had been compared. The results are shown in the following tables.

4.1 Descriptive statistics of three task types in the immediate and delayed Tests

At first, we analyzed the variance of the instant test as follows:

	N	Mean value	Standard deviation	Standard error	95% confidence intervals for mean values		Variance between components
					Lower limit	Upper limit	
1.0	30	8.403	1.3085	.2389	7.915	8.892	
2.0	30	8.667	1.3218	.2413	8.173	9.160	
3.0	30	8.883	1.1721	.2140	8.446	9.321	
Total amount	90	8.651	1.2703	.1339	8.385	8.917	
model	Fixed effect		1.2693	.1338	8.385	8.917	
	Random effect			.1388	8.054	9.248	.0041

This data shows that the average score of the first group is 8.403, that of the second group is 8.667, that of the third group is 8.883, and their variances are around 1.2. It proves that the levels of those students are similar.

Single factor variance analysis

Instant test

			Square sum	df	Mean square	F	significance
Between groups	(combination)		3.467	2	1.733	1.076	.345
	Linear	contrast	3.456	1	3.456	2.145	.147
	term	deviation	.011	1	.011	.007	.935
In groups			140.158	87	1.611		
Total amount			143.625	89			

According to the depth of processing theory, the depth of processing involved in the three types of tasks is of great difference. From result of immediate test, we can find out that the effect of task 3 based on reading on the incidental vocabulary acquisition is better than task 1 and task 2.

But they have no evident difference in statistics.

The delayed test is conducted one week after their completion of the tasks.

		N	Mean value	Standard deviation	Standard error	95% confidence intervals for mean value		Variance between components
						Lower limit	Upper limit	
1		30	6.43	2.079	.380	5.66	7.21	
2		30	6.33	1.900	.347	5.62	7.04	
3		30	8.33	1.422	.260	7.80	8.86	
Total amount		90	7.03	2.025	.213	6.61	7.46	
model	Fixed effect			1.822	.192	6.65	7.41	
	Random effect				.651	4.23	9.83	1.159

In terms of performance, the overall level of the first two groups' shows a downward trend, whose scores are of only 6 points and the decrease is especially obvious. The decline of the level of the third group of students is not obvious and the standard deviation of the first group indicates that the students' level is differentiated.

Single factor variance analysis

Delayed test

			Square sum	df	Mean square	F	significance
Between groups	(combination)		76.200	2	38.100	11.481	.000
	Linear	contrast	54.150	1	54.150	16.318	.000
	term	deviation	22.050	1	22.050	6.645	.012
In groups			288.700	87	3.318		
Total amount			364.900	89			

Multiple comparisons

Dependent variables: delayed test

LSD

(I) group	(J) group	Mean difference (I-J)	Standard error	significance	95% confidence intervals	
					Lower limit	Upper limit
1	2	.100	.470	.832	-.83	1.03
	3	-1.900*	.470	.000	-2.83	-.97
2	1	-.100	.470	.832	-1.03	.83
	3	-2.000*	.470	.000	-2.93	-1.07
3	1	1.900*	.470	.000	.97	2.83
	2	2.000*	.470	.000	1.07	2.93

* the significant level of mean difference is 0.05.

The result of comparing group 2 and group 3 shows that there is a great difference between the learning effect of group 2 and group 3. The difference between group 1 and group 3 is also prominent. However, the results of group 1 and group 2 have no big distinction. Therefore, it can be seen that the effect of task 1 and task 2 is similar.

In the delayed test, the differences among the three types of tasks became evident. Furthermore, the effect of task 3 based on reading on the incidental vocabulary acquisition is much better than task 1 and task 2.

4.2 The effect of three task types on the incidental vocabulary acquisition (IVA)

As the tables shown, the results of the three groups are all representing high rate of acquisition, which suggests that the reading tasks do contribute to the incidental vocabulary acquisition, but different tasks have different effect on vocabulary acquisition. Due to the fact that the students of three groups were required to do different tasks, the results of their instant test are different and the difference became more evident in the delayed test. The tasks attracted students' attention to the target words so that students incidentally acquired those target words through deep processing. According to the involvement load hypothesis, when the learners have to grasp the usage of certain words to make sentences or write articles by using the given words, the strong evaluation occurs. The strong evaluation represents deep processing. It means that reading comprehension with forming new sentences with the target words involved deeper processing than the other two tasks. Therefore, task 3 has the best effect on the vocabulary acquisition.

4.3 The relationship between the word learning and factors in Task-induced Involvement Load

Involvement Load consists of three factors: need, search and evaluation. When a word is required to be known to finish the reading, then the reader has need on that word. Search occurs when learners run into unfamiliar words or need to find certain L2 words to accomplish an essay through asking help from others or looking up words in the dictionary. Evaluation involves distinguishing meanings of several words and deciding which word should be utilized. Tasks with high involvement load hypothesis do benefit the incidental vocabulary acquisition. The higher the involvement load the tasks induced, the better the effect of word learning is. Moreover, the impact of evaluation is deeper than search and search is deeper than need because of the depth of processing that the factor involved. It means that the factor in task-induced involvement load of deeper processing has better effect on vocabulary acquisition. Therefore, the effect of tasks involved evaluation on incidental acquisition is the best, especially the tasks with strong evaluation.

5. Conclusion

5.1 Summary of the thesis

The research shows that the incidental vocabulary acquisition does exist in the process of second language acquisition. Moreover, enhancing the effect of incidental vocabulary acquisition during the process of reading second language materials can effectively enlarge students' vocabulary. Incidental vocabulary acquisition can also be influenced by some disadvantages, teachers should employ multiple methods to help students to get through the effect of those disadvantages and cultivate their ability of incidental vocabulary acquisition during the process of reading with tasks of deep processing and high involvement load.

5.2 Major findings and pedagogical implications

Different types of output tasks all have positive effect on the incidental vocabulary acquisition. However, there exist differences among tasks which involved high level of depth of processing under the same involvement load, especially in the aspect of word retention. Reading comprehension with forming new sentences with the target words is beneficial for learners to quickly understand and completely acquire the input information. Moreover, there will be a medium language formed in the learner's brain and that medium language will be involved in the output procedure of the later vocabulary test. According to the depth of processing theory, the effect of word retention is closely related to the depth of processing that learners attribute to the reading materials. The deeper the degree of processing is, the better the effect of word retention will be.

5.3 Limitations and suggestions for the future study

There still exist some questions to be settled. The task types discussed in this essay are not comprehensive. And the quantity of sampling is not large enough. That's the limitation. Therefore, as for second language teachers, they should attach more attention to the learning of high frequency vocabulary and help students to build a network of vocabulary semantics; as for researchers, they can employ more task types of reading to study more details of the effect of different task types on IVA. Moreover, they can also do a exclusive research on written output tasks. Last but not least, the future study should utilize the highly developed big data technology to gather more sampling.

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