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Azizollah Dabaghi, Marzieh Rafiee
University of Isfahan, Iran
Dabaghi@fgn.ui.ac.ir

Incidental Vocabulary Learning and the Development of Receptive and Productive Vocabulary: How Gloss Types Work

Evidences exist that language learners can benefit from the incidental process of language learning in different ways. The present study tries to investigate the effects of incidental vocabulary learning in the form of different gloss types (L1 and L2) through the application of State Rating Tasks, which show the change of state of vocabulary knowledge in learners. Also this study attempts to shed more light on the relationship between the incidental vocabulary learning through the form of gloss types and development of Receptive and Productive vocabulary knowledge among learners. The participants were presented a list of twenty L1 and L2 glosses and they were required to read the passage by the use of these glosses. One version of State Rating Tasks was administered among participants in two data times, one before and one after the treatment, to show the change of state in participants' knowledge. The findings show that incidental learning of vocabulary by the application of gloss types increases participants' knowledge states from lower states to higher, but regarding the type of glosses, this change varies. The analysis of SRT shows that participants received L1 gloss type outperformed the other group with respect to the Productive vocabulary knowledge, while L2 gloss type was more beneficial for increasing Receptive vocabulary knowledge.

Introduction

One of the main sources of second language vocabulary acquisition is the exposure to L2 input (Laufer, 2001). This claim would lead us to distinguish between two approaches to L2 vocabulary learning and instruction; incidental and intentional. Hulstijn (2003) differentiates between these two types by defining incidental vocabulary learning as "picking up" the lexicon of a language, by involving in a variety of language activities, particularly reading and listening activities, which help learners to focus on meaning instead of focusing on form. In short, this approach can be regarded as the "by–product" of other activities (Laufer and Hulstijn, 2001). As the name suggests, intentional voca-

bulary acquisition is defined as the act of deliberately engaging in memorizing L2 lexicons, by spending some specific times on this process.

In his comprehensive study, Hulstijn (2001) describes two under–related meanings of incidental vocabulary learning; methodological and educational. The first one, which is actually related to the experimental research design, involves asking learners to perform the activity without being told they would be tested on those materials in advance. Educational meaning of incidental vocabulary learning integrates the meaning of by–product of other learning activities which was mentioned before in incidental vocabulary learning definition.

Drawing on this theoretical framework the present study attempts to fill the existing gap in complete understanding the effect of incidental vocabulary learning in the form of different gloss types (L1 and L2) through the application of State Rating Tasks. The study also thrives to increase awareness of the relationship between the incidental vocabulary learning through the form of gloss types and development of Receptive and Productive vocabulary knowledge among learners.

Background

Incidental vocabulary learning provided fuel for a vast majority of research in L2 lexicon field of study. Those areas which form the focus of research in this respect include examining the role played by incidental vocabulary instruction during reading comprehension activities (Paribakht and Wesche, 1997; Hunt and Beglar, 1998; Huckin and Coady, 1999; and more recently, Kim, 2006; Pulido, 2007, Pellicer–Sánchez & Schmitt, 2010, to name just a few), which appears to be one of the earliest sources of research in incidental vocabulary literature. In addition, incidental vocabulary learning research manifested itself in the investigation of the role of modified input and output in the incidental process of word meaning (Ellis & He, 1999), measuring the frequency of exposure to new vocabularies and its influence on incidental vocabulary learning (Rott, 1999), incidental vocabulary learning through listening comparing to reading (Vidal, 2011), L2 vocabulary acquisition through negotiated interaction (Luan & Sappathy, 2011) and last but not least, the relationship between dictionary use and glossing and incidental vocabulary learning (Hulstijn, Hollander, & Greidanus, 1996; Roby, 1999; Yoshii, 2006; Lin & Huang, 2008).

What can be added to the whole hosts of incidental vocabulary learning research is to differentiate between the notions of Receptive and Productive vocabularies in assessing learners' lexicon knowledge (Waring, 2000) by two forms of gloss during the incidental process of vocabulary learning. To make the distinctions clear, Waring (2000, p. 2) discusses four different ways to more clearly defining these two notions; "Receptive and Productive vocabulary processes", "Receptive and Productive vocabulary skills", "Receptive and Productive vocabulary product", and "Receptive and Productive vocabulary abilities".

"Receptive and Productive vocabulary processes" refer to the "subconscious mental process" during the process of "recognition, recall, retrieval, comprehension, and production" of each word. While "Receptive and Productive vocabulary skills" is related to the prevailing assumptions of regarding reading and listening as Receptive skills and speaking and writing as Productive ones during the process of foreign language learning, "Receptive and Productive vocabulary product" indicates the size of knowledge of both Receptive and Productive vocabulary in the mind in language learning tasks. The last notion is "Receptive and Productive vocabulary abilities" which means the ability to control one's reception of the input and production of the output.

Taking the notions of Receptive and Productive vocabulary assessment into consideration, it seems to be necessary to conduct a research to gain insight into the effects of incidental vocabulary learning via L1 and L2 glosses on the growth of words' knowledge among the learners on the one hand, and to investigate the differences between the types of glosses on the other hand. This study also attempts to examine the contribution of gloss types on the development of Receptive and Productive vocabulary in learners' minds.

The research questions guiding this investigation are as follows:

1. Does Incidental vocabulary learning via gloss types improve the growth in the knowledge of words in mind by the application of State Rating Task?
2. If the answer is yes, to what extent the types of glosses, L1 or L2, have contributions to this difference?
3. Is there any relationship between the incidental vocabulary learning through the form of gloss types and development of Receptive and Productive vocabulary knowledge among learners?

Based on the above research questions, this study attempts to test the following hypothesis:

H0: Incidental vocabulary learning via gloss types does not improve the growth in the knowledge of words in mind by the application of State Rating Task.

H0: There is a relationship between L1 gloss types and growth of vocabulary.

H0: There is no relationship between the gloss types and the development of Receptive and Productive vocabulary.

Method

Participants

The population from which the participants have been selected for this study included Iranian EFL learners whose first language was Persian and had not yet been to an English country. A total number of 64 male/female EFL learners whose age ranges between 18–25 took Nation's Level test vocabulary

knowledge at 3000, 5000, 10000. They were also asked to fill out a bio–data questionnaire about their background and the amount of time they generally spend on working with L2 vocabulary learning. This was to make sure that none of them had been to English speaking countries before and also were not working on L2 vocabularies more than the rest of the participants. After examining the scores on the Nation's Level Test vocabulary knowledge and taking into account the answers given to the questionnaire, a total number of 59 students were selected to participate in this study. The following table shows the descriptive statistics of this sample of participants:

Table 1: Descriptive Statistics of participants
Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation
Leveltest	59	40.00	54.00	48.7627	3.15867
Valid N (listwise)	59				

Instruments

In this study, the following materials were applied:

a) Tests and tasks

Nation's Level test vocabulary knowledge at 3000, 5000, 10000 was used in order to examine the participants' receptive and productive knowledge. In addition to this test, a version of State Rating Task (Waring, 2000) was given to the participants which was applied in two phases of the study; once used for the purposes of pretest administered two weeks before first session of the treatment and as the posttest administered immediately after each session of the treatment.

Unlike traditional methods of testing vocabulary knowledge, whose main concerns were reporting how vocabulary grows, this multi–state model of vocabulary testing were used which are concerned with how lexicons change through different cognitive states (Waring, 2000).

Waring (2000, p. 4) believes that State Rating Tasks (SRT) "attempts to resolve the issue of rating words in relation to other ratings by presenting the rubric in such a way that subject should make independent judgments of her Understanding and Use vocabulary". Five rubrics, A, B, C, D and E, each indicating different states of vocabulary knowledge, besides a list of words, which were selected from the passage "Twenty Thousands Leagues under the Sea" as the target words, were presented to participants. They were asked to rate their own knowledge of words by the use of different rubrics. Participants must first decide whether they know the word or not, rubric E. If they think they know the word but do not know how to use it and if they think they know the word and know how to use it they must select rubrics D and C

respectively. If participants are sure they understand the word but they do not know how to use it the rubric B should be used and finally if they have complete knowledge of vocabulary and its usage they must select rubric A. The rationale behind selecting this model is two–faceted; as it was stated by Waring (2000), this model help participants to have an independent judgment of their understanding and use vocabulary. Secondly, it provides a perception of participants own knowledge of words by simply showing a distinction between different states of knowing and not knowing.

b) Text Selection

Before delving further into the process of text selection it is necessary to mention that university course book, from which the passage Twenty Thousands Leagues under the Sea, written by Jules Verne was selected as the baseline text, contains different passages in different subjects. The passages chosen from various sources, e.g. internet, magazines, newspaper articles, novels, etc. were revised by the author of the book to get more simplified passages which would be relevant to the proficiency level of undergraduate students. University students, even those majoring in English, have the habit of using guide books including the translation of passages and key answers to the questions. The text proposed to be used for this present study, was intentionally picked from those parts which were not dealt with in guide books. This confirms that the participants had no access to its translation and definitions of new words. The passage was divided into three parts with the comprehension check questions presented after them. The first part of the story, which was four pages length, was selected as the main text for the study.

c) Target Word Selection and Preparation

At the outset a test of vocabulary of the intended passage, prepared by the researcher, was administered among participants in order to select target words (TW). Twenty words, which most participants did not answer or answered incorrectly were considered as the target words and presented to the participants after the treatment session. These TWs are in the form of two types of glosses, i.e. L1 and L2. For the selection of the words, the following characteristics were considered as well:

1. The level of frequency: the TWs were selected from the academic–list vocabularies using Nation's Vocabulary Profile.
2. Visual similarity: the TWs were examined to have 4 to 10 letters. They were words from three word classes (11 nouns, 7 verbs, 2 adjectives).

In addition to the TWs, the number of thirteen words was included to the list as the control words. They were of the same frequency and the same grammatical categories as the target words. The rationale behind using the control words was to play the role of distracter items so that participants would be able to recognize the TWs according to their true knowledge.

d) Gloss types

For the purpose of the present study two types of glosses, L1 and L2, were applied. A list of twenty L1 glosses, i.e. translation of the difficult terms in to Persian, and a list of twenty L2 glosses, i.e. the definition of the difficult terms in to English were prepared to be administered among participants before each session of treatment. They were asked to use the lists of glosses while reading.

Procedure

At the first phase of the study and before going through the main study participants were required to fill out a bio–data questionnaire, to obtain some information regarding their background knowledge of English, their age, gender, the time they involved in learning English and a question regarding whether they have read the story, Twenty Thousands Leagues under the Sea or not. Only one individual has read the passage before, who was removed from the analysis part. Before the time of data collection, participants were asked to take a Nation's level test to homogenize them in terms of their vocabulary knowledge. Two weeks before the main study, a version of State Rating Task (Waring, 2000) was administered among participants for fifteen minutes as the pretest, to measure their previous knowledge of the target and control words. Accordingly, the participants were randomly assigned into two groups of L1 and L2 glosses.

The second phase of the study began with the administration of lists of twenty L1 and L2 glosses among participants of the first group and the second group respectively. Participants in each group were required to read the intended passage in twenty minutes by the help of the list of glosses. The words in the two lists of glosses were the same. There was no interaction between researcher (teacher) and participants. Immediately after the treatment session, one version of State Rating Task was administered to participants. To guarantee the establishment of the experimental condition of incidental vocabulary learning from reading, the vocabulary posttest was not pointed out to the participants in advance (Kim, 2006).

Results

State Rating Tasks data analysis

In this section, the data were analyzed for the two groups, G1 (who received L1 gloss type) and G2 (who received L2 gloss type) for all the 20 target word items in both the 2 data times. There are different ways suggested by Waring (2000) to analyze the data. The focus of this study is to show the change of state representation in participants of the two groups in different data times, and to analyze the difference as well. The following two tables show the patterns of change in percentage of the participants' rating of their vocabulary knowledge states in both G1 and G2 by both data times.

Table 2: Patterns of Changes in Percentage of the Participants' Rating of Their Vocabulary Knowledge States in G1 by Both Data Times.

States	E	D	C	B	A	E	D	C	B	A
Time 1						Time 2				
Item 1	70	10	5	5	10	20	10	5	5	60
Item 2	80	–	10	10	–	30	10	–	5	60
Item 3	70	10	10	–	10	35	5	5	5	50
Item 4	60	5	10	5	20	15	–	10	–	75
Item 5	65	20	–	10	5	60	–	15	–	25
Item 6	25	35	5	15	10	15	20	10	10	45
Item 7	50	25	10	10	5	20	15	10	–	55
Item 8	90	–	–	10	–	40	15	10	–	35
Item 9	50	10	5	5	30	25	5	–	5	65
Item 10	55	10	5	5	25	50	–	5	5	40
Item 11	90	–	–	10	–	50	10	15	–	25
Item 12	20	20	–	10	50	5	10	–	–	85
Item 13	55	10	5	–	30	25	10	15	–	50
Item 14	55	5	–	10	30	5	5	–	–	90
Item 15	45	20	10	–	25	30	15	5	–	50
Item 16	50	20	–	15	15	5	20	–	5	70
Item 17	25	10	–	5	60	15	10	5	10	60
Item 18	30	25	15	5	25	30	10	20	–	40
Item 19	65	10	15	–	10	35	15	20	–	30
Item 20	40	10	15	15	20	15	5	5	5	70

Three types of change in state knowledge were identified by Waring (2000); "Same States, Near State changes and Dramatic movement changes". According to these patterns of change, G1 state E vocabulary (not knowing the words completely) had dramatic change in almost all the items over time, except for some particular ones such as items 6, 10 and 17, which had near state changes, and item 18, which had the same state change over two data times. While D, C and B had the same state changes, or in some cases near state changes, the state of participants' knowledge in rubric A (completely understanding the word and knowing how to use it) in all the items has dramatic movement changes, except in state 5, which it had near state changes. The fluctuation towards better states in the first group, who received L1 gloss type, is indicative of the increase in participants' state knowledge of vocabulary over time. In the following section the percentage of response patterns of G2 who was given L2 gloss type are analyzed. Table 2 shows the results:

Table 3: Patterns of Changes in Percentage of the Participants' Rating of Their Vocabulary Knowledge States in G2 by Both Data Times.

States	E	D	C	B	A	E	D	C	B	A
Time 1						Time 2				
Item 1	55	20	5	5	15	15	25	–	10	50
Item 2	70	10	10	5	5	20	25	–	20	35
Item 3	80	5	5	–	10	40	20	10	5	15
Item 4	55	15	25	–	5	25	25	5	10	35
Item 5	75	5	–	5	15	35	20	15	15	15
Item 6	25	35	15	15	10	40	10	25	–	25
Item 7	40	20	10	15	15	20	20	10	10	40
Item 8	95	–	–	5	–	50	15	5	10	20
Item 9	20	25	5	5	45	30	5	–	20	45
Item 10	50	5	–	25	10	35	20	5	10	30
Item 11	25	25	10	15	25	10	20	–	10	60
Item 12	50	10	10	10	20	25	15	10	–	50
Item 13	45	20	15	–	10	15	25	–	10	50
Item 14	45	20	15	10	10	15	25	–	10	50
Item 15	45	20	–	10	25	25	20	15	15	20
Item 16	55	25	10	–	10	25	30	10	10	25
Item 17	30	10	5	10	45	15	20	–	10	55
Item 18	20	25	10	15	30	15	30	5	5	45
Item 19	60	20	10	–	10	50	5	10	5	30
Item 20	35	25	10	–	30	5	25	10	25	45

Similar to G1, who had dramatic change of states in rubric E, second group's state knowledge had changed erratically over time in almost all the items as well. Item 9 is exceptional from this generalization; in time 2, participants rated it more than time 1. It means that incidental vocabulary learning had no effect on the state of knowledge of participant in this particular item. As in the first group, rubrics D, C and B had no specific changes from time 1 to time 2. In some cases, these states were not largely used by the participants. One reason for this might be that participants prefer to rate their knowledge in two extreme points of knowing or not knowing completely specific words.

Quite contrary to group 1 in the second time, which had dramatic changes in all items, group 2 had changed slightly in some items, and it had the same state changes in others, like items 5 and 9. Item 15, surprisingly, declined slightly, which shows incidental vocabulary learning through L2 gloss types has no influence on none of the participants in this particular item.

Relationship between gloss type and the growth of vocabulary knowledge

Thus far, the answer to the first question was given. The first hypothesis formed above, stating that incidental vocabulary learning via gloss types does not improve the growth in the knowledge of words in mind by the application of State Rating Task, has been rejected. Regarding the second research question, the results presented above indicate that L1 gloss type had more contribution to participants' knowledge states than L2 one. This is clearly presented by the following table:

Table 4: Difference in Percentage of Participants' Rating Regarding the Type of Glosses

States	E	D	C	B	A	E	D	C	B	A
Time 1						Time 2				
G 1	38.25	7.75	3.00	4.75	10.75	18.5	5.75	5.00	1.75	31.0
G 2	48.00	17.75	8.75	7.5	18.25	26.75	19.75	7.75	10.25	36.00

The figures in the table 3 show substantial differences between the lower and higher states in both groups. The two groups show a systematic fluctuation in states from time 1 to time 2 but this change is more erratic in G1. While 38.25 percent of participants in G1 rated E in time 1, this number reduced to 18.5 in the second administration of SRT (almost 2 times less than t1). Although the change of states in the second group is noticeable (48.00 to 26.75) between time 1 and 2, it is not as dramatic as the G1. Regarding state A, which is the full knowledge of target words, it shows the same changes of states, i.e. an increase in state A from time 1 to time 2. Because the other states in between (i.e. states D, C, B) had no observable changes between the two administrations, they are not of concern here.

Development of Receptive and Productive Knowledge

In order to answer the third question, there should be a categorization of different rubrics of the SRT into Receptive (Understanding) and Productive (Use). The following table clearly shows this classification:

Table 5: SRT's rubrics Categorization

Receptive	Productive
D: I think I understand this word but I don't know how to use it	C: I think I understand this word and I know how to use it
B: I understand this word but I don't know how to use it	A: I understand this word and I know how to use it

The first rubric, i.e. E → I do not know this word (completely unfamiliar, partially familiar, i.e. knowing only its form or its meaning) has not been put

under neither of the two categories, because it does not rate participants' Receptive and Productive vocabulary knowledge.

Participants' rating of the D and B rubrics, on the one hand, and the C and A rubrics in each group, i.e. G1 and G2, were calculated. Table 4, displays the percentage of participants' rating the Productive and Receptive rubrics:

Table 6: The Percentage of Participants' Rating the Productive and Receptive Rubrics

Receptive rubrics (D & B)			Productive rubrics (C & A)	
	Time 1	Time 2	Time 1	Time 2
G1	19/50	12/00	23/75	56/00
G2	25/25	31/25	27/00	43/75

As table 5 demonstrates, between the two data times, the percentage of participants' rating of the Receptive rubrics in G2 (25/25 to 31/25%) was higher than the first group (19/50 to 12/00%). This shows that L2 gloss type was more beneficial in Receptive knowledge than L1 gloss. Contrary to the Receptive rubrics, L1 gloss type's effect on the Productive knowledge of participants of the G1 (23/75 to 56/00%) is more evident than G2 (27/00 to 43/75%).

Discussion

A close examination of the results reveals that incidental vocabulary learning in the form of two gloss types had changed the state of vocabulary knowledge in learners. In other word, while some of the items were exceptional from this generalization, this change of state was noticeable in almost all the target words. This finding is in line with Waring's (2000), who believes that there would be an increase in higher states and a decrease in lower states of knowledge over time, by the use of SRT. The data show that most of the items had dramatic changes, according to three types of change in states suggested by Waring (2000), more specifically in G1 who received L1 gloss type, compared to G2. One possible explanation might be that, as Kroll and Stewart (1994) states, bilingual learners' memories have a strong conceptual link in their L1. This suggests that during the learning process of second language, bilingual learners associate the L2 new words to their L1, which correspondingly results in development of the link between their L2 to L1 over time. The systematic and erratic fluctuation of states knowledge from time 1 to time 2 in the first group supports the Hierarchical Bilingual Model proposed by Kroll and Stewart (1994).

In conclusion, it can be said that incidental vocabulary learning through L1 and L2 gloss types has contribution to the rapid change in state of vocabulary knowledge in learners' mind, which as indicated before, this change is more dramatic in L1 gloss type group.

As regard with the third research question, which tries to investigate the existing relationships between the gloss types and the development of Receptive and Productive vocabulary knowledge among language learners, the results came up with different conclusion. By examining the items of the SRT, it was found that group 2 outperformed group 1 in Receptive vocabulary knowledge from time 1 to time 2, while percentage of participants' rating of the Productive vocabulary knowledge was higher in G1 compared to G2. Similar to the findings reported in the literature (for example see Nation, 2001, 2009; Nation & Ming–Tzu, 1999), the results of the current study indicated that incidental vocabulary learning, specifically through gloss types, had influences on the Receptive as well as Productive vocabulary knowledge.

Conclusion

The present study has considered the effects of incidental vocabulary learning in the form of two types of gloss (L1 and L2) through the application of State Rating Tasks, which show the change of state of vocabulary knowledge in learners. The study also attempts to investigate the relationship between the incidental vocabulary learning through the form of gloss types and development of Receptive and Productive vocabulary knowledge among learners. The results indicate that incidental vocabulary learning increases participants' knowledge states from lower to higher states. Regarding the relationship between the types of gloss and development of Receptive and Productive vocabulary knowledge among learners the findings show that L1 gloss type has increased Productive vocabulary knowledge, while L2 gloss type was more effective in increasing Receptive vocabulary knowledge.

The findings should be treated with some caution, however. Although the results reveal that incidental vocabulary learning via glosses has contribution to the growth of vocabulary knowledge, the number of data times should be more to clearly indicate the growth of knowledge. Furthermore, as regards with the relationship between incidental vocabulary knowledge and Receptive vs. Productive vocabulary knowledge progress, SRT administration could be accompanied by a writing task in order to measure participants' Productive knowledge as well. The future effort to examine the relationship between incidental vocabulary learning through glosses and Productive/Receptive knowledge in developmental stages, the limitations of the current study should be considered.

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Nenamjerno ovladavanje vokabularom i razvoj prijamnog i proizvodnog rječnika: kako funkcioniraju različiti tipovi glosa.

Istraživanja su pokazala da nenamjerno ovladavanje vokabularom može biti od velike pomoći pri učenju jezika. Primjenom zadataka za ispitivanje stupnja znanja vokabulara kod učenika (engl. State Rating Tasks – SRT), u ovome se istraživanju pokušava ispitati utjecaj nenamjernog ovladavanja vokabularom putem različitih tipova glosa (onih iz J1 i J2). U istraživanju također želimo rasvijetliti povezanost između nenamjernog ovladavanja vokabularom upotrebom tipova glosa i razvoja prijamnog i proizvodnog rječnika kod osoba koje uče strani jezik. Ispitanicima su podijeljeni popisi s dvadeset glosa u J1 i J2 te su ispitanici morali pročitati kratki tekst uz uporabu danih glosa. Jedna verzija zadataka (SRT) dana je ispitanicima u dva različita vremenska perioda, prije i poslije samog zadatka čitanja, kako bi se pokazala promjena u znanju ispitanika. Rezultati pokazuju da je nenamjerno ovladavanje vokabularom uz uporabu tipova glosa povećalo znanje ispitanika od niže prema višoj razini, ali ta promjena varira ovisno o tipu glosa. Analiza zadataka za ispitivanje stupnja znanja vokabulara kod učenika (SRT) pokazala je da su ispitanici kojima su dani tipovi glosa u J1 imali bolje rezultate od druge grupe u odnosu na poznavanje proizvodnog rječnika, dok je zadatak s tipovima glosa u J2 imao povoljniji učinak na proširivanje prijamnog rječnika.

Key words: Incidental vocabulary learning, students' vocabulary, gloss types, State Rating Tasks, receptive and productive vocabulary knowledge

Ključne riječi: nenamjerno ovladavanje vokabularom, vokabular učenika, tipovi glosa, zadatci za ispitivanje znanja, poznavanje prijamnog i proizvodnog rječnika