

# A STUDY ON THE EFFECTS OF ANNOTATION ON INCIDENTAL VOCABULARY LEARNING ATTACHED TO LISTENING TASKS

Li Ping

Beijing Information Science & Technology University

## Abstract

This study examines the effects of annotation on vocabulary learning through listening tasks , with two experiment groups —definition group and multiple choice group (53 non -English major students in the second year) . The present study also explored the effect of EFL proficiency and listening comprehension on vocabulary acquisition . The result shows that language proficiency and listening comprehension only affect lexical knowledge test while the effect of annotation on lexical knowledge test and lexical recognition test were found to be the most significant .

## Key words

incidental vocabulary learning ; listening tasks ; annotation ; language proficiency

## 1 . Introduction

Most of the research into vocabulary has been conducted in the field of reading ( Vidal 2003 ) . Few studies have been carried out into the effect of the aural input on the acquisition or retention of vocabulary . In fact , most native or foreign language acquisition occurs when learners try to understand new words that they hear or see in a context ( Ellis 1994 ) . Listening is an important channel to pick up new information , therefore it is necessary to examine how aural input works on word gain .

## 2 . Literature Review

### 2 .1 Phonological memory and vocabulary acquisition

Model of speech processing and phonology of memory provide theoretical supports for incidental vocabulary acquisition through listening . According to model of speech processing , developed by Clark and Clark (1977) , when listeners take in raw speech , words verbatim are not stored in memory . During the construction process , the verbatim constituents are held in working memory only for a brief period of time , after which they are eliminated and replaced by a representation of the finished interpretation of the sentence , which is finally retained in long term memory ( Clark & Clark 1977 ) .

In 1974 , Baddeley and Hitch developed working memory framework . It comprises a number of subsidiary slave systems . One of them is the phonological loop , which automatically registers heard speech and stores it for about one and a half to two seconds . After this time , the memory traces fade unless a control process , such as subvocal rehearsal , refreshes them in the store again . Likewise , Jarvella (1971) claims that learners need further recording and rehearsal processes so that they can retain the abstract representations of the speech they heard in long term memory .

Gathercole et al . (1991) argue that non word repetition ability and vocabulary knowledge develop in a highly interactive manner . Intrinsic phonological memory skills may influence the learning of new words by constraining the retention of unfamiliar phonological sequences . However , the extent of

vocabulary will affect the ease of generating appropriate phonological frames to support the phonological representations. As they practice hearing and producing L2 words, they practice hearing and producing L2 words, learners' L2 vocabulary extends. Therefore they will be able to generalize the pattern of the second language such as frequencies and sequential probabilities of the phonotactics of the L2, and thus become more proficient at novel L2 words.

## 2.2 Incidental Vocabulary Learning and Involvement Load Hypothesis

Incidental Vocabulary Learning Hypothesis, developed by Nagy, Herman & Anderson (1985), formulate that incidental vocabulary learning is different from direct or intentional learning. Direct learning mainly focuses on vocabulary through pertinent activities and exercises, such as word games, word building, word lists etc. By contrast, learners can incidentally acquire vocabulary in indirect learning which provides more information on the context of words instead of focusing on the words themselves (Nation 1990; Hulstijn 1992; Hulstijn et al. 1996).

But learning incidentally is not the same as learning without conscious attention. Schmidt (1990) argues that learning can not take place without noticing or attending to linguistic features in the input. Hulstijn & Laufer (2001)'s Involvement Load hypothesis have shown that acquisition could not occur without conscious efforts from a new perspective and provided an effective tool to measure the outcome of incidental acquisition.

Involvement load hypothesis, based on Depth of Processing Model which assumes that deeper processing of new information brings about better retention, examines three elements — need, search and evaluation from two dimensions of cognition and emotion. Need is related to motivation. Search is to learn about new words with the help of dictionaries or authoritative sources. And evaluation means to apply the new words to some context. Involvement index is used to measure the intensity of those three elements. The hypothesis argues the deeper involvement load is, the better vocabulary incidental acquisition and retention will be.

VanPatten (1989) requires university students of Spanish to perform different tasks while listening to a three-minute passage, in order to determine to what extent L2 students are able to simultaneously process form and meaning. The research result concludes that students concentrate on both form and meaning when required.

Toya (1992) asks 109 Japanese university students of English to listen to two passages of approximately 3 minutes each. Repeated exposures to the passages also results in vocabulary gain.

Karina Vidal (2003) presents an empirical study of the acquisition of EFL vocabulary through academic listening. The study finds that attending full-time English lectures has significant effect on words acquisition.

Many studies show that annotation attached to reading can improve comprehension and increase new word acquisition as well (Hulstijn 1992; Hulstijn et al. 1996; Hulstijn & Laufer 2001; Duan 2004). Wu et al. (2007) conducted a similar research about the effect of involvement load on incidental vocabulary learning. They provided a word list in English attached to each reading test rather than directly annotating new words. The research shows a high correlation between word gain in post test and involvement load of reading tasks. In delayed test significant difference does not occur in reading tasks. It appears in the way the meaning of a word is provided, i.e. that words with multiple meanings are gained significantly better than words with a single meaning. The finding actually confirms involvement load that the more efforts the learners put in choosing a right meaning among multiple choices, the better result they will get in vocabulary learning. It seems that annotation styles make a greater difference to word acquisition than the arrangement of tasks. Therefore this study is conducted to examine the effect of different annotations on learners' listening comprehension and word gain.

## 3. Research Design

### 3.1 Research Questions

This study deals with the following questions: 1) what impact will the two annotations have on

retention ?2 ) which is the most significant influence on vocabulary study ,English proficiency ,listening comprehension ,annotation ?3 ) what effect will the two annotations have on long term memory ?4 ) what is the effect of the interaction of proficiency and annotation on retention ?

### 3.2 Participants

The participants are all second year non-English major students (n =53 ) from two college English classes in a scientific technology university in which students come from parts of China and there is no significant difference among their proficiency .

### 3.3 Research Material

Listening materials are selected from 21st century College English Viewing ,Listening ,and Speaking Course Book Four . A three minute passage about creativity contains two abstracts with 320 words total , normal speed ,and clear arrangement . Materials are easy to understand and proper to test takers .

### 3.4 Target Words

There are four target words ,of which 3 words (“reawaken ,skateboarding ,concrete lined ”) are beyond curriculum requirement and 1 (“ditch ”) belongs to basic requirement ,according to College English Curriculum Requirements . The pilot testing includes 16 non-words as distract items and 4 target words . The test results indicate all the target words are new to subjects . Repetitive occurrence of the target words draws subjects attention . Informative contexts offer clues for guess . Target words affect listening comprehension .

Annotation is given to target words as well as to other difficult words ,accordingly diverting students attention to target words . Multiple choice annotation consists of 4 synonyms ,such as substantial a 巨大的 b 笨重的 c 真实的 d 有效的 ,or they are simple addition of the meaning of each part in the compound , for instance ,concrete lined a 列队的 b 成纵行的 c 混凝土浇灌成行的 d 具体安排的 .

### 3.5 Measurement

Listening tasks include retell ,true false questions and a listening cloze test . In the retelling test ,test-takers fill each of 14 blanks with details they hear . It requires students to write down either exact words or interpret in their own words . Each correct answer is awarded 1 point ,partially right ,i. e. incomplete answer is 0.5 points ,the same method is used to listening cloze test except that exact words are required one point each . A maximum score of 14 could be achieved on the T /F test and 8 on the listening cloze .

Vocabulary test (see Appendix ) is made up of two parts —vocabulary knowledge test and vocabulary recognition test . The former is a self report ,measured on a modified version of the Vocabulary Knowledge Scale ( Wesche & Paribakht 1996 ) . The students were given a list with the target words plus some distractors that are non-words ,in order to prevent the learners from overestimating their vocabulary knowledge .

### 3.6 Experiment Procedure

First ,send handout to students ,tell them that the words in the handout with definition annotation or multiple choice annotations will appear in the following listening passage ,and remind them they can take notes during the listening and will retell the text after the listening . Then play the tape twice . First listening is nonstop in which students have a general idea about the passage . During the second repetition , many kinds of activities such as question ,repetition ,and paraphrase help students understand the text in detail . Annotation guides students to distribute attention during the listening ,searching target words concerned information ,and picking up meanings .

Collect handout ,and then retell the information just heard . Do listening comprehension ,lexical knowledge test ,lexical recognition test one by one . Each step is conducted alone . One test is finished and the test paper is collected ,then the next continues .

### 3.7 Data Analysis

This study adopts SPSS13.0 statistics :first ,one-way ANOVA is used to distinguish the difference

between two groups in terms of listening comprehension and vocabulary tests ;second , Pearson correlations show the relation between retention and other three factors such as annotation ,listening comprehension ,and proficiency level ;third ,linear regression reveals which is the most significant factor to retention ,among annotation ,listening comprehension ,and language proficiency ;finally ,univariate ANOVA examines language proficiency and annotation style interaction on lexical knowledge test .

#### 4 . Results and Discussions

##### 4 .1 Annotation style s effect on retention

Word gain appears in both of two groups ( Table 1 and Table 2 ). It shows listening as phonological input can ,just like reading ,promote word gain ,but annotation style s effect on retention is different in listening tasks from in reading tasks . During listening activities ,definition annotation ( DA ) group performed better than multiple choice annotations ( MCA )group in lexical knowledge test ,and the more significant difference between the groups was found in word recognition test ,while in reading activities , MCA group was better than DA group . Duan illustrates involvement load hypothesis of reading activities that multiple choice annotation requires learners to guess meaning ,induces deep semantic process ,and thus strengthens vocabulary retention ( Duan & Yan 2004 ) . But when it comes to phonological input , attention space is very limited . Continuous information allows no time for listeners to make choices . When listeners choose meaning ,they are likely to neglect part of information and therefore have no coherent understanding of the passage . This necessarily has a bad effect on exact guess . Divert attention only brings about surface semantic processing ,laying a negative input on retention .

Table 1 . One -way ANOVA for Lexical Knowledge Test

		Post test			Delayed test		
Group	N	M	SD	P	M	SD	P
MCA	24	4 .208	2 .621	.038	4 .333	1 .579	.001
DA	29	5 .656	2 .319		6 .207	2 .059	

Table 2 . One -way ANOVA for Lexical Recognition Test

		Post test			Delayed test		
Group	N	M	SD	P	M	SD	P
MCA	24	3 .167	.761	.000	3 .208	.833	.001
DA	29	3 .931	.258		3 .931	.258	

##### 4 .2 The correlation between retention and annotation ,listening comprehension ,or language proficiency

Pearson correlation shows ( Table 3 ) that annotation style and listening retell both have significant correlation with lexical knowledge test and lexical recognition test ,but the former is more significant . Language proficiency only influences lexical knowledge . Listening comprehension level has no correlation with the two vocabulary tests ,indicating listening comprehension has no impact on word gain . This result is different from Karina Vidals (2003) . Word gain and retention are affected by the degree of lecture comprehension . Karin Vidal focuses on academic lecture in foreign language which involves professional knowledge background and presents large amount of information . It is obviously more difficult for listeners to understand than common listening teaching materials .

Language proficiency level only influences vocabulary accumulation . Lexical knowledge test examines word productive ability ,being closely linked with language proficiency . Recognition test relates to vocabulary quantity . Retell requires learners more cognitive efforts than listening comprehension test . Learners take advantage of target words to recall the context and details in which they occur and construct the text . Retell activities attract learners attention to target words as well as context ,favorable to vocabulary recognition and production .

Table 3 .Pearson correlations

Variables	LKS1	LKS2	WRT1	WRT2
Annotation	.286 *	.455 ***	.579 ***	.527 ***
Proficiency	.291 *	.313 *	.203	.203
Listening comprehension	.066	.167	.153	.070
Retell	.457 ***	.292 *	.295 *	.218

Notes LKS1 and LKS2 respectively represent lexical knowledge s post test and delayed test ; WRT1 and WRT2 respectively represent word recognition s post test and delayed test ; \*\*\*p < .001 ; \*\*p < .01 ; \*p < .05 .

But which one of the above variables is most significant ? Table 4 tells us that retelling task is significantly related to short term memory while annotation has significant effect on long term memory of vocabulary knowledge and vocabulary recognition only is closely linked to annotation , p = .000. Therefore annotation is the most significant factor of the three variables to word retention .

#### 4.3 Annotation style and word retention

T test is done on the two groups in order to discover the effect of the different annotation styles . There is no significant difference between them ( Table 5 ). The mean value of the two tests is calculated by subtracting the post test from the delayed test , because most of the subjects get better grades in the second test . The better grades in the second test will be attributed to multiple chances such as listening comprehension test , retell , vocabulary knowledge test and vocabulary recognition test for students to contact and practice new words . After these tests , learners consult dictionary , check up answers , consolidating the words just learned . Therefore , since there are only four target words , the memory load is not heavy . Vocabulary incidental acquisition through listening should be done gradually with multiple listening tasks . In other words , not quite a few word gains can be retained in memory accompanying listening activities .

The deviation of the two tests mean shows that word gain in definition annotation group is more than in multiple choice annotation group ( see Table 2 ) proving again that semantic processing only reaches surface when attention span is very limited . Definition annotation offers immediate information quick access to working memory , then the saved attention resources are distributed to continuous new phonetic input .

Table 4 . Linear regression

Independent variable	Post test			Delayed test		
	multiple R	F value	P	multiple R	F value	P
	.059	5.724	.002	.539	6.701	.001
	Beta	P		Beta	P	
proficiency	.115	.399		.225	.097	
retell	.368 *	.010		.115	.399	
annotation	.201	.115		.411 **	.002	

Table 5 .Vocabulary maintenance effect

Group	Lexical knowledge test			Lexical recognition test		
	MD	SD	p	MD	SD	p
MCA	.1250	2 .112	.549	.0417	.806	.805
DA	.5517	2 .886		.0000	.378	

Note :MD =mean deviation

#### 4.4 Mutual effect between annotation style and English proficiency

Univariate ANOVA shows language proficiency and annotation interaction have significant impact on lexical knowledge posttest and delayed test ( $p = 0.049 < .05$  and  $0.029 < 0.5$  respectively) but no great difference occurred to word recognition tests ( $p = .197$  and  $.201$  respectively). Lexical knowledge test examines students comprehensive ability — understanding, association and production. More skilled learners are able to get more information from listening and understand new words under rich context. They can also associate the new words with the context, creating the appropriate situation to produce the target word. So their productivity is higher than less skilled learners. English proficiency and annotation styles interaction play an important role in vocabulary knowledge acquisition. Nevertheless, word recognition only tests retention, recalling of the words. So it is hardly affected by the interaction.

#### 5. Conclusion

This study is of certain importance to English instruction. First, teachers design listening tasks with target words to promote vocabulary study. Corresponding meaning to each word is given to attract learners attention. Learners semantic processing stores the new word in short term memory. The context in listening and listening tasks offer opportunity to digest vocabulary and bring them into long-term memory. Second, listening incidental vocabulary acquisition is immune to listening comprehension, no matter who will benefit from listening activity, good or bad listener. Learning vocabulary by listening not only improves listening comprehension but also contributes to memorization of words. Learners acquire correct phonetics when listening to material with the annotation. Phonetics is good to remember word form. Incidental acquisition by listening could be more effective and last longer than those acquired individually, since the former lies in the context. Third, after various listening exercises, such as listening comprehension task, retelling task, or using the words in a sentence or a paper, retention can be reinforced. The more cognitive effort learners make, the deeper level word processing will reach, the better result learners will have, being in line with involving load hypothesis.

This study shows that listening teaching seems to be separate from vocabulary instruction, but as a matter of fact, they are blended and support each other. Also, reading, writing, speaking instruction have something in common, which can be seen a different approach to vocabulary learning. Good result can be expected only if pertinent tasks are appropriately designed.

Further research will compare the impact on word acquisition of reading with that of listening, since both are regarded as a source to pick up vocabulary, to see which side is more favorable to learn and maintain words.

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## Appendix

Vocabulary Knowledge Test is done by Self Report in 5 scales .

Scale

1 point :recognizes a non -word

0 point :does not recognize the word

1 point :recognizes having heard the word

2 points :provides a synonym or Chinese translation

3 points :is able to provide a translation and uses the word in a sentence

The recognition test is directed to target words . Each word is given 5 choices ,one correct item ,3 distractors ,the last choice " I don't know " .

## Listening Task

Retell Test excerpt

According to the passage you hear ,fill in the blank with the missing information in English or Chinese .

1 . What is creativity ?

A simple definition is that 1 )creativity is the ability to \_\_\_\_\_ ,2 )is not the ability to \_\_\_\_\_ ,but the ability to \_\_\_\_\_ .

This test paper is written in Chinese .

Vocabulary Knowledge Test excerpt

1 reawaken

A . I don't remember having seen this word before .

B . I have seen this word before but I don't know what it means .

C . I have seen this word before ,and I think it means \_\_\_\_\_ .(synonym or translation) .

D . I can use this word in a sentence :\_\_\_\_\_ (write a sentence) .

( Continued on p .29 ... )