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Learning Conditions for Incidental Vocabulary Acquisition in L1 and L2

Boniesta Z Melani

University of Mataram, Indonesia

Bio-Profile:

Boniesta Z Melani is a lecturer of English at the University of Mataram, Indonesia. Her research interests include English Language Teaching and Second Language Vocabulary Learning. She has an M.A. in TESOL Studies from the University of Queensland, and currently teaches Second Language Acquisition and Language Testing. She can be reached at bonista22@yahoo.com

Abstract

It is believed that language learners can acquire vocabulary as they are exposed to the target language. Second language learners in particular, can pick up unfamiliar words spontaneously from either oral or written context. However, the level of incidental vocabulary learning varies across studies. Having examined various researches on both incidental and intentional vocabulary learning either in first language (L1) or in second language (L2) acquisition, it is informed that these variations are affected by several factors such as students' proficiency, the richness of context, the number of exposures and the types of words being learned.

Keywords: *vocabulary learning, incidental, intentional, L1, L2*

Jalan Majapahit No. 12 Mataram, Lombok-Indonesia

Introduction

Second language vocabulary is often acquired incidentally as learners read or listen to the target language. Many studies confirm that language learners learn words as they engage in extensive reading and listening (Nagy, Herman, & Anderson, 1985; Jenkins, Stein &

Wysocki, 1984; Shu, Anderson & Zhang,1995; Horst, 2005; Pigada & Schmitt, 2006; Lehmann, 2007; Brown, Waring & Donkaewbua, 2008; Kweon & Kim, 2008; Webb, 2008; Gitsaki & Melani, 2013). This paper examines several studies investigating incidental vocabulary learning in learning first and second language. It will first look at incidental language learning in general and incidental vocabulary learning in particular, comparing the different terminologies of incidental and intentional learning based on the learning condition. It will then focus on incidental vocabulary learning in the acquisition of first language (L1) and second language (L2), through reading and listening, evaluating the learning conditions prone to incidental word acquisition in both learning contexts.

Intentional Learning and Incidental Learning

In psychology, the term 'incidental learning' is commonly known as an activity without any intention and therefore it is often distinguished from intentional learning. Eysenck (1982) uses the term incidental learning as the type of learning without instruction to the learners. The absence of intention and instruction are key points in incidental learning. Although it is clear from the above definition that these two types of learning seem different from one another, it is still unclear to what extent the learning process is incidental or intentional.

In light of the basic concept of incidental and intentional learning in the psychological domain, the terms incidental learning versus intentional learning in second language acquisition (SLA) research are traditionally associated to *acquisition* versus *learning* (Krashen, 1981), or *implicit* versus *explicit* learning (Bialystok, 1978; Ellis, 1990) respectively. Krashen (1981) asserts through his acquisition-learning hypothesis that adults have two distinct ways of developing competence in a second language. These two ways are through acquisition, a subconscious process, similar to the process of children mastering their first language, and through the conscious process of learning. Thus, acquisition is assumed as a subconscious process, whilst learning is a conscious process that usually occurs in a formal learning environment and it is typical of settings where English is learned as a foreign language.

From a slightly different perspective, Bialystok (1978) describes the notion of explicit learning and implicit learning in the way in which information is stored in the brain and is used in production. According to Bialystok (1978), explicit learning is a conscious process of information admission as well as the ability to articulate it. The information may include some grammar rules, some vocabulary items, pronunciation rules, and so on. Conversely, implicit learning is an intuitive process of getting information that language learners operate in order to

produce responses (comprehension or production) in the target language spontaneously. Again, the information may contain grammar rules, vocabulary and so on.

In the case of *acquisition* and *implicit learning*, learners pick up L2 rules without focusing their attention on L2 items. In terms of *learning* and *explicit learning*, learners primarily focus their attention on the target language in order to learn the rules and learning occurs in a formal setting. While incidental and intentional learning differ in terms of the stimuli, acquisition and learning or explicit and implicit learning are different in terms of the learners' attention to the target language and the learning environment (formal vs informal).

Furthermore, beside the absence or presence of direct attention, Schmidt (1990) considers the degree of consciousness when learners notice new items and rules in the input as another factor that contributes to incidental learning or intentional learning of a second language. Thus, in incidental learning, learners are unlikely to notice L2 rules consciously, whilst in intentional learning, learners learn a second language consciously. Schmidt (1990) describes the term 'conscious' as having an awareness and control. In line with this, Hulstijn (2001) adopted Eysenck's (1982) idea about incidental and intentional learning in general and maintained that the term 'intentional' be used when language learners are aware that they will be tested on particular items in the target language and 'incidental' be used when the learners are not aware of a later evaluation.

To summarize, incidental learning in second language acquisition is often classified as a type of learning that does not require learners' attention, awareness and control, where the learner's focus is on conveying meanings rather than on language forms or grammar rules. Intentional learning on the other hand is the type of learning that requires learners' attention and awareness as they focus on the target language.

Incidental Vocabulary Learning

Hulstijn (1992) defines incidental vocabulary learning as the learning of words that is caused by inexplicit involvement in a language activity. It is called incidental because the process of learning occurs unintentionally as a result of learners being involved in activities that require them to access and use a language. Thus, incidental learning may occur through exposure to normal language use as learners interact with parents, caretakers, foreigners and peers. It can also occur through reading literature, newspapers, magazines, and so on, where the main focus during reading is on the text's message rather than on the particular vocabulary within the text.

Incidental Vocabulary Learning in First Language (L1) Acquisition

The fact that incidental learning does occur in the acquisition of a language in general and vocabulary learning in particular, has encouraged many researchers to explore further this topic. Attention was mainly given to extensive listening and extensive reading as the main sources of vocabulary.

In first language acquisition, Jenkins, Stein and Wysocki (1984) investigated incidental L1 learning through normal classroom reading tasks, and factors (words presentation and prior exposure) that might influence it. 112 fifth-graders of average and below average ability read narrative passages that contained unfamiliar target words and were contextually rich, and were randomly assigned to read different numbers of context presentations over several days. Some students read the words twice in different passages, others read them six times and the third group read them ten times. In other words, some students had two exposures of the target vocabulary, others had six exposures and the rest had ten exposures. Later in the experiments, all children were tested on their knowledge of the target words.

The results indicated that students acquired some word meanings from context even without explicit directions to consider the unfamiliar words. Students who encountered ten repetitions of a word in different contexts acquired more knowledge than students who encountered the same words only twice. These findings indicate that the number of exposures to a word can affect children's L1 vocabulary acquisition. Moreover, more skilled readers were better able to derive and learn word meanings than their less skilled peers. Based on several measures of vocabulary knowledge, better readers benefited more from context than did less skilled readers. Researchers concluded that incidental learning from reading accounts for students' vocabulary growth. However, a closer examination of this study indicates that learning might not have been entirely incidental since students may have been alerted to the nature of the study because they had to read aloud the target words beforehand.

The probability for incidental learning from context to occur during normal reading is also found in a later study (Nagy, Herman & Anderson, 1985). After reading grade-level texts (narrative or exposition) data from two vocabulary post-tests (an individual interview and three level-multiple-choice tests) showed that learning occurred at all levels of knowledge. Some of the students went from no knowledge to some knowledge, whereas others went from some knowledge to fuller knowledge of the words, even though words appeared only once in the narrative or exposition. The probability of learning a word through reading was found to be

between 15% and 22% on the multiple-choice test. These findings indicate that incidental learning from context through free reading accounts for students' vocabulary growth.

This result is confirmed in their later study (Nagy, Anderson, & Herman, 1987) on 352 third, fifth, and seventh grade students. Although, the students' gain in this study is about one third as much as the earlier one, this study found that the proportion of unfamiliar words that were conceptually difficult, and the average of length of unfamiliar words significantly influenced learning from context. In the long term, students' acquisition of vocabulary from written context is predicted to be significant.

The fact that new words can be learned incidentally while reading appears to be universal for all children learning a first language. In a study of American and Chinese children's natural learning of word meanings while reading, Shu, Anderson and Zhang (1995) found significant incidental learning of word meanings in both grades in both countries. This study mentioned the importance of conceptual difficulty, children's oral vocabulary and their general world knowledge as important factors for incidental acquisition of written vocabulary. Due to the strength of contextual support, the data from both Chinese and American students indicated that words surrounded by richer contextual information have a higher probability of being learned, and that children with high and low ability were similar in the amount of learning that occurred from context during reading. This was consistent to the result of previous research in L1 settings (Nagy et al., 1987).

These studies (Nagy et al., 1987; Nagy et al., 1985) conclude that incidental vocabulary learning from normal reading alone accounts for students' vocabulary growth. However, the result of intentional word learning can significantly higher that learning word incidentally. In order to compare two conditions of word learning, intentional and incidental, Konopak et al. (1987) investigated 65 eleventh graders' spontaneous learning of specific vocabulary embedded in history text passages, by assigning the intentional learning group to read the text passage with the target words underlined and completing a redefinition task. The incidental learning group read a second form of the passage without the words emphasized, while the control group read the newspaper passage. After post-tested on the same self-report and definition task, the incidental learning group did acquire some knowledge whilst the intentional learning group made the greatest gain. The control group on the other hand only gained little, and there was no significant difference regarding the number of exposures, ranging from one or two to four among the three groups.

Contrary to these research findings, other studies discovered that the frequency of vocabulary appearance in the text appears to be an important factor in incidental learning

(Nagy, 1997; Saragi et al., 1987; Wittrock et al., 1975). In fact, vocabulary learning from written context appears to be closely connected to the frequency of occurrence of the target words in the text. Stahl and Fairbanks (1986) assert that multiple exposures to unknown words increase the possibility for the words to be learned. Thus, sufficient exposure to the target words is necessary to allow learners to process lexical information and commit it to the long-term memory (Nagy, 1997). This was confirmed in a quasi-experimental study on 34 L1 learners of English, where Horst, Cobb, & Meara (1998) found that learners are more likely to pick up words that are encountered more often in a text. The data on text frequency suggest that sizable and consistent learning can be expected to occur for words that are repeated eight times or more in the text. Meanwhile, Saragi, Nation, and Meister's (1987) study on L1 acquisition suggested that at least 10 exposures were needed for full acquisition. Nagy, Herman, and Anderson (1985) estimated that the probability of learning a word from context through a single exposure is about .10 to .15. This number is even lower in a follow up study conducted by Nagy and Herman (1987). They discovered that reading textbooks designed for a particular grade produced a small increase in word knowledge among 3rd to 8th grade L1 students, and estimated that the chance of learning a word from a single exposure in a text is small, about 1 in 20. In line with this, Wittrock, Marks and Doctorow (1975) discovered that young native speakers were able to learn some of the unknown words through rereading the same story. The establishment of the familiar words on the first reading seemed to make it easier to learn the unfamiliar words during the later reading.

Based on the foregoing, incidental learning does occur in the acquisition of L1 vocabulary, adding support for the existence of this type of learning. In fact, some studies have demonstrated a considerable amount of vocabulary growth without any instruction. As far as these studies are concerned, reading and listening to normal language are the two ways to expose learners to the target language, although most studies were more likely to focus on reading rather than listening, through the use of natural texts, such as reading textbooks, history passages, and newspaper articles. Thus, reading and listening materials provide the context that is crucial for words to be guessed and learned. Moreover, contextual clues and conceptual difficulty of the words can significantly affect word learning, adding evidence for the importance of learners' oral vocabulary and their general world knowledge for the incidental acquisition of written vocabulary. For words to be learned, students need enough exposure to the target language that may allow them to process the language. Most studies have confirmed that the number of word repetitions in a text determine the possibility for words to be learned.

To search for more evidence for incidental vocabulary learning, it is inadequate to see it only from the perspective of first language acquisition. It is therefore necessary to extend the discussion by also examining this phenomenon from the field of second language acquisition, to see whether there are similarities or perhaps different learning conditions between the two.

- ***Incidental Vocabulary Learning in Second Language (L2) Acquisition***

Following the research on incidental learning of vocabulary in first language (L1) acquisition research, many studies in SLA tested the same hypotheses in second language vocabulary acquisition. There is one common belief among scholars in this area that vocabulary is not solely learned as a result of direct instruction (Ellis, 1999; Huckin & Coady, 1999; Hulstijn et al., 1996; Nation, 2001; Paribakht & Wesche, 1997). Rather, there is agreement among researchers that most vocabulary, except the first few thousand most common words, is predominantly learned as a result of picking up the words in either oral or written context, that is through incidental learning (Ellis, 1999; Huckin & Coady, 1999; Hulstijn, 2001; Hulstijn et al., 1996; Paribakht & Wesche, 1999).

Considering both oral and written contexts to promote incidental learning, Brown, Sagers and LaPorte (1999) conducted a study on 9 advanced university EFL learners in one semester period. Two types of input (teacher and students' oral and written dialogue journals) were used as the source of data. The data analysis of the two modes of input indicated significant evidence for the existence of incidental vocabulary learning. According to the researchers, "the speech and writing of the native English-speaking teacher became a major input source (the only native input) for the learners and their speech and writing became the major output evidence of what they were acquiring" (Brown et al., 1999:262).

A combination of written and oral inputs was also tested on English Immersion (IM) program to find out whether vocabulary learning could occur incidentally in untutored L2 acquisition (Wode, 1999). The term incidental is used in this study to show "language learning as a by-product of language use by the teacher or by anyone else in the classroom, without the linguistic structure itself being the focus of attention or the target of teaching manoeuvres" (Wode, 1999). Comparing one IM class with one non-IM class from another school, the results showed that IM offers plenty of opportunities for incidental vocabulary learning, and that the IM students outperformed the non-IM class in the vocabulary test. Although IM students produced more types of tokens, used more synonyms, and appeared to have more variety of

vocabulary than their peers in non-IM classes, this study was not specific in the types of exposure (written and oral) that best facilitates incidental learning.

Focusing more on written context as the main source of learning, Paribakht & Wesche (1997), compared two types of learning conditions, Reading Only (RO) and Reading Plus (RP) instructional conditions. In the RO condition, learners read four texts on two themes with multiple exposures to a number of nouns, verbs, and discourse connectors that had been identified as unfamiliar to students at their level, and later answered comprehension questions. In the RP treatment, students read four texts on two themes and then carried out text-based vocabulary activities focusing on the same set of words. Results based on the Vocabulary Knowledge Scale (Paribakht & Wesche, 1993; Wesche & Paribakht, 1996), indicated significant gains in both conditions. Although students in the RP treatment showed the greater gain, multiple exposures to the target language alone proved to increase the learners' knowledge of the words. Similar finding showed in a 15-week study of EFL extensive reading program) (Wang, 2013). EFL extensive reading treatment had produced a beneficial effect on the incidental vocabulary learning gains of the 50 randomly selected target words by 45 lower-level proficiency EFL Taiwanese learners, with word pick-up rate reached to a modest level on recognition test and moved from 6% to 15%.

Specifying on the amount of exposure Rott (1999) carefully investigated the effect of word frequency of occurrence for word acquisition and retention as a result of reading. 95 intermediate learners of German as a foreign language were divided into three groups, which then either received two, four, or six exposures during reading (one reading each week). Result of translation tests of word acquisition and retention on 50 lexical items (12 target words and 38 distractors) indicated that the frequency of occurrence of unfamiliar words had an impact on the amount of vocabulary gained. In fact, two encounters with unfamiliar words during reading significantly affected learners' vocabulary growth. Moreover, two or four exposures resulted in fairly similar word gain, but six exposures produced the most gains in vocabulary knowledge.

Similar to L1 setting, studies on incidental vocabulary learning in L2 context also highlighted the importance of word repetition. Considering the importance of word exposure for incidental word learning from reading, Saragi, Nation, and Meister (1987) found that the minimum frequency of appearance for words to be learned from text is 10. Gitsaki and Melani (2013) concluded that three encounters of the target words during reading may result in some words gain, but the probability to learn is accelerating after encountering the word ten times. Reviewing some studies on incidental L2 vocabulary acquisition, Nation (1990) concluded that

full vocabulary acquisition requires a range of exposure to the target vocabulary, between 5 to 16 exposures. This means that learners need to encounter the target words five to sixteen times in various contexts in order to fully acquire them without intentional effort. The exact number of word occurrences needed for acquisition has been in debate, but many researchers put it somewhere between 6 and 12 (Jenkins & Dixon, 1983).

Studies focused on listening input however, revealed very little vocabulary learning. An investigation on learners' L2 vocabulary from listening using three vocabulary knowledge dimensions, form recognition, grammar recognition, and meaning recall did not show strong effect of frequency of word occurrence (3, 7, 11, or 15 exposures) (Van Zeeland & Schmitt, 2013). Thus, for listening to be a valuable source for vocabulary learning, it appears that considerably more than 15 exposures are needed (Van Zeeland & Schmitt, 2013). Word retention as a result of learning word through listening is also low. When subjects were tested by unprompted recall, there was almost no difference of word retention. Thus, the meaning of only 1 of the 28 items met in the reading conditions and the meaning of none of the items met in the listening-only mode, would be retained after 3 months (Brown, Waring, Donkaewbua, 2008).

Besides frequency of word occurrence, the effects of pictorial cues and glosses were also tested for their possibility to promote incidental word learning. A study (Yoshi, 2006) in a multimedia environment indicated no significant differences between L1 and L2 glosses for translation and recognition tasks and showed significant differences between picture (text-plus-picture) and no-picture (text-only) glosses for translation test only. Findings suggest that both L1 and L2 glosses are effective for incidental vocabulary learning, but long-term retention may differ between the two types; and that the effect of additional visual cues on vocabulary learning may rely on the nature of the tasks given.

A closer look at the type of word prone to be learned under incidental condition suggests that learners' retention of receptive word knowledge can be twice as much as productive vocabulary knowledge when tested after 4-week delayed (Rott, 1999). Gitsaki and Melani (2013) found that word category and word frequency (high or low) determine vocabulary learning from reading. Thus, technical words were more likely to be incidentally learned than general vocabulary, due to a number of intralexical factors (i.e. similarity of lexical forms, abstractness, word class and multiple meanings). Furthermore, low frequency words that had a concrete meaning were better acquired from reading than multi-meaning high frequency words.

From the above review of several studies, it becomes clear that the nature of incidental vocabulary learning in L2 acquisition is almost the same as in L1 acquisition. Both contexts

require learners to be exposed to the target language and involve the process of guessing the meaning of unknown words through available context. However, the number of exposures needed for learning to take place in a L2 setting may be different to the L1 setting. In addition, L2 acquisition may require exposure to a richer context, such as manipulating the learning condition with picture aids and L1 or L2 glosses.

- **Summary**

Previous research on incidental vocabulary learning shows great possibility for incidental learning to occur naturally as learners get exposed to the language. This exposure is basically through two types of input, written input and oral input. Studies that focused on written input as a source for incidental learning showed that written contexts often provide clues that can be used by readers to guess the meaning of unknown words. This cognitive process is believed to support the learning process of new vocabulary. The level of vocabulary learning varies across studies, depending on the students' proficiency, the richness of context, the number of exposures and the types of words being learned.

In terms of student's proficiency, research in L1 acquisition concluded that more proficient readers tend to be better at guessing than less proficient readers, whilst in L2 acquisition, proficiency does not seem to play an important role. However, research in both L1 and L2 agree that contextual richness such as context clues that surrounded the target words is crucial for incidental vocabulary learning. In terms of the amount of exposure needed to learn words incidentally, although studies in L1 acquisition reported that even a single exposure might affect learning, this is not the case in L2 acquisition. In fact, studies in L2 acquisition reported that multiple exposures are needed for word learning, with the number of exposures ranging between 2 to 16. In order for the words to be retained, more word repetition may be required. However, not many studies focused on the types of words that are likely to be learned from either written or oral context under incidental or natural condition.

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