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The Role of Frequency in the Elementary Foreign Language Classroom

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Abstract

Researchers state that the number of times a learner encounters a word may contribute to its acquisition (Nagy, Herman, & Anderson, 1985; Pigada & Schmitt, 2006; Rott, 1999; Webb, 2007). The current study seeks to find out whether there is a relationship between specific frequency – that is, the number of times a word occurs in a text – and vocabulary learning. Contrary to most frequency studies, a more ecological perspective is proposed here. Specific-frequency effects on vocabulary acquisition are studied under classroom conditions. A group of fourteen nine-year-old students of EFL in their fourth year of Elementary Education are tested on vocabulary contained in their coursebook. Both written and oral occurrences are taken into consideration. Receptive and productive vocabulary knowledge is assessed by means of immediate and delayed tests. Results suggest that specific frequency has a significant effect on delayed retention, though it

does not seem to make a difference in immediate retention. The learning context may have an influence on the results obtained. That is, other factors such as saliency can be more relevant in the formal context where the study was carried out. Therefore, it is recommended a combination of intensive and extensive repetition, plus focus on meaning-form link in order to profit from the formal context where vocabulary learning is taking place.

Keywords: Elementary education, Foreign language, Frequency, Saliency, Vocabulary learning

Introduction

The relevant role of vocabulary in language learning may have been a hotly debated topic in the seventies, eighties and even the nineties. However, at present, that discussion has turned obsolete. Nowadays, nobody can - or should – question the weight of vocabulary in the process of acquiring a new language. Thus, vocabulary is currently considered one of the cornerstones – some would say *the* cornerstone – of EFL learning and teaching.

An example of this situation is the increasing number of research papers and L2 vocabulary books published since the mid seventies until now (Allen, 1983; McCarthy, 1990; Milton, 2009; Nation & Gu, 2007; Richards, 1974; Schmitt, 2000). In all those works vocabulary knowledge has proved to be a hallmark in Second Language

Acquisition, and a good predictor of L2 reading and writing success (Golkar & Yamini, 2007; Laufer, 1998; Spark, Ganschow, Patton, Artzer, Siebenhar, & Plageman, 1997). Not only do researchers and teachers appreciate the relationship between vocabulary and L2 proficiency. Learners themselves regard vocabulary as one of the most important things in L2 acquisition. In fact, learning new words provides them with a feeling of general improvement in the language they are studying (Laufer, 1986).

Nonetheless, although L2 vocabulary research is no longer a neglected area, there is still a long way to find definite answers to some key questions within this field. Traditionally, vocabulary acquisition research has largely concentrated on vocabulary itself, viz. what is to be learned or what is in fact learned, rather than how vocabulary is actually learned and what affects this learning.

Regarding the latter, Nation and Gu (2007) state that not all words are equally acquired. Laufer (1997) mentions a set of factors which may have an influence on vocabulary acquisition. Frequency of occurrence is among the most important ones. In this sense, we have to distinguish between general frequency and specific frequency. General frequency refers to the number of occurrences of a word in the general corpus of a language such as the British National Corpus (BNC). General frequency studies focus on the design, and or analysis of different corpora and frequency lists. This is the case of Kucera and Francis (1967), who are interested in the creation of a corpus with the most

frequent words in English. In the same line, Nation (1990) and Laufer (1992) resort to frequency in order to establish the number of words that a learner should know for basic communication.

By contrast, specific frequency refers to the number of occurrences of a word in a given text. Specific frequency studies refer to frequency of exposure, and they are usually based on extensive (Day, Omura, & Hiramatsu, 1991; Nagy, Herman, & Anderson, 1985) and intensive reading (Gipe & Arnold, 1979). It is important to bear in mind, then, that a word with high degree of specific frequency in a text may have a low degree of general frequency in discourse. In the same vein, a word which, according to the BNC is among the 1000 most frequent words, may appear just once or twice, if any, in a textbook.

General frequency might be determinant in vocabulary acquisition (Brown, 1993). Words with a higher frequency are supposed to occur more times in discourse, providing learners with more chances of acquiring them. This type of acquisition should be preferably contemplated in naturalistic contexts, where the learner enjoys permanent contact with the L2. Yet, it is a fact that a great part of the L2 community learns vocabulary in non-naturalistic environments. English is becoming more and more necessary in all contexts, and L2 learner profiles are becoming more and more varied and specialized. In fact, not all L2 learners have the same needs and aims, especially in the

case of English as a second or foreign language. English has become the world language, the lingua franca for many different issues such as tourism, business, or music.

Heterogeneity, together with lack of non-laboratory studies, constitutes two of the reasons why despite current great interest in the fieldwork, L2 vocabulary research has not seemed to completely leak to the classroom, yet. Studies which deal with real situations are required. The present research work adopts a more ecological perspective, where the microcosmos of the classroom is taken into consideration.

Research Questions

The current study seeks to find out whether there is a significant relationship between specific frequency and vocabulary learning within the context of EFL formal instruction. The possible effect of specific frequency will be analysed. This aim is materialized into two questions:

- Is there a significant relationship between specific frequency and immediate vocabulary acquisition, regarding receptive and productive knowledge?
- Is there a significant relationship between specific frequency and mid-term vocabulary retention, regarding receptive and productive knowledge?

Method

Subjects

Initially the group of participants was to be formed by 25 students, but nine of them were discarded because they previously knew some of the words which were going to be tested. Eventually, a total of 14 nine-to-ten-year-old children (9 male and 5 female) in their fourth year of Elementary Education took part in the study. They were all native speakers of Spanish. They all attended regular lessons at a state school in the South-East Spain, and received 2 and 45 minutes of EFL instruction a week. At the moment the study was conducted, they had been learning English for 21 months. Contact with this language outside the classroom was very rare. No subject attended extra English lessons, so that exposure to the foreign language was limited to the English lessons at school. At the same time, instruction was not completely delivered in English. Spanish was mainly the vehicular language in the classroom and the use of English was basically constrained to written and oral activities in the textbook.

Materials

In order to carry out the present study we resorted to the English textbook used by the participants in their EFL lessons. *Cool Kids 4* (2006) is a course book especially designed for EFL elementary students. It has been written by Paul Davies and published by Burlington Books. It contains 6 didactic units, plus an introduction, and two special sections devoted to Bonfire's night and New Year's Eve. Each didactic unit presents a

series of target words, and it is organized into eight parts. Target vocabulary appears as the basis of dialogues, songs and other types of texts in the coursebook. Units present a series of activities where different linguistic skills are integrated, and target vocabulary appears. The study is based on unit 3 of the textbook, which deals with jobs and physical descriptions. It presents 21 target words among which we can find 17 nouns and 4 adjectives.

Instruments and procedure

All students were given a pre-test three weeks before they began working with unit 3. This pre-test consisted of translating 21 English forms into Spanish. Those words were the same they would encounter in unit 3, and be tested afterwards.

The study is based on lessons 1 to 5 in Unit 3 of *Cool Kids*. Oral and written occurrences elicited by the textbook were both considered. The several texts found in those parts were digitalized and analysed with the RANGE programme designed by Nation (2005). This programme classifies words according to their general frequency – that is, the number of occurrences in general discourse – and their specific frequency or the number of occurrences in a specific context such as a written text or oral interaction. The session was also tape-recorded in order to register oral exposure to the target words. Occurrences of the target words were computabilized. The specific frequency of each target word is the result of both its oral and written occurrences.

We focused on the target vocabulary proposed for that didactic unit. Unit 3 presents 21 target words which ranged from 3 up to 18 occurrences. Given the wide spectrum of specific frequencies found, target vocabulary was organized into three categories. The first category (Category I) contained words appearing from three to six times. Words appearing from seven to ten times fell within the second category (Category II). Finally, the third category (Category III) corresponded to words occurring more than ten times.

Table 1. Frequency of oral and written occurrences of target vocabulary

Category I (X3)	occurrences	Category II (X7)	occurrences	Category III (X10)	occurrences
Costume	4	Baker	7	Beard	16
Dancer	5	Clown	8	Curly	12
Dress	4	Dark	8	Glasses	18
Shirt	5	Fair	8	Hat	17
Shoes	5	Jacket	8	Moustache	11
Skirt	4	Ponytail	7	Trousers	12
Socks	3	Straight	9	T-shirt	11

The study was carried out during a double English session of two hours. The session presented two parts. In the first one, textbook lessons from 1 to 5 were developed as usual, but the students were not informed that they would be assessed on vocabulary knowledge at the end. Students paid attention to the teacher, asked questions and worked with the different songs, chants and activities contained in the first five lessons of unit 3. The first part of the study took 80 minutes. Given the considerable amount of time required and the students' short age, the 80 minutes were distributed into two forty-minute periods. Between one period and the other, and also just before getting into the second part of the session, a five-minute break was taken so that students could keep concentration.

In the second part of the session two tests were administered to the students. These two tests were devoted to assess immediate retention, that is, the vocabulary knowledge which has been acquired just after the lesson. The first one was a L1-L2 translation test where subjects had to write the L2 equivalent of a series of L1 words. The aim of this test was to elicit productive knowledge of the target vocabulary. The Spanish equivalents of the 21 target words were alphabetically displayed together with a dot line where the corresponding L2 word had to be provided. The second test consisted of a L2-L1 translation test where children had to provide the L1 equivalent of a series of words. It pursued the assessment of the receptive knowledge of the target words. Words were alphabetically presented to the children. Next to each word a dot line appeared where the L1 equivalent was to be provided.

Subjects first completed the L1- L2 test and then the L2-L1 test. The order of distribution was not random. We wanted to prevent students from copying answers or gleaning hints from one test onto the other. The L1-L2 test is considered cognitively more difficult than the L2-L1 test (Scholdfield, 1991). This is the reason why it must be done in the first place.

Three months later identical L1-L2 and L2-L1 tests were administered again to the same subjects under the same conditions. The aim was to assess delayed retention, that is, the vocabulary knowledge which was still remembered some time after dealing with the target words.

A dual scoring system (0/1) was used in order to mark test answers. Regarding L1-L2 immediate and delayed tests, correct answers scored 1 point, whereas 0 was credited for blank or wrong L2 translations. Yet, correct translations with spelling errors were accepted as long as: a) they did not distort the meaning of the word; b) the L2 form was itself understandable. An example of the first case is illustrated as follows: the L2 form 'bread' or 'bear' instead of 'beard' as the equivalent of the L1 'barba' (beard). The letter swap or the missing of the last letter here are not only spelling errors, but they also lead to meaning confusion. In this case, both 'bread' and 'bear' would score 0 points. However, as an example of the second case we can find the form 'jaket' instead of 'jacket'. 'Jaket' would be considered right and would score 1. In fact, even though the

letter 'c' is missing, the form is perfectly understandable. As for L2-L1 translation tests, including the pre-test, one point was given to right L1 equivalents. Spelling errors in the students' L1 were not taken into consideration, as the important thing was meaning. Blank or incorrect L1 translations were scored 0.

A series of repeated measures analyses were run using the receptive immediate test scores, the productive immediate test scores, the receptive delayed test scores and the productive delayed test scores of each subject. Version 17.0 of SPSS (2008) was applied in the statistical analysis.

Results

Pre-test

The fourteen participants scored 0 for the L2-L1 translation pre-test. In fact, there was small chance that they knew the words given their low level, but the pre test would confirm that our assumption was right.

Immediate Post-tests: Is there a significant relationship between specific frequency and immediate vocabulary acquisition, regarding receptive and productive knowledge?

Analyses of repeated measures showed a clear difference between immediate vocabulary knowledge and delayed vocabulary knowledge. In the first case specific frequency did not seem to be determinant for the learning of target vocabulary. Both receptive and productive vocabulary was not significantly affected by the number of occurrences of the words. That is, words such as ‘socks’ and ‘costume’ with just 3 and 4 occurrences respectively presented similar or even higher degree of acquisition than words such as ‘curly’ or ‘hat’ which occurred more than ten times.

Delayed Post-tests: Is there a significant relationship between specific frequency and mid-term vocabulary retention, regarding receptive and productive knowledge?

However, we obtained a different picture regarding delayed tests. Specific frequency seemed to have an effect on vocabulary retention after three months. Put another way, the number of times words occurred during the session had an effect on their mid-term retention. This significant effect was found both in receptive and productive results. As for receptive knowledge, the analysis showed that there was a significant repetition effect [F (2, 26) 5.57 p = .01]. This effect was especially significant in those words occurring more than 10 times. That is, category +10 produced significantly higher scores than fewer repetitions of words found in categories I (3-6 repetitions) and II (7-10 repetitions). In the same vein, specific frequency proved to be significant in productive knowledge retention.

In fact, the effect was even higher than that found in receptive knowledge [F (2, 26) 9.48 p = 0.001].

Discussion

Results show that the effect of specific frequency on vocabulary learning differs depending on the moment this learning is assessed, that is, whether it is tested just immediately after dealing with vocabulary or some months later.

Specific frequency does not significantly affect immediate vocabulary acquisition

As for immediate learning, the number of times a word occurs does not seem to make any significant difference in its acquisition. This is given both in receptive and in productive vocabulary knowledge. One of the possible reasons why this can happen is that the number of encounters in the study was too low. We might have needed more occurrences for the effect to be significant.

Despite that fact, some authors (Saragi, Nation, & Meister, 1978; Waring & Takaki, 2003; Webb, 2007) observed that ten occurrences were enough for obtaining an impact on vocabulary acquisition. What is more, Hulstijn, Hollander, and Graidanus, (1996) or Rott (1999) showed that even two or three encounters can have an effect on word learning.

Yet, it is fair to say that enhancement was found only at the receptive level, in a stage of mere recognition. Put another way, learners reported having seen the words before but were not able to provide further information.

Meara (1997) suggests that there is only a 0.01 hypothesis (1 uptake every 100 exposures) for L2 learners to be able to acquire a word under mere specific-frequency effects. In fact, previous studies such as Pigada and Schmitt (2006) recognize that at least twenty occurrences are necessary for noticing a significant effect on vocabulary acquisition. Maybe this effect would have been noticeable in immediate acquisition if we had increased the number of word occurrences. Yet, more repetitions would have implied more input, and consequently more contact with the L2, something which is very difficult to find in formal learning contexts.

Hence, the learning context where the study was developed may be the second reason why specific frequency does not seem to be significant for immediate vocabulary learning. This type of effect is normally related to a naturalistic context of learning (Nation, 2001). Krashen (1981) argues that the naturalistic learning process is normally unconscious. Thus, naturalistic contexts are characterized by incidental or ‘informal’ language learning. It is under this kind of situation where the effect exerted by the number of word occurrences can be more noticeable. Indeed, it is argued that it is implicit rather than explicit learning which is strongly affected by repetition (Nation, 2001).

In this sense, we could say that the learning context somehow predisposes students to one or other type of vocabulary learning (Gu, 2003; McNamara, 1973). Nonetheless, we cannot assert that there is a direct and simple relationship between the learning context and a given type of vocabulary acquisition. Vocabulary can be acquired consciously in naturalistic contexts, and vice versa, vocabulary can be learned unconsciously under formal instruction. Indeed, Ellis (1994) asserts that the learning context itself is not really determinant. The key is the quantity and quality of opportunities of learning, regardless the nature of the learning context.

Our study is carried out in a formal context, where most learning is expected to happen by means of instruction and the learners' conscious attention. Accordingly, it is important to remark the role of saliency in this type of context. Saliency refers to the importance of a word. Words can be salient in different ways, for instance, because they are vital to the message. In this sense, Sternberg (1987, p. 93) states that "if a given unknown word is judged to be necessary for understanding the surrounding material in which it is embedded, the reader's incentive for figuring out the word's meaning is increased".

However, for the sake of the present study we will define saliency as 'instructional focus'. In Brown's words (1993) saliency can be identified when "a teacher explicitly teaches a word, gives the word on a list to be learned, or has students do exercises using the word"

(Brown, 1993, p. 265). This kind of practice can be classified within the explicit vocabulary approach. In the explicit approach vocabulary receives direct attention: learners spend some time doing different sorts of exercises where target vocabulary is used (Nation, 1982). Alternatively, in an implicit approach vocabulary appears as part of activities whose main goal is other than lexical. Besides, learners are encouraged to do a substantial amount of graded reading, so that direct attention to vocabulary will only derive from problems in understanding the reading.

Debate regarding the best way to approach vocabulary is still far from being resolved. Some researchers (Grabe & Stoller, 1997; Mason & Krashen, 1997) remark on the effectiveness of implicit vocabulary learning. They assert that mere exposure can lead to substantial vocabulary improvement. However, Coady (1997) argues that the fact that one word appears a certain number of times does not warrant that it will be processed by the learner. In this respect, more and more studies warn about the ineffectiveness of just using implicit instruction and remark the need to accompany it with an explicit vocabulary approach. In a study by Horst, Cobb and Meara (1998), low intermediate EFL learners read a 109-page book over a ten-day period. Of all the input prone to be obtained, the pick-up rate did not overcome 20% vocabulary. In fact, studies comparing explicit and implicit vocabulary approach have shown that the former usually offers better results than the latter (Paribakht & Wesche, 1997). Therefore, the fact that frequency does not seem to be determinant for immediate acquisition might be due to other factors which intervene in the participants' learning process.

Specific frequency has a significant effect on mid-term vocabulary retention

Specific frequency does seem to have an effect on mid-term vocabulary retention. The reason for this may be the relationship between specific frequency and incidental vocabulary acquisition mentioned above. That is, the number of exposures and its effect on vocabulary acquisition seems to be more noticeable in informal contexts, where vocabulary learning is normally implicit. This type of acquisition requires slower processing and more time than intentional learning. In this sense, the effect of specific frequency may have been noticed three months later, where knowledge has been eventually processed.

This effect is especially remarkable in the third category of target words, that is, words occurring more than 10 times. However, there is disagreement about the number of encounters necessary to learn a word. Nagy et al. (1985) define vocabulary learning as a gradual process, where gains are made in small increments with repeated encounters needed to gain full knowledge of a word. They argue that even a single encounter with a word could push the knowledge of that word “a little bit higher on the scale of knowledge” (Nagy & Herman, 1987, p. 25). In fact, Horst et al. (1998) reported that with only a second reading of the same text, substantial word learning was registered.

Rott (1999) states that improvement is noticed with only 2 encounters, but 6 exposures are necessary for the effect to be really significant. Bunker (1988) claims that at least five encounters are required. Kachroo (1962) increases the number up to seven. Horst et al. (1998) argue that at least 8 or more encounters are required, and Reyes (1999) states that no less than nine occurrences are needed. Nation (1990) warns about the dangers of establishing a fixed number. That is why he prefers to offer a range, concluding that 5 to 16 exposures are needed in order to learn a word from context. Hence, every single encounter potentially helps acquisition. Yet, the safest thing to say might be in the line of what Nation and Wang claim: “there is not set number of repetitions that will ensure learning” (1999, p. 363).

On top of this, it should be clear that whatever the number might be, the relationship between frequency and vocabulary acquisition is “not unambiguous” (Pigada & Schmitt, 2006, p. 19). For instance, our study presents words which occur over 10 times and are not acquired neither in immediate nor in delayed tests. In fact, frequency is just one of the many factors that may affect vocabulary learning.

Our results of delayed retention are in line with other frequency studies such as Waring and Takaki (2003). They observed that the number of times a word occurred in a learning context affected its retention three months later. Nonetheless, the effect of specific frequency in their study presents a moderated degree of significance. Words occurring

more than 15 times only had around 40% chance of being acquired. The authors suggest that at least 20 to 30 encounters are necessary for word meaning to be retained after three months. However, comparison between our study and other frequency studies such as the one mentioned here has to be taken with caution, given the different learning contexts and conditions under which studies are conducted. In Waring and Takaki (2003), learners were expected to acquire vocabulary from extensive reading. The subjects were asked to read the story and enjoy it without any kind of vocabulary focus, explanations or post-reading activities.

This way of approaching new vocabulary is clearly different from the learning context found in our study. We deal with the usual situation in the context of EFL formal instruction, where students are normally involved in different activities, and explanations and clarifications are the norm. Waring and Takaki (2003) is not an exception. Most studies deal with frequency effects by means of extensive reading, differing from the general picture that we can see inside a classroom. The dynamics of the EFL instruction goes beyond extensive reading. There is interaction between the students and the teacher, focus on form, different tasks and explanations.

Pedagogical Implications

When teaching vocabulary we have to be aware of the learning context in which this teaching is carried out, making use of the factors which may help acquisition. In the present study we have explored the role of the specific frequency in a formal learning context. As stated above, students are exposed to a very limited input. These circumstances are not the most adequate for specific frequency to be significant for acquisition.

Nonetheless, we have observed that specific frequency is significant for mid-term vocabulary retention. This effect may be due to the nature of this factor itself. In other words, specific frequency is more related to implicit learning, where knowledge may require certain processing time. A certain amount of time may be necessary for repetition to have an effect. What is more, the ultimate goal of vocabulary teaching is to retain vocabulary as long as possible. In this sense, we can assert that specific frequency does play a role in formal contexts, as its effect can be useful for mid-term retention.

Taking into account the results in this study, three measures are proposed for approaching vocabulary in formal contexts:

1. Intensive repetition. By ‘intensive repetition’ we mean increasing the number of word occurrences in one and the same lesson. As we have observed, not all target words occur

the same number of times. A possible way to solve this heterogeneity is by reinforcing those target words which occur less frequently in the unit.

Nevertheless, it is fair to say that teachers cannot really control the number of times that target vocabulary may occur. Didactic materials and the group dynamics will determine the frequency of occurrence of vocabulary. In addition, we have to be aware of the limited amount of time which is normally available for complying with the course programme. That is why intensive repetition does not necessarily have to be done by means of written and highly elaborated tasks.

Little oral activities where students have the chance to recognize and produce target words can be useful. For instance, imagine one of the readings in the textbook contains the word 'trousers'. The didactic unit where this text appears deals with clothes, and 'trousers' is one of the target words. Yet, this word only occurs twice in the unit. Intensive repetition can be applied by means of short student-student or teacher-student interactions after reading the text. If 'trousers' is the target, students can be asked about the trousers they are wearing that day; if they normally wear trousers; or which type of trousers they like or dislike. The aim of this interaction is to increase the frequency of occurrence of this word in context.

2. Extensive repetition. It refers to periodical word occurrences along a course. The best way to do that is by means of a recycling programme. In order to design a recycling programme, the first thing to do is to identify which words are going to constitute that programme. We can use our own selection criteria, though there is the risk of subjectivity and arbitrariness. Nowadays, most textbooks or didactic guides offer a list of target vocabulary to be learned by students. This can be the basis for our programme. The second step is to establish the repetition periods. They will depend on several factors among which are the time available, the students' age and L2 level. The more time available along the course, the more recycling we can do. The students' age and L2 level are also determining factors. The lower the age and L2 level, the more recycling is recommendable.

3. Focus on meaning-form link. Despite the importance that specific frequency may have for foreign language vocabulary acquisition, we should not expect that in a formal context most words can be acquired just because they appear a certain number of times. Under formal circumstances both input and chances of repetition are limited. That is why it is essential to get the students' explicit attention on target vocabulary. Activities which focus on meaning-form acquisition are necessary to warrant learning. Many contemporary foreign language textbooks offer a wide range of activities, some of them dealing with vocabulary. Nonetheless, in the case lexical reinforcement is required one of the most direct ways to board meaning-form link is by means of flashcards. They provide

quite a straightforward association between the concept and the L2 linguistic representation of that concept.

Taking into account the results of our study and the formal context in which teachers work, it is recommended a combination of implicit (intensive and extensive repetition) and explicit (focus on form-meaning link) teaching.

Conclusion

The present study has explored the role of specific frequency under formal EFL instruction. Results have shown that the number of times a word occurs in a specific context has a complex relationship with its acquisition. Whereas it seems to be non significant for immediate learning, it might have an effect on mid-term retention both in receptive and productive terms. This is possibly due to the fact that specific frequency is more closely related to incidental learning, and as such, its effects are more noticeable in mid and long-term, when knowledge has been processed. Being aware of those results, some pedagogical directions are provided for approaching vocabulary in the EFL classroom. Intensive and extensive repetition, together with some explicit attention to vocabulary are recommended in order to obtain good results when teaching vocabulary.

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