INCIDENTAL VOCABULARY LEARNING AND RETENTION IN EDUCATION-ORIENTED L2 COMMUNICATIVE TASKS: THE EFFECT OF TESTING CONDITIONS

APRENDIZAJE INCIDENTAL DE VOCABULARIO Y RETENCIÓN EN TAREAS COMUNICATIVAS ORIENTADAS A LA EDUCACIÓN EN LA L2: EL EFECTO DE LAS CONDICIONES DE PRUEBA

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Abstract

Vocabulary learning is pivotal for language learning as it is a cross-sectional aspect related to both receptive and productive skills. L2 vocabulary learning has given way to a substantial body of research in which the role of implicit and explicit instruction has been central. Bearing in mind the importance of communicative tasks as sources for vocabulary learning, this study will explore how vocabulary presented with context and without context is retained. 39 undergraduate students were assigned to each of these conditions, and after performing a communicative task which included a warm-up activity with a set of 15 target words, they completed a word meaning test (post-test) and repeated the same test after two weeks. The data gathered was analyzed using a quantitative approach. Findings indicate that the type of vocabulary test with context-embedded words is more effective for vocabulary retention in the short term. Nevertheless, multi-word items were better identified with the no-context vocabulary test, a finding supported by previous research. The present study raises the possibility that different vocabulary strategies are used by EFL learners, and that warm-up activities may contribute to L2 vocabulary learning.

Keywords: communicative tasks, vocabulary retention, incidental vocabulary learning; speaking skills, vocabulary enhancement.

Resumen

El aprendizaje del vocabulario es fundamental para el aprendizaje de un idioma ya que es un aspecto transversal relacionado tanto con las habilidades receptivas como productivas. En este sentido, el aprendizaje del vocabulario en una lengua extranjera (L2) ha dado lugar a una gran cantidad de investigación en la que el papel de la enseñanza implícita y explícita ha sido central. Teniendo en cuenta la importancia de las tareas comunicativas como fuentes para el aprendizaje del vocabulario, este estudio explorará cómo se retiene el vocabulario presentado con contexto y sin él. 39 estudiantes de grado fueron asignados a cada una de estas condiciones, y después de realizar una tarea comunicativa que incluyó una actividad de calentamiento con un conjunto de 15 palabras objetivo, completaron una prueba de significado de palabras (prueba posterior), y repitieron la misma prueba después de dos semanas. Los datos recogidos se analizaron utilizando un enfoque cuantitativo. Los resultados indican que el tipo de prueba de vocabulario con palabras en contexto facilitan la retención del vocabulario a corto plazo. Sin embargo, las palabras múltiples (*multi-word items)* se identificaron mejor con la prueba de vocabulario sin contexto, lo cual está respaldado por investigaciones anteriores. El presente estudio plantea la posibilidad de que los estudiantes de inglés como lengua extranjera (EFL) utilicen diferentes estrategias de vocabulario, y que las actividades de calentamiento puedan contribuir al aprendizaje del vocabulario L2.

Palabras clave: tareas comunicativas, retención del vocabulario, aprendizaje de vocabulario de forma incidental, destrezas orales, mejora del vocabulario.

1. Introduction

When learning a second language (L2), one of the primary lexical objectives is to increase vocabulary breadth and knowledge, and "the means for achieving these objectives are skill-based and include training learners to effectively learn decontextualized lexis, consolidate and elaborate previously met lexis, consult dictionaries, infer from context, and engage in reading for meaning" (Hunt and Beglar 2005: 26). Additionally, the knowledge of L2 vocabulary is regarded as an essential cornerstone to being successful in language learning. Previous research has attempted to demonstrate that vocabulary knowledge learning and acquisition are dependent on a number of variables such as frequency of exposure, input, output, strategies to learn vocabulary, reading and speaking skills, and the use of tasks as sources of vocabulary learning. Tasks constitute the core of most teaching approaches, and depending on their sequencing, they might be included within

the area of explicit or implicit instruction, or both. Thus, the importance of tasks as sources of incidental vocabulary learning (Keating 2008) has made it necessary to observe the degree of retention of lexical items on the learners' part. Similarly, few studies of incidental learning have been conducted considering other modes of input apart from the combination of different types of input (Webb 2019).

The present study intends to add new empirical evidence on the role of communicative tasks, by means of a pedagogically tested L2 task for use in Higher Education (see Garcés-Manzanera 2021a) in an attempt to test further vocabulary retention. Thus, the objective is two-fold: (a) to provide an exploratory insight into the role of communicative tasks for vocabulary retention, and (b) to explore the possible value of context or absence of context when students are tested on the target words retained.

2. Theoretical Background

2.1. L2 Vocabulary Learning

L2 vocabulary learning and acquisition is dependent on a number of cross-sectional variables that enable learners to build their lexicon repertoire. Among these, the frequency of exposure when receiving input has been a major concern given its influence on the retention of vocabulary (see Webb 2007). In this vein, the more frequent number of encounters of a word or expression, the higher the possibilities for these words to be retained (Laufer 2003). However, another variable together with the frequency of exposure in conditioning vocabulary retention is the presentation of this vocabulary; that is, how lexical items are presented in the input.

Determining the best conditions inducing efficient vocabulary processing has been a major concern of research on L2 vocabulary learning (Laufer and Rozovski-Roitblat 2011). However, no consensus has been reached thus far, and more evidence should be obtained in this respect. Among these conditions are the language-oriented tasks —allegedly related to the manner of presenting the vocabulary in the input. Research has examined how the type of task may contribute to vocabulary learning and retention on a short-term and long-term basis. Studies on L2 vocabulary learning have relied on different types of tasks: communicative tasks (e.g. Huckin and Coady 1999), decontextualized Focus-on-Form activities without a communicative component (e.g. Laufer 2003, 2006), and Focus-on-Form activities with target words in the conversation (e.g. De La Fuente 2002).

Besides the importance of the type of task, L2 vocabulary learning has been part of a dichotomous view of instruction: explicit vs implicit instruction (see Hulstijn et al. 1996; Hunt and Beglar 1998).

2.2. Explicit vs. Implicit Instruction

L2 vocabulary learning cannot be understood without the role of explicit and implicit instruction (Hunt and Beglar 2005). Explicit instruction involves learners' attention being focused on vocabulary items while implicit instruction aims to spark the learners' attention toward the element of interest "minimizing any interruption to the communication of meaning" (Doughty and Williams 1998: 231). Hunt and Beglar (2005) pioneered this distinction: explicit lexical instruction builds on the role of the use of dictionaries, decontextualized lexis and vocabulary inference from context. Previous research has considered the role of decontextualized lexis as ineffective for vocabulary retention (Nagy 1997), although others have advocated its efficiency when combined with large amounts of written input (Hunt and Beglar 2005). In this regard, explicit lexical instruction has equally been supported as an ecologically valid L2 vocabulary learning technique given its relation to vocabulary inference from context, which, in essence, is intentional. However, much of this context in which vocabulary is embedded should be 98% comprehensible, according to previous research (Hirsh and Nation 1992).

Implicit lexical instruction has been characterized by the reception of rich, contextualized comprehensible input in *great amounts* (Hunt and Beglar 2005). Indeed, implicit lexical instruction involves a more relaxed approach to vocabulary learning, since the focus is placed on meaning-focused aspects. That is, learners are not enticed to focus on specific words or multi-words. To illustrate this, some tasks contain a reading component that allows lexical instruction to be purely implicit —for instance, when learners are asked about content-based information from the text without referring to a specific vocabulary word or expression. As a result, the primary aim of the activity is not learning vocabulary but rather answering to show comprehension. Should vocabulary learning occur, such a process would be framed within what has been defined as *incidental vocabulary learning* (Chen and Truscott 2010).

2.3. Incidental Vocabulary Learning

Incidental vocabulary learning has received varied definitions given the difficulty of conceptualizing the construct. Traditionally, incidental vocabulary learning has been defined from two different perspectives. Hulstijn (2001) regarded it as the type of vocabulary learning that occurs when learners are not forewarned of a vocabulary test after the activity or lesson. The second definition, which is the commonest one in the scientific literature, views incidental vocabulary learning as a by-product of a meaning-focused task (see Ellis 1999; Chen and Truscott 2010). The many definitions have provided

varied perspectives in the conceptualization of incidental vocabulary learning. In essence, some intention may be present in incidental learning vocabulary learning, which has been viewed as a challenge (Webb 2019). Previous research using novel methodological techniques such as eye-tracking has revealed that learners attend to novel vocabulary more, contributing to learning (Pellicer-Sánchez 2017; Godfroid et al. 2018). Thus, there is some intentionality underlying the incidental perspective of vocabulary learning. Additionally, the dichotomy between explicit and implicit learning is equally of relevance in the area of L2 vocabulary learning. Explicit learning may occur either intentionally or incidentally (Laufer and Hulstijn 2001), and implicit learning is purely incidental. In other words, L2 learners must be informed beforehand for explicit learning to be purely intentional.

Research on incidental vocabulary learning has traditionally relied upon meaning-focused comprehension tasks instead of word-focused tasks such as flashcard learning. The main rationale behind meaning-focused comprehension tasks is rooted in the fact that learners' attention is geared towards comprehension and not towards vocabulary learning (see Swanborn and de Glopper 2002). However, as pointed out by Uchihara et al. (2019), the use of a methodological procedure (e.g. announcing a vocabulary test or the use of a specific type of task) does not rule out that learners may engage in intentional vocabulary learning (see also Pellicer-Sánchez and Schmitt 2010).

In this scholarly domain, one of the earliest attempts to accumulate evidence on the role of incidental learning was Nagy et al.'s (1985) seminal study. Framed within the first language (L1) context, their study intended to determine whether students acquired measurable knowledge about unknown words when reading natural texts. Their findings revealed that word knowledge through context was slightly increased thanks to reading. In essence, Nagy et al. (1985) demonstrated that encountering a word multiple times pointed to further retention in the long-term memory. Their study paved the way for future L2 research on vocabulary learning, and more importantly, the role of repetition for incidental vocabulary learning. The bulk of research on L1 (e.g. Nagy et al. 1987; Jenkins et al. 1989) and L2 words (Day et al. 1991; Waring and Takaki 2003) and collocations (Webb et al. 2013; Pellicer-Sánchez 2017) has revealed that these lexical items are usually learnt incidentally through reading (Webb 2019). Additionally, the focus of research on L2 incidental vocabulary learning has primarily relied on the frequency of occurrence as a key variable in the process, especially when these words appear in written input. For instance, studies have revealed that words encountered in context with a higher frequency are more likely to be retained (Waring and Tataki 2003; Pigada and Schmitt 2006; Chen

and Truscott 2010). Yet, studies have not concluded the existence of a threshold that ensures learning as well as the retention of a word or lexical item (Webb 2019). Research in this respect has shown that the number of encounters necessary for substantial learning is variable, and more importantly, what implications it might have for vocabulary retention. Equating word knowledge with form recognition (Webb 2019), studies such as Chen and Truscott (2010) or Webb (2007) suggested that one word encounter may suffice for learning to occur in reading. Nevertheless, meaning recognition has been reported to require more than one encounter ranging from two (Rott 1999) to four (Pellicer-Sánchez and Schmitt 2010) to ten or more (Pigada and Schmitt 2006). In spite of the vast amount of research conducted, more empirical evidence has to be accumulated in an attempt to amplify other variables that might come into play in incidental vocabulary learning.

In this regard, Webb (2019) also mentions another important methodological variable, which is the *timing* of administering vocabulary posttests; that is, observing the temporal extent of vocabulary retention. Scholarly works have revealed varied findings. For instance, Waring and Takaki (2003) observed that a drastic loss of meaning recall occurred after three months (42% to 6%). This is aligned with Webb and Chang's (2015) study whose findings revealed that only 7.2% of words were retained after three months. These studies were conducted in a tertiary-level setting, and they relied exclusively on extensive reading. Nevertheless, English as a Foreign Language (EFL) undergraduate students usually draw on word knowledge seen in the classroom rather than engaging in extensive reading, which is a purposeful learning technique. As a result, exploring word knowledge with on-the-spot classroom tasks that are not *exclusively* focused on one skill (e.g. reading as a pre-task of a communicative activity) may aid in observing whether incidental vocabulary learning genuinely occurs and whether it is retained in the medium or long term.

The importance of methodological variables has also been considered, and their inclusion in research designs has yielded varied results. Research has considered the use of non-words, which are words not belonging to the lexical repertoire of any language, in an attempt to control for learners' pre-existing knowledge of target words (e.g. Reynolds 2018). However, non-word use does not reflect actual L2 learning in a real-life situation given the overestimation of learning (Chen and Truscott 2010). Yet, the use of non-words is reported to constitute a methodological constraint. This is why the use of real words in testing conditions in research on L2 incidental vocabulary learning deserves further exploration (Webb 2019). Similarly, studies have exclusively relied upon meaning-recognition and meaning-recall tests. However, to date, the role of contextualized words has not been considered in the

methodological procedures. Testing conditions in which participants have to recognize isolated words or words in context have not been explored sufficiently in this scholarly area.

Another important methodological variable has been the announcement of a comprehension test since, as mentioned above, when learners are informed of a vocabulary test after meaning-focused tasks, more vocabulary is incidentally or intentionally learned (Webb 2019). In terms of learning gains, informing participants of an upcoming vocabulary test may be helpful as they might direct their attention to aspects such as topic-related lexis (Swanborn and de Glopper 2002). Other studies, such as Paribakht and Wesche (1997), revealed that informing participants may lead to intentional repeated encounters, requiring more mental effort in understanding unfamiliar words.

In the case of the type of words, i.e. single-word or multi-word items, recent studies have explored their incidence on L2 vocabulary learning. Chang and Chen (2022) looked into the vocabulary retention of these two types of words in both written and oral vocabulary exercises using different vocabulary tests. Their findings indicated that participants obtained higher results in the L2 meaning recall test, and that retention was more marked in multi-word items than in individual words.

The role of repetition in L2 vocabulary learning has been regarded as dependent upon the measures used to assess learning, that is, form recognition and meaning recall, both of which are types of exercises in vocabulary tests. This was suggested by earlier studies (Webb 2007). Parallel to learner-related variables —e.g. age (de Vos et al. 2018) or vocabulary knowledge, i.e. the degree of active and passive vocabulary as well as the effective use of these items of vocabulary (see Zahar et al. 2001; Elgort and Warren 2014)— treatment variables deserve our attention: (i) *spacing* in terms of treatment-testing intervals has been a concern in L2 incidental vocabulary learning, whose study (e.g. Tekmen and Daloğlu 2006; Webb and Chang 2015) has revealed that massed learning conditions, in which learners practice a task continuously without rest (Namaziandost et al. 2020), are more likely to increase the effects of frequency on learning vocabulary; (ii) *the mode of input* is equally relevant since the presentation of the input may condition the manner in which a word is retained. In this case, written input is more salient than spoken input (Brown et al. 2008; Vidal 2011), thus favoring incidental vocabulary learning.

Building on all this previous research on L2 incidental vocabulary learning, there is still a concern on the frequency of words, that is, on the number of times a learner needs to encounter a specific word to retain and learn it. In this regard, no consensus has been reached and the lack of a specific threshold makes

it necessary to accumulate more evidence, especially on one-time encounters (Chen and Truscott 2010). Similarly, the bulk of research has focused on assessing learners' vocabulary retention on extensive reading (e.g. Boutorwick et al. 2019; Song 2020) and on auditory or visual stimuli, such as television (e.g. Rodgers and Webb 2020) or listening to songs (Pavia et al. 2019). To date, no study has explored the extent to which pre-task activities (e.g. warm-up reading input as part of communicative tasks) may contribute to L2 vocabulary learning. This is a topic of research interest worth exploring since it constitutes a key site for incidental vocabulary learning. Webb (2019) alludes to the benefits of other more auditory or visual modes (e.g. TV watching or listening) for incidental learning; however, the value of the written text for lexical development is still a key source for incidental L2 vocabulary learning (see Godfroid et al. 2018). As a result, there are no studies focusing on reading and speaking combined in L2 vocabulary learning. The following section aims at exploring conceptually both skills, and their theoretical and empirical implications for this area of research.

2.4. Reading and Speaking for L2 Vocabulary Learning

Studies on L2 vocabulary learning have shown that vocabulary is primarily acquired through reading input (Laufer 2003). Reading is an interactive activity since the reader proceeds to "extract, or build, meaning from a text" (Grabe 2014: 8). When reading in an L2, comprehension efforts are directed toward learning. Thus, the reader's effort is channeled through monitoring the difficulties in the mental representation of the meaning (Perfetti and Adlof 2012). Such effort is directly connected with incidental vocabulary learning, since learning a word or phrase in an effortful manner —thus, activating cognitive operations— may lead to subsequent better retention. The cognitive operations involved in reading are part of both receptive and productive skills, for instance, linguistic encoding, comprehension, and the comparison of the input with previous knowledge (Garcés-Manzanera 2021b).

Reading is certainly a skill that contributes to incidental vocabulary learning (see Nagy et al. 1985), and such a characteristic has been echoed by some voices (e.g. Swanborn and de Glopper 2002) since word-meaning connections are established without purpose. Reading for L2 vocabulary learning is related to the focus on, or absence of, vocabulary instruction *per se* (Stallman 1991). Reading has to be coherently coupled with the learners' objectives. In other words, learners who are focused on reading a text but pay special attention to vocabulary are more likely to retain it. This is why it has been put forward that reading with a purpose has a positive effect on incidental vocabulary learning (Swanborn and de Glopper 2002).

This purpose entails, for instance, answering reading comprehension questions despite the fact that the purpose will not be communicative.

Several theories emerged on the basis of the motivational-cognitive construct of involvement (Laufer 2003; Laufer and Hulstijn 2001) as a highly reliable predictor of task effectiveness and retention of new words. This *involvement* is composed of three different components: (1) need, (2) search, and (3) evaluation, and they are related to the need for reading to be linked to the learners' purposes. In the case of the *need* component, it is a fully motivational dimension since it suggests that L2 learners are driven by either an external or internal agent when reading a text. An external agent would be the role of the teacher as director of the task. Learners are the external agents since they shoulder the burden of looking up a word in a dictionary while reading instead of asking an external source. The *search* component, on the other hand, is pivotal in order to foster the creation of mental mapping connections that further ensure the retention of new words. Finally, the *evaluation* component is a certain type of cognitive comparison given the establishment of hypotheses between a given word and other words in an attempt to discover its meaning.

Laufer (2003) claimed that, despite the obvious efficient role of reading and its contribution to L2 vocabulary learning and retention, it is certainly not the only source whereby L2 learners may learn and acquire vocabulary. In this context, reading has equally been part of tasks mainly aimed at other skills, such as communicative tasks. This type of task is communicative in nature, and generally includes a reading or listening component. This leads us to consider the potential role of speaking and reading combined in the retention of L2 vocabulary. As mentioned previously, the cognitive effort while reading a text in an L2 is considerable and may be conducive to learning, but the introduction of a speaking component may guarantee that this retention is more long-lasting given the role of negotiation of meaning while speaking (see De la Fuente 2002).

The connection between reading and speaking has already been explored in previous research (e.g. Garcés-Manzanera 2021a). Oral production is regarded as a productive skill since it involves the production of utterances to convey meaning to words. It involves the connection of speech, the use of expressive devices so that ideas are coherently linked, the appropriate use of lexis and grammar, and finally, negotiation of meaning and language (Harmer 2001). These components are associated with the four dimensions in the communication framework: grammatical competence, sociolinguistic competence, discourse competence, and strategic competence. Firstly, L2 learners have to possess an appropriate command of the L2, allowing them to carry out cognitive operations in an automatic manner (McLaughlin 1990). The automaticity in the process of speaking and reading has

been reported to allow for the recognition of words, and hence, rapid lexical retrieval in the case of speaking. Second, the purported connection between reading and speaking is essential vis-à-vis vocabulary learning. Vocabulary knowledge reinforces L2 learners' ability to develop speed at reading, and automaticity at speaking. In the same vein, the de-codification of meaning while reading a text in the L2 contributes to all competences, as effective communication must occur at both written and oral levels. Third, Garcés-Manzanera alludes to the benefits of combining both reading and speaking as a way of fostering vocabulary learning, since "certain linguistic structures, and vocabulary words may become part of this discourse" (2021b: 6).

Reading plays a significant role in helping the retention of new words and expressions in the L2 as the most efficient and widespread source of vocabulary learning. However, mere reading tasks would not be sufficient without the use of productive skills that allow for the activation of these new words in a context that is relevant to the L2 learner. A real-life communicative situation was selected for the present study on the basis of this task-inducement involvement load in order to examine whether the purported presence of these words in a warm-up section of the pre-task phase could lead to learners' further vocabulary retention.

3. Aim and Research Questions

On the basis of the above review, the objective of this paper is to add new empirical evidence that supports the efficiency of the type of task, in this case, communicative tasks, to further L2 vocabulary learning. Hence, the aim is to analyze the students' retention of some vocabulary when it is presented through communicative tasks and when these words appear in a vocabulary test in the absence or presence of context. Thus, the study seeks to provide an answer to the following research questions:

1. To what extent will the target words be retained when participants complete a vocabulary test in which such words are presented with context after incidental learning/teaching?
2. To what extent will the target words be retained when participants complete a vocabulary test in which such words are presented without context (in isolation) after incidental learning/teaching?
3. Does the presentation of the target words (in context and without context) in a vocabulary test play a significant role in lexical retention of these words when learning vocabulary incidentally through a communicative task?

4. Method

4.1. Context and Participants

A total cohort of 39 undergraduate students took part in the study. They were aged 19-20. Out of the total number of participants (N= 39), 17 participants were randomly assigned to a 'context' group and 22 participants were assigned to a 'without context' group. As will be more clearly explained in later sections, both conditions refer to the manner in which students were presented with the target words, that is, words embedded in a context or without context when completing a test after undertaking a communicative task where these words appeared. Our participants were pursuing the third year of a Degree in Primary Education at a Spanish university, receiving EFL lessons with a frequency of 3.5 hours a week. Their average proficiency level was B1-B2 according to the Common European Framework of Reference (CEFR).

4.2. Research Design

The study is exploratory as we intend to shed light on the potential influence of a very specific type of L2 communicative task on vocabulary learning. The research is framed within classroom-based experimental research (DeKeyser and Prieto-Botana 2019) since participants belonged to an intact group of students. Similarly, the research study was conducted under a natural environment. Table 1 below displays the data collection procedure:

Phase 1	Phase 2	Phase 3
Pre-task engagement: • Reading component (warm-up) containing target words (5-10 minutes) • Preparation of the communicative task (pre-task planning) • Presentation of the communicative task outcome	Immediate post-test	Delayed post-test (2-week timespan)

Table 1. Research design

In order to collect the data, in Phase 1 the students were provided with the communicative tasks. They were first presented with a warm-up activity that allowed them to engage with the topic that was going to be dealt with in the communicative task. This warm-up activity was text-based, that is, reading, and

it included the target words (see Figure 1). The topic was not selected specifically for this research, but rather, to safeguard the ecological validity of the study, it was designed on the basis of the vocabulary unit that had to be taught in that specific week.

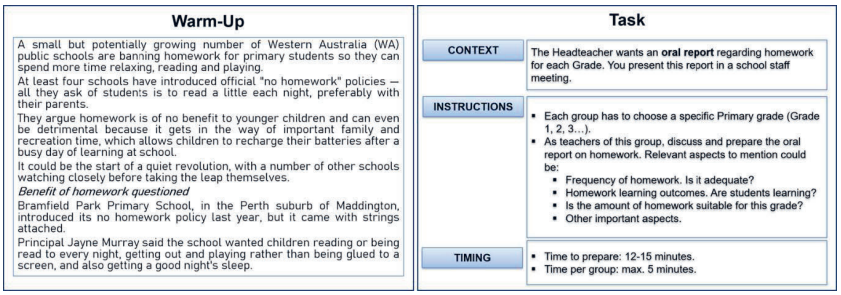

Figure 1. The education-oriented communicative task

Firstly, students were encouraged to read the text, and afterward, they were asked about its content and the topics covered. Ultimately, the meaning of words could be explained or provided in the L1 when students asked for it. This could include target words which are part of this study. Nevertheless, participants were not told about those words that were going to be elicited in the immediate post-test after the communicative task. After this warm-up activity, participants were given 15 minutes to prepare the task outcome, and they were not forced to use the words appearing in the warm-up text. This activity was carried out in groups, and in order to favor mutuality, participants were able to decide who they were going to form groups with. After the 15-minute preparation time, each group presented their task outcomes to the rest of the class in an oral manner.

Immediately after the task outcome, participants were led to Phase 2, in which they had to complete an immediate post-test. It is worth noting that it is called "immediate post-test" since having introduced a pre-test before doing the task itself would have drawn the students' attention towards the target words. Hence, this would have interfered in the appropriate ecological validity of the present research, and thus vocabulary learning would have been more intentional than incidental. As will be clarified in the sub-section 4.4. "Measurement instrument", two types of post-tests were provided to each group (Table 1). The immediate post-test of the 'context' group was a meaning-recognition test in which the words were embedded in a sentence. Conversely, the 'no context' group was

given a meaning-recognition text with isolated words. These tests were delivered using *Google Forms*.

Two weeks after phases 1 and 2, Phase 3 involved the provision of a delayed post-test that was identical to the immediate post-test in Phase 2. According to previous research (e.g. Teng 2016), two weeks seems to be an appropriate timespan that, on the one hand, does ensure that students do not recall the words as a mere effect of immediateness. On the other hand, the two-week distance in time would help us consider the degree of retention, and the existing possibility that one condition might be more influential than the other. On this basis, such a distance in time was also applied in an attempt to neutralize other confounding variables (e.g. recalling the words due to the recent provision of the test) that may affect the outcome of the study.

4.3. Variables

Following the research design, the present study contains a number of variables. Firstly, the independent variable contains two levels which are based upon the type of presentation of the words: 'context' and 'no context'. The manner in which these were presented will be described in section 4.4. The dependent variable includes the target words, which are chosen differently according to the frequency within a specific corpus. Participants in this study were tested with a set of 15 words which, based on the researcher's teaching experience, would be unfamiliar to learners. Additionally, the relevance of these words within a corpus was observed in order to discern whether these words would be regarded as more difficult —given their infrequency— or much easier. To do so, the iWeb Corpus (<https://www.english-corpora.org/iweb/>) was used. This corpus is freely available on the Internet and contains roughly 14 billion words. As can be observed in Table 2, the frequency is provided in raw numbers, which is based on the iWeb Corpus frequency list composed of the top 60,000 words. The third column shows "accumulated frequency" on the basis of the frequency in the second column. Bearing in mind the learners' level (B1-B2 level), these target words are thought to be varied in terms of (i) difficulty, e.g. the appearance of cognates (e.g. *detrimental*) with respect to the participants' L1 and (ii) the presence of both single word and multi-word items (e.g. *take a leap*).

As can be observed in Table 2, not all target words were equally frequent, which in some sense may have an influence on the results of our study. This is an important limitation that will be taken into consideration in the discussion of the results.

Code	Target word	Frequency (raw numbers)	Accumulated frequency
P1	*several*	4,000,965	100%
P2	*suitable*	564,978	80%
P3	*time-consuming*	53,032	20%
P4	*elsewhere*	391,836	60%
P5	*detrimental*	58,120	26.66%
P6	*take a leap*	2,467	6.66%
P7	*closely*	563,797	73.33%
P8	*growing*	1,537,889	93.33%
P9	*principal*	474,001	66.66%
P10	*outcome*	379,879	53.33%
P11	*suburb*	60,691	33.33%
P12	*benefit*	1,479,431	86.66%
P13	*leap*	143,398	40%
P14	*ban*	274,242	46.66%
P15	*infrequently*	17,512	13.33%

Table 2. Target words with frequency and accumulated frequency

4.4. Measurement Instrument: Meaning-recognition Vocabulary Tests

The main instrument used in this study was a vocabulary test which includes the passive recognition of the word in the L1 (Laufer and Rozovski-Roitblat 2011; Mohamed 2018). Meaning-recognition seems an ecologically valid technique for two reasons: (i) it is the least demanding test, thus favoring the students' concentration on it (Laufer and Goldstein 2004), and (ii) it has pedagogical validity and usefulness since "it reveals knowledge [to the teacher] that could be further developed" (Webb 2021: 457). In addition, the use of meaning-recognition tests is justified in terms of test practicality, since meaning-recall test formats (i.e. tests in which students have to write the meaning of the L2 words or vice versa) are more cognitively demanding. Similarly, grading meaning-recall test formats is more time-consuming and challenging (Webb 2021).

This meaning-recognition test allowed the collection of data using two versions of this test: one with the words in sentences and the other one with the words in isolation. Both meaning-recognition tests involved: (1) passive recognition of words

in the L1, with both a correct and an incorrect option, and (2) the inclusion of an option "I don't know the word", given its usefulness to detect the lack of knowledge about a particular word, and to avoid random selection of answers. When learners chose the correct answer, they were given 1 point; in the case of an incorrect answer or choosing the "I don't know the word" option, no point was awarded.

In the 'context test', the target words were presented within a context different from the one in which the target words appeared in the warm-up section of the education-oriented communicative task:

*I made **'several'** mistakes in the exam.*

a) un número de.

b) varios.

c) no conozco la palabra.

Conversely, in the 'no context test', the target words were presented in an isolated manner with no context, thus similar to the format used in previous research (e.g. Teng 2016).

'several'

a) un número de.

b) varios.

c) no conozco la palabra.

4.5. Statistical Analyses

In order to calculate the retention score of vocabulary knowledge, the percentage of correct answers was calculated per target word for each condition (context vs no context). Proportions were used to observe the number of correct answers for each target word. The calculation of the magnitude of the effect between proportions within-groups (that is, the potential change from post-test to delayed post-test) and between-groups (differences in the post-test between context and no context conditions) was carried out using Cohen's *h*-statistic (Cohen 1988). Cohen's *h* is regarded as an appropriate effect size statistic to compare two proportions. Effect sizes were considered small (0.2), medium (0.5), and large (0.8).

5. Results

First, the results for the differences between the immediate post-test and delayed post-test within-groups, that is, for the 'context' and 'no-context' groups,

respectively will be presented. Then, the second part of this section will report the results corresponding to the differences between-groups, that is, between the 'context' and 'no-context' groups.

Figure 2 below shows the proportions obtained in the immediate post-test and delayed post-tests as well as the magnitude of Cohen's *h*. The most relevant results are observed in P1 (*several*), where there was a slight increase in terms of learning gains as evidenced by the medium effect size (h= 0.61). In the case of P2 (*suitable*), P4 (*elsewhere*), and P14 (*ban*), no differences between the results in the immediate post-test and delayed post-test were observed and a high degree of retention was maintained after the two-week timespan. Additionally, a moderate increase was observed in P6 (*take a leap*), with a medium effect size (h= 0.41). Such a tendency was also observed in P8 (*growing*). Nonetheless, for P10 (*outcome*) a decrease was observed in the proportion of correct answers, with a medium effect size (h= 0.54).

Moving on to the within-group differences in the 'no-context' group, there are a number of results regarding the 'no-context' condition which are worth highlighting (see Figure 3). One important aspect is that P1 (*several*), P6 (*take a leap*), and P15 (*infrequently*) did not seem to have been affected by the two-week timespan. Conversely, P7 (*closely*) seems to have been slightly retained, although there was a slight decrease with a medium effect size (h= 0.70). In the case of P8 (*growing*), a very slight decrease was observed with a small-to-medium effect size (h= 0.49). P10 (*outcome*) was shown not to have been retained, since the proportion of correct answers to this question decreased with a medium effect size (h= 0.50). In the case of P12 (*benefit*) and P13 (*leap*), the former was shown to be retained with a medium effect size (h= 0.49) while the latter decreased the percentage of retention (h= 0.41).

The third research question aimed to discern whether there were any statistical differences in the delayed post-test between the 'context' and the 'no-context' testing conditions. As observed in Table 3, the effect sizes indicate that, in the 'context' condition, retention was higher for P1 (*several*) and P2 (*suitable*) with medium and almost high effect sizes (h= 0.49, and h= 0.70).

Another important result shows that participants in the no-context testing group retained the multi-word item *take a leap* (P6) to a greater extent than the context testing group with a medium effect size (h= 0.45). Nevertheless, the values were still low. In the case of *growing* (P8), the difference between the 'context' and 'no-context' condition was not very large, but the former showed better retention with a medium effect size (h= 0.49). The situation is the reverse in the case of both P12 (*benefit*) and P13 (*infrequently*), for which retention was higher in the 'no-context' condition with an equal medium effect size (h= 0.43).

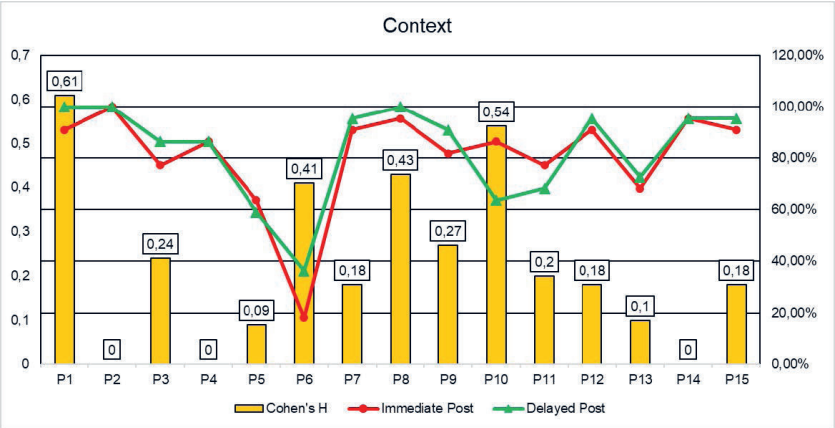

Figure 2. Context-embedded target words: immediate post-test and delayed post-test differences

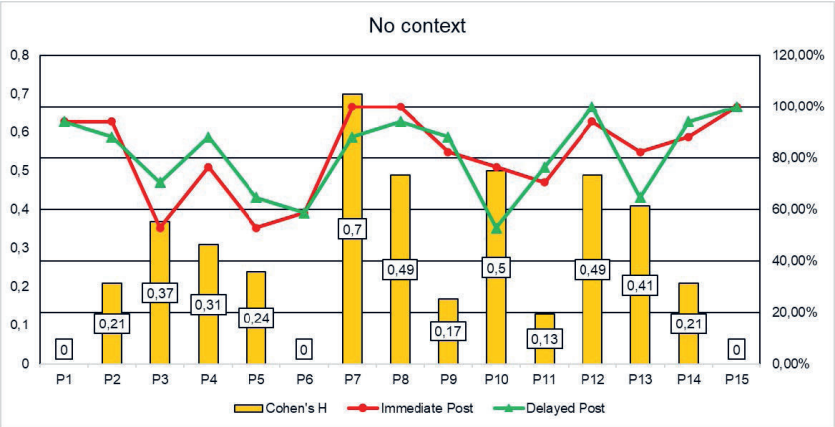

Figure 3. No context-embedded target words: immediate post-test and delayed post-test results

			Delayed post-test		Between-groups comparison
			Context	**No context**	Effect Size
Code		Frequency	Proportion	Proportion	Cohen's h
P1	*several*	100%	100%	94.1%	**0.49**
P2	*suitable*	80%	100%	88.23%	**0.70**
P3	*time-consuming*	20%	86.36%	70.58%	0.39
P4	*elsewhere*	60%	86.36%	88.23%	0.05
P5	*detrimental*	26.66%	59.09%	64.7%	0.12
P6	*take a leap*	6.66%	36.36%	58.82%	**0.45**
P7	*closely*	73.33%	95.45%	88.23%	0.27
P8	*growing*	93.33%	100%	94.11%	**0.49**
P9	*principal*	66.66%	90.9%	88.23%	0.08
P10	*outcome*	53.33%	63.63%	52.94%	0.22
P11	*suburb*	33.33%	68.18%	76.47%	0.19
P12	*benefit*	86.66%	95.45%	100%	**0.43**
P13	*leap*	40%	72.72%	64.7%	0.17
P14	*ban*	46.66%	95.45%	94.11%	0.06
P15	*infrequently*	13.33%	95.45%	100%	**0.43**
		Total	83.03%	81.56%	**0.04**

Table 3. Results showing the between-group results with the frequency of the word, the proportion of correct answers in the test (in percentages), and Cohen's *h* effect size

6. Discussion

This study intended to shed light on whether the testing conditions of vocabulary appearing in a pre-task phase (i.e. the warm-up activity) of a communicative task could lead to incidental learning, looking specifically at the degree of correct and incorrect answers. Ultimately, the purpose was to provide further empirical evidence on the role of single word and multi-word items regarding the presentation of these words when they appeared contextualized or in the absence of context. To this end, we compared fifteen different words both within-groups (that is, differences in the post-test and delayed post-test

for both the 'context' and 'no-context' testing groups) and between-groups (that is, the differences in the delayed post-test between both 'context' and 'no-context' testing groups).

Findings from this study point to the beneficial effect of context-embedded target words. As observed in the results section, more frequent words as per the corpus used were better retained by the group that undertook the test with words presented in context. This is in accordance with previous studies, such as Webb's (2008), in which the presence of a context led to greater incidental retention of word meaning. However, this is not sufficiently consistent; for instance, the expression *take a leap* (P6) seems to have been better retained in the 'no-context' testing situation. However, despite the higher retention value in this testing condition (58.82%), vocabulary gains increased in the 'context' testing condition from 18.82% to 36.6% for this multi-word item. This is indicative of context exerting some influence on the recognition of a word, possibly by comparing previous knowledge (i.e. the original input of the words) with that presented in the meaning-recognition test. Additionally, there are several reasons why the 'no-context' condition maintained a higher retention percentage than the 'context' one in the case of *take a leap*. First, the restricted options in the context condition might not have prompted learners to infer the meaning of the word, and thus it might have led to confusion (Hulstijn et al. 1996). Likewise, previous research has also revealed that one-time word encounters tend not to be affected by context type (Teng 2016). This could explain why, for instance, in words that tend to be less frequent, such as *detrimental* (P5) or *infrequently* (P15), the absence of context might have favored focusing on both the form and meaning. The retention of these words was higher in the 'no-context group', thus pointing to the effect that eliciting or highlighting the word may have had when dealing with the warm-up part of the communicative task. Additionally, another explanation might be that these words have cognates in Spanish, leading Spanish learners to deduce their meaning by resorting to their knowledge of the L1 words. In the case of *detrimental* (P5), the proportion of correct answers decreased slightly (63.63% to 59.09%) in the 'context' group, while learning gains were higher in the 'no-context' condition (52.94% to 64.70%). As observed, *detrimental* is a less frequent word (26.66%), and yet the absence of context seemed to favor, at the very least, the recognition of its meaning. This finding contradicts previous research such as Waring and Takaki's (2003) which, albeit methodologically different, also explored how learners retained new vocabulary from extensive reading. Their findings in terms of meaning-recognition tests indicated a purported decrease in the one-week delayed post-test and the three-month delayed post-test (0.8 > 0.7 > 0.5).

Another potential reason that might explain why multi-word items such as idioms (*take a leap*; P6) were better retained by participants being tested with no context could be related to wild guessing, which is considered a noise factor when recognition measures are used (Webb 2007; Chen and Truscott 2010). Additionally, the absence of context seems to have been detrimental to the recognition of more frequent words, such as P2 (*suitable*). A potential explanation for this could be related to the type of word. *Suitable* is an adjective whose meaning may be recognized within a sentence when context is provided. Thus, participants in the 'no-context' testing condition might not have been able to establish the appropriate map-meaning connections given the presentation of the word in isolation.

Additionally, a series of conflicting findings emerged from the study. There seem to be more learning gains with words such as *leap* (P13), a single-word item and a less frequent word (40%), in the 'context' condition. Results revealed that the 'context' testing group maintained the same gains (68.18% to 72.72%) while the 'no-context' group decreased significantly the retention of this word (82.35% to 64.70%). Hence, the appearance of unfamiliar words may have paved the way for their use in productive communication (Newton 2013), although the exploration of this variable was beyond the purposes of the study. Learners might have concentrated more on words that they might not have been familiar with during the preparation of the task. Although this would be taken as a different variable, the way of eliciting the target words during the warm-up could have equally affected vocabulary retention in both groups.

Its presentation in a sentence with context might have influenced the retention of *outcome* (P10), which is a moderate frequent word (53.33%). In this case, there was no statistical difference between the 'context' (63.63%) and the 'no-context' condition (52.94%). As can be observed, the 'context' testing group maintained higher learning gains even if both groups had decreased the recognition of this single-word item. In this respect, a potential explanation behind this finding may be related to two factors: (i) the lack of quality of the context may have conditioned the lasting effect of incidental vocabulary learning (Webb 2008), and (ii) the nature of *outcome* as a less frequent word may have contributed to this loss of retention, as participants might not have recognized it or might not have been able to map form-meaning connections with previous encounters.

7. Conclusion

This exploratory study has looked into how the presence or absence of context in a vocabulary test may contribute to retaining vocabulary after the completion of an education-oriented communicative task. Studies on the use of these tasks to

explore vocabulary retention have been scarce in the scholarly literature (with the exception of Newton 2013), hence the important contribution of this study to this area of knowledge. An additional contribution has been observing the plausibility of the type of vocabulary test as a variable determining vocabulary retention. In this respect, this has been an attempt to observe whether L2 learners tested with a meaning-recognition test with the presence or absence of context conditioned not only the amount of vocabulary learned but also the retention time.

The findings in the study revealed that context plays a pivotal role in vocabulary retention in incidental learning through a communicative task although, given the small scale of the study, our findings cannot be definitive in terms of the dichotomy of the 'context' vs 'no-context' condition (Teng 2016), and thus further research is needed. Similarly, an important finding has been the fact that multi-word items (such as idioms) were retained in a more efficient manner when the vocabulary items were presented in context in a sentence. This constitutes important proof that more empirical evidence has to be accumulated regarding this type of lexis and, more specifically, to determine their degree of retention after incidental learning. As mentioned, previous studies exploring multi-word items in contrast to single-word items, such as Chang and Chen (2022), have revealed that the former are retained more efficiently, which is consistent with the findings in our study. Yet, the 'context' testing group was not able to recognize one of the multi-word items. This certainly needs further empirical evidence.

There is a series of pedagogical implications that may be derived from the present study. Our findings seem to indicate that vocabulary learning is fostered by the presence of context. Nevertheless, the absence of context equally contributes to favoring short-term retention of certain words. These findings might indicate that learners do not solely rely on one-time strategies to develop vocabulary learning and, consequently, words that appear in second encounters —even in a vocabulary test— are also identified when context is not present. Secondly, teachers might benefit from the plausibility of using varied testing conditions. Although all the target words in this study were presented using the same reading input, the testing conditions were different. Thus, besides input and the frequency of exposure, second encounters after a reasonable period of time might indicate that learners retain some content from the input presented in warm-up activities. Finally, the frequency of the word does not seem to have a direct relation to whether it is tested in a 'context' or 'no-context' condition. This provides modest evidence that unfamiliar words may be retained and, thus, elicited either in aural or written form to pave the way for further vocabulary learning.

Our study is not without its limitations. Firstly, the absence of a pre-test in the form of a global vocabulary knowledge test would have brought to light what the

participants' initial vocabulary size was. Second, the appearance of these words should have been equally explored by including the variable of frequency of exposure. Additionally, individual differences among the vocabulary knowledge of L2 learners should have been a concern in our study inasmuch as variability may lead to different levels of lexical coverage and degrees of comprehension, as has been suggested by Webb (2021). Finally, one important limitation of our study was the use of test formats. Using a meaning-recognition test (L2 to L1) with the variation in the presentation of the target words certainly contributes to adding more empirical evidence to this scholarly domain; however, the inclusion of other vocabulary tests such as meaning recall tests (L2 to L1) would have shed more light upon the degree of vocabulary retention to a larger extent. Despite this obvious constraint, meaning-recognition has been recognized as a better predictor of reading comprehension than meaning recall (Laufer and Aviad-Levitzky 2017), which seems a relevant research finding to consider given the nature of the reading component of our communicative task.

On this basis, future research avenues should explore vocabulary retention in a more longitudinal manner, observing the degree of retention throughout a period extending from one to three months. Additionally, the inclusion of several input modes deserves more investigation (Uchihara et al. 2019), as well as comparing the effectiveness of different types of tests. Equally important, studies should also explore how vocabulary gains are affected when the same target words are used with different communicative tasks.

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