

Vocabulary acquisition from extensive reading: A case study

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Abstract

A number of studies have shown that second language learners acquire vocabulary through reading, but only relatively small amounts. However, most of these studies used only short texts, measured only the acquisition of meaning, and did not credit partial learning of words. This case study of a learner of French explores whether an extensive reading program can enhance lexical knowledge. The study assessed a relatively large number of words (133), and examined whether one month of extensive reading enhanced knowledge of these target words' spelling, meaning, and grammatical characteristics. The measurement procedure was a one-on-one interview that allowed a very good indication of whether learning occurred. The study also explores how vocabulary acquisition varies according to how often words are encountered in the texts. The results showed that knowledge of 65% of the target words was enhanced in some way, for a pickup rate of about 1 of every 1.5 words tested. Spelling was strongly enhanced, even from a small number of exposures. Meaning and grammatical knowledge were also enhanced, but not to the same extent. Overall, the study indicates that more vocabulary acquisition is possible from extensive reading than previous studies have suggested.

Keywords: vocabulary acquisition, extensive reading, incidental learning, word frequency, testing, French as a foreign language

Introduction

A number of studies during the last two decades have confirmed the widespread belief that second language learners can acquire vocabulary through reading. However, the same findings suggest that incidental vocabulary acquisition is a time-consuming and unpredictable process and, hence, raise questions about the suitability of the approach for second language (L2) learners (Paribakht and Wesche, 1997; Zimmerman, 1997). At the same time, Meara (1997) comments that most of these studies do not contribute to the understanding of the acquisition process, since they do not investigate the factors that lead to word retention. As a result, the process of incidental vocabulary acquisition is not yet understood to any great degree (Paribakht

and Wesche, 1997; Paribakht and Wesche, 1999; Schmitt, 1998), and therefore, it cannot be fully exploited by teachers and learners.

In an attempt to further this understanding, this case study investigates the relationship between incidental vocabulary acquisition and extensive reading, with a particular focus on a variable that is commonly assumed to affect the retention of words; that is, the number of times a word occurs in the text (Horst, 2005). Few reading studies have actually examined this factor (exceptions include Horst, Cobb and Meara, 1998 and Saragi, Nation and Meister, 1978). Moreover, reading and vocabulary studies have almost exclusively focused on word meaning in determining vocabulary acquisition. However, it has been acknowledged by a large number of lexically-minded researchers that knowing a word involves much more than just understanding its meaning (Aitchison, 1994; Laufer, 1997; McCarthy, 1990; Nation, 1990; Nation, 2001; Richards, 1976; Schmitt, 1998; Schmitt, 2000). Therefore, our aim is to examine the effects of text frequency on the acquisition of word meaning, spelling and grammatical behaviour. This study, as far as we know, is the first to relate the number of encounters with a word during extensive reading with multiple types of word knowledge other than meaning. It also endeavours to capture partial knowledge of those aspects since, as Newton (1995: 171) comments, "there is a need to develop instruments which are more sensitive to degrees of acquisition." Finally, it is one of the few studies on this topic that has been conducted in a non-English language, i.e., French.

Benefits and limitations of extensive reading for vocabulary learning

According to its definition, extensive reading exposes learners to "large quantities of material within their linguistic competence" (Grabe and Stoller, 2002: 259), which is, at the same time, pleasurable. There are several reasons why it is so attractive to develop language knowledge (and more specifically vocabulary) through extensive reading. To mention a few, it is considered a "pedagogically efficient" (Huckin and Coady, 1999: 182) approach, as two activities – vocabulary acquisition and reading – occur at the same time. This approach facilitates learner autonomy, can be very pleasant and motivating, provides learners with the opportunity to meet words in their context of use (Thornbury, 2002), increases sight vocabulary (Coady, 1997; Nagy, Herman and Anderson, 1985; Nation and Coady, 1988), and could theoretically result in substantial vocabulary learning, which seems difficult to achieve with explicit teaching during the relatively short period of time that L2 learners spend in the language classroom. In fact, Nation (2001: 155) argues that "the use of reading and other input sources may be the only practical options for out of class language development for some learners," especially in EFL contexts.

Considering the above, it seems that extensive reading should be an indispensable dimension of vocabulary teaching. However, there are many counter-arguments to the potential benefits discussed so far. First of all, there is still little actual evidence of the supposedly substantial contribution of incidental L2 learning (Raptis, 1997). It is also argued that reading for meaning does not automatically lead to the acquisition of vocabulary (Huckin and Coady, 1999). A number of researchers (e.g., Huckin and Coady, 1999; Nation and Coady, 1988; Parry, 1993)

make a distinction between guessing the meaning of a word with the use of context clues and actually retaining that meaning.

Moreover, richness of information can sometimes result in learners ignoring the target word, as they do not need to understand its meaning in order to comprehend the text (Mondria and Wit-de Boer, 1991; Nation and Coady, 1988; Zahar, Cobb and Spada, 2001). There is also the question of whether vocabulary learning from reading is really incidental, as it is argued that the learner has to pay at least some attention to a given new word and to put some effort into finding its meaning (Paribakht and Wesche, 1999). For all these reasons, Paribakht and Wesche (1997: 175) describe the role of reading in vocabulary acquisition as "unpredictable and not necessarily the most effective."

Studies on vocabulary growth

Horst (2005) divides research in the field into two strands: studies on incidental vocabulary acquisition and studies on acquisition through extensive reading. As it will be shown below, these two do not always coincide. In fact, in most cases the focus is on incidental acquisition and not extensive reading, since the participants are exposed to only one or very few texts.

Incidental vocabulary acquisition research

Incidental vocabulary acquisition research has verified the assumption that exposure to reading texts can contribute to L2, and also first language (L1), vocabulary growth, as all studies have found evidence of incidental vocabulary learning. Yet the amount of that contribution has been reported to be small, and the efficacy of the method compared to others is still debatable (Nagy et al., 1985; Nation and Coady, 1988; Coady, 1997; Raptis, 1997; Horst and Meara, 1999; Huckin and Coady, 1999; Waring and Takaki, 2003). Early L2 reading studies indicate a rate of roughly one word correctly identified in every twelve words tested (Horst et al., 1998).

An interesting result that came to light in one of the first studies (Saragi et al., 1978) was the small but significant correlation (0.34) they found between the number of times each word occurred in the book and the number of people who chose the correct meaning in the test. From that, they concluded "repetition affects learning but the relationship is considerably complicated by other factors" (Saragi et al., 1978: 76).

However, most L2 incidental vocabulary acquisition studies (Day, Omura, and Hiramatsu, 1991; Dupuy and Krashen, 1993; Ferris, 1988; Pitts, White and Krashen, 1989; Saragi et al., 1978) have been criticised for a number of limitations (Hunt and Beglar, 2005; Raptis, 1997), most of which are also acknowledged by the researchers themselves. First of all, they used measuring instruments not sensitive to small amounts of learning (Nation, 2001). For example, Pitts et al. (1989: 272) comment that their measuring instrument was designed in such a way that "rendered partial knowledge...useless." At the same time, they did not adequately control text difficulty (Nation, 2001), considering that, for instance, in the Pitts et al. (1989) study, over 50% of the participants did not manage to finish reading the assigned chapters. Furthermore, the number of target words was quite small; for example, only seventeen words were tested by Day et al.

(1991). For the same study, the writers also point out that, since the test was taken right after the reading, the effects of the reading on the long-term retention of the words could not be predicted.

The studies discussed so far were not implemented under "extensive reading" conditions. The participants were given only one text to read which might not have been interesting or motivating enough for them. As Day and Bamford (1998: 29) comment, "in the absence of interesting texts very little is possible." In addition, none of the earlier reading treatments (except for Saragi et al., 1978) lasted for more than an hour (Horst et al., 1998).

Two later studies (Horst et al., 1998; Horst and Meara, 1999) tried to overcome some of these limitations by expanding the reading treatment and adding new measuring instruments, which possibly allowed for partial knowledge to be recorded (e.g., an association test in Horst et al., 1998). They confirmed the small but meaningful amounts of incidental vocabulary learning as a result of reading, but with a higher pick-up rate than its predecessors (e.g., about one new word in every five in Horst et al., 1998). In addition, in the same study, knowledge "persisted over a period of ten days" (Horst et al., 1998: 219). What is especially interesting in relation to the research questions of the current study is that, Horst et al. (1998) found a higher correlation (0.49) than Saragi et al. (1978) (0.34) between the number of times each word occurred in the text and the relative learning gains. This makes the role of word frequency more dominant, but it is again implied that other factors are also involved.

In Horst and Meara (1999), the need for multiple encounters with a word was emphasized. However, the learning conditions were again not typical of extensive reading. Considering that the participant read the same text eight times, he did not simply have eight encounters with the unknown words, but he encountered each word eight times in exactly the same context. This does not necessarily have the same effect on the retention of the word as when the word is encountered in eight different contexts.

Brown, Waring, and Donkaewbua (under review) found encouraging amounts of incidental vocabulary learning in terms of word-form recognition and prompted-meaning recognition, but far less in terms of unprompted meaning production. Moreover, the word-form and receptive meaning knowledge seemed relatively durable over time. However, Waring and Takaki (2003) found that relatively little vocabulary was remembered after three months, for example, of twenty-five words correctly answered in the immediate post test, only one was remembered in the delayed test.

Extensive reading research

In the field of extensive reading, two studies (Nation and Wang, 1999 and Wodinsky and Nation, 1988) investigated the potential contribution of graded readers to vocabulary learning by examining word frequency. They concluded that graded readers can be an important source of vocabulary learning for second language learners if used appropriately. Although useful, these are corpus-based studies that, as their writers suggest, should be followed by research in order to test whether this learning actually takes place.

There are a number of L2 extensive reading studies that have found gains in vocabulary using either direct or indirect measures of vocabulary (Cho and Krashen, 1994; Elley and Mangubhai, 1981; Grabe and Stoller, 1997; Hafiz and Tudor, 1989; Hafiz and Tudor, 1990; Lai, 1993 (also noticed improvement in spelling); Mason and Krashen, 1997). However, the indirect measures employed and the conditions under which these studies were implemented make us cautious when evaluating the findings. For instance, some of the participants were living in the L2 environment (Hafiz and Tudor, 1989, Cho and Krashen, 1994, Grabe and Stoller, 1997), while others used a dictionary for parts of the reading (Cho and Krashen, 1994, Grabe and Stoller, 1997). Both factors make it difficult to attribute any learning solely to the reading involved in the studies.

Grabe and Stoller (1997) report some interesting conclusions that further complicate the issue of incidental vocabulary acquisition and reveal the relative learning difficulties of different words; it seems that "some words needed to be looked up only once while others required multiple exposures and multiple dictionary consultations" (Grabe and Stoller, 1997: 112). Based on that, they argue "each learner seems to encounter some sets of words that just will not be remembered" (Grabe and Stoller, 1997: 115).

Finally, in a recent study of extensive reading that took place in an authentic extensive reading environment (Horst, 2005: 374), participants appeared to have learned "well over half of the unfamiliar" words they encountered in the simplified readers (although there might have been "a role for other sources of exposure in learning" for some of these words). This seems a very encouraging result; we should take into consideration, however, that the procedure involved a self-rating test, and that as Horst (2005) acknowledges, the pre- and post-tests were not the same.

To sum up, the literature provides good evidence that vocabulary is learned incidentally from reading, at least to some extent, but there are still large gaps in our knowledge of this learning in an authentic extensive reading context. For example, we do not know much about whether types of word knowledge other than meaning are amenable to incidental learning, how extensive reading enhances knowledge of words which are already partially known, how this learning may be linked with how often a word occurs in the texts, and to what extent the incidental learning demonstrated in EFL environments also occurs when the target language is not English.

Rationale for the research design

Following the principles suggested by Horst and Meara (1999: 309) of a "combination of long input texts and more sophisticated testing," this study will involve a one-month period of extensive reading in a language other than English. The test battery (see below) will cover a relatively high number of target words (133), and will include measurement procedures that are sensitive to partial knowledge of words. This is important because "vocabulary learning is not an all-or-nothing piece of learning" but is rather "a gradual process of one meeting with a word adding to or strengthening the small amounts of knowledge gained from previous meetings" (Nation, 2001: 155). Likewise, Nagy, Anderson and Herman (1987) argue that any meaningful encounter with a target word could contribute to its acquisition, even though this contribution might be very small. One likely reason why many previous studies fail to show much

vocabulary growth from reading is that the measurements utilized required "full" knowledge of a word (usually its meaning) in order for it to be counted as being positively affected. Because vocabulary learning is incremental in nature, "more sophisticated testing" which taps into incremental improvement is necessary in order to fully appreciate the benefits reading has for vocabulary learning.

Furthermore, the study adds a new dimension to extensive reading research by examining types of word knowledge other than meaning. As mentioned in the introduction, different criteria for a broadly based view of vocabulary knowledge have been proposed (Aitchison, 1994; Laufer, 1997; McCarthy, 1990; Nation, 1990; Nation, 2001; Richards, 1976; Webb, 2005), with the upshot that "lexical competence is far more than the ability to define a given number of words" (Zimmerman, 1997: 122). Read (2004: 201) suggests this "comprehensive word knowledge" approach involves not only the semantic features of a word, but also "its orthographic, phonological, morphological, syntactic, collocational and pragmatic characteristics." It has been recognised that reading tasks contribute to multiple aspects of vocabulary knowledge; however, it has been rare for studies to measure aspects of knowledge apart from meaning (Webb, 2005). This is problematic because "studies that measure only meaning may be unable to find a significant result when there have in fact been significant gains in other aspects of vocabulary knowledge" (Webb, 2005: 48). For practical reasons and due to the "lack of suitable measures for several word knowledge components" (Read 2004: 217), our study focuses on three word knowledge components, which were selected from each of Nation's (2001: 27) three categories (in his analysis of what is involved in knowing a word): form (spelling), meaning (form-meaning relationship), and use (grammatical functions).

One of the few studies that attempted to capture degrees of lexical knowledge through more sensitive measurement procedures was carried out by Schmitt (1998), who tracked the acquisition of eleven words over the course of a year for three adult learners with advanced proficiency in English. More specifically, he measured four kinds of word knowledge: spelling, associations, grammatical behaviour and meaning. Although the study is not related to extensive reading, it offers a measurement battery sensitive to small gains of word knowledge, which was used as a model for our study. One of the conclusions drawn from his results was that "students can possess other kinds of word knowledge even when they can demonstrate no meaning knowledge" (Schmitt, 1998: 301). Schmitt highlights the need to focus on individual words and to be able to measure the degree or depth of knowledge for each of these words, in order to reach a better understanding of vocabulary acquisition.

One of the limitations of incidental learning is that the learner might not put effort into guessing a new word's meaning. However, this argument, although valid, ignores other aspects of word knowledge that could be improved through reading, often regardless of how informative the context is, such as spelling and grammatical behaviour. For example, Day and Swan (1998) found that subjects exposed to seventeen words in a short story achieved a modest but significant advantage (1.52) in the number of words spelled correctly compared to control subjects. Furthermore, Parry (1993) argues that vocabulary acquisition can sometimes be unconscious; although a new word is often not noticed because the general sense is already understood, some association may be established for that word and that association may be reinforced at the next encounter (also see Aitchison, 1994).

Finally, most of the studies reviewed above focus on new vocabulary. However, Nation (1990) suggests that teaching new words is only one of the components of teaching vocabulary. The rest are concerned with learning more about previously taught words (consolidation of words) or increasing the automaticity of words. Much earlier, West (1955), one of the so-called parents of L2 extensive reading in modern times (Day and Bamford, 1998), assigned the following purpose (among others) to simplified readers: "review and fix the vocabulary already learned" (West, 1955: 69). In fact, Nation and Wang (1999: 364) predict that "it is not likely to be the [graded reader] level at which the word is introduced that establishes knowledge of that word, it is likely to be the later levels that establish the knowledge." Moreover, sight vocabulary is especially important in the target language of this study (French), as the different accents, difficult spelling, and use of articles that do not always follow the rules increase the learning burden of words.

As far as word frequency in the text is concerned, research is limited. Although the original Clockwork Orange study (Saragi et al., 1978) related incidental word learning growth to word frequency in the text, none of the replication studies investigated this factor. It was not until 1998 that Horst et al. took it into account. Waring and Takaki (2003) found that even if a word was encountered more than eighteen times in a text, there was still only a 10-15% chance of remembering its meaning. Zahar et al. (2001) also studied word frequency as a factor conducive to incidental vocabulary acquisition. They suggest that the number of encounters needed to learn a word might depend on the proficiency level of the learners, because more advanced learners who know more words seem to be able to acquire new words in fewer encounters.

Considering all the above, this study will employ multiple, sensitive tests of word knowledge to determine the vocabulary acquisition benefits which a learner of French derives from a period of extensive reading. In particular, the study addresses the following questions:

1. Does extensive reading lead to increased word knowledge, in terms of spelling, meaning and grammatical behaviour of words?
2. Are these three aspects equally affected by extensive reading?
3. Are words that occur more frequently in the texts more affected in these three aspects of word knowledge?

The hypothesis is that reading will affect all three aspects of word knowledge, but spelling is expected to be affected the most, based on the findings of Schmitt (1998) and Waring and Takaki (2003). It is also assumed that words occurring more often in the text will have more chances of being acquired or of being enhanced than less frequent ones.

Methodology

The readers

Simplified materials were preferred instead of authentic ones since they "compare favourably to the much more lexically dense literary originals" (Horst, 2005: 375) and therefore, offer L2

learners appropriate conditions for word learning, as already suggested (Nation and Wang, 1999; Wodinsky and Nation, 1988). Graded readers from the "Lectures CLE en Français facile" collection (Level 1) were used in this study. Level 1 is the first out of four levels of the series, which are aimed at adults or teenagers. The four levels (according to the publishers) are organised taking into consideration grammatical difficulties and vocabulary. The vocabulary lists on which readers in Level 1 are based range from 400 to 700 words.

The level of the readers was selected after considering the participant's vocabulary level in French. Research (Hsueh-chao and Nation, 2000; Laufer, 1992; Liu and Nation, 1985) indicates that at least 95% of the words should be known to the participant for guessing from context to take place and for the reading to be relatively uninterrupted. Although the above percentage could not be statistically verified, a rough estimation of the proportion of unknown to known words (suggested by Nation, 2001) was employed. On a random page of one of the graded readers, the participant found about one unknown word in every twenty words. Moreover, in the interview that followed the post-test, it was confirmed that he had followed the plot of all the books perfectly well and he reported that they were easy enough for the reading to be pleasant and not laborious.

In order to simulate the conditions of extensive reading as much as possible, after the appropriate level was defined, the participant selected four from the seventeen titles of the Level 1 series himself, on the basis of what seemed most interesting to him. This way, the limitation of using potentially unmotivating texts that hampered some previous studies was avoided. The four pocket-size books (228 pages in total) amounted to approximately 30,000 words. Three of the titles were based on a 600-word list and the fourth on a 700-word list.

The whole study lasted for about a month, thus, the participant read approximately one reader per week. This amount of reading is considered by Day and Bamford (2002) as the goal for a successful extensive reading program. It is also consistent with Nation and Wang's (1999: 355) suggestion that "learners need to read about one graded reader per week in order to meet repetitions of the new words soon enough to reinforce the previous meeting," assuming that the learners do not meet the words in other language activities.

The participant

The participant was a 27-year old learner of French whom we will refer to as G. His mother tongue is Greek, and he also speaks fluent English as a second language. In French, he holds the "*DELFL (Diplôme d'études en langue française) 1er degré*" which used to correspond to an intermediate level (French diplomas have now changed). It should be noted that the specific diploma consisted of four independent units and that G had taken long breaks (sometimes years) between the units. He had passed his last exam one year prior to the study and he had not practised the language since. As a result, his level of proficiency was lower than the typical intermediate French learner. Therefore, taking also into consideration the proportion of unknown to known words (discussed above), the first level of the readers was selected as the most appropriate for him.

At the time of the study he was living and studying in England as a postgraduate student in a non-linguistic field. As already discussed, one of the limitations of some earlier extensive reading studies was the simultaneous exposure of the participants to other forms of language input. In this case, apart from the readers, G had no other exposure to French. Therefore, we can safely exclude any other potential sources of word learning and ascribe any vocabulary gains to the extensive reading treatment alone.

The words

The target words consisted of 70 nouns and 63 verbs (133 words in total). The original intention was to include all parts of speech in the study. However, the grammatical component of the test battery hindered that possibility. It proved extremely difficult with only four graded readers to find adjectives and adverbs that shared similar grammatical features, and, at the same time, for these features to be manifest in the texts. As a result, we had to limit our selection of target words to nouns, which are all used with an article, and verbs, for the use of which knowledge of prepositions is essential. Furthermore, it seemed like a logical start in this type of research, since nouns and verbs are "the most common parts of speech found in natural text" (Webb, 2005: 36), in the hope that additional research will extend to other word classes.

Both word groups were tested on meaning, spelling and grammatical behaviour. For the nouns, grammatical behaviour, in this case, was defined as the articles that are used with the specific nouns. In French, all nouns are of either a masculine or a feminine gender. The definite article for masculine nouns, in the singular form, is "*le*" and the equivalent for feminine nouns is "*la*". When a word begins with a vowel, (*l'*) (e.g., *l'ombre* = the shadow, the shade) is used, and when in plural form, "*les*" is the form whether the noun is masculine or feminine. Nouns that were used in the graded readers only with (*l'*) or mainly in their plural forms were excluded from the study, since it would be difficult for the participant to deduce whether they were masculine or feminine. In fact, it is sometimes possible to work out the gender of a noun by looking at the adjective, as adjectives in French agree with the nouns (e.g., *un manteau blanc* 'a white coat', *une maison blanche* 'a white house'). However, the kind of processing required in this case was considered to be too demanding for incidental learning and therefore, it was not expected that the participant would learn the gender of those nouns (although we cannot say it is impossible). Apart from the definite articles (*le*, *la*), nouns in the texts were sometimes preceded by the indefinite articles (*un*: masculine, *une*: feminine) and possessive pronouns (*mon*, *ton*, *son*: masculine; *ma*, *ta*, *sa*: feminine). These cases were included in our study, as they are not very different from the definite articles and the participant (having reached an intermediate level) was familiar with those forms.

Regarding the articles, it should be noted that in French, the correct article can sometimes be derived from the spelling of the words. For example, words that end in *-eau* (e.g., *le manteau* 'the coat') tend to be masculine. Therefore, there were a few instances when the participant could predict the right article by the ending of the word without having met the word before. However, this was limited, partly because of some irregularities, but mainly because he did not seem to be aware of all the rules. It should also be noted that Greek (the subject's L1) has three genders, and that these genders do not necessarily correspond in the two languages.

For the verbs, grammatical behaviour involved the prepositions that follow these verbs. In French, some verbs have to be used with specific prepositions (e.g., *aller à* 'go to'), some can be followed by various prepositions depending on the meaning, and others do not take any prepositions at all. Knowledge of any of the above is considered useful for learners if they want to use the verbs in a sentence. Therefore, in the test, the participant was awarded points if he knew, for example, that a specific verb did not require any prepositions. It also seemed reasonable to test him only on prepositions that appeared in the texts, even if these are not the only ones that can be used with the specific verbs.

Words that appeared in the texts in many different forms (mainly because of derivatives) were excluded. Most verbs were presented to the participant in their infinitive form. In a few cases, however, when the form used in the texts was quite different from the infinitive, the former was used in the test as well, to make sure that the participant would recognise the verb (e.g., *il appartient à* 'it belongs to', *infinitive = appartenir*).

In order to study the effects of word frequency, the target words were organised into six sub-groups according to the number of encounters that the participant had with each word (1, 2-3, 4-5, 6-10, 10+, and 20+). Without this sub-grouping, many of the occurrence frequencies would have contained too few words for meaningful analysis. A complete list of the target words is given in Appendix A.

Measurement Procedure

Because this was a case study of just one participant, it was feasible to employ the time-consuming, but highly informative, measurement method of one-on-one interview, as used in Schmitt (1998). Although a single rater meant that no interrater reliability check was possible, the rater (the lead author) was able to interactively question and probe the participant at length, until a very good impression was achieved concerning the knowledge level of the various word knowledge elements. Because G was likely to know some of the target words in the study, he was interviewed both before the extensive reading treatment (hereafter "pre-test") and after (hereafter "post-test"). G knew that he would be tested on his reading, but was not informed of the research questions. He was also not aware that the post-test would be exactly the same as the pre-test. Both tests were divided into two parts that took place on two different days. On the first day, he was tested on the spelling of all the target words and the following day he was tested on meaning and grammatical behaviour.

G was given clear instructions on the test procedure, and some words, not included in the test, were used as examples before the meaning and prepositions tests. He was explicitly asked not to try to guess the answers (especially in the case of articles and prepositions). He was also encouraged to take as many breaks as he felt necessary so that he would not get too tired or bored. In both tests, he took two ten-minute breaks; the spelling test was about ninety minutes long and the second part (meaning and grammar) lasted for almost two and a half hours.

For the spelling test, the words were read aloud to him by the researcher and he had to write them down. He could ask for a repetition of a word if necessary. After the end of the spelling test, he was assigned a writing task irrelevant to the study (without him being aware that it was

irrelevant). More specifically, he was asked to write down five French words he was familiar with and then write a sentence with each word. The purpose of this task was to make the participant use, in writing, words that were not included in the study and, thus, to distract him as much as possible from the target words. The distraction task also served to flush the target words from his immediate memory, so that he could not give them additional explicit attention, such as looking them up in a dictionary after the session, which might have contaminated the study. These distraction tasks seemed to be effective, as there was no indication during any of the interviews that G gave the target words explicit attention outside the reading.

The meaning and grammar tests were conducted simultaneously. The order of the words was different than the previous day. G was not explicitly informed that all the words were the same in the two tests, but he did remember a few of the words. First, he was given a list of all the verbs and in order to allow for partial knowledge to be traced, he was asked to report on any kind of knowledge he had about the meaning (or meanings) of the words, no matter how vague or trivial it appeared to him. As a result, different degrees of knowledge were demonstrated. There were some words for which he could explain the meaning, others for which he had some idea about the meaning but was not sure, there were words he said he had encountered before but did not know their meaning, and finally, there were words that were completely unfamiliar to him. He was not asked to produce sentences with the words because their large number meant the interview would have been unacceptably long.

In order to test G's knowledge of the grammatical behaviour of the words, he was, at the same time, asked to report any of the prepositions that could follow the specific words. After the verbs, he was given a list of the nouns and was asked to follow the same procedure, except with a focus on articles. He could choose between the masculine article "*le*" and the feminine article "*la*", only if he thought he already possessed that kind of knowledge.

After this test, G was again assigned a distracting task. This time, he had to read three short texts in French and, based on his understanding of the texts, to answer six multiple-choice questions. The texts were carefully selected so that they did not include any of the target words. He started reading the first graded reader four days later, allowing for a short time lapse between the pre-test and the reading. One day after finishing the last reader, the participant took the post-test, under the same conditions and following the same procedure. The order of the words was again different.

Marking

The tests were scored in the following manner: marks for each type of word knowledge ranged from 0-2. More specifically, for spelling, a completely wrong answer was given 0 points; an answer similar to the correct spelling earned 1 point and a fully correct answer received 2 points. For example, for the verb *échouer* the participant's answer in the pre-test was *essouer*, for which he was given 0 points. In the post-test, the spelling was much improved (*echouer*), but he did not use an accent, and therefore, he earned 1 point.

Similarly, for meaning, if G gave a completely wrong answer, he was given 0 points; if he had some idea of the meaning of the word (e.g., he learned that *sanglier* – the French word for wild

boar – was an animal but he was not sure which one) or if he knew one of the multiple meanings of a word (as long as all meanings appeared in the readers) he earned 1 point, whereas if he knew the exact meaning of the word or all its different meanings, he would receive 2 points. For grammar, prepositions followed a similar pattern. For example, the verb *penser* appeared in the texts followed either by the preposition *à* or without a preposition. Therefore, in the pre-test G received 1 point for knowing that the verb is used without a preposition, but in the post-test he received 2 points because he was aware of both possibilities.

However, articles and the gender of words were marked somewhat differently, as it was difficult to account for partial knowledge in this case. Thus, there were only two marks to be awarded: 0 points if he did not know the gender of the word or 2 points if he did. We did not feel it was safe to give G partial credit (1 point) for mentioning that the words seemed familiar to him, simply because we could not discount the possible influence of the pre-test.

The interview procedure allowed us to control guessing to a large extent. G was advised not to guess, and based on the interviewer's probing and G's responses, we feel confident that his guessing was held to a minimum throughout all the tests. Moreover, the interviewer explicitly queried any answers G was not sure of to verify whether they were guesses or not. Confirmed guesses were not accepted as correct answers.

Results

The results, presented in detail in Table 1 (nouns) and Table 2 (verbs), show that substantial learning of the target words occurred during the extensive reading treatment, although this was not uniform across the three types of word knowledge. For spelling, there was relatively strong enhancement, with improvement in all noun frequency groups and in all but two of the verb groups; for the 6-10 and 20+ groups there was no improvement, as the participant already knew how to spell most of the words. For all target words, G earned 98 spelling points out of a possible 266 (36.8%) in the T1, but improved to 159 out of 266 (59.8%) in the T2.

For meaning, there was also improvement in all but one frequency category. There was no apparent learning at all for the twelve single-exposure verbs. For single and 2-3 exposure nouns, learning was very limited, with only one noun in seventeen showing any signs of learning in either category, and even that was only to a level of partial knowledge. However, there was clear improvement in meaning knowledge for the rest of the target words. Overall, the T1 meaning scores were 22 points out of 266 (8.3%), moving up to 63 out of 266 (23.7%) in the T2.

Similarly, there was an improvement in all frequency groups in the grammatical mastery of nouns (i.e., knowledge of appropriate article). The T1 results were eighteen out of 140 (12.9%), while the T2 results were 60 out of 140 (42.9%). On the other hand, although there was an improvement in the grammatical mastery of verbs (i.e., knowledge of appropriate preposition) for all but the 10+ group, the percentages were much lower: for T1, five out of 126 (4.0%); and for T2, 26 out of 126 (20.6%).

Although this study used a relatively large number of target words overall (133), the smaller numbers in the sub-groups precluded running a statistical analysis of those subgroups. However, we were able to compare the improvement in mean scores for all nouns for each of the three types of word knowledge, as these data sets were large enough (70 nouns). Because the data was not normally distributed, Wilcoxon Signed Ranks tests were used, which showed that the improvement was statistically reliable in all cases. Similarly, the improvement in verb knowledge was also significant for all three types of word knowledge.

Table 1: Scoring for Nouns

Number of Occurrences	Spelling		Meaning		Articles	
	T1	T2	T1	T2	T1	T2
1 (17) ^a	.588 ^b 29.4 ^c	1.059 52.9	.000 0.0	.059 2.9	.235 11.7	.353 17.6
2-3 (17)	.412 20.5	.647 32.3	.000 0.0	.059 2.9	.000 0.0	.588 29.4
4-5 (15)	1.000 50.0	1.067 53.3	.333 16.6	.667 33.3	.267 13.3	1.067 53.3
6-10 (13)	.769 38.4	1.153 57.6	.384 19.2	.538 26.9	.615 30.7	1.230 61.5
10+ (5)	.800 40.0	2.000 100	.200 10.0	1.200 60.0	.000 0.0	1.200 60.0
20+ (3)	.667 33.3	1.667 83.3	.000 0.0	1.333 66.6	.667 33.3	2.000 100
All nouns (70)	.686 34.2	1.077* 53.6	.157 7.9	.414* 20.7	.257 12.9	.857* 42.9

a. number of target words in frequency category

b. mean score (max=2)

c. percentage of possible points scored

* Wilcoxon Signed Ranks $p < .01$

Table 2: Scoring for Verbs

Number of Occurrences	Spelling		Meaning		Prepositions	
	T1	T2	T1	T2	T1	T2
1 (12)	.250 12.5	1.083 54.1	.000 0.0	.000 0.0	.000 0.0	.333 16.6
2-3 (13)	.461 23.0	1.385 69.2	.077 3.8	.538 26.9	.000 0.0	.308 15.3
4-5 (13)	.692 34.6	1.077 53.8	.000 0.0	.538 26.9	.000 0.0	.154 7.6
6-10 (15)	1.466 73.3	1.466 73.3	.400 20.0	.800 40.0	.066 3.33	.533 26.6
10+ (7)	.714 35.7	1.714 85.7	.286 14.2	.571 28.5	.571 28.5	.571 28.5
20+ (3)	1.667 83.3	1.667 83.3	.667 33.3	1.333 66.6	.000 0.0	1.333 66.6
All verbs (63)	.794 39.6	1.333* 66.6	.174 8.7	.540 27.0	.079 4.0	.413* 20.6

* Wilcoxon Signed Ranks $p < .01$

Another way of looking at the data is to explore how many of the target words were enhanced in real terms. To determine this, we eliminated all of the words that G already knew in the pre-test (i.e., received a score of 2), because no further learning was demonstrable with our measurement procedure. (Of course, these words may well have been enhanced in terms of mastery or automaticity, but we were not able to measure the improvement.) Of the remaining words, we tallied how many were enhanced during the extensive reading period, that is, having scores increasing from $0 \rightarrow 1$, $0 \rightarrow 2$, or $1 \rightarrow 2$. The results from this analysis are illustrated in Table 3 (all words), Table 4 (nouns) and Table 5 (verbs). We find that a very considerable number of words were enhanced in one or more of the forms of word knowledge.

Table 3: Number of Words (Nouns+Verbs) in Which Learning Occurred

Number of Occurrences	Improvement	Spelling	%	Meaning	%	Grammar	%
1	0 → 1	6		1		0	
	0 → 2	4		0		4	
	1 → 2	4		0		0	
	Total	14/29	48.2	1/29	3.4	4/27	14.8
2-3	0 → 1	9		2		0	
	0 → 2	2		2		7	
	1 → 2	3		1		0	
	Total	14/27	51.8	5/30	16.7	7/30	23.3
4-5	0 → 1	3		1		0	
	0 → 2	1		5		7	
	1 → 2	5		1		0	
	Total	9/23	39.1	7/26	26.9	7/26	26.9
6-10	0 → 1	5		2		0	
	0 → 2	0		3		7	
	1 → 2	4		0		1	
	Total	9/17	52.9	5/23	21.7	8/24	33.3
10+	0 → 1	1		1		0	
	0 → 2	4		3		4	
	1 → 2	4		0		0	
	Total	9/10	90.0	4/11	36.3	4/11	36.3
20+	0 → 1	1		0		0	
	0 → 2	1		3		4	
	1 → 2	0		0		0	
	Total	2/3	66.7	3/5	60.0	4/5	80.0
All words	0 → 1	25		7		0	
	0 → 2	12		16		33	
	1 → 2	20		2		1	
	Total	57/109	52.3	25/124	20.2	34/123	27.6

Table 4: Number of Nouns in Which Learning Occurred

Number of Occurrences	Improvement	Spelling	%	Meaning	%	Grammar	%
1	0 → 1 0 → 2 1 → 2 Total	1 2 3 6/17	35.3	1 0 0 1/17	5.9	- 2 - 2/15	13.3
2-3	0 → 1 0 → 2 1 → 2 Total	4 0 0 4/15	26.7	1 0 0 1/17	5.9	- 5 - 5/17	29.4
4-5	0 → 1 0 → 2 1 → 2 Total	1 0 3 4/12	33.3	0 2 1 3/13	23.1	- 6 - 6/13	46.2
6-10	0 → 1 0 → 2 1 → 2 Total	2 0 4 6/12	50	0 1 0 1/11	9	- 4 - 4/9	44.4
10+	0 → 1 0 → 2 1 → 2 Total	0 2 2 4/4	100	1 2 0 3/5	60	- 3 - 3/5	60
20+	0 → 1 0 → 2 1 → 2 Total	1 1 0 2/2	100	0 2 0 2/3	66.7	- 2 - 2/2	100
All nouns	0 → 1 0 → 2 1 → 2 Total	9 5 12 26/62	41.9	3 7 1 11/66	16.7	- 22 - 22/61	36.1

Table 5: Number of Verbs in Which Learning Occurred

Number of Occurrences	Improvement	Spelling	%	Meaning	%	Grammar	%
1	0 → 1	5		0		0	
	0 → 2	2		0		2	
	1 → 2	1		0		0	
	Total	8/12	66.7	0/12	0	2/12	16.7
2-3	0 → 1	5		1		0	
	0 → 2	2		2		2	
	1 → 2	3		1		0	
	Total	10/12	83.3	4/13	30.8	2/13	15.4
4-5	0 → 1	2		1		0	
	0 → 2	1		3		1	
	1 → 2	2		0		0	
	Total	5/11	45.4	4/13	30.8	1/13	7.7
6-10	0 → 1	3		2		0	
	0 → 2	0		2		3	
	1 → 2	0		0		1	
	Total	3/5	60	4/12	33.3	4/15	26.6
10+	0 → 1	1		0		0	
	0 → 2	2		1		1	
	1 → 2	2		0		0	
	Total	5/6	83.3	1/6	16.7	1/6	16.7
20+	0 → 1	0		0		0	
	0 → 2	0		1		2	
	1 → 2	0		0		0	
	Total	0/1	0	1/2	50	2/3	66.7
All verbs	0 → 1	16		4		0	
	0 → 2	7		9		11	
	1 → 2	8		1		1	
	Total	31/47	66	14/58	24.1	12/62	19.4

We also looked at the 133 target words individually and what was learned about them. We found that 66 (49.6%) were enhanced in one type of word knowledge, thirteen (9.8%) in two types, and eight (6.0%) in all three types of word knowledge. Adding these figures together, we find that some degree of learning was demonstrated for 87 out of the 133 target words, an impressive 65.4%, or a pick-up rate of about one of every 1.5 words tested. This is much higher than previous studies, although the comparison may be considered arbitrary since most previous studies tested only meaning (of new words). In the interview that followed the post-test, G reported that he spent about 60 to 90 minutes for each book. If we accept his higher time (90 minutes), it can be estimated that he learned something (at least one feature) for 14.5 words per hour. These figures, stemming from broader and more sensitive testing than many earlier studies

employed, seem to indicate that there is more lexical learning occurring during reading than many of those studies previously suggested.

Discussion

The main point of note in the results is the relatively widespread vocabulary acquisition. Previous studies into incidental vocabulary acquisition from reading have shown relatively small amounts of learning, with Horst et al. (1998) surveying the literature and concluding that the learning rate overall was about one word in twelve (as discussed earlier). Even their more sophisticated study showed a pick-up rate of only one word in five. In contrast, this study, which sought out both different facets of lexical knowledge and partial degrees of that knowledge, found that about two-thirds of the target words tested were enhanced in at least one of their word knowledge aspects, translating to a pick-up rate of about one of every 1.5 words tested. Of course, this does not mean that these words were necessarily fully mastered (all three word knowledge facets were enhanced in only 6% of the cases). Nevertheless, if we accept that vocabulary acquisition is incremental and that any movement towards mastery is beneficial, then the results indicate that extensive reading can be effective in promoting this process, and to a degree not demonstrated before. This is even more impressive if we remember that the measurements were productive in nature (i.e., G had to spell the words, say the meanings, and supply the grammatical partners), while he only had receptive exposure to the words during reading. Also, the calculation included words which G knew on the pre-test, and so no further learning was possible to demonstrate. Thus, Research Question 1 can be answered affirmatively, as extensive reading definitely appears to lead to the enhancement of knowledge about the spelling, meaning and grammatical behaviour of words in the text.

Research Question 2 asked whether the three word knowledge aspects were equally affected by extensive reading, and as hypothesized, this was not the case. Knowledge of spelling was benefited most by the reading for both verbs and nouns, confirming Day and Swan's (1998: 1) results on the "causal relationship" between foreign language reading and spelling. It is noteworthy that improvement in spelling was significant even for words that were encountered only once in the four readers. This finding suggests that extensive reading can be very beneficial for the spelling competence of learners, especially for languages such as French, which are considered difficult to spell. It is also interesting to note that the French verb spellings seemed to be easier to learn than the noun spellings, which is not surprising since verbs in French have specific endings characterized by a degree of regularity.

Meaning was also acquired through reading, but not to the same extent. This is especially true for words with a single exposure, where very little meaning uptake seems to have occurred. At 2-3 exposures, we start seeing a noticeable degree of meaning uptake for verbs, but this does not happen with nouns until 4-5 occurrences. There is no frequency point where meaning acquisition is assured, but by about 10+ exposures, there does seem to be a discernable rise in the learning rate. However, even after 20+ exposures, the meaning of some words eluded G, echoing Grabe and Stoller's (1997) point that some words simply seem hard to learn. Some examples of these "difficult" words include *le rocher* 'rock' (10+ encounters), *le radeau* 'raft' (20+ encounters), *essayer* 'to try' (10+ encounters), and *entendre* 'to hear' (20+ encounters). We

could not find an obvious reason why G did not acquire the meaning of these words even after more than ten encounters. We tried to trace the reason in the distribution of word encounters throughout the four books, i.e., if the word was encountered in only one of the readers or if the word was encountered only at the beginning of the reading treatment. However, we could not discern any pattern, although it may be that a larger number of words is necessary for a pattern to become noticeable. One possible reason could be incorrect initial guesses (see below).

The acquisition of knowledge about which articles accompany particular nouns also seems to be possible through reading, even after a few encounters with a noun. Thus, extensive reading may usefully supplement the direct instruction of articles based on spelling rules. On the other hand, knowledge of which prepositions accompany verbs was the type of word knowledge that benefited the least from the reading, with the amount of uptake being relatively small. This suggests that the acquisition of prepositions in French may well require some other type of instruction.

Overall, the results show that the lexical aspect that benefited the most was spelling, followed by knowledge of articles. Knowledge of meaning and prepositions appear to be picked up at a similar, lower level. As a whole, the results are consistent with those of Schmitt (1998), who found that it is possible for L2 learners to have other kinds of word knowledge without having acquired knowledge of the word's meaning. We do need to take into consideration, however, that the words were presented to the participant in a decontextualized manner, which may have not affected the spelling and grammar scores much, but may have been somewhat of a disadvantage when it came to recalling the meaning of those words. It seems reasonable to assume that if the test contained sentences with the target words (as it is the case with real life reading), the participant might have remembered more about their meaning.

The third research question queried the role of frequency of occurrence in the texts in the enhancement of the three types of word knowledge. In short, there was no unambiguous relationship between frequency and lexical enhancement. As mentioned before, it seems that spelling knowledge can be gained with even a few exposures. Meaning does not seem to be as affected by frequency as much as one might expect, with 2-19 text occurrences yielding uptake rates ranging between 16-36% when we take the nouns and verbs together. Only at the extremes of frequency do we see a noticeable effect. Single encounters produced hardly any learning of meaning at all (3.4%), while it took 20+ occurrences to lead to a noticeable increase in uptake rates (60%). Only in the case of grammar (when articles and prepositions are considered together) was there a relatively steady increase of learning along the frequency scale. Overall, only when words were seen twenty or more times was there a good chance of all three word knowledge facets being enhanced.

There are at least two possible explanations for why higher-frequency words did not necessarily have greater chances of being learned. First, the pre-test showed that the participant already had partial knowledge of some high-frequency words and this could have resulted in a ceiling effect; in other words, there was less room for improvement. At the same time, however, these findings confirm earlier studies (Horst et al., 1998; Saragi et al., 1978) in that frequency of exposure is only one of the factors that affect word acquisition. It is possible that some of the low-frequency

words were easier for the participant to learn for a number of other reasons, such as morphology or salience of the word or the context in which the word was encountered.

It is also notable that some of the low-frequency words that showed signs of improvement (in various aspects of word knowledge) were encountered by the participant only in his reading of the first reader, which took place at least three weeks before the post-test. Therefore, the post-test served as a delayed measurement for some of the words (in contrast to other studies where testing took place right after the reading), and the results suggest that extensive reading can contribute to the long-term retention of certain word features. However, since the number of those specific words is small, the findings need to be verified by further research before any generalizations are made.

It is interesting to note that most of the wrong interpretations of the word meanings were caused by cross-linguistic influence, either by the participant's L1 (Greek) or the other L2 (English) (e.g., he understood *le sable* 'the sand' as "the stable"). It is even more striking that some of these wrong guesses were sustained even after the exposure to the words in the texts (several times for some of the words). This finding agrees with the results of an earlier study by Haynes (1993), who found a similar problem of incorrect initial guesses not being corrected by subsequent context. It is also evident from the results that the participant confused the meanings of French words, which, although not semantically related, have similar forms (e.g., *atteindre*, *êteindre*, *entendre*). This further strengthens the argument against initially teaching similar words together, because they are very likely to become cross-associated (Higa, 1963; Waring, 1997).

A number of other interesting points came out of the post-test interview. G did not use a dictionary, but he read the marginal glosses when they were available. He tried to guess the meaning of some words, but he did not report using a specific strategy in order to learn them. He also mentioned that, in some cases, he had inferred the meaning of the word from the context but he had forgotten it by the time of the post-test. This comment supports the idea that guessing a word meaning does not necessarily lead to its retention. G commented that he enjoyed the reading and felt (before being informed of the results) that it had been useful, as he had learned some new words. The participant's answers also suggest that absorption of language from comprehensible input is not always subconscious, as Krashen (1989) argues. At least as far as meaning is concerned, it seems that G consciously tried to learn some words mainly for two reasons: because he considered it beneficial for his learning, but also because he thought he might encounter the word later in the story. Nevertheless, he did not seem to pay attention to grammar and spelling; in this case, considering the results, some form of subconscious learning seems to have taken place, supporting Parry's (1993) assumptions discussed earlier. Finally, G reported engaging in the reading during his holidays in places like the beach or before going to bed. It is very encouraging that learning occurred under these conditions and it is highly unlikely that he would ever engage in direct study of vocabulary in these environments.

Limitations

Obviously, a case study cannot safely make claims for statistical generalizations, especially when the participant is a very capable and highly motivated learner as it was the case in this study.

Therefore, it cannot answer the question raised by Beck, McKeown and McCaslin (1983) of whether less-skilled readers who are probably most in need of vocabulary development or learners at different levels (Coady, 1997) are likely to benefit from this approach. However, single-subject studies allow us to investigate in more detail the process of vocabulary learning and the stages that word acquisition goes through (Meara, 1995). As Joe (1995: 157) states, "case-study data can provide insights into the various learning processes at play." Overall, our study does seem to show that a capable learner can substantially increase his or her vocabulary knowledge through extensive reading.

Although the reading treatment was longer than previous studies, it still covered only a small part of the scheme of the graded readers. It can be argued that four readers do not constitute "large quantities of material" that extensive reading requires by definition. Despite this, vocabulary gains were found, encouraging us to believe that the greater reading involved in an organized and sustained extensive reading program would lead to greater vocabulary acquisition. Future studies will need to include a greater number of readers and a higher number of target words to verify this belief. In addition, similar research is needed on other components of the lexical framework and different parts of speech.

We used the term "pick up rate" in this report, but it must be remembered that this only entails the target words. Not every unknown word was considered (for example, adjectives and adverbs were not addressed), so it is likely that there was some vocabulary learning that was not captured. Thus, it is impossible to state a comprehensive pick up rate for the whole text, including all unknown words.

Finally, in discussing our results, we compared them to the reported acquisition in previous studies. Our study showed greater gains, but it must be remembered that much of these gains were in the realm of orthography, and so our results are not directly comparable to most previous studies, which focused on meaning. However, the point remains that using a variety of measurement methodologies allowed us to illustrate a degree of vocabulary acquisition previously undemonstrated.

Conclusion

Extensive reading appears to lead to substantial vocabulary learning, but it is not consistent across all word knowledge types. This seems to justify the suggestion of many researchers that incidental learning should be followed up with intentional learning (Hulstijn, Hollander and Greidanus, 1996; Nation, 2001). Moreover, when we compare incidental with intentional learning, we should not generalize; rather, it seems more relevant to consider each language feature separately. Even when only vocabulary is concerned, various aspects of word knowledge should be treated differently. More specifically, the results suggest that spelling is a type of word knowledge that is especially amenable to exposure to comprehensible input. On the other hand, the same cannot be argued for prepositions of verbs, at least in French. Therefore, when teachers try to decide which type of learning (intentional or incidental) is more effective, they should first consider which language feature they want to focus on. As Zimmerman (1997: 122-123) states, "word knowledge involves a range of skills and word learning is facilitated by

approaches that provide varied experiences," since "no single approach can address all of these skills."

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Appendix A

A list of the target words

Nouns	Verbs
1 Occurrence	
1. le bec - beak	1. échouer à - to fail
2. la mâchoire - jaw	2. s'appuyer contre - to lean against
3. le bond - leap	3. se congeler - to freeze
4. le coffre - chest box	4. s'entrechoquer - to knock together
5. le bouillon - broth	5. gêner - to bother
6. le cercueil - coffin	6. lutter contre - to fight against
7. le bourreau - executioner	7. déplacer - to move
8. la lueur - gleam	8. goûter - to taste
9. la secousse - jolt	9. dévorer - to devour
10. le morceau - piece	10. épouser - to marry
11. le soupir - sigh	11. s'éventer - to fan oneself
12. le piège - pitfall	12. résoudre - to solve
13. le pouce - thumb	
14. le simoun - simoon	
15. le toit - roof	
16. la preuve - proof	
17. la poignée (de main) - handshake	
2-3 Occurrences	
18. le clocher - church tower	13. s'abattre sur - to beat down on
19. le fauteuil - armchair	14. abjurer - to abjure
20. le puits - well	15. chauffer - to heat
21. la loupe - magnifying glass	16. arracher - to pull out
22. le récit - narrative	17. déchirer - to rip

23. le limier - bloodhound	18. enfoncer dans - to push in
24. le sondage - probing	19. lâcher - to let go of
25. le robinet - tap	20. parcourir - to travel
26. le singe - monkey	21. il appartient à - it belongs to
27. le banquet - feast	22. apercevoir - to perceive
28. le dos - back, spine	23. frictionner - to rub
29. le poignard - dagger	24. se redresser - to stand up
30. le sommeil - sleep	25. rejoindre - to (re)join
31. la toile - canvas, linen	
32. le serpent - snake	
33. la réussite - success	
34. le vertige - vertigo	
4-5 Occurrences	
35. le but - aim, goal	26. se débarrasser de - to get rid of (to kill sb)
36. la hauteur - height	27. se dépêcher - to hurry
37. la bonne - maid	28. régner - to reign
38. la malle - trunk (suitcase)	29. inquiéter - to worry about
39. la mèche - fuse (bomb)	30. agiter - to move about
40. la caverne - cavern	31. fuir - to run away
41. la chute - fall	32. éclater - to explode
42. la odeur - smell	33. jeter - to throw
43. le poids - weight	34. entraîner dans, vers - to lead to
44. le sifflement - whistle	35. saisir - to grab, to understand
45. le piqueur - stepper	36. se tromper - to be mistaken
46. le rayon - ray	37. soigner - to take care of
47. le sable - sand	38. serrer - to grip
48. le vent - wind	
49. la tempête - storm	
6-10 Occurrences	
50. la nourrice - child-minder	39. emmener - to accompany sb
51. la auberge - inn	40. se rendre - to surrender
52. le repas - meal	41. parvenir - to reach
53. le sommet - summit	42. allumer - to light
54. la foule - crowd, mob	43. éclairer - to light up
55. la nourriture - food	44. sauter - to jump
56. la feuille - leaf, sheet	45. ajouter - to add
57. le navire - boat	46. éloigner - to move away
58. le chemin - path	47. cesser de - to cease
59. le doigt - finger	48. pousser - to push
60. la douleur - pain, ache	49. penser - to think
61. le sorcier - sorcerer	50. perdre - to lose

62. la cheminée - chimney	51. se précipiter - to rush
	52. bouger - to move
	53. suivre - to follow
10+ Occurrences	
63. la boussole - compass	54. s'accrocher à - to hang on
64. la corde – rope	55. courir - to run
65. le sanglier - wild boar	56. se diriger vers - to head toward
66. le rocher - rock	57. empêcher - to prevent
67. la reine - queen	58. atteindre - to reach
	59. essayer - to try
	60. se réveiller - to wake up
20+ Occurrences	
68. le lendemain - the following day	61. tuer - to kill
69. la nacelle - gondola (balloon)	62. entendre - to hear
70. le radeau – raft	63. s'écrier - to exclaim

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