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## Review article

# Instructed second language vocabulary learning

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This article overviews current research on second language vocabulary learning. It concludes that a large vocabulary is necessary to function in English: 8000–9000 word families for reading, and perhaps as many as 5000–7000 families for oral discourse. In addition, a number of word knowledge aspects need to be learned about each lexical item. Taken together, this amounts to a substantial lexical learning challenge, one which many/most learners fail to meet. To facilitate adequate vocabulary learning, four vocabulary learning partners (students, teachers, materials writers, and researchers) need to contribute to the learning process. Vocabulary learning programs need to include both an explicit, intentional learning component and a component based around maximizing exposure and incidental learning. The four learning strands (meaning-focused input, meaning-focused output, language-focused learning, and fluency development) suggested by Nation (2001) provide a structure by which to integrate intentional and incidental vocabulary learning. The overriding principle for maximizing vocabulary learning is to increase the amount of engagement learners have with lexical items. All four learning partners need to acknowledge the incremental nature of vocabulary learning, and to develop learning programs which are principled, long-term, and which recognize the richness and scope of the lexical knowledge that needs to be mastered.

**Keywords:** depth of knowledge, engagement, intentional and incidental learning, vocabulary acquisition, vocabulary instruction, vocabulary size

## I Introduction

One thing that students, teachers, materials writers, and researchers can all agree upon is that learning vocabulary is an essential part of mastering a second language. However, the best means of achieving good vocabulary learning is still unclear, partly because it depends on a wide variety of factors (e.g. de Groot, 2006), and so it is perhaps not surprising that teachers and learners have often been unsure of the best way to pursue it, especially as textbooks and syllabuses have typically been negligent in providing clear

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descriptions and guidelines. Luckily, there is now a very substantial research literature available on vocabulary learning, although much of it has been slow to filter into mainstream pedagogy. This article will overview as much of this research as possible, focusing on the most recent studies, and will highlight what I believe are the pedagogical lessons that can be learned. (See Read, 2004, for another relatively recent review of research into vocabulary teaching, with a listing of useful websites.)

## **II The scope of the vocabulary learning challenge**

### *1 Vocabulary size*

A good starting point is to outline reasonable vocabulary learning goals. In order to do this, we must first determine the percentage of lexical items<sup>1</sup> in written or spoken discourse that a learner must know in order to understand it. It was previously thought that around 95% coverage was sufficient (Laufer, 1989), but more recent research suggests that the figure is closer to 98–99% (Hu & Nation, 2000), at least for written discourse.<sup>2</sup> 98% coverage would mean that one word in 50 is unknown, which still does not make comprehension easy (Carver, 1994), and so this is probably a reasonable minimum coverage figure.

If we use this figure for spoken discourse, and also assume that the proper nouns in the discourse are known, we can estimate the number of word families it takes to be able to engage in informal daily conversation. Nation (2006) analyzed about 200,000 words of the Wellington Corpus of Spoken English, which included talk-back radio, interviews, and friendly conversation between family members and friends. Using word lists based on (the mainly written) British National Corpus, he calculated that 6000–7000 word families are required to reach the 98% goal. An analysis of the spoken CANCODE corpus (Adolphs and Schmitt, 2003) found coverage figures congruent with Nation's at the 3000 word family level (the upper limit of their analysis), supporting Nation's calculations.

However, it is not clear whether a 98% coverage figure is the most appropriate for dealing with spoken discourse. Of course, knowledge of more vocabulary is always better, but two studies have indicated that substantial comprehension can occur with lower coverage rates. Bonk (2000) found no absolute lexical percentage 'threshold', but learners who knew less than 80% of the lexical words tested in the target passages almost always had poor comprehension, 43% of those who knew 80–89% achieved good comprehension, while 60% of those who knew more than 90% of the lexical words had good comprehension. These coverage figures included most, but not all, of the lexical (content) words in the passages, but did not take account of the remaining content words (e.g. words like *wife*, *house*, and *night*, which were high-frequency), or the function words. Assuming these were known, we can calculate the coverage figures for all of the running words in the passages: Bonk's 80% (lexical target words) translates to about 90% of all of the running words; likewise,

his 90% (lexical) works out to about 95% (running words). This means Bonk found that knowledge of less than 90% of the running words in passage usually led to inadequate comprehension, while it took knowledge of 95% or more of the running words to enable the majority of participants to achieve good comprehension. Thus Bonk's results for listening comprehension suggest a coverage figure of 95%, rather than 98%.

A study by Larson and Schmitt (under review) suggests that a coverage figure as low as 90% might be adequate. They found that university postgraduate students gained just as much comprehension from passages with 95% known words as from 100% known words, and from passages with 90% coverage as from 97.5% coverage. The students comprehended, on average, over half of the idea units in the 90% coverage passages, and two-thirds to three-quarters in the 95% and 97.5% passages. Based on the CANCODE tables from Adolphs and Schmitt (2003), they estimate that if only 90% coverage is required, the amount of vocabulary needed would be under 800 word families or under 1400 individual words, and if 95% coverage were required, then the amount needed would be over 2000 families and close to 4000 words. Nation (2006), analyzing the Wellington corpus, calculated that 95% coverage would require knowledge of about 3000 word families, plus proper nouns. In addition, Staehr (under review) found that advanced Danish listeners who knew the 5000 most frequent word families in English were also able to demonstrate adequate listening ability on the Cambridge-ESOL Certificate of Proficiency in English (CPE) listening exam. Being conservative and withholding judgement on the 90% coverage finding, the current evidence suggests that it requires between 2000–3000 word families to understand spoken English (if 95% coverage is adequate) or between 6000–7000 word families if 98% coverage is needed. However, there is simply not enough evidence to confidently establish a coverage requirement for listening at the moment.

For estimates of written vocabulary, we are on firmer ground. Nation (2006) went on to calculate that 8000–9000 word families are necessary to read a range of authentic texts (e.g. novels or newspapers), based on British National Corpus (BNC) data and 98% coverage. Inevitably, other indicators point to somewhat lower figures. For example, Milton and Hopkins (2006) report that both the highest level (C2) of the Common European Framework and the CPE require only about 4500–5000 word families. However, careful scrutiny of the C2 level suggests that 4500–5000 word families would not be sufficient to achieve many/most of the descriptors.<sup>3</sup> Therefore, while learners may be able to cope with a smaller vocabulary, 8000–9000 word families seems to be a more realistic target if they wish to read a wide variety of texts without unknown vocabulary being a problem.

These figures may seem daunting, but even so, they probably underestimate the learning challenge. Each word family includes several individual word forms, including the root form (*stimulate*), its inflections (*stimulated*, *stimulating*, *stimulates*), and regular derivations (*stimulation*, *stimulative*). Nation's (2006) BNC lists show that the most frequent 1000 word families

average about six members (types per family), decreasing to about three members per family at the 9000 frequency level. According to his calculations, a vocabulary of 6000 word families (enabling listening) entails knowing 28,015 individual word forms, while the 8000 families (enabling wide reading) entails 34,660 words, although some of these family members are very low frequency items. Sometimes these word family members are transparently related (*nation–national*) and relatively guessable if unknown. However, this is not always the case (*nation–nationalistically*), and learners may have trouble with these less-transparent members, especially in terms of production. While Horst and Collins (2006) found a growing morphological productive ability in their French learners of English over 100, 200, 300, and 400 hours of instruction, Schmitt and Zimmerman's (2002) advanced learners of English (preparing to enter English-medium universities) typically knew only some, but not all, of the noun/verb/adjective/adverb members of word families taken from the Academic Word List (Coxhead, 2000). Thus, it cannot be assumed that knowing one word family member implies knowing (or being able to guess) other related members.

The upshot is that learners must learn a very large number of lexical items to be able to operate in English, especially considering that the above figures do not take into account the multitude of phrasal lexical items, which have been shown to be extremely widespread in language use (e.g. Schmitt, 2004; Wray, 2002). Learning such a large number of lexical items is one of the greatest hurdles facing learners in acquiring English. It is not surprising then, that the vocabulary sizes of learners reported in research studies typically fall well short of the size requirements reported above (Laufer, 2000; see Table 1).

The scope of the vocabulary learning task, and the fact that many learners fail to achieve even moderate vocabulary learning goals, indicates that it can

**Table 1** English vocabulary size of foreign learners<sup>a</sup>

Country	Vocab. size	Hours of instruction <sup>b</sup>	Reference (re-size)
Japan EFL University	2000 2300	800–1200	Shillaw 1995 Barrow <i>et al.</i> 1999
China English majors	4000	1800–2400	Laufer 2001
Indonesia EFL University	1220	900	Nurweni & Read 1999
Oman EFL University	2000	1350+	Horst <i>et al.</i> 1998
Israel High school graduates	3500	1500	Laufer 1998
France High school	1000	400	Arnaud <i>et al.</i> 1985
Greece Age 15, high school	1680	660	Milton & Meara 1998
Germany Age 15, high school	1200	400	Milton & Meara 1998

*Notes:* <sup>a</sup> The table is taken from Laufer, 2000: 48, slightly adapted.

<sup>b</sup> The data on hours of instruction was largely obtained by Laufer's personal communication with colleagues from the respective countries.

no longer be assumed that an adequate lexis will simply be 'picked up' from exposure to language tasks focusing either on other linguistic aspects or on communication. Rather, a more proactive, principled approach needs to be taken in promoting vocabulary learning, which will require contributions from four learning 'partners'. Most importantly, students need the willingness to be active learners over a long period of time, for without this, they are unlikely to achieve any substantial vocabulary size, regardless of the quality of instruction. But they will need guidance about which lexical items to learn, and perhaps help in developing effective learning techniques. Teachers are well placed to provide this guidance, but their experience may not be enough in itself to provide the guidance without help. For example, research indicates that native-speaker intuitions of word frequency appear limited to differentiating between very frequent and very infrequent words, with teachers performing no better than first-year university undergraduates (McCrostie, 2007). Thus even native-speaking teachers cannot always rely on their intuitions to identify more frequent (and thereby generally more useful) words of English, and so they should consult frequency lists in conjunction with their intuitions (e.g. Leech, Rayson, & Wilson, 2001). This highlights the role of the researcher, whose expertise and resources are necessary in providing reliable information about vocabulary itself (such as frequency lists), and effective methods of learning it. The fourth partner is materials writers, who are an obvious conduit for delivering this research-based information to teachers and learners in a form that is usable. Given the magnitude of the lexical learning task, it is unlikely that it can be achieved without strong and active contributions from all four members of this learning partnership, and the failure of any partner might doom the whole enterprise to failure.

## *2 Depth of vocabulary knowledge/the incremental nature of vocabulary learning*

In addition to needing a large number of lexical items, a learner must also know a great deal about each item in order to use it well. This is often referred to as the quality or 'depth' of vocabulary knowledge, and is as important as vocabulary size. Many teachers and learners consider a word 'learned' if the spoken/written form and meaning are known. While it is true that the form–meaning link is the first and most essential lexical aspect which must be acquired, and may be adequate to allow recognition, a learner needs to know much more about lexical items, particularly if they are to be used productively. Nation (2001, p. 27) provides the best description of the range of 'word knowledge' aspects which need to be known (Table 2).

These various types of word knowledge become important when thinking about acquisition and pedagogy for a number of reasons. First, some of these word knowledge aspects are relatively amenable to intentional learning, such as word meaning and word form, while the more contextualized aspects, such as

**Table 2** What is involved in knowing a word

<i>Form:</i>	Spoken	R	What does the word sound like?
		P	How is the word pronounced?
	Written	R	What does the word look like?
		P	How is the word written and spelled?
	Word parts	R	What parts are recognizable in this word?
		P	What word parts are needed to express this meaning?
<i>Meaning:</i>	Form and meaning	R	What meaning does this word form signal?
		P	What word form can be used to express this meaning?
	Concept and referents	R	What is included in the concept?
		P	What items can the concept refer to?
	Associations	R	What other words does this make us think of?
		P	What other words could we use instead of this one?
<i>Use:</i>	Grammatical functions	R	In what patterns does the word occur?
		P	In what patterns must we use this word?
	Collocations	R	What words or types of words occur with this one?
		P	What words or types of words must we use with this one?
	Constraints on use (register, frequency...)	R	Where, when and how often would we expect to meet this word?
		P	Where, when and how often can we use this word?

collocation and intuitions of frequency, are much more difficult to teach explicitly. They probably have to be acquired instead through massive exposure to the L2. This suggests that a vocabulary learning program will require both an explicit teaching component, and a component which maximizes repeated exposures to lexical items, such as extensive reading. In addition, although all of the word knowledge types are learned concurrently, some are mastered sooner than others (Schmitt, 1998). This implies that different teaching approaches may be appropriate at the different stages of acquisition of an item. At the beginning, an explicit approach which focuses directly on establishing the form–meaning link can be most effective, while later, the exposure approach can be most beneficial in enhancing contextual knowledge. Similarly, the word knowledge table highlights the necessity of thinking of vocabulary learning in incremental terms. It is well established that lexical items need to be met many times in order to be learned (Nation, 2001), but the table shows that this is not just to *consolidate* the form–meaning link, but also to *enhance* knowledge of an item by developing the other types of word



knowledge. Words will have to be met in many different contexts in order to develop mastery of the different word knowledge types, and this entails a long-term recursive approach to vocabulary learning. Indeed, some research suggests that single episodes of instruction may not only be ineffective, but may actually be counterproductive under certain circumstances. Chang and Read (2006) found that vocabulary instruction before a listening comprehension task helped less than hearing the input twice or reading and discussing the topic beforehand. Crucially, the students reported that they did not learn the target vocabulary well enough to utilize it in the on-line listening task, and for higher proficiency students, a focus on this inadequately learned vocabulary seemed to distract their attention away from a more general understanding of the listening passages.

It is also useful to think of depth of knowledge in terms of receptive vs. productive levels of mastery, with the receptive lexicon always proving larger than the productive one (e.g. Laufer, 2005). Likewise, the ability to use words in written and spoken discourse is not equivalent. Milton and Hopkins (2006) compared the written and spoken English vocabulary sizes of Greek- and Arabic-speaking learners, and found that the written was generally larger (mean written size: 2655 words; spoken: 2260). The correlation between the two sizes was moderate (0.68), but varied according to L1: Greek 0.81; Arabic 0.65). Similarly, Larson and Schmitt (under review) found that written vocabulary recognition was higher than spoken recognition at three frequency levels: 1000 (W 98%, S 92%), 2000 (W 95%, S 90%), and 3000 (W 95%, S 87%), with an overall correlation of between written and spoken recognition of 0.56. Milton and Hopkins also found that the spoken/written relationship varied according to proficiency: for both language groups, low scores tend to be associated with a greater tendency for phonological vocabulary knowledge to exceed orthographic vocabulary knowledge, but for high scorers, the reverse was true. Thus we cannot assume a straightforward relationship between the written and spoken knowledge of words in a learner's lexicon, although these do seem to generally increase in parallel manner.

### **III Issues in vocabulary acquisition and pedagogy**

#### *1 The importance of word form*

As mentioned above, the first step in the vocabulary acquisition process is establishing an initial form–meaning link, and this is what the vast majority of vocabulary materials and activities attempt to do. However, a common assumption seems to be that learning the meaning is of key importance, while the form element is either downplayed or disregarded. In fact, there is a large body of research indicating that L2 learners often have trouble with the word form. For example, Laufer (1988) studied words<sup>4</sup> with similar forms and found that some similarities were particularly confusing for students, especially



words that were similar except for suffixes (*comprehensive/comprehensible*) and for vowels (*adopt/adapt*). Similarly, Bensoussan and Laufer (1984) found that a mis-analysis of word forms, which looked transparent but were not, sometimes led to misinterpretation. Their learners interpreted *outline* (which looks like a transparent compound) as 'out of line', and *discourse* (which looks as if it has a prefix) as 'without direction'. Moreover, it is not only the forms of the words themselves that can lead to problems. Regardless of the word itself, if there are many other words that have a similar form in the L2 (i.e. large *orthographic neighborhoods* (Grainger and Dijkstra, 1992)), it makes confusion more likely. For example, the word *poll* may not be difficult in itself, but the fact that there are many other similar forms in English can lead to potential confusion (*pool, polo, pollen, pole, pall, pill*).

One reason that people can learn their L1 so easily is that the mind becomes attuned to the features and regularities in the L1 input (Doughty, 2003; Ellis, 2006). This *developmental sharpening* applies to the word form as well, as people become attuned to the particular set of phonemes and graphemes in their L1, and the ways in which they combine. This specialization makes L1 processing efficient, but can cause problems when there is an attempt to process an L2 in the same way, even though the two languages may have different characteristics. For example, English speakers use mainly stress to parse words in the speech stream, while French speakers rely more on syllable cues. Cutler and her colleagues have found that both French and English speakers used their L1 cue processing strategies when learning the other language as an L2, causing problems for both groups (e.g. Cutler *et al.*, 1986; Cutler & Norris, 1988). The same type of mismatch has been found in the processing of written language, for example, between Chinese and English (e.g. Koda, 1997, 1998). What this means is that learners not only have to learn new oral and written forms in the L2, but they may also have to develop a completely new way of processing those forms, one which is in opposition to the automatic processes in their L1. The effect of this shows up in laboratory experiments, where de Groot (2006) found that L2 words that match L1 orthographical and phonological patterns are easier to learn and are less susceptible to forgetting than L2 words that are atypical.

Thus, while Ellis (1997) argues that form is mainly acquired through exposure, it is clear that this may not occur without problems in an L2. It can therefore make sense to allot attention to learning form, especially as knowing it can aid other aspects of vocabulary learning. Bogaards (2001) found that knowing the form of lexical items aided subsequent vocabulary learning for those items, such as learning additional polysemous meaning senses. However, if form is to be addressed in vocabulary exercises, it needs to have a direct focus, and not just be an 'add-on' to meaning. This is because the mind has a finite processing capacity, and any attention given to meaning will diminish the resources available for attention to form, and vice-versa (Barcroft, 2002).

## 2 *The role of the L1 in L2 vocabulary learning*

There is no doubt from the research that the L1 exerts a considerable influence on the learning and use of L2 vocabulary in a number of ways (Swan, 1997). In terms of learner output, Hemchua and Schmitt (2006) studied the lexical errors in Thai university EFL compositions, and found that nearly one-quarter were judged to be attributable to L1 influence. But for verb–noun collocation errors in particular, the percentage may be over 50% (Nesselhauf, 2003). Learners also typically employ their L1 in learning an L2, most noticeably in the consistently high usage of bilingual dictionaries (Schmitt, 1997). They also strongly believe that translating helps them to acquire English language skills, such as reading, writing, and particularly vocabulary words, idioms, and phrases (Liao, 2006). But perhaps the best evidence for L1 influence comes from psycholinguistic studies, which demonstrate that the L1 is active during L2 lexical processing in both beginning and more-advanced learners (e.g. Hall, 2002; Jiang, 2002; Sunderman & Kroll, 2006).

Although it is unfashionable in many quarters to use the L1 in second language learning, given the ubiquitous nature of L1 influence, it seems perfectly sensible to exploit it when it is to our advantage. One case where there is a clear advantage is in establishing the initial form–meaning link. Prince (1996) found that more newly learned words could be recalled using L1 translations than L2 context, particularly for less-proficient learners. With secondary school Malaysian learners, using L1 translations was much more effective than providing L2-based meanings (Ramachandran & Rahim, 2004). Laufer and Shmueli (1997) found the same trend with Hebrew students. Lotto and de Groot (1998) found that L2–L1 word pairs lead to better learning than L2–picture pairs, at least for relatively experienced foreign language learners.

There are also compelling psycholinguistic arguments why the establishment of the initial form–meaning link might benefit from the use of the L1. It has been hypothesized that the initial form–meaning link consists of the new L2 word form being attached to a representation of the corresponding L1 word which already exists in memory (Hall, 2002), so an L1 translation is a natural vehicle for achieving this, such as with L2–L1 word cards. Furthermore, we know that learning word form can be problematic, so using the L1 to facilitate the form–meaning linkage (by providing an easy access to meaning) may allow more cognitive resources to be focused on form (Barcroft, 2002). Then, once the link is established, there will be more resources freed up to allot to the learning of the more contextualized types of word knowledge. Given the cognitive constraints inherent in learning an L2, it is unlikely that learners will absorb much contextualized knowledge at the beginning stages anyway, which suggests there is little disadvantage to using the L1 to establish initial meaning. After this initial stage, however, the advantages of meeting the new lexical item in L2 contexts become important to enhance contextual word knowledge, and so the value of the L1 lessens. Thus, it can be argued that using the L1 may be

appropriate at some stages along the vocabulary learning process, but not others, which suggests using different teaching methods at different stages of vocabulary learning.

### *3 Engagement with vocabulary*

It is a commonsense notion that the more a learner engages with a new word, the more likely they are to learn it. There have been a number of attempts to define this notion more precisely. Craik and Lockhart's (1972) *Depth/Levels of Processing Hypothesis* laid the basic groundwork by stating that the more attention given to an item, and the more manipulation involved with the item, the greater the chances it will be remembered. Hulstijn and Laufer (2001) refined the notion further and suggested that involvement for vocabulary learning consists of three components: need, search, and evaluation. *Need* is the requirement for a linguistic feature in order to achieve some desired task, such as needing to know a particular word in order to understand a passage. *Search* is the attempt to find the required information, for example, looking up the meaning of that word in a dictionary. *Evaluation* refers to the comparison of the word, or information about a word, with the context of use to determine if it fits or is the best choice. The authors found some support for their hypothesis: learners writing compositions remembered a set of target words better than those who saw the words in a reading comprehension task, and learners who supplied missing target words in gaps in the reading text remembered more of those words than learners who read marginal glosses. In both comparisons, the 'better learning' case had higher involvement according to Hulstijn and Laufer's scheme. They also reviewed a number of studies and found that the tasks with relatively more need, search, and evaluation elements were more effective (Table 3).

While this is almost certainly true, research also shows that many other factors make a difference as well. For example, while Hulstijn and Laufer's *Involvement Load Hypothesis* is useful for materials writers to set up good materials that can facilitate incidental vocabulary learning, it does not take the student into account. Students can scan, engage, and interpret in many different ways, regardless of material design, and there is little way to know in advance exactly how (Joe, 2006). Students' motivation and attitudes also matter, as even the best materials are little good if students do not engage with them. Moreover, there is an effect for students' strategic behavior. It appears that vocabulary learning is part of a cyclical process where one's self-regulation of learning leads to more involvement with and use of vocabulary learning strategies, which in turn leads to better mastery of their use. This enhances vocabulary learning, the effectiveness of which can then be self-appraised, leading to a fine-tuning of self regulation and the start of a new cycle (Tseng and Schmitt, in press).

**Table 3** Relative effectiveness of vocabulary learning methods

The more effective task	The less effective task	Study
Meaning selected from several options	Meaning explained by synonym	Hulstijn 1992
Meaning looked up in a dictionary	Reading with/without guessing	Knight 1994; Luppescu & Day 1993
Meaning looked up in a dictionary	Meaning provided in a marginal gloss	Hulstijn <i>et al.</i> 1996
Meaning negotiated	Meaning not negotiated	Newton 1995
Negotiated input	Premodified input	Ellis <i>et al.</i> 1994
Used in original sentences	Used in non-original sentences	Joe 1995, 1998
Used in a composition (L1-L2 look up)	Encountered in a reading task (L2-L1 look up)	Hulstijn and Trompeter 1998
Interactionally modified output	Interactionally modified input	Ellis & He 1999
Reading and a series of vocabulary exercises	Reading only (and inferring meaning)	Paribakht & Wesche 1997
Reading, words looked up in a dictionary	Reading only, words not looked up	Cho & Krashen 1994

There is a range of other factors that recur throughout the literature as facilitating vocabulary learning, including the following:

- increased frequency of exposure;
- increased attention focused on the lexical item;
- increased noticing of the lexical item;
- increased intention to learn the lexical item;
- a requirement to learn the lexical item (by teacher, test, syllabus);
- a need to learn/use the lexical item (for task or for a personal goal);
- increased manipulation of the lexical item and its properties;
- increased amount of time spent engaging with the lexical item;
- amount of interaction spent on the lexical item.

Overall, it seems that virtually anything that leads to more exposure, attention, manipulation, or time spent on lexical items adds to their learning. In fact, even the process of being tested on lexical items appears to facilitate better retention, as research designs that include multiple post-tests usually lead to better results on the final delayed post-test than similar designs with fewer or no intermediate post-tests (e.g. Mason and Krashen, 2004). There does not seem to be one cover term that encompasses all of these involvement possibilities, and so in this paper I will use the hopefully transparent term *engagement*. In essence, anything that leads to more and better engagement should improve vocabulary

learning, and thus promoting engagement is the most fundamental task for teachers and materials writers, and indeed, learners themselves.

#### *4 Phrasal vocabulary*

The discussion so far has focused on words and not phrasal items, mainly because most vocabulary research to date has primarily focused on individual words. This is despite the fact that phrasal vocabulary is (1) very widespread in language (Wray, 2002), (2) used for a number of purposes, including expressing a message or idea (*The early bird gets the worm* = do not procrastinate), realizing functions (*[I'm] just looking [thanks]* = declining an offer of assistance from a shopkeeper), establishing social solidarity (*I know what you mean* = agreeing with an interlocutor), and transacting specific information in a precise and understandable way (*Blood pressure is 150 over 70*) (Schmitt and Carter, 2004), and (3) allows more fluency in production (Wood, 2006; Kuiper, 2004). Michael Lewis and colleagues (1993, 2000) have argued for a language teaching methodology highlighting phrasal vocabulary, but the effectiveness of such an approach has not yet been empirically demonstrated. However, the small amount of research available suggests that highlighting phrasal language to learners can have an impact. Jones and Haywood (2004) focused on phrasal vocabulary in a 10-week EAP class, and found that the students became much more aware of phrasal vocabulary by the end of the course, showed a slight improvement in the production of phrases in C-tests, but demonstrated no noticeable improvement in their output of phrases in composition writing. Boers *et al.* (2006) found that learners who were exposed to considerable listening and reading and made aware of the phrasal vocabulary in that input were later judged to be more orally proficient than learners who received the same input but were taught with a traditional grammar–lexis dichotomy. A number of scholars have suggested bringing corpus data into the classroom for learners to analyze. Kennedy and Miceli (2000) found that this approach provided benefits, but that even with a substantial and principled training regimen in place, their students still had problems using corpus analysis well. It seems quite difficult to train students to use a corpus with the necessary rigour, and to foster a ‘researcher’ attitude.

### **IV Intentional learning of vocabulary**

The currently favored language teaching paradigm highlights a focus on meaning-based learning, where language features are learned by using them rather than by focusing on them explicitly, but with a supplementary focus on language forms (e.g. explicit grammar teaching) when necessary (e.g. Doughty and Williams, 1998). However, while it can be argued that this works for building proficiency of the four skills or grammatical structures,

there are good reasons to believe that vocabulary requires a different approach which incorporates explicit attention to learning the lexical items themselves:

- learners who understand the overall message often do not pay attention to the precise meanings of individual words
- guessing from context is often unreliable, especially if the learner does not know 98% of the words in the discourse
- words which are easily understood (guessed) from context may not generate enough engagement to be learned and remembered
- new words which learners have met in discourse need to be met again relatively quickly to avoid their being forgotten. In order for words to be met 10 times in reading, learners would need to read 1–2 graded readers per week. The typical learner simply does not read this much.

(Laufer, 2005)

However, the main reason for an explicit focus on vocabulary is that it is effective: although research has demonstrated that valuable learning can accrue from incidental exposure (see below), intentional vocabulary learning (i.e. when the specific goal is to learn vocabulary, usually with an explicit focus) almost always leads to greater and faster gains, with a better chance of retention and of reaching productive levels of mastery. Laufer (2005) reviews a number of studies which contain an explicit focus on vocabulary. Those in which the explicit exercises were related to, but not embedded in, meaning-based tasks led to 33–86% of the words being learned. Exercises which required work on isolated words, without a meaning-based task, led to gains of 13–99%. These ranges reflect a variety of types of measurement and immediate vs. delayed testing, but regardless, they compare extremely favorably with the magnitude of results typically derived from incidental learning. Laufer goes on to report on three of her studies, which show that explicit vocabulary exercises led to about 70% of the words being known on immediate receptive posttests. Although this decayed to 21–41% on two-week delayed posttests, it is far better than results reported from incidental learning. Similarly, Smith (2004) found that target words which were used and focused upon in interactive tasks on an internet chat program were retained very well in terms of receptive meaning knowledge (80–90%), and still fairly well in terms of productive word form (50–59%) (one-week delayed tests).

Given the relative effectiveness of explicit activities in promoting vocabulary learning, one might think such an approach would be a major element in most classrooms. However, this is not necessarily so: case studies into two Asian contexts show that the percentage of words taught explicitly are very low (Hong Kong: 2.79%; China: 12.24%) (Tang and Nesi, 2003). Furthermore, teachers may not naturally use many lexical items in their lessons that are new to their students. Indeed, Meara, Lightbown, and Halter (1997) found that teachers from both audiolingual and communicative approaches used only about 2.75 new words per 500 words of speech. While this exposure to new

words can add up over time, the real value of the teacher talk in this study was in providing repeated exposure to high-frequency vocabulary, which could aid the consolidation and enhancement of already partially known lexical items.

Despite this relative ‘shortchanging’ of vocabulary, research clearly indicates that a vocabulary learning program needs to have an explicit component, and so the important question concerns which activities are most effective. Although it is impossible to say that any activity is better than any other activity in all cases (which is not surprising given the complexity and variability inherent in the language acquisition process, e.g. Ellis & Larsen-Freeman, 2006), vocabulary research has suggested a number of principles for selecting/constructing effective learning tasks.

### *1 Use activities that maximize learner engagement with target lexical items*

As mentioned above, maximizing engagement is a key principle in vocabulary learning. In addition to Laufer and Hulstijn’s (2001) comparison of methods in Table 2, a host of other studies have shown that a wide variety of activities can increase engagement in ways which facilitate vocabulary learning. Below is a sample:

- using an interactive on-line database which contained a variety of vocabulary learning activities, including concordance examples, a dictionary, and a quiz feature (Horst, Cobb, & Nicolae, 2005);
- using an Internet chat program, with pairs negotiating a picture story sequencing task and a decision-making task (Smith, 2004);
- receiving an L1 translation for a target word, and then using it in a sentence (better than reading three example sentences with L1 translation) (Webb, 2005);
- giving learners a few seconds to try to produce new word forms on their own before those forms are given to them by the teacher or materials (Barcroft, 2007);
- having students consider the underlying categorical orientation of figurative language (e.g. MORE IS UP, LESS IS DOWN; blow up = inflate) (Boers, 2000);
- seeing words in a reading text and then retelling the passage using those words or related ideas (Joe, 1998);
- temporarily isolating words from their context and processing them elaboratively (Prince, 1996);
- having learners record target words in a notebook, along with multiple aspects of word knowledge for those words, and later having the words incorporated in classroom activities (Walters and Bozkurt, under review).



## *2 Maximize repeated exposures to target lexical items*

Equally important is the principle of repeated exposure and recycling. It is difficult to prescribe the number of repetitions necessary to learn a lexical item through explicit methodology, as it depends on the level of engagement and the type of measure used. However, Nation's (2001, p. 81) brief overview of a number of studies gives us a rough idea; he found a range of from five to more than 20 repeated meetings were necessary to 'learn' words according to the various criteria in the different studies. Psycholinguistic studies have also demonstrated the power of repetition in learning vocabulary. For instance, de Groot (2006) found that after six 10-second exposures to translation pairs and three receptive tests, Dutch students learned from 43% to 70% of the target words on a one-week delayed test. Each of the nine meetings with the words was brief, so the total time for learning was relatively short. Nevertheless, the effect of repetition led to relatively strong learning. Disregarding the exact number of repetitions required, the important point is that recycling is necessary, and if it is neglected, many partially learned words will be forgotten, wasting all the effort already put into learning them (Nation, 1990, p. 45). Indeed, Nation argues that it is *more* important to consolidate previously studied words than teach new words, because of the time investment. Recycling has to be consciously built into vocabulary learning programs, and teachers must guard against presenting lexical items once and then forgetting about them, or else their students will likely do the same. Teachers and materials writers need to think about vocabulary learning in longitudinal terms, where target lexical items are recycled over time in a principled way. From memory research, we know that most forgetting occurs soon after the learning session and then eventually slows down (Baddeley, 1990), so the first recyclings are particularly important and need to occur quickly.

## *3 Consider which aspects of lexical knowledge to focus upon*

Just as Skehan and Foster (2000) have shown that there are different proficiencies involved in language learning in general (accuracy, complexity, or fluency), vocabulary learning is also multifaceted. It follows that teachers and materials writers need to consider carefully how to develop the various aspects. It seems that most vocabulary tasks focus their attention almost solely on introducing the meaning of new words. However, such a narrow view of vocabulary does not take into account the incremental nature of word learning, or the many kinds of word knowledge that need to be mastered. Nation (2001) and Nation and Gu (2007) suggest a four-strand approach which gives balanced attention to learning new information about lexical items, and then provides for consolidation and enhancement of that knowledge: (1) meaning-focused input, (2) meaning-focused output, (3) language-focused learning, and (4) fluency development, with each strand being given roughly equal emphasis (Table 4).

**Table 4** Four strands of vocabulary teaching (Nation, 2001, p. 390)

Strand	General conditions	Vocabulary requirements	Activities and techniques
Meaning-focused input	<ul style="list-style-type: none"> <li>• Focus on the message</li> <li>• Some unfamiliar items</li> <li>• Understanding</li> <li>• Noticing</li> </ul>	<ul style="list-style-type: none"> <li>• 95%+ coverage (preferably 98%)</li> <li>• Skill at guessing from context</li> <li>• Opportunity to negotiate</li> <li>• Incidental defining and attention drawing</li> </ul>	<ul style="list-style-type: none"> <li>• Reading graded readers</li> <li>• Listening to stories</li> <li>• Communication activities</li> </ul>
Meaning-focused output	<ul style="list-style-type: none"> <li>• Focus on the message</li> <li>• Some unfamiliar items</li> <li>• Understanding</li> <li>• Noticing</li> </ul>	<ul style="list-style-type: none"> <li>• 95%+ coverage (preferably 98%)</li> <li>• Encouragement to use unfamiliar items</li> <li>• Supportive input</li> </ul>	<ul style="list-style-type: none"> <li>• Communication activities with written output</li> <li>• Prepared writing</li> <li>• Linked skills</li> </ul>
Language-focused learning	<ul style="list-style-type: none"> <li>• Focus on language items</li> </ul>	<ul style="list-style-type: none"> <li>• Skill in vocabulary learning Strategies</li> <li>• Appropriate teacher focus on high-frequency words, and strategies for low-frequency words</li> </ul>	<ul style="list-style-type: none"> <li>• Direct teaching of vocabulary</li> <li>• Direct learning</li> <li>• Intensive reading</li> <li>• Training in vocabulary strategies</li> </ul>
Fluency development	<ul style="list-style-type: none"> <li>• Focus on the message</li> <li>• Little or no unfamiliar language</li> <li>• Pressure to perform faster</li> </ul>	<ul style="list-style-type: none"> <li>• 99%+ coverage</li> <li>• Repetition</li> </ul>	<ul style="list-style-type: none"> <li>• Reading easy graded readers</li> <li>• Repeated reading</li> <li>• Speed reading</li> <li>• Listening to easy input</li> <li>• 4/3/2 speaking exercise</li> <li>• Rehearsal tasks</li> <li>• 10-minute writing</li> <li>• Linked skills</li> </ul>

*a Meaning-focused input:* The first strand acknowledges the benefits of learning vocabulary through reading and listening to lexical items in meaningful (and hopefully interesting) contexts, and will be discussed in detail in the 'Incidental Learning' section below.

*b Meaning-focused output:* Vocabulary learning also occurs when learners try to communicate messages to other people. This dovetails nicely with the kind of tasks and activities which are promoted by current task-based methodologies (e.g. Ellis, 2003; Van den Branden, 2006).

*c Language-focused learning:* This strand corresponds most closely to traditional vocabulary teaching, as it highlights explicit attention on lexical items. The reasoning behind this strand is that some vocabulary (particularly high-frequency items) is absolutely necessary for any kind of language use, and so is worth the effort of teaching and learning explicitly, especially as intentional learning is much more effective than incidental learning. A number of aspects of word knowledge can be taught and learned in this strand, and Table 2 outlines the main possibilities.

Table 2 also highlights the difference between receptive (R) and productive (P) mastery of lexical items. This distinction is important, because the research shows that they are not equivalent. Learners have larger receptive vocabularies than productive ones. For example, Laufer (2005) reports productive/receptive ratios ranging from 16% at the 5000 frequency level (i.e. learners' productive test scores [L1–L2] were only 16% of their receptive test scores [L2–L1]) to 35% at the 2000 level, while Fan (2000) found a range from 53% to 81% (mean 69.2%) for words taken from the 2000, 3000 and UWL levels. Laufer and Paribakht (1998) found an average ratio of 77% for Israeli EFL students and 62% for Canadian ESL students. While the ratios are highly dependent on the types of receptive/productive tests used (Laufer & Goldstein, 2004), it seems clear that acquiring productive mastery of vocabulary is more difficult than acquiring receptive mastery. The implication is that it cannot be assumed that productive mastery will automatically follow from receptive mastery of words.

In fact, it seems that if productive mastery is required, then learners need to engage in productive tasks for this to be developed; merely having receptive exposure does not seem to be enough to reliably lead to productive mastery. For example, Lee and Muncie (2006) found that adolescent ESL learners, even after being given a substantial introduction to lexical items, used only 18.4–20.87% of those items in follow-up free compositions. However, after some additional practice with the items, the students wrote another composition, but this time with a composition structure frame with the items written on it, and encouragement to use the target items. This time, the compositions contained 67.5–68.7% of the items. What is more, on a third composition two weeks later (with the writing frame but no target items), the students still

produced 50.5–63.0%. Similarly, Lee (2003) found that her secondary school ESL learners, after being given explicit vocabulary instruction, produced (in compositions) 63.62% of the words they knew receptively, compared to only 13.19% before the instruction. In a delayed composition (23 days later) the productive percentage had only dropped to 55.46%, showing that the gains were durable. The relatively good retention of productive vocabulary in these two studies shows the value of structured productive practice (and encouragement) in helping learners to reach higher levels of productive mastery.

The different strands can be usefully integrated together. An example of this is de la Fuente (2006), who found that an explicit focus on the morphological forms of target words at the end of a task-based lesson effectively stopped the decay of vocabulary knowledge on a delayed post-test compared to a Present-Practice-Produce lesson (i.e. the delayed scores approximately equalled immediate post-test scores). There was a similar effect for structured role-play, where learners were encouraged to engage with the target words. However, the students in the PPP class hardly used the target words in their free role-play, so it seems adding tasks which force students to engage with target words is an important supplement to meaning-focused output.

*d Fluency development:* The fourth strand focuses on fluency. It is self-evident that knowledge of lexical items is only of value if they can be recognized or produced in a timely manner that enables real-time language use. One obvious example of this is in reading. If the vocabulary recognition speed is too slow, then reading turns into a slow decoding process, and it becomes impossible to understand the flow of the text (Grabe & Stoller, 2002). Thus, increasing the automaticity of lexical recognition and production is an essential part of enhancing the mastery of vocabulary. Happily, research shows that vocabulary fluency is amenable to intervention. In an example of an explicit approach, learners who manipulated words 10 times over four weeks with explicit attention to sentence completion, appropriacy judgments, and translation exercises became faster in their lexical retrieval (Snellings, van Gelderen, & de Glopper, 2002). Likewise, an incidental approach can have an impact. Al-Homoud and Schmitt (in press) found that both extensive reading (with self-selected graded readers) and intensive reading (working with a class text) over 10 weeks led to increased reading speeds, which imply more automatic vocabulary recognition speeds.

## **V Incidental learning of vocabulary**

Although engagement-rich explicit exposure is most effective in promoting learning, there are inevitable limitations in the number of times that teachers and materials writers can engineer such contact. This means that many of the meetings which learners need to consolidate and enhance their knowledge of lexical items must come from the extensive exposure generated by the meaning-focused input strand, from which incidental learning can occur. As

a consequence, teachers and materials writers need to consider the maximization of meaning-focused exposure as an equal partner to explicit vocabulary learning, and thus actively promote and manage it.

### *1 The effectiveness of incidental vocabulary learning from reading*

Early research on vocabulary acquisition from incidental exposure in reading found a discouragingly low pick-up rate, with about one word being correctly identified out of every 12 words tested (Horst, Cobb, & Meara, 1998). This disappointing rate of learning has led some to question incidental learning as a viable approach (e.g. Raptis, 1997). However, the early studies typically had a number of methodological weaknesses, including very small amounts of reading, insensitive measurement instruments, inadequate control of text difficulty, small numbers of target words, and no delayed post-tests. More recent studies which have addressed some or all of these problems have found more gains from reading than previous studies indicated. Horst, Cobb, and Meara (1998) found learning of about one new word out every five, and that this learning persisted over a period of at least 10 days. Horst (2005) found that her participants learned well over half of the unfamiliar words they encountered in their extensive reading. Pigada and Schmitt (2006) studied the learning of spelling, meaning, and grammatical characteristics during a one-month extensive reading case study. They found that 65% of the target words were enhanced on at least one of these word knowledge types, for a pick-up rate of about 1 of every 1.5 words tested. Spelling was strongly enhanced, even from a small number of exposures, while meaning and grammatical knowledge were enhanced to a lesser degree. Brown, Waring, and Donkaewbua (in press) found encouraging amounts of durable incidental vocabulary learning in terms of recognition of word form and recognition of meaning in a multiple-choice test, but far less in terms of being able to produce the meaning in a translation task. Waring and Takaki (2003) also found stronger gains and retention for recognition than recall knowledge. Their Japanese participants recognized the meaning of 10.6 out of 25 words on an immediate multiple-choice test, but only were able to provide a translation for 4.6/25. However, after three months, while the recognition of meaning score dropped to 6.1, the translation score dropped much more sharply to 0.9. This indicates that incidental vocabulary learning from reading is more likely to push words to a partial rather than full level of mastery, and that any recall learning is more prone to forgetting than recognition learning.

### *2 Number of exposures necessary to promote incidental learning from reading*

An important issue related to incidental learning is the number of exposures that is necessary to push the incremental learning of a word forward, especially in a way that is durable. Webb (2007a) compared the learning

of words from the study of L2–L1 word pairs, both with and without the addition of a single example sentence. The results for the two conditions were the same, indicating that a single context had little effect on gaining vocabulary knowledge. Beyond a single exposure, learning increases, but there does not appear to be any firm threshold when it is certain. At the lower end of the frequency spectrum, Rott (1999) found that six exposures led to better learning than two or four exposures. Pigada and Schmitt (2006) found that there was no frequency point where the acquisition of meaning was assured, but by about 10+ exposures, there was a discernible rise in the learning rate. However, even after 20+ exposures, the meaning of some words eluded their participant. Waring and Takaki (2003) found it took at least eight repetitions in order for learners to have about a 50% chance of recognizing a word's form, or its meaning on a multiple-choice test, three months later. However, even if a new word was met 15–18 times, there was less than a 10% chance that a learner would be able to give a translation for it after three months, and no words met fewer than 5 times were successfully translated. Horst, Cobb, and Meara (1998) also found that words appearing eight or more times in their study had a reasonable chance of being learned, while Webb (2007b) found that 10 encounters led to sizable learning gains across a number of word knowledge types. Of course, learning a word depends on more than just the frequency of exposure. For example, Zahar, Cobb, and Spada (2001) 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. Nevertheless, the research seems to suggest that 8–10 reading exposures may give learners a reasonable chance of acquiring an initial receptive knowledge of words.

Taken together, the research confirms that worthwhile vocabulary learning does occur from reading. However, the pick-up rate is relatively low, and it seems to be difficult to gain a productive level of mastery from just exposure. Hill and Laufer (2003) estimate that, at the rates of incidental learning reported in many studies, a L2 learner would have to read over 8 million words of text, or about 420 novels to increase their vocabulary size by 2000 words. This is clearly a daunting prospect, and thus it is probably best not to rely upon incidental learning as the primary source of the learning for new words.<sup>5</sup> Rather, incidental learning seems to be better at enhancing knowledge of words which have already been met. This conclusion is congruent with Waring and Takaki's (2003) findings that reading graded readers does not lead to the learning of many *new* words, but that is very useful in developing and enriching *partially known* vocabulary. Studies with a variety of test types have shown that exposure leads to improvements in multiple types of word knowledge. Also, given that repetition is key to learning words, the benefits of repeated exposures in different contexts for consolidating fragile initial learning and moving it along the path of incremental development cannot be underestimated.

### *3 Incidental learning from listening*

While most of the work on incidental learning has focused on reading, there is now beginning to be a literature on the incidental acquisition of vocabulary from listening. Most of it points to a low uptake rate from listening exposure. Vidal (2003) found that Spanish university students learned small amounts of vocabulary from 14–15-minute academic lectures. On average, most target words seemed to move from being totally unknown to a state in which the learners recognized having heard the words. However, after a 4–8-week delay, learners retained about only 50% of this small knowledge increase. In another study, after listening to news reports for 12 minutes a day for seven days, learners gained only an average of two words out of 40 (5%) (Al-Homoud, 2007). A few studies have explored which listening conditions are most conducive for vocabulary learning. Joe (1998) found that just actively listening to a group discussion could lead to vocabulary learning. Ellis (1995) had low-proficiency Japanese high school students perform a listening task in which they needed to locate kitchen items on a drawing of an empty kitchen, with either simplified/elaborated instructions or the opportunity to interactively ask questions and seek clarification. In general, the learning was modest: 14% (premodified group) and 33% (interactive group) of the target words were correctly translated two days later, but the learning was largely durable as one-month delayed post-tests produced scores of 14% and 26% respectively. Furthermore, incidental learning from listening seems to be better when there is a variety of speakers and voice types (Barcroft, 2001; Barcroft & Sommers, 2005), suggesting that materials writers should incorporate ample acoustic variability when presenting L2 vocabulary on audiotapes, videotapes, and computer-based presentation programs. Listening can also be a useful supplement to reading, as studies have found that reading-while-listening is generally superior to reading-only in promoting vocabulary learning (Amer, 1997; Brown, Waring, & Donkaewbua, under review).

### *4 Extensive reading*

One way of incorporating incidental learning into a language program is to organize an extensive reading component (Day & Bamford, 1998).<sup>6</sup> Although readers need to know 98–99% of the words in a text, many authentic texts will still be suitable for more advanced learners, especially if teachers provide support for the more difficult vocabulary (see below). However, for developing learners, the vocabulary load will probably be too high in authentic texts, and so the use of graded readers is recommended, as the vocabulary load is both fine-tuned for the learner's level, and systematically recycled (Nation & Wang, 1999; Al-Homoud, 2007). Graded readers used to have a bad reputation for being boring and poorly written, but that is no longer the case, with several major publishers providing a series of interesting and well-presented



readers. Most importantly, research shows that substantial vocabulary learning can be derived from graded readers. For example, Horst (2005) found that her participants learned over half of the unfamiliar words they encountered in the graded readers they read. Likewise, Al-Homoud and Schmitt (in press) found that Saudi learners in a short 10-week course incorporating extensive reading and graded readers increased their vocabulary at the 2000, 3000, and 5000 frequency levels, as well as improving their reading speed and attitudes towards reading. Unsurprisingly, the amount of reading is key: of 10 variables entered into a regression analysis, only the amount of extensive reading done during a two-month course came up as a significant predictor of gain scores in overall language proficiency (Renandya, Rajan, & Jacob, 1999).

### *5 Inferencing from context*

While extensive reading programs can maximize the amount of exposure, it is possible to help learners utilize that exposure more effectively. One way is to train them in lexical inferencing. Learners typically rate guessing from context as a useful strategy (Schmitt, 1997; Zechmeister *et al.*, 1993) and research has shown that it is one of the most frequent and preferred strategies for learners when dealing with unknown words in reading. In one study, Paribakht and Wesche (1999) found that their university ESL students used inferencing in about 78% of all cases where they actively tried to identify the meanings of unknown words, while Fraser (1999) found that her students used inferencing in 58% of the cases where they encountered an unfamiliar word. It also seems to be a major strategy when learners attempt to guess the meaning of phrasal vocabulary, at least for idioms (Cooper, 1999). Unfortunately, this does not mean that it is necessarily effective. Nassaji (2003) found that of 199 guesses, learners only made 51 (25.6%) that were successful, and another 37 (18.6%) that were partially successful. This low success rate is similar to the 24% rate that Bensoussan and Laufer's (1984) learners achieved. One of the reasons for this poor rate is that learners often confuse unknown words for words which they already know with a similar form (Nassaji, 2003), again highlighting the importance of form in learning vocabulary. Other factors include the percentage of unknown words in the text, word class of the unknown words, and learner proficiency. Liu and Nation (1985) unsurprisingly found that unknown words embedded in a text where 96% of the other words were known were guessed more successfully than unknown words in a text with only 90% known. They also found that verbs were easier to guess than nouns, and nouns easier than adjectives or adverbs. Finally they found that higher proficiency learners successfully guessed 85%–100% of the unknown words, while the lowest proficiency learners only guessed 30%–40% successfully.<sup>7</sup>

This uneven success in guessing suggests that inferencing skills need to be taught. Two meta-analyses (Fukkink & De Glopper, 1998; Kuhn & Stahl, 1998) and an overview (Walters, 2004) have found a positive effect for instruction in the use of context. Both meta-analyses found that context clue instruction was as or more effective than other forms of instruction (e.g. cloze exercises, general strategy instruction), but the inferencing improvement may be mostly about attention given to the inferencing process, as Kuhn and Stahl concluded that there was little difference between teaching learners inferencing techniques and just giving them opportunities to practice guessing from context. Walters (2006) found that learners of different proficiencies seemed to benefit from different approaches, with beginning learners benefiting most from instruction in a general inferencing procedure (Clarke & Nation, 1980), and more advanced learners benefiting more from instruction in the recognition and interpretation of context clues. She also found that instruction in inferencing may do more to improve reading comprehension than the ability to infer word meaning from context.

## 6 Glossing

Another way to help learners utilize exposure better is to give them information about unknown words in the text. One way this can be done in teacher-prepared texts is with glossing. Nation (2001) believes there are several reasons why glossing can be useful: more difficult texts can be read, glossing provides accurate meanings for words that might not be guessed correctly, it has minimal interruption to reading – especially compared to dictionary use, and it draws attention to words that should aid the acquisition process. Research tends to support these views. Hulstijn (1992) found that glosses helped to prevent learners from making erroneous guesses about unknown words, which is important because learners seem reluctant to change their guesses once made (Haynes, 1993). Moreover, Hulstijn, Hollander, and Greidanus (1996) found that L2 readers with marginal glosses learned more vocabulary than dictionary-using readers, or readers with no gloss/dictionary support. But how and where to gloss? Research indicates that it does not matter much whether the gloss is an L2 description or an L1 translation, as long as the learner can understand the meaning (Jacobs, Dufon, & Fong, 1994; Yoshii, 2006), which suggests that there is no reason not to use L1 glosses with less-proficient learners. Glosses just after the target word do not seem to be very effective (Watanabe, 1997), but glosses in the margin, bottom of the page, or end of the text have similar effectiveness (Holley & King, 1971). As learners seem to prefer marginal glosses, this is probably the best place for them (Jacobs, Dufon, & Fong, 1994). If phrasal vocabulary is being glossed, it helps to make the phrases more salient by highlighting their form (e.g. by printing them in color, and/or underlining them), so that the learner can recognize them as chunks (Bishop, 2004).

### *7 Adding explicit activities to implicit learning situations*

Glossing is one way of focusing explicit attention on lexical items during exposure where otherwise only incidental learning would occur. But there are many more possibilities, based on the general principle that intentional and incidental learning are complementary approaches which can be usefully integrated. For example, students working in a group can learn vocabulary from each other, especially if it involves explicit negotiation of the meaning of target words (Newton, 2001). Explicit attention in the during-reading phase can aid learning: reading with marginal glosses or referral to a dictionary leads to better receptive knowledge of words than reading alone (Hulstijn, Hollander, & Greidanus, 1996).

But perhaps the most effective way of improving incidental learning is by reinforcing it afterwards with intentional learning tasks. Hill and Laufer (2003) found that post-reading tasks explicitly focusing on target words led to better vocabulary learning than comprehension questions which required knowledge of the target words' meaning. Atay and Kurt (2006) found that young Turkish EFL learners who carried out reading comprehension and interactive tasks as post-reading activities outperformed students who did written vocabulary tasks, and that the interactive tasks were much more appealing for the young learners. Mondria (2003) gives a particularly good illustration of the value of post-reading exercises. Dutch students who inferred the meaning of French words from sentence contexts, and then verified the meaning with the aid of a word list before memorization, learned just as much vocabulary (about 50% of the target words on a two-week delayed receptive test) as students who were given a translation before memorization. This shows that incidental learning plus explicit follow-up (particularly the memorization element) can be just as effective as a purely explicit approach. However, it is not as time effective, as the 'translation + memorization' method used 26% less time than the 'incidental + follow-up' method to achieve the same results.

Just as with reading, post-tasks seem to improve gains from listening exposure. Jones (2004) found that various post-listening tasks (pronunciation help + synonym definition/ synonym definition and pictures of the target words) resulted in scores on a delayed productive translation test that were around 3–4 times higher than listening and pronunciation help alone. However, although the greater engagement of reading + explicit attention leads to greater learning, it is still fragile and needs to be followed up. Rott, Williams, and Cameron (2002) found that while reading + multiple-choice glosses lead to better immediate scores than reading-only incidental learning alone, after five weeks the scores had decayed to the same level as the incidental learning condition. Thus, the improved learning gained from incidental exposure + supplementary tasks can be useful if subsequently consolidated and maintained, but if not followed up upon, the advantage may well be lost.

## VI Summarizing the research

With so much vocabulary research now published, it is becoming difficult to distill it down into a manageable number of pedagogical suggestions. However, the seven principles Hunt and Beglar proposed in 1998 still provide a very good start towards summarizing a principled approach to vocabulary learning:

- Principle 1: Provide opportunities for the incidental learning of vocabulary.
- Principle 2: Diagnose which of the 3000 most common words learners need to study.
- Principle 3: Provide opportunities for the intentional learning of vocabulary.
- Principle 4: Provide opportunities for elaborating word knowledge.
- Principle 5: Provide opportunities for developing fluency with known vocabulary.
- Principle 6: Experiment with guessing from context.
- Principle 7: Examine different types of dictionaries and teach students how to use them.

In addition to these, I believe that research now indicates that the following points also need to be incorporated into vocabulary instruction:

- Learners need large vocabularies to successfully use a second language, and so high vocabulary targets need to be set and pursued.
- Vocabulary learning is a complex and gradual process, and different approaches may be appropriate at different points along the incremental learning process.
- At the beginning, establishing the meaning–form link is essential, and intentional learning is best for this. Using the L1 is one sensible way to quickly establish this initial link.
- Once this initial meaning–form link is established, it is crucial to consolidate it with repeated exposures.
- It is also important to begin enhancing knowledge of different aspects of word knowledge. Some of these may be usefully learned explicitly (e.g. knowledge of derivative forms), but the more ‘contextualized’ word knowledge aspects (e.g. collocation) are probably best learned by being exposed to the lexical item numerous times in many different contexts.
- Make sure that learners maintain the maximum amount of engagement possible with lexical items.

It is also clear that intentional and incidental approaches are not only complementary, but positively require each other. It is impossible in explicit teaching to recycle words adequately and to teach all of the contextual types of word knowledge (both in terms of time constraints and the difficulty of teaching word knowledge aspects like collocation), and so exposure to a great

deal of reading and listening is necessary for consolidation and enhancement of explicitly taught lexical items. Conversely, words acquired by incidental learning are unlikely to be learned to a productive level, and so the additional attention that comes from intentional learning may be required to push them to this level of mastery. Thus, teachers and materials writers need to take a broader view of what vocabulary instruction entails, and take proactive charge of all four strands of vocabulary development.

In sum, it is important to acknowledge the incremental nature of vocabulary learning, and to understand that an effective vocabulary learning program needs to be principled, long-term, and one which recognizes the richness and scope of lexical knowledge. All of the vocabulary learning partners need to work towards moving learner lexicons along the learning continuum, in terms of size, depth, and fluency. The variety of factors which affect vocabulary learning means that there will never be one 'best' teaching methodology, but the meta-principle of maximizing sustained engagement with the lexical items which need to be learned appears to underlie all effective vocabulary learning.

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### **Notes**

- <sup>1</sup> A lexical item functions as a single meaning unit, regardless of the number of words it contains. Sometimes it is a single word (*expire* = 'die') and sometimes a multi-word phrasal item (*pass away*, *kick the bucket*). Phrasal vocabulary is becoming a key issue in language studies, as research is beginning to suggest that most language use revolves around it (e.g. Wray, 2002). However, there is still little research into its acquisition, and so this overview will generally report on research covering individual words.
- <sup>2</sup> These figures are for English, the language on which most vocabulary size research has been done. The size requirements for other language probably differ, and there is some reason to believe that they may be lower (see Nation & Meara, 2002). Also, these vocabulary size figures do not take into account how well the words are known, i.e. the depth of vocabulary knowledge (Nassaji, 2004).
- <sup>3</sup> The Common European Framework (2007) does not stipulate required vocabulary sizes for the various levels, but rather describes learner performance expectations at each level. The C2 descriptors for reading and vocabulary include the following, for which a 5000 word family lexicon would appear inadequate (although firm research on this is lacking):
  - Can understand and interpret critically virtually all forms of the written language including abstract, structurally complex, or highly colloquial literary and non-literary writings.
  - Can understand a wide range of long and complex texts, appreciating subtle distinctions of style and implicit as well as explicit meaning.
  - Can exploit a comprehensive and reliable mastery of a very wide range of language to formulate thoughts precisely, give emphasis, differentiate and eliminate ambiguity. No signs of having to restrict what he/she wants to say.
  - Has a good command of a very broad lexical repertoire including idiomatic expressions and colloquialisms; shows awareness of connotative levels of meaning.

- <sup>4</sup> This discussion focuses on the forms of individual words, as I did not come across any research which directly explores potential confusion between phrases which have similar form, e.g. *at any price/at a price: not just a pretty face/not a pretty sight*.
- <sup>5</sup> Little is known about the incidental learning of phrasal vocabulary.
- <sup>6</sup> A very useful website for extensive reading can be found at <<http://www.extensivereading.net/>>. It includes an annotated bibliography of research on extensive reading from 1919–present.
- <sup>7</sup> In one study on lexical inferencing from listening, Li (1988) found that Chinese adult learners were able to infer about 50% (14/30) of new words embedded in sentences in a listening task, and were able to remember about 2/3 of these (9/33) in an immediate posttest.

## VII References

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