

Chapter 15: MATERIALS FOR TEACHING VOCABULARY

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Abstract

This chapter discusses how to improve the effectiveness of material use and development for teaching and learning second language vocabulary in a way that answers the following four important questions: (1) What are the most common materials for teaching vocabulary?, (2) What principles can be used to develop materials for teaching vocabulary?, (3) How can teachers evaluate materials for vocabulary learning?, and (4) How can teachers modify materials to optimize vocabulary learning?. In addressing these questions, this chapter provides an overview of empirical research findings which support the claims we make about implications for teaching materials, as well as give examples of how to develop, evaluate, and modify materials for effective vocabulary learning. Finally, we suggest how vocabulary learning programs should be organized and draw attention to underexplored areas in need of future research with the view of further improving the effectiveness of material use and development for vocabulary teaching.

Introduction

The field of second language (L2) vocabulary teaching and learning has gained greater currency among researchers and teachers since Michael West published the General Service List (GSL) in 1953. Until the appearance of West's work, vocabulary had received relatively little attention, while a great deal of research was focused on grammar (Schmitt, 2000). Over the last three decades, an increasing number of studies and vocabulary teaching and learning materials have been published and available for classroom use. Language teachers today have access to a great number and variety of vocabulary teaching materials, and a large body of literature that they can access to help them to develop suitable materials for their students.

Currently, perhaps the greatest issue with materials for teaching words may not be a lack of resources, but rather a lack of 'good' materials that are informed by research findings. Moreover, there is also a need for greater guidance about why some activities and exercises might be more effective than others. Without knowledge of the research on vocabulary learning, it is difficult to create or select appropriate materials for effective vocabulary teaching. Studies of vocabulary learning have looked at several questions that are important for developing materials for teaching vocabulary. The questions include: Which words should be taught and in what order should they be presented in textbooks? How should encounters with target vocabulary be arranged and prepared in

reading materials? What kind of activities should be included in vocabulary activity books? How can teachers evaluate and improve the potential effectiveness of vocabulary learning activities? How can multiple materials be best handled within a limited class time? In order to answer these questions, this chapter will provide fundamental principles based on empirical evidence from L2 vocabulary research that can be used to guide the selection and development of vocabulary teaching materials.

This chapter is organized in a way that answers four questions that are useful to keep in mind in developing and selecting materials. In Section 1 (Critical Issues and Topics), we address the following questions: ‘What are the most common materials for teaching vocabulary?’ and ‘What principles can be used to develop materials for teaching vocabulary?’ This section will provide a brief overview of existing materials and resources frequently used in vocabulary instruction, and a review of factors promoting or preventing vocabulary learning on the basis of research evidence. In Section 2 (Implications and Challenges for Materials Development), the following questions are discussed: ‘How can teachers evaluate materials?’ and ‘How can teachers modify materials?’ In this section, we will summarize important psychological conditions that contribute to vocabulary learning, and also introduce Technique Feature Analysis (Nation & Webb, 2011), a useful checklist tool for evaluating and improving vocabulary learning activities. Finally, the chapter will provide practical considerations for materials development and use as well as future directions in this area.

Critical issues and topics

What are the most common materials for teaching vocabulary?

There are a great number of materials and resources for teaching L2 vocabulary: coursebooks, vocabulary exercise books, word lists, concordancers, graded readers, and other types of materials. In the following sections, we will highlight several of these key resources.

Coursebooks

Perhaps the most basic form of materials for vocabulary learning are coursebooks. Coursebooks are considered to have a major influence on classroom practice, forming the core of most teaching programs (Tomlinson & Masuhara, 2018). Matsuoka and Hirsh (2010) examined an internationally, best-selling coursebook (i.e., *New Headway Student's Book Upper-Intermediate*) by counting repetitions of words that appear in the lists of high-frequency/basic words, academic words, and lower-frequency words. This study suggests that the textbook is useful for learning high-frequency vocabulary and academic words, but that it gives little opportunity to learn words beyond basic levels (i.e., beyond the first 2,000 words and academic words). Another limitation of coursebooks concerns insufficient recognition of different aspects of word knowledge. Brown (2011) examined nine textbooks from a range of publishers targeting beginner to intermediate levels (e.g., *English Firsthand Success*, *New Cutting Edge*, *Clockwise*) by identifying the aspects of vocabulary knowledge involved in an activity. The author found that coursebooks primarily focus on knowledge

of form-meaning connections while other aspects of knowledge (e.g., collocations, word class) received relatively little attention.

Vocabulary activity books

Vocabulary activity books are more explicitly focused on vocabulary learning than general coursebooks. Perhaps the most extensively used activity book series focused on word learning is *Vocabulary in Use* (e.g., see McCarthy & O'Dell, 2010 for high intermediate level). Vocabulary activity books of this kind contain various types of word learning activities such as gap-filling, error correction, word matching, and sentence writing (see Webb & Nation, 2017, Chapter 5 for other activities). A recent review of vocabulary learning activities has suggested that the activities where words are learned out of context (flashcard and word list learning) lead to higher learning gains than the activities where words are learned in context (gap-filling and sentence/composition writing) (Webb, Yanagisawa, & Uchihara, under review).

Word lists

A word list can be used in two ways; first, it can be used as part of vocabulary learning activities such as, list learning (e.g., memorizing L2 forms and matched L1 meanings presented side by side on a notebook) and flashcards, and second, it can be used as a reference list, primarily serving the purpose of identifying L2 words deserving of teaching and testing (Nation, 2016). We refer to the second use here in discussing the role of word lists.

Word lists are often developed using frequency information as one of the key selection criteria. Building upon West's (1953) original GSL, updated lists representing high-frequency word families (i.e., a word counting unit including headwords and both inflected and derived forms such as *respect, respects, respecting, respected, respective, respectable, respectful*) have been created such as Nation's (2012) British National Corpus (BNC)/Corpus of Contemporary American English (COCA) 2000 (see Webb & Nation, 2017, pp. 197–198 for other general-service lists). In addition to these general-service lists, several specialized word lists are also available for teaching and materials development. The Academic Word List (Coxhead, 2000) might be the most widely used specialized list. It contains words frequently appearing across various academic subjects and serves as an important resource for materials used in English for Academic purposes programs. Other types of word lists include subject-specific word lists, which represent words that commonly appear in a particular subject area such as agriculture and economics (see Webb & Nation, 2017, p. 16 for a summary of subject-specific word lists), as well as lists of multiword items. There are available lists of the most frequent and useful phrasal verbs (e.g., *find out, pick up*), spoken collocations (e.g., *out there, a little bit*), phrasal expressions (e.g., *as well as, rather than*), and academic formulas (e.g., *the extent to which, in terms of*) (see Webb & Nation, 2017, p. 200 for examples of multiword lists).

Of particular relevance to materials development is the use of word lists to determine which words to include and in what order to sequence them in vocabulary learning materials such as

coursebooks, activity books, and texts for reading and listening. For example, in choosing appropriate texts for reading activities, when learners master the most frequent 2,000 words but fall short of the 3,000 frequency level, teachers can use word lists as reference points to select a text which contains a large number of the most frequent 2,000 words and a small portion of the most frequent 3,000 words. Thus, learners can pick up the most useful unknown words without too much difficulty in comprehending the text (see the subsection below on evaluating materials for details of this procedure).

Concordancers

A concordancer is a type of software that produces a concordance of a text. A concordance is a list of all the occurrences of keywords or keyphrases in context. The concordance is sorted according to the words on the left or the right of the search term so that it is easy to determine the words that are used together with the keyword. An example of a concordance for the keyword ‘priority’ is presented in Figure 15.1 using the British National Corpus (BNC) from Tom Cobb’s Compleat Lexical Tutor website (<https://www.lextutor.ca/conc/>). We can see that ‘priority’ typically occurs preceded by adjectives such as ‘high’ and ‘immediate’. In this example, we can also see that a verb commonly preceding ‘priority’ is ‘give’. These pieces of information are considered to be appropriate for learning how a given word is commonly used together with other words (e.g., collocations), which can be of great value in helping students to improve their use of vocabulary in writing. Such advantages were confirmed by a recent meta-analysis of studies adopting corpus-based vocabulary teaching (Lee, Warschauer, & Lee, 2018).

phase space amply large enough for chaotic behaviour: our **first PRIORITY** is to constrain the phase space by examining various ide
o China, Mr Bush may have signalled that the Administration **gave PRIORITY** to continuity in relations over moral outrage, and thus
home and away matches, we will need continuity. We have to **give PRIORITY** where it's due." However, President Ros Marsh said after
the Congress of People's Deputies was being recommended to **give PRIORITY** to the government's report on the economy. People would
mmittees since Labour took control Labour's favoured areas **given PRIORITY** Threat of overdevelopment 70% of vacant council houses g
n, Quarry, and Wolvercote Oxford people in need of housing **given PRIORITY** An accessible bus station THE LABOUR ALTERNATIVE Staff d
to promote the election of their most favoured candidates. **High PRIORITY** is given to any of their senior members who have held mi
we've always felt we had great strength in depth. We put a **high PRIORITY** on this league and have chosen to neglect the Norfolk an
at this budget recognises that education and training are a **high PRIORITY** in job creation." Mr Hay is hoping his firm will achieve
ices or staff. The library and its catalogue do not warrant **high PRIORITY** rating simply because they are not central to the day-to
nities within the company. At Guinness Brewing Worldwide, a **high PRIORITY** is attached to training and development, and to providin
unt of effort will require the allocation of finance with a **high PRIORITY** in operational plans. To expect existing staff to contri
the effects of skill mix on patient services and that "a **higher PRIORITY** should be given by management to achieving the best valu
authorising untold atrocities. Mr V.P. Singh said his **immediate PRIORITY** was to deal with separatist and secessionist violence in
he Fire Service undertaking to search such areas as an **immediate PRIORITY**. 7.4 Design of Equipment All equipment within and around
refore, the government recognises media training as an **important PRIORITY**. The Ministry of Information and Broadcasting has organi
employment of nurses from an inappropriate grade. The **manager's PRIORITY** is to fill the gap and he therefore may accept the offer
: "It is time that the needs of children were given this kind of **PRIORITY**. "Protecting the physical and mental development of chil

Figure 1. A concordance for the keyword ‘priority’ in a one million-word written section of the British National Corpus using the online concordancer at Tom Cobb’s Compleat Lexical Tutor.

Graded readers

Graded readers are books that are specially written or modified for L2 learners using a controlled vocabulary. Because the words that are repeatedly encountered in graded readers consist

almost entirely of the most frequent words, they are widely viewed to be an essential source of input for L2 vocabulary learning. In reality, the majority of English-as-a-foreign-language (EFL) learners fall short of the vocabulary sizes necessary to comprehend unsimplified, authentic texts (Webb & Nation, 2017). A graded reader serves to fill this gap as it provides a series of books with incremental lexical difficulty which caters to learners with varying vocabulary sizes. Tom Cobb's Compleat Lexical Tutor website includes 11 graded readers, under the resource-assisted reading link (https://www.lextutor.ca/ra_read/graded/), for learners with a vocabulary size ranging from 2,000 to 3,000 words. Paul Nation's website (<https://www.victoria.ac.nz/lals/about/staff/paul-nation>) also provides a number of graded readers including books for intermediate and more advanced learners with vocabulary sizes ranging from 4,000, 6,000, to 8,000 words. Research (Webb & Chang, 2015) supports the effectiveness of extensive reading programs using graded readers. Webb and Chang examined the extent to which Taiwanese EFL students in secondary school learned 100 target words incidentally from reading a total of 10 graded readers with audio support (i.e., the Oxford Bookworm series). A pre-and-post design of the study using a bilingual matching test (measuring meaning recognition) revealed that learners gained an average of around 20 words after 13 weeks of reading activities.

Audiovisual materials

Resources that include spoken input are worth noting. First, watching L2 television programs has the potential to promote vocabulary growth. A corpus-driven study revealed that television programs provide opportunities for learners to encounter both high and low-frequency words repeatedly in a relatively small amount of viewing time (Webb & Rodgers, 2009). Research shows that viewing television programs contributes to vocabulary learning (Peters & Webb, 2018; Rodgers & Webb, 2019). For example, Peters and Webb (2018) explored the extent to which Dutch-speaking EFL learners incidentally learned 64 words from watching a single full-length, one-hour television program (i.e., BBC documentary) and found that learners recalled the meanings of 2.5 words on average immediately after viewing. Similarly, TED Talks, which are freely available online presentations about different topics, have gained popularity as a resource for vocabulary learning. Although a higher vocabulary size may be required for the comprehension of TED Talks than general spoken texts, the advantages of using TED Talks are that they are relatively short, allowing repeated viewing of the same talk, and viewers can also read captions of the audio (Webb & Nation, 2017). Nguyen and Boers (2018) found that watching a TED Talk twice led to learning four words on average. Finally, L2 songs are also a useful vocabulary learning resource. Because listening to L2 songs is common practice among learners, it has the potential to increase the amount of spoken input that is received. Indeed, Pavia, Webb, and Faez (2019) found that children in grades five and six learning EFL in Thailand were able to learn words through repeated listening to L2 songs. In this study, young learners listened to two English songs (i.e., *Every Breath You Take* and *Die a Happy Man*) without being asked to sing or seeing the lyrics. The learners completed multiple-choice

vocabulary tests (e.g., form recognition) before and after listening sessions. For both songs, learners recognized a greater number of target-word forms that appeared in the songs repeatedly compared to control groups who did not listen to the songs.

Choosing vocabulary teaching materials needs to be done wisely depending on a focus of learning as well as learners' proficiency levels. With too much focus on learning vocabulary through decontextualized learning activities (e.g., list learning, sentence writing), learners might develop limited aspects of word knowledge. Instead, teachers should ensure that decontextualized learning is balanced with contextualized learning, for example, by drawing on extensive reading or viewing activities using graded readers or full-length episodes of television programs (see the section below, Recommendations for Practice, for discussion of balanced vocabulary teaching programs). Proficiency levels also need to be considered in choosing materials. For example, an activity using concordances without any support may not be appropriate for L2 beginners as it requires not only some reading skills but also the ability to infer meanings or linguistic patterns inductively with contextual clues provided. Audiovisual materials also need to be used carefully with consideration given to learners' ability to segment connected speech. For low proficiency learners, textual support in written form should be provided, such as lyrics for songs and L2 captions or L1 subtitles for television programs.

What principles can be used to develop materials for teaching vocabulary?

In order for teaching materials to be used or developed appropriately, it is important that teachers and material writers are well informed about different factors that promote or prevent word learning. In this section, we will provide key principles about vocabulary learning, which are based on the different factors that influence vocabulary learning. Application of these principles should help teachers and materials writers to select, develop, or modify vocabulary teaching materials to optimize learning.

Select the words for learning in the materials

Perhaps of greatest importance when designing materials for vocabulary learning is deciding which words should be included as target vocabulary for learning. Because there are thousands of different words and a limited amount of class time, it is important to focus on teaching the words that are most useful for learners. Usefulness is often indicated by frequency of word occurrence in actual language use. Words that are frequently encountered in spoken and written language are of greater value for learning, because these words are most likely to influence comprehension and use. Therefore, teaching high-frequency vocabulary needs to come before teaching low-frequency vocabulary. When teaching novice learners, for example, development of a vocabulary syllabus may start with the Essential Word List (Dang & Webb, 2016). Knowledge of the 800 lemmas (624 content words and 176 function words) that make up the Essential Word List should provide the lexical foundation for language learning, because they cover 75% of the words that are encountered in

spoken and written discourse. If students have mastered the Essential Word List, then the next goal should be mastery of General Service Lists (Brezina & Gablasova, 2015; Nation, 2012; West, 1953). General Service Lists tend to account for around 90% of the word families in actual language use and so there is great value in learning words from these lists. After this, the next step is to target either the next 1,000 words so that the most frequent 3,000 words are known, or specialized vocabulary if there are specific learner needs. Knowing the most frequent 3,000 word families provides 95% coverage of spoken discourse and should allow students to understand television programs and movies (provided that they recognized known words in connected speech). For learners who aim to enroll in English-medium universities, focusing on general academic vocabulary (Coxhead, 2000; Dang, Coxhead, & Webb, 2017; Gardner & Davies, 2014) may be useful. These words account for a relatively large proportion of unknown vocabulary in university studies. If learners know which subject they will study or are already studying given subject matter, teaching subject-specific vocabulary may also be essential.

Decide on the different aspects of vocabulary knowledge to focus on in materials

Learning a word is typically associated with learning form-meaning connections. This involves learning the meaning attached to a L2 word form. However, it is important to note that knowledge of form-meaning connections is one of many aspects of word knowledge. Other aspects of vocabulary knowledge include collocations, polysemy, word class, grammatical functions, contextual knowledge, and pronunciation (Nation, 2013). Although the view that word knowledge involves multiple aspects appears to be accepted among researchers, it has yet to be effectively implemented by materials designers. Brown (2011) conducted text analysis on 9 general English textbooks ranging from beginner to intermediate level. The results revealed that learning activities focused almost exclusively on form-meaning connections while other aspects of vocabulary knowledge received little to no attention. It is important to remember that learning words is a gradual process and so using different types of materials over time to develop different aspects of word knowledge is likely to be a good strategy (Webb, 2012). For example, using word cards (e.g., an L2 form written on one side and the corresponding meaning written in L1 on the reverse side) and trying to memorize the meaning of the word might lead to learning form-meaning connections, while using a concordancer and trying to work out how words are used in combination with other words might lead to learning collocations. In the classroom, for example, teachers can choose in advance node words that they want their students to notice which words likely co-occur with (e.g., *effect*), prepare concordance lines for that word, encourage discovering collocations from the lines (e.g., *adverse effect*), and have students engage in meaning-focused output activities using such collocations (e.g., essay or sentence writing).

Ensure that there is repetition of target vocabulary in materials

Repeated exposures to words lead to greater learning than a single exposure. A

meta-analysis conducted by Uchihara, Webb, and Yanagisawa (2019) confirmed the importance of repeated encounters with words for learning through reading, listening, and viewing. Specifying the number of encounters needed for substantial learning to occur is difficult as it is influenced by many other factors, such as age of learners, mode of input, and learning conditions (e.g., massed vs. spaced) (Uchihara et al., 2019). Research has indicated that from 8 encounters (Horst, Cobb, & Meara, 1998), to 10 encounters (Webb, 2007) to more than 20 encounters (Waring & Takaki, 2003) may be necessary to learn words when they are encountered during reading. The effect of repetition is enhanced when learners encounter words at greater intervals over time (i.e., spaced learning) rather than through repeated encounters over a short amount of time (i.e., massed learning). Evidence supports this spacing effect as Elgort, Brysbaert, Stevens, and Van Assche (2018) found that encountering the same words during reading over two days led to greater learning than through the same encounters in a single-day. Therefore, materials writers need to make efforts to ensure that target vocabulary appear multiple times across coursebooks and exercise books and not simply in a single unit. Although a strong call for the ‘recycling’ of words has been already made, this perspective has not fully informed practice in materials development (Nordlund, 2015; Schmitt, 2008).

Avoid interfering relationships between words

Presenting semantically and formally related words simultaneously could disturb or interfere with vocabulary learning. When learners are presented with near synonyms (e.g., *fast, rapid*), antonyms (e.g., *dark, light*), lexical sets (e.g., *apple, orange, lemon*), or have similar forms (e.g., *adapt, adopt*), learning tends to be more effortful and less successful than when presented with unrelated words (Nakata & Suzuki, 2018). Despite the recommendations of researchers, in many textbooks, words related to a given topic (e.g., animals, days) are often introduced together (Nation & Webb, 2011). Webb and Nation (2017) suggest several alternatives to the traditional topic-based lessons on lexical sets. For example, introducing related words individually at different times (e.g., different units or activities) and learning the words in distinguishing contexts (e.g., *Apples are red, but lemons are yellow*) can help to reduce the negative effects of interference.

Implications and challenges for materials development

Teachers and learners today might be overwhelmed by the great number of teaching and learning materials focused on lexis. Unfortunately, the reality is that many existing materials have not been sufficiently informed by research findings. Under these circumstances, teachers need to be able to effectively assess the suitability of materials for their students and adapt them for effective classroom use. An emerging challenge is that even though teachers might know the general rules or principles about vocabulary learning, they might not necessarily know how best to evaluate or modify the materials in practice. This section will describe how teachers can evaluate and modify materials for vocabulary teaching.

How can teachers evaluate materials?

Lexical profilers

A lexical profiler is a text analysis tool which classifies vocabulary in a text according to word frequency levels (e.g., the most frequent 1,000, 2,000, 3,000 words and so on). A lexical profiler can be used to evaluate the lexical difficulty of texts. In principle, the more low-frequency words that are used in a text, the more challenging the text would be for learners to comprehend. Research suggests that learners need to know 95% or 98% of the words in a text for adequate and optimal comprehension (Schmitt, Cobb, Horst, & Schmitt, 2017). These two coverage figures work as points of reference in order to judge the appropriateness of a text for learners. Let us suppose that teachers are looking for a text at the right level for students with a vocabulary size of the most frequent 2,000 words. They can conduct a lexical profile analysis on the text from this chapter as an example using Vocabprofile available at Tom Cobb's Compleat Lexical Tutor (<https://www.lextutor.ca/vp/>). According to the result (Figure 15.2), the column labeled cumulative tokens (i.e., running words) indicates that 75.9% coverage is explained by the 1,000 word level (K-1), 87.1% by the 1,000 and 2,000 levels (K-1 + K-2), and 95.5% by the 1,000, 2,000, and 3,000 levels (K-1 + K-2 + K-3). This finding suggests that the text would be too difficult for students who only know the most frequent 2,000 words because they account for 87% coverage, which is lower than the 95% or 98% coverage necessary for successful comprehension. Thus, the analysis suggests that the text could either be discarded or modified to increase the coverage (see Webb & Nation, 2008 for detailed procedures of text modification and interpretation of the output of a lexical profile analysis).


Freq. Level	Families (%)	Types (%)	Tokens (%)	Cumul. token %
K-1 Words :	351 (58.7)	452 (56.15)	2251 (<u>75.9</u>)	75.9
K-2 Words :	114 (19.1)	154 (19.13)	331 (<u>11.2</u>)	87.1
K-3 Words :	92 (15.4)	117 (14.53)	248 (<u>8.4</u>)	95.5
Coverage 95 				
K-4 Words :	15 (2.5)	16 (1.99)	20 (<u>0.7</u>)	96.2
K-5 Words :	9 (1.5)	10 (1.24)	12 (<u>0.4</u>)	96.6
K-6 Words :	7 (1.2)	9 (1.12)	11 (<u>0.4</u>)	97.0
K-7 Words :	3 (0.5)	3 (0.37)	6 (<u>0.2</u>)	97.2
K-8 Words :	1 (0.2)	1 (0.12)	1 (<u>0.0</u>)	
K-9 Words :				
K-10 Words :	1 (0.2)	3 (0.37)	9 (<u>0.3</u>)	97.5
K-11 Words :				
K-12 Words :	1 (0.2)	2 (0.25)	2 (<u>0.1</u>)	97.6
K-13 Words :				
K-14 Words :	1 (0.2)	1 (0.12)	5 (<u>0.2</u>)	97.8
Coverage 98				

Figure 2. A sample output of the lexical profile analysis.

Psychological conditions for efficient learning

There are several features of activities that contribute to vocabulary learning. Inclusion of these features serves as useful criteria for evaluating the effectiveness of vocabulary learning activities. Understanding of the conditions that contribute to word learning should raise awareness of how effective (or ineffective) an activity may be in vocabulary learning materials. This sub-section will discuss the following four conditions that influence word learning: noticing, retrieval, varied encounters and use, and elaboration (Webb & Nation, 2017).

Noticing

Noticing involves paying attention to a word. Words that receive a greater amount of attention, incidentally (e.g., through extensive reading) or deliberately (e.g., through word matching task), are found to be more likely to be learned (Boers, Eyckmans, & Stengers, 2007; Elgort et al., 2018). There are various ways to draw learners' attention to a word. First, words that are presented out of context tend to receive attention. The presence of context in activities such as extensive reading might take learners' attention away from the word forms. In contrast, when words are presented in isolation (e.g., word card learning), they tend to receive all of the attention, increasing the chance that they will be learned. Second, word consciousness enhances the quality of attention to a word. Word consciousness refers to a general meta-linguistic awareness of words and the different aspects of what it means to know a word (see Webb & Nation, 2017, pp. 68-69 for ways to raise word consciousness). Boers et al. (2007) present one example of how word consciousness might be raised by suggesting that inferring idiomatic meaning on the basis of etymological information promotes learning idioms. Third, noticing is encouraged by group work activities in which learners negotiate the forms and meanings of words that are unfamiliar to them. Negotiation of word form and meaning triggers, language-related episodes, which occur when learners clarify and explain language features to one another, such as what a word means or how to pronounce it (Newton, 2013). A review of studies on vocabulary learning through spoken input activities such as watching videos and listening to stories confirms the central role of interaction in incidental vocabulary learning (de Vos, Schriefers, Nivard, & Lemhöfer, 2018). This means that when learners negotiate to clarify the meaning of new words during a task, they tend to notice and pay more attention to these words, and consequently, vocabulary is more likely to be learned than in tasks in which opportunities for negotiation are absent.

Retrieval

Retrieval is regarded as an additional condition contributing to successful word learning. Retrieval can only come about on the second or subsequent encounters with a word, because it involves recollecting or recalling what was encountered previously. Evidence confirms the robust

advantage of retrieval in vocabulary learning (Barcroft, 2007). For example, word card learning where L1 and L2 words are not presented together (e.g., L1 translations are written on one side, and L2 words are written on the reverse side) is more likely to bring about retrieval and be more effective for learning than list learning where L1 meaning and L2 form are presented together. Ways to increase the opportunity for retrieval to occur include re-telling activities (e.g., reading a text => summarizing the text without reference to it), digital glossaries, and flashcards (see Webb & Nation, 2017, pp. 70-71 for details of the activities).

Varied encounters and use

Encountering or using a word repeatedly in different contexts can not only increase the opportunity for retrieval to occur but also enrich knowledge of the word on each encounter. Joe (1998) reports that there are many degrees of variation which impact our knowledge of a word. Words can vary in their form, meaning, and use. Forms can vary in their spoken/written form or word parts (e.g., inflected or derived words). Meaning senses can also vary for a word (e.g., polysemous words). Use can vary across different contexts: a different grammatical context may require the use of a different form of the word (e.g., *make decisions* vs. *made decisions*) as well as different collocations (e.g., *make decisions* vs. *reach decisions*). Through varied encounters, learners can see how a word can be used, while through varied use, productive knowledge of a word is strengthened. To increase the chance that learners encounter and use words in different contexts, Webb and Nation (2017) propose a linked skills activity as an example in which learners work on the same piece of material across a range of different language skills (e.g., reading a text while taking notes => exchanging opinions about the topic in speech => writing a summary of the main points in sentences or paragraphs).

Elaboration

Elaboration involves the enrichment of knowledge of a word, which helps a word stick in memory by, for instance, linking it with images, seeking extra information about the word, or applying memory techniques. Research suggests that learning words along with pictures can help to promote elaboration by making strong associations between images and words, contributing to word learning (Horst et al., 1998). Analyzing word parts (e.g., word stems such as *-ped-* and *-spect-*) and their relationships with other words that share the same word part is another way of stimulating elaboration (e.g., *ped: pedal, centipede, pedestrian*) (Wei & Nation, 2013). It is important to bear in mind that some words can be easily learned, but other words are relatively difficult to learn for many reasons such as word characteristics (e.g., concreteness, word length, pronounceability). Elaboration in teaching can be used to increase the chances that students learn difficult words.

Awareness of how these four conditions contribute to vocabulary learning can serve as useful guidance for materials writers in developing vocabulary activities or coursebooks. When developing reading materials, materials writers can refer to the conditions and make every effort to

increase the chances that target words are learned. For example, by putting target words in boldface type (Noticing), making the same words appear across chapters on different topics (Varied Encounters), and including post-reading activities of word parts analysis (Elaboration) and story retelling (Retrieval), vocabulary learning may be enhanced.

How can teachers modify materials?

With awareness of the conditions that contribute to vocabulary learning as highlighted above, teachers and materials designers can create or modify materials to try to optimize learning. For this purpose, Nation and Webb (2011) developed Technique Feature Analysis (TFA), which lists criteria for evaluating and modifying vocabulary learning activities. TFA includes 18 questions related to motivational and psychological conditions contributing to vocabulary learning, under five headings: Motivation, Noticing, Retrieval, Varied encounters and use, and Retention (see Table 15.1 for the questions). TFA users answer each question (Max = 18 points) with each point representing a positive feature of an activity. Higher scores for an activity indicate that the activity is likely to be more effective. Research supports the ability of the framework to predict successful vocabulary learning (Hu & Nassaji, 2016).

Let us suppose a hypothetical situation where we as teachers or materials writers need to examine the effectiveness of a sentence writing activity (i.e., writing sentences using target words along with L1 meanings provided by teachers or textbooks). A first step is to examine the effectiveness of this activity using the TFA framework. The result of the TFA (Table 15.1) shows that the sentence writing activity has a total score of 8. A second step in response to this result is to consider whether the current version of the sentence writing activity could be modified to become even more effective. By examining the TFA features, we can look to see if we could change the activity in a way that its total TFA score increases. One way to do this would be to integrate an element of interaction between learners when completing the sentence writing activity. To illustrate, learners could be instructed to write sentences in a question form using the target vocabulary. Learners are then paired up and ask the questions to their partners without looking at the written sentences. This change to the activity would result in an increase of 1 point (+1 for #2: motivating learners) and 3 points as it requires recalling spoken forms of the words (+1 for #7: presence of retrieval, +1 for #8: productive retrieval, +1 for #9 recall). The listeners answer the questions and they are allowed to ask clarification questions or give feedback on language use when necessary (+1 for #6: negotiation). This cycle continues repeatedly with different partners (+1 for #10: multiple retrievals, +1 for #11: spacing of retrievals). As a result, the total TFA score of the modified version of the sentence writing activity increases from 8 to 15.

Table 15.1. Example of Technique Feature Analysis

	Criteria	Writing sentences
	Motivation	

1	Is there a clear vocabulary learning goal?	1
2	Does the activity motivate learning?	0 (1)
3	Do learners select the words?	0
	Noticing	
4	Does the activity focus attention on the target words?	1
5	Does the activity raise awareness of new vocabulary learning?	1
6	Does the activity involve negotiation?	0 (1)
	Retrieval	
7	Does the activity involve retrieval of the word?	0 (1)
8	Is it productive retrieval?	0 (1)
9	Is it recall?	0 (1)
10	Are there multiple retrievals of each word?	0 (1)
11	Is there spacing between retrievals?	0 (1)
	Varied encounters and varied use	
12	Does the activity involve varied encounters and use?	1
13	Is it productive?	1
14	Is there a marked change that involves the use of other words?	1
	Retention	
15	Does the activity ensure successful linking of form and meaning?	1
16	Does the activity involve instantiation?	0
17	Does the activity involve imaging?	0
18	Does the activity avoid interference?	1
	Total score	8 (15)

Note. The numbers in parentheses indicate the scores after modification.

Recommendations for practice

We are inclined to think or wish that one-size-fits-all materials exist, and by using such materials, teachers can simply rely on them for language teaching. A coursebook might be used among teachers with a common view that it is supposed to be an ideally-structured and research-based product. However, evidence suggests that this is not always true, as some textbooks do not appear to fully reflect empirically-underpinned conditions for successful vocabulary learning.

Research suggests that within coursebooks, there can be a lack of attention to different aspects of word knowledge (Brown, 2011), minimal recycling of target words (Nordlund, 2015), and interference between related words (Nation & Webb, 2011). This suggests that there is the potential to improve on materials to help increase vocabulary learning.

One of the best structured plans to optimize vocabulary learning in materials is through the use of Paul Nation's four strands (see Nation, 2007). Nation proposes that vocabulary learning programs should be well-balanced with a roughly equal amount of instruction time spent on each of the four strands: meaning-focused input, meaning-focused output, language-focused learning, and fluency development. Language-focused learning is where deliberate attention is often directed to word forms in a decontextualized manner with the purpose of intentionally learning words (e.g., flashcards, sentence production). In meaning-focused input, learners' attention is focused on comprehension (e.g., extensive reading) and in meaning-focused output students are encouraged to produce L2 words in context with the purpose of communication (e.g., essay writing, oral presentations). Fluency development is related to meaning-focused input and output but different in that it gives greater weight to the ability to comprehend and produce words at a faster rate (e.g., speed reading, 10-minute writing).

Through a four strands approach, language teachers' use of multiple materials is likely to provide balanced vocabulary learning opportunities for learners, which should result in the development of more comprehensive vocabulary knowledge than might be gained through any one type of material. For example, L2 learning programs with a primary focus on deliberate learning using exercise books might benefit from introducing extensive reading activities using graded readers and production activities based on reading (e.g., retelling, text reconstruction) in order to assist learners in seeing how words are used in context and help them to effectively use words. Similarly, integrating more language-focused activities (e.g., word part activities, data-driven learning using concordancers) into L2 immersion programs (where meaning-focused input is abundant) might help learners to understand more of the words that they encounter and hope to use.

Future directions

Despite increased attention in recent years on materials and resources for L2 vocabulary teaching and learning, there are a number of areas in need of further exploration and research for materials development and use.

First, we reiterate the apparent lack of reflection of research findings onto development of vocabulary teaching materials. In particular, it is necessary for materials to increase the degree to which target words are recycled throughout coursebooks and vocabulary-focused activity books. We acknowledge that there are great challenges in writing texts in a way that target vocabulary appears repeatedly across different coursebook units while maintaining the high quality of the content in each unit. However, research clearly indicates that repeated encounters with a word increases vocabulary learning (Uchihara et al., 2019), especially when such encounters are spaced and provided in

different contexts (Elgort et al., 2018; Joe, 1998; Webb & Nation, 2017). Notably, a recent study (Northbrook & Conklin, 2018) also reveals that frequency of occurrence of multiword items in a coursebook predicts learning at the beginner level, suggesting that regardless of proficiency levels or single/multiword items, repeated encounters promote vocabulary learning.

Second, it is important for materials writers and teachers to provide opportunities for learners to learn different aspects of word knowledge other than form-meaning connections. We should always remember that word knowledge is multi-faceted and includes knowledge of word class, collocations, pronunciation, spelling, and contextual constraints on use (Nation, 2013). Among these aspects, knowledge of spoken forms perhaps deserves more attention. Uchihara and Harada (2018) found that learners who mastered the most frequent 2,000 words in written form did not necessarily know the spoken form of these words, suggesting the need to place more instructional focus on encountering words in speech. In fact, a call has long been made to teach pronunciation (e.g., lexical stress) in vocabulary teaching programs (Field, 2005), which leads us to propose that well-balanced exposure to both written and spoken forms of a word is necessary when selecting materials.

Third, frequency information has been used as the criterion for various purposes of materials development, particularly for compiling word lists. Although valuable, frequency should not be viewed as a single point of reference (Nation & Webb, 2011). Dang, Webb, and Coxhead (2020) and He and Godfroid (2018) have recently adopted an innovative approach using cluster analysis to integrate frequency, usefulness, and difficulty as word selection criteria in order to classify words and collocations, with the latter two criteria rated by experienced teachers.

Finally, it would be useful to develop more tools that teachers and materials writers can use for assessing texts for comprehension tasks (e.g., reading, listening, viewing). There have been several research tools created employing a large number of lexical indices that can be used to accurately predict the difficulty of a written text for L2 learners (e.g., Crossley, Greenfield, & McNamara, 2008). Text analysis tools such as Coh-Metrix (Crossley et al., 2008) (accessible at <http://cohmetrix.com/>) and TAALES (Kyle & Crossley, 2015) (accessible at <http://www.kristopherkyle.com/tools.html>) are freely available. However, the complexity of these tools (e.g., more than 400 indices available in TAALES) might make them challenging to use for materials design. The development of more user-friendly tools could be of great benefit to improving the quality of materials designed for learning words.

Conclusion

This chapter discussed several issues with materials commonly used for vocabulary teaching and provided practical guidance of how to evaluate and modify materials to optimize learning. We emphasized the importance of selecting and designing teaching materials according to key principles for L2 vocabulary learning. It is hoped that materials and resources that are developed in the future will be more fully informed by research evidence, and that there will be greater guidance about how

to use materials to promote vocabulary learning. This should provide better opportunities for learners to gain comprehensive vocabulary knowledge. We also hope that this chapter will raise awareness of some of the key pedagogical implications of research on learning vocabulary, and that this improves our understanding of how materials might be created to enhance vocabulary learning.

Further reading

Nation, I. S. P. (2013). *Learning vocabulary in another language* (2nd ed.). Cambridge, UK: Cambridge University Press.

Nation's Learning Vocabulary in Another Language covers a wide range of points of discussion regarding practical and theoretical considerations in vocabulary pedagogy.

Schmitt, N. (2010). *Researching vocabulary: A vocabulary research manual*. Basingstoke: Palgrave Macmillan.

Schmitt's Researching Vocabulary serves as a useful reference for materials writers, teachers, and researchers. Part 4 compiles various resources including corpora, concordancers, and word lists.

Webb, S., & Nation, I. S. P. (2017). *How vocabulary is learned*. Oxford, UK: Oxford University Press.

This book expands on many of the topics in this chapter. Readers might find Chapter 5 particularly useful as it includes various vocabulary learning activities with information of which program strands an activity belongs to and which learning conditions underlie an activity.

Related topics

Word frequency, word lists, vocabulary learning activities, corpus-based learning, different aspects of vocabulary knowledge, repetition, psychological conditions contributing to vocabulary learning, lexical profiling, Technique Feature Analysis, Nation's four strands

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