



THE ROUTLEDGE E-MODULES ON CONTEMPORARY LANGUAGE TEACHING

Vocabulary in Language Teaching

Joe Barcroft

ROUTLEDGE


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This module focuses on the pivotal role of vocabulary in language acquisition, communication, and instruction. It first reviews the nature of vocabulary knowledge, the mental lexicon, and different contexts of vocabulary learning. It then explains how we acquire vocabulary and refine vocabulary knowledge over time. The primary emphasis is on how language instructors can promote evidence-based vocabulary instruction in the classroom. To this effect, the module highlights some telling research on the effects of specific tasks (such as sentence writing and copying target words) and different ways of presenting target words (such as having multiple talkers instead of a single talker produce the target words). It also outlines an effective approach to vocabulary instruction, one that emphasizes multiple presentations of target vocabulary, specificity in the relationship between task type and learning outcomes, and the gradual build-up of language-specific vocabulary knowledge over time. A sample lesson based on this approach is also provided.

Joe Barcroft is Professor of Spanish and Second Language Acquisition in the Department of Romance Languages & Literatures at Washington University in St. Louis.

The Routledge E-Modules on Contemporary Language Teaching

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Joe Barcroft

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Vocabulary in Language Teaching

Joe Barcroft

WASHINGTON UNIVERSITY IN ST. LOUIS

Overview

In this module you will explore the following topics:

- the central role of vocabulary knowledge in language and communication
- the nature of vocabulary and the mental lexicon
- form, meaning, and mapping as three key components of vocabulary knowledge
- contexts of vocabulary learning
- how we learn vocabulary and refine our lexical knowledge over time
- some telling input- and task-based effects on L2 word learning
- principles for promoting vocabulary learning in an effective manner
- integrating effective vocabulary instruction within communicative language teaching

As many language teachers, advanced second language (L2) learners, and bilinguals can attest, vocabulary is at the center of language and our ability to communicate successfully. Non-native grammatical structures sometimes lead to “unnatural-sounding” utterances that impede communication, but non-native word choices can cause complete communication breakdowns, leading to pivotal misunderstandings or no understanding at all. Consider, for example, a Spanish-speaking learner of L2 English who attempts to say the target sentence *I'll wait for you*. Non-native grammatical structures may lead to sentences like **I wait for you* or **I'll wait you* or even **I you wait*, depending on the proficiency of the learner. With these sentences, the intended message is still likely to be understood by the listener, regardless of how unnatural and incorrect they may sound. A non-native word choice, such as substituting

hope for wait in the sentence above (e.g., *I'll hope for you*), can lead to greater breakdown in communication, however. This alternative sentence is completely grammatical but is likely to require additional interaction (and negotiation of meaning) if its intended meaning is to be understood.

Given this general state of affairs as a backdrop, the present module addresses key issues related to vocabulary in language teaching. The module is divided into three main sections. The first section discusses the nature of vocabulary knowledge and the mental lexicon. The second section focuses on how we learn vocabulary, including different contexts of vocabulary learning and the effects of different tasks and ways of presenting target vocabulary in the input. Finally, the third section highlights key implications for contemporary language instruction, taking into account ten principles of effective vocabulary instruction and providing a sample lesson.

Vocabulary and the Mental Lexicon: A Network of Knowledge

The vocabulary or **lexicon** of an individual refers to all of the words, word parts (e.g., prefixes, suffixes), and **lexical phrases** (e.g., fixed strings of words such as *The thing of it is . . .*) that she or he has acquired at any given point in time. It exists as a vast network in the individual's mind/brain. Within the network, every **lexical item** (word, word part, or lexical phrase) is connected to other lexical items in a manner that reflects statistical properties that dictate how lexical items should and should not be used. One example of these statistical properties is our capacity for **collocation**, which refers to how individual words and groups of words tend to appear next to one another (or co-occur) in a given language. In English, for example, we say *save time* but do not say **store time*, and *make the bed* but not **do the bed* or **set the bed*. Our ability to know which words co-occur in this manner is based on extensive exposure to language over long periods of time. It comes from being exposed to and processing these same patterns of word co-occurrence (and lack thereof) in the **input**—samples of target language to which we are exposed—over hours, days, weeks, and years. Furthermore, for fluent language users, knowledge of collocation is implicit, meaning that it lies outside of a speaker's conscious awareness. Fluent speakers of English do not consciously think about saying *save time* (instead of **store time* or otherwise); they simply say it, based on previously acquired knowledge that is implicit and unconscious in nature. Similarly, if fluent speakers of English hear the phrase **store time*, they intuit immediately that this phrase is not acceptable in English with no need for any conscious reflection as to why that is the case.

For a language learner, when it comes to vocabulary, the goal is to acquire the vast network of implicit knowledge described above, and in

order to do so, there is no getting around attending to large amounts of input over long periods of time while attempting to communicate in the target language in question. Before going further into the process of vocabulary acquisition and how to facilitate it, let us first consider some additional details about the nature of vocabulary and vocabulary knowledge.

Words and Other Types of Lexical Items

A **morpheme** is the smallest unit of meaning in a language. Morphemes that can stand alone as words are **free morphemes**, such as *desk*, *smart*, and *run*, whereas morphemes that must combine with other morphemes are **bound morphemes**, such as *-ly*, *-ness*, and *-ing*. Like free morphemes, bound morphemes convey meaning, as in the case of *-ing*, which indicates that an action is ongoing; when the bound morpheme *-ing* combines with the free morpheme *talk* to form *talking*, it conveys that the act of talking is in progress. From this perspective, *word* may be defined as an element of language formed either by a single free morpheme or some combination of free morphemes (*key-board*, *fire-fly*, *frog-man*), bound morphemes (*dis-gruntle*; note that *gruntle* is not a word in English), or both free and bound morphemes (*happi-ness*, *care-less-ly*, *un-forget-able*). Some words, such as the English word *do* in the context of question formation (as in *Do you like the party?*) and the Spanish word *a* as an object marker (*A Juan lo saluda María*. ‘María greets Juan.’), do not convey meaning in the same sense that other words do. The information (“meaning”) that these words convey is more grammatical in nature, but they still conform to the morpheme-based definition of a word provided here. In addition, words such as *the* and *of* may depend on other words but can be interpreted as conveying meaning (such as *the* meaning “definite, specific”). Function words of this nature also have at least one free morpheme (one each in the case of *the* and *of*) and, as such, still constitute individual words.

The field of morphology focuses on how words are formed, either as part of inflectional paradigms (inflectional morphology) or as part of word-formation processes that lead to new words with new meanings (derivational morphology). **Inflectional morphology** concerns verbal paradigms (e.g., *habl-o* ‘I speak’/ *habl-é* ‘I spoke’/ *habl-aba* ‘I was speaking’ in Spanish), paradigms related to case, such as the case of pronouns (e.g., *mē* ‘me’ as direct object / *mibi* ‘to me’ as indirect object in Latin), and other types of inflectional paradigms. **Derivational morphology**, on the other hand, concerns the formation of new words by adding and combining morphemes, such as adding *un* and *able* to the word *speak* in order to produce the new word *unspeakable*. In the case of *unspeakable*, *speak* is the **root**, or the base word that is modified, and *un* and *able* are **affixes**, elements that can be placed at the beginning, end, or in

the middle of a word in order to alter the word's meaning. When placed at the beginning of a word, an affix is a **prefix**, such as when *re* (meaning “again”) is added to *think* to form *rethink* (meaning “think again”). When placed at the end of a word, an affix is a **suffix**, such as when *less* ‘without’ is added to *limit* to form *limitless* (meaning “without limit”). When placed in the middle of a word, an affix is an **infix**, such as when *í* is used in Spanish to express affection when changing names such as *Edgar* and *Óscar* to *Edgítar* and *Osquítar* and when changing the noun *azúcar* ‘sugar’ to *azuquítar* to express the idea of smallness, affection, or both.

Besides individual words, lexical items include combinations of verbs, nouns, and adjectives with prepositions that function as a unit. One example is phrasal verbs in English, such as *to put up with*, *to get around*, *to move about*, *to bump into*, and so forth. An extremely large amount of language also consists of other types of (multiword) **lexical phrases**, or various types of strings of words that can vary greatly in length but are fixed with regard to their form. Some examples in English are *for that matter*, *on the one hand . . . on the other hand . . .*, *by the way*, *that being said*, *I'd like to order . . .*, *the more/less . . . the more/less . . .*, *out of bounds*, *around the corner*, *in the background*, *blowing in the wind*, *well then . . .*, *allow me to . . .*, and *have a seat*. Changing even one word in phrases such as these typically leads to an unacceptable phrase. For example, changing *allow* to *let* in the phrase *allow me to* leads to the unacceptable phrase **let me to*, as can be seen clearly in the difference between the sentences *Allow me to help you* versus **Let me to help you*. Other types of multiword lexical items include idioms and sayings. **Idioms** are series of words that often have a figurative (i.e., non-literal) meaning, such as more common English idioms like *raining cats and dogs* (meaning that it is raining heavily) and *to break the ice* (meaning to get some type of social exchange started) and less common (but nevertheless amusing) ones like *wilder than a peach orchard boar* (meaning running wild or out of control). **Sayings**, another type of lexical item, are adages and pieces of advice that typically are very fixed in terms of the exact words used to produce them. Some examples in English include *If it ain't broke, don't fix it*, *The early bird gets the worm*, and *Beauty is in the eye of the beholder*. These sayings, although full sentences, are lexicalized, which means that they are fixed both in their form and in the meaning that they express. An alternative saying such as **Beauty is in the vision of the beholder*, for example, is not acceptable in English because of the extent to which this particular target saying has become lexicalized.

Additionally, it is important to remember that lexicalized phrases of this nature vary greatly from one language to another. For example, the Spanish-language idiom *más perdido/a que gaviota en Bolivia*, which translates as ‘more lost than a seagull in Bolivia,’ is used in at least some varieties of Spanish. It means “very lost,” but it has no immediate

counterpart as an expression in English. Lexical differences of this nature pose a major challenge to second language learners attempting to become more native-like when communicating in any second language. When learning a lexicalized phrase of any sort in a second language, a learner has little option other than to get the lexicalized phrase exactly right, if the goal is to sound more native-like in the target language.

Reflection

Can you think of other examples of idiomatic expressions that differ from one language to another? Consider, for example, the following English expressions: *apple of your eye*, *have an axe to grind*, *cutting edge*, *give the run-around*, *open a can of worms*, *white lie*, and *piece of the pie*. How are these expressed in another language that you have learned or are learning? To what extent do you think one's level of proficiency in a second language (L2) is tied to knowing L2-specific meanings of words and idiomatic expressions?

Human language is infinite when it comes to the range of novel sentences that a person can produce. Nevertheless, as the previous examples illustrate, much of language consists of **formulaic language**, which (although challenging to define) refers to the numerous prefabricated sequences of language (**formulaic sequences**) that we produce without engaging (morpho)syntactic procedures that otherwise might be used to produce them. It has been estimated that over half of everyday communication consists of formulaic language. Indeed, this is a considerable amount. In this light, language competence must not only consist of grammatical knowledge that interfaces with the lexicon, but also lexicalized knowledge that exists independently of grammatical structure. Consider the following examples: (a) *People who live in glass houses should not throw stones*, (b) *beyond the call of duty*, (c) *on the other hand*, (d) *Have a good one!*, (e) *How's it goin'?*, (f) *You bet!*, and (g) *Shucks!* None of these examples, which vary in length, can be altered in form in present-day English and still remain acceptable. The following phrases, for example, would not be acceptable alternatives to the examples of formulaic language above (respectively): (a) **People who reside in glass houses should not toss hard objects*, (b) **further than the call of what is expected*, (c) **on the other foot*, (d) **Take a good one!*, (e) **How's it unveiling?*, (f) **You gamble!*, (g) **Husks!* As these examples illustrate, formulaic language is an integral part of our overall knowledge of language, a part of our knowledge that is central and in no way peripheral.

In addition to the issues discussed thus far, another way of approaching vocabulary and vocabulary knowledge is to ask the following question: When it comes to vocabulary, what is it exactly that one needs to learn? As with many aspects of language, learning vocabulary involves more than one type of learning alone. Instead, it involves multiple types of learning directed toward multiple subcomponents of knowledge, such as the formal, semantic (meaning-oriented), and mapping-related components of vocabulary knowledge, which are discussed and exemplified in the next section.

Three Key Components of Vocabulary Knowledge: Form, Meaning, and Mapping

Vocabulary is uniquely situated at the place where form meets meaning in human language. As such, it needs to be distinguished from (morpho)syntax when it comes to making form-meaning connections, a process that is critical in language acquisition. Whereas (morpho)syntactic forms convey meaning in a more functional one-to-many manner, such as when *-ing* expresses “ongoing-ness” regardless of the verb to which it is attached, lexical forms convey meaning in a more one-to-one manner. Before considering the implications of this difference in the meaning of “form-meaning connections” further, let us first consider more precisely how we define the terms *form*, *meaning*, and *mapping* in the realm of lexis.

Form

The form of a word or a lexical phrase is a physical entity. In spoken language, it consists of sound waves that emanate from the vocal tract and that are modified in various ways by speech-related anatomy and physiological processes in the throat, mouth, and nasal cavity to produce **phonemes**, or units of sounds that contrast to produce different words. In Spanish, for example, the words *gol* ‘goal’ and *col* ‘cabbage’ are distinguished by the phonemes /g/ and /k/, which are both stop consonants but differ on the basis of voicing, or vibration of the vocal chords. In the case of *gol*, the vocal chords vibrate to create the sound (phoneme) /g/, whereas in the case of *col*, the vocal chords do not vibrate to create the phoneme /k/. The words *gol* and *col* form **minimal pairs** (words that differ based on one phoneme only) that are distinguished on the basis of voicing as a distinctive feature. The three distinctive features used to generate phonemes in languages such as English and Spanish are (a) place of articulation (of the apex of the tongue and other speech-related anatomy), (b) manner of articulation (how the tongue and other speech-related anatomy move), and (c) voicing (presence or absence of vibration of the vocal chords). Stress also can sometimes be used as a contrastive feature in these languages, such as when distinguishing between the

words *incite* and *insight* in English. Finally, other languages have other contrastive features, such as the use of distinct tones or tonal contours to distinguish between words, as in the well-known case of the Mandarin word *ma*, which can be produced using different tones and tonal contours to mean different things.

In signed languages, the form of a word is also a physical entity, but each word is represented in visual space. Contrastive features for a signed language such as American Sign Language (ASL) are *hand shape*, *hand location*, and *hand movement*. For example, the verb *think* is produced in ASL by touching a pointed forefinger to the forehead whereas the verb *miss* is produced by touching the same type of pointed forefinger to the chin, demonstrating here a minimal pair distinguished by hand location only. Additionally, in tactile languages such as Braille, raised dots that can be touched are the physical property used to represent word forms. Finally, in any written language, the physical property used to represent word forms is visual in nature but based upon the contrast between characters presented in a foreground in contrast to a background, such as in the cases of ink on paper or different types of characters that contrast with different types of backgrounds in digital text.

Meaning

The meaning of a word or a lexical phrase refers to all of the semantic (meaning-related) properties conveyed by and associated with the word or lexical phrase. From a mental or cognitive standpoint, it refers to the entire semantic network that a word or lexical phrase activates within the mental lexicon. Take, for example, the English word *candle*. The meaning of *candle* not only pertains to the basic definition of a candle (object made of wax that has a wick and burns and gives off light) but also the entire semantic space connected to the word, including all of the different types of candles to which one has been exposed, some general tendency of various types of candles, leading to some type of canonical meaning, and other associations that English speakers make with the word, including expressions such as *candle in the wind*, *burn the candle at both ends*, and so forth. Because *candle* is a concrete noun, its referent, or the item to which it refers, is also concrete in nature and, from a syntactic standpoint, should be expected to function as nouns do in sentences. Other lexical items are more nuanced with regard to what they represent, however. Consider the lexical items *regroup* and *pick oneself up by the bootstraps*. Because both of these refer largely to the same meaning, they are synonyms. However, they are different in a nuanced manner: *regroup* expresses the basic meaning in question without the involvement of the emotional and visual components tied to *pick oneself up by the bootstraps*. Therefore, even though they are largely synonymous, the meaning of each of the two differs to some degree.

As the example above suggests, lexical items have both denotative and connotative meanings. **Denotation** refers to the direct or literal meanings of words. **Connotation** refers to different types of semantic (meaning-related) associations that we make with a given word. For example, the denotative meaning of *green* refers to the color it represents, but its connotative meaning might include associations with other terms such as “fresh,” “natural,” and “forest,” and others such as “new,” “novice,” and “wet behind the ears.” The connotative meanings of words can vary not only across different languages but also across speakers of the same language. Continuing with the example of the word *green*, it is also interesting to note that different languages divide up the world in different ways. If a language divides up the main colors of the entire color spectrum to have fewer main colors, the term *green* may not even exist in that language; instead, it might be subsumed in a different primary group, such as “blue-greens” or “dark colors.”

In the case of **synonymy** (the property shared by words that are synonyms), different word forms can share the same or similar meanings, and in the case of **antonymy** (the property shared by words that are antonyms), different word forms can have opposite meanings. In the case of **homonymy** (the property shared by words that are homonyms), the same word form can have different meanings, as in the case of *wait* and *weight*, *time* and *thyme*, and *bank* (of America) and *bank* (of the river). The words in the final example are also considered to be homographs, given that they are not only pronounced in the same way but also written in the same way. If a single word (e.g., *card*) has multiple meanings that are at least in some sense related (e.g., *playing card*, *credit card*, and *greeting card*), the relationship is considered to be one of **polysemy**; the word in question (*card*) is polysemous.

Mapping

The mapping between (a) the form and (b) the meaning of a word or lexical phrase refers to how the mental representations of (a) and (b) are connected to one another. Given that the formal and semantic components of lexical knowledge themselves are represented mentally in a distributed network, the process of mapping word form to word meaning is also network-oriented and distributed in nature. If one attempts to learn the Basque words *landare* and *zaldi*, the learner may not be able to learn and retain the entire word forms in question. Based on one, two, or three presentations of these word forms, the learner may be able to recall partial words such as *land . . .* and *z..di*. In this case, the process of mapping the two target word forms in question to their meanings, which are ‘plant’ and ‘horse,’ respectively, is only partially completed. Once the learner has managed to retain the complete forms of each word, *landare* and *zaldi*, the mapping

process is more complete, but the learner still has a lot more to learn about the Basque-specific meanings and uses of the two words. In English, for example, the word *horse* has both denotative and connotative meanings that may differ, at least to some extent, from the denotative and connotative meanings that Basque speakers tend to have for this word. Also, the word *horse* is used in sayings such as *You can lead a horse to water . . .*, but one should not assume that the same saying is used in Basque. If it is not, then associations that arise from the expression (associating *horse* with *water* and *trying to make a horse drink*) need to be “unlearned” as the learner continues to refine Basque-specific semantic space for *zaldi* ‘horse,’ which allows for a Basque speaker to activate Basque-appropriate meanings and to use the word appropriately in Basque. As the Basque-specific semantic space becomes more refined, this new semantically oriented information must be mapped onto the word form in question, making the form-meaning mapping process more complete.

Reflection

There is a substantial body of research suggesting that presenting target vocabulary in semantic sets, such as learning “all of the fruits” and “all of the vegetables” at one sitting is less effective than presenting them in thematic sets, such as when novel vocabulary arises in the context of a story (e.g., *rabbit, hop, grass, carrot, chew, ditch, leap* . . . when telling a story involving a rabbit). What are the instructional implications of this research when it comes to how L2 textbooks should be written and how vocabulary should be taught in the classroom?

Although form, meaning, and mapping are all integral parts of successful vocabulary learning, one may question the extent to which these three components are dissociable (separable and independent) from one another when it comes to learning and providing instruction. As it turns out, the three components in question are dissociable, at least to a large degree, from the perspective of both learning (as discussed more in the next section) and instruction. If a language instructor wants to help students learn a set of target words, having them focus extensively on the meaning of the words may help with learning aspects of the meaning, but the instructor should not expect the meaning-focused task to promote learning target word forms or the mapping component of word learning in an effective manner. Similarly, having the students focus extensively on the forms of target words should not be expected to promote effective

learning of the meaning or mapping components of vocabulary knowledge. The more one is aware of this state of affairs, the easier it is (a) to understand input- and task-based effects, such as those discussed in the next section, and (b) to implement principles of effective vocabulary instruction involving different types of input and tasks, as discussed in the third and final section.

Quiz

Take the following quiz to see what you have learned so far. Answers are given at the end, so try not to look ahead until you are finished.

1. If one wishes to convey the meaning of the sentence *The ivy is growing up the wall*, which of the following sentences contains a clear non-native lexical choice?
 - a. *The ivy it grows up the wall.*
 - b. *Growing up the wall the ivy is.*
 - c. *The hedry is growing up the wall.*
2. Which of the following analogies best depicts the manner in which words and lexical phrases are represented and stored in the mind/brain?
 - a. building blocks stacked on top of one another
 - b. a spider's web with strings going in many directions
 - c. a pyramid with cement triangles leading to a single point
3. When an English speaker says *baby blue* instead of **infant blue*, the speaker is demonstrating knowledge of . . .
 - a. synonymy.
 - b. collocation.
 - c. polysemy.
4. Learning how words co-occur in any language requires . . .
 - a. exposure to input.
 - b. explicit attention.
 - c. logical inference.
5. Which of the following words consists of bound morphemes only?
 - a. applecart
 - b. felines
 - c. precept

6. A suffix is a type of . . .
 - a. root.
 - b. infix.
 - c. affix.
7. Which of the following is true about formulaic language?
 - a. It makes up a large part of our overall knowledge of language.
 - b. It can be modified in form with minimal or no consequence.
 - c. It does not change in form from one language to another.
8. Which of the following is spoken, visual, or tactile in nature?
 - a. the form of words and lexical phrases
 - b. the meaning of words and lexical phrases
 - c. the mapping between words and lexical phrases
9. Denotative meaning refers to which of the following?
 - a. associations that individuals have for words
 - b. the direct or literal meanings of words
 - c. both (a) and (b)
10. To what extent are the formal, semantic (meaning-oriented), and mapping-oriented components of vocabulary learning dissociable when it comes to processing and learning vocabulary?
 - a. Not at all
 - b. Very slightly
 - c. Largely

[Answers: 1. c; 2. b; 3. b; 4. a; 5. c; 6. c; 7. a; 8. a; 9. b; 10. c]

How Do We Learn Vocabulary?

Now that we have considered the nature of vocabulary and the mental lexicon, we turn our attention to the processes involved in vocabulary learning and how these can be affected by different tasks and different ways of presenting vocabulary in the input. In so doing, we necessarily touch upon the study of lexical input processing and introduce key concepts such as specificity in processing/learning and processing resource allocation. Before doing so, however, we begin by distinguishing the variety of contexts in which vocabulary learning can take place.

Contexts of Vocabulary Learning

Vocabulary learning can take place in importantly different contexts, among them the following: (a) as part of first language (L1) acquisition or as part of L2 acquisition; (b) incidentally or intentionally; and (c) in a naturalistic environment or in an instructed environment. Each of these three sets of contexts has implications for vocabulary learning and teaching.

L1/L2

It is important to point out that there are a number of similarities between vocabulary learning in L1 and L2 acquisition, such as how in both cases learners must construct a network-like mental lexicon and develop appropriate mappings between word forms and meanings. Critical differences do exist, however, such as how L2 learners typically already know meanings and have semantic representations for novel L2 words based on their experience with L1. For example, when an L2 learner of Finnish first encounters the word *koira*, which means ‘dog,’ the learner does not have to relearn the basic meaning of “dog” and all of the various semantic associations that one might connect to “dog.” The learner does have to learn any Finnish-specific meanings and uses of *koira* ‘dog’ but does not “start from scratch” on the semantic front by working to carve up the semantic space of the world (e.g., how we distinguish dogs from wolves, cats, and other animals) as L1 learners must do. There certainly are cases in which both novel words and meanings are learned in L2, but they are substantially less common in most cases of L2 acquisition. L2 vocabulary learning also sometimes benefits from **cognates**, or words that are similar in form in two languages, such as *history/storia*, *biology/biologia*, *mathematics/matematica*, *situation/situazione*, and *delicious/delizioso* between English and Italian. L1 learners cannot make use of cognates in this manner.

Incidental/Intentional

Vocabulary also can be learned either incidentally or intentionally. **Incidental vocabulary learning** refers to when one ‘picks up’ new words and lexical phrases from context without intending to do so, such as when conversing or reading for meaning. **Intentional vocabulary learning**, on the other hand, refers to when one learns words and lexical phrases in an intentional manner, such as when studying lists of target words for a quiz or a test. The incidental-intentional distinction also can be viewed as a continuum given that we can learn vocabulary with varying degrees of intentionality. For example, if a learner is instructed to read a text for meaning and also to attempt to learn and remember any new L2

words that appear in the text, there will be some degree of intentional vocabulary learning, but it is likely to be less intentional than would be the case if the instructions were only to find any new L2 words in the text and learn them while ignoring the rest of the text. Not surprisingly, learners do learn more L2 vocabulary in a text when they are instructed to attempt to do so and told that they will be tested on the vocabulary, which would seem to favor providing L2 learners with such instructions, and post-reading vocabulary quizzes, but one might question how constant use of this practice would affect overall reading comprehension and enjoyment over time.

Naturalistic/Instructed

Finally, regardless of whether vocabulary is learned intentionally or incidentally, it also is learned in either a naturalistic or an instructional setting. Naturalistic settings are those that occur outside of the classroom and outside of an instructional program. If one learns new words and lexical phrases while communicating with friends or the larger linguistic community in different ways (while shopping, working, or otherwise), the context of vocabulary learning is naturalistic. If one learns new vocabulary in a classroom or within an instructional program, however, the context of vocabulary learning is instructional. Learning new vocabulary as part of a homework assignment would be vocabulary learning in an instructional context because it is part of a larger instructional program. Naturalistic vocabulary learning affords a variety of advantages, such as potentially impactful reinforcement regarding the relationship between lexical form and its meaning, as in the following example: *Aquí tiene los calamares que pidió. ¿No es lo que quería? ¿Acaso quería los camarones? . . .* 'Here is the squid that you ordered. Is that not what you wanted? By chance did you want the shrimp? . . .'

Instructional settings afford other advantages, however, such as planning for vocabulary learning and dedicating more time to learning novel vocabulary than might be allotted in a purely naturalistic setting.

Reflection

Try to think of cases in which you learned a new L2 word that you had not previously learned in your L1. Jot down as many of these words as you can think of (up to a maximum of five). For each of these words, try to remember whether you learned the word incidentally or intentionally and whether you learned it in a naturalistic or instructed setting.

The Process of Vocabulary Learning

Vocabulary learning always begins with exposure to words and lexical phrases in the input. If the target word appears within the context of larger sentence-level or discourse-level input, that type of input typically provides valuable information about **collocates** (words that tend to co-occur with the target word) and information about other properties of the target word or lexical phrase in question. Even if a learner does not attend to information about the collocational properties consciously, by attending to sentence- and discourse-level input over extended periods of time, the learner gradually collects and retains statistical information about the word or lexical phrase in question, albeit in an implicit manner. As the vocabulary in question continues to appear in the sentence- and discourse-level input in variable contexts over time, the learner's implicit knowledge of the statistical properties of the vocabulary in question continues to accrue.

A word or lexical phrase can also appear as an isolated lexical item in the input, such as when a speaker points at an item and names it: *Window. Yes, [pointing] the window. [pointing more] Window. That's the window.* The amount of this type of input (with isolated lexical items) provided by caregivers for children during L1 acquisition is substantial (and in no way trivial), and isolated lexical items in the input need to be taken seriously in contexts of L2 acquisition as well. On the one hand, input of this nature tends to provide less information about the full range of collocational properties of words (e.g., compare the example above with an input segment such as *Please open the blinds and crack the window* and *That provides a window into . . . the human mind/physics/linguistics/her world . . .*). On the other hand, the meaning of the word or lexical phrase in input of this nature may be clearer, and the learner may be less likely to pass over or ignore the item than compared to when it is encountered in discourse-level input.

Another critical component of vocabulary learning is **word segmentation**, which refers to the ability of learners to divide up a continuous speech stream in the spoken mode (or a continuous visual stream in signed input) and to separate out individual words from the larger stream. Different languages provide different types of clues (e.g., metrical stress) of which learners make use in order to segment words successfully. Such issues are specific to spoken input and not to written input, although issues related to segmentation (and other issues related to attention to individual lexical items) may vary according to the nature of the writing system of the target language in question. Challenges posed by word segmentation also recede as a learner becomes more proficient in any language. When native or highly fluent speakers of a language encounter new lexical items in spoken (or signed) input, typically they have previously segmented and learned so many of the other words in a given input segment that word segmentation does not pose a challenge.

However, retaining the novel phonemic sequence (word form), identifying word meaning, and mapping the lexical form to its meaning still do.

The more often that a given word or lexical phrase appears in the input, the more likely it is that the word or lexical phrase will be learned and retained. This basic principle holds true regardless of whether the item in question is presented in sentence- or discourse-level input or whether it is presented as an isolated lexical item. Additionally, when lexical items are repeated in the input, they are learned better if they are repeated with a sufficient amount of space between them, which is consistent with the **spacing effect**—how different types of target stimuli are retained better in human memory when they appear with sufficient space/time in between them. Frequency of target lexical items in the input is only one of a number of input-based effects that should be considered with regard to vocabulary learning. Others, such as the presentation of target vocabulary in an acoustically varied manners (using multiple talkers, speaking styles, or speaking rates), are discussed in greater detail below.

In addition to input-based effects, requiring learners to perform different types of tasks when they are exposed to vocabulary also can have significant effects on vocabulary learning. Sometimes the effects of a task are positive, but sometimes they are negative. To provide one example, providing learners with opportunities to recall and generate target words on their own (after being exposed to the items as input) has been found to affect L2 vocabulary learning positively in both intentional and incidental contexts. As such, the more language instructors are informed about both the positive and negative effects of different ways of presenting target vocabulary as input (input-based effects) and different tasks that learners can perform when they are exposed to novel vocabulary (task-based effects), the better equipped they are to facilitate vocabulary learning among their students. Before going into further detail in this regard, however, let us first back up and consider the role of lexical input processing within the larger process of vocabulary learning and lexical development over time.

Reflection

Based on your experience as a language learner, language instructor, or both, in what different ways have you seen target vocabulary presented in the input to students (in both the spoken and written modes)? Jot down different ways that come to mind. Can you also think of some situations in which target vocabulary was not presented in the input to students to a sufficient degree, such as when students were asked to produce target vocabulary before they had sufficient exposure to it in the input? What are some of the negative consequences of that type of situation?

Lexical Input Processing (lex-IP)

Lexical input processing (lex-IP) refers to how learners process words and other types of lexical items as input. Importantly, lex-IP must take place regardless of whether the lexical item in question is learned intentionally or incidentally. What is needed for lex-IP is sufficient access to all or part of the form of the lexical item and access to all or part of the meaning of the lexical item. To learn the word *regnhlíf* ‘umbrella’ in L2 Icelandic, for example, one needs sufficient exposure to the target word form in the input and some means of ascertaining or inferring the meaning of the word in question. One example of a direct route to word meaning would be simply to see a picture of the target word and see the word written below it or to hear the word spoken when the picture appears. In the case of *regnhlíf*, this direct route would involve seeing a picture of an umbrella and the word written below it or hearing the L2 word spoken as /'rekn.ɫi:v/ (as per the International Phonetic Alphabet) when the picture of an umbrella appears. If the word were to appear in a reading or in the context of a spoken discourse, however, access to the meaning of the word would likely be less direct and need to be inferred from context, such as if one were to hear the sentences *Það er rigning. Ertu með regnhlíf?* ‘It is raining. Do you have an umbrella?’ while having a sufficient degree of proficiency in Icelandic so as to be able to infer that *regnhlíf* refers to ‘umbrella’ (and assuming that the learner has come to be able to segment the word in question from a continuous speech stream that would be more along the lines of *Þaðerrigning.Ertumeðregnhlíf?*, as per what was explained previously regarding word segmentation).

Regardless of how direct the route from form to meaning, if the word in question appears in the input and its meaning can be ascertained or inferred to a sufficient degree, lex-IP can and must ensue if the word is going to be learned. In the current example, a novel word form such as *regnhlíf* is processed, retained to varying degrees over time, and eventually mapped onto its meaning in the developing (in this case bilingual) mental lexicon of the learner. Encoding of a novel word form is a process that is separable from mapping. For example, one could study and attempt to retain the novel Catalan word form *vaixell* over time by repeating the word form (in spoken or written form or both) without mapping it onto any meaning. In fact, the learner could never map this novel word form onto its meaning if denied sufficient exposure to the meaning in question. The learner could go on for hours, days, months, or years without ever knowing the word meaning, which is ‘boat.’

What is more, the process of learning word form and mapping it onto meaning tends to be piecemeal in nature. Learners pick up bits and pieces of novel word forms incrementally over time, map them onto different aspects of word meaning bit by bit, and expand on their knowledge of different word meanings and uses of words incrementally. The nature

of the input to which a learner is exposed is predictive of which aspects of word form learning may occur at different times, but the overall process is piecemeal and incremental in nature. At the cognitive level, this type of learning continues to be distributed (network-like) in nature, with varying degrees of word form knowledge being mapped onto varying degrees of knowledge of word meanings (in the **semantic space** for a given word). This evolving knowledge of word meanings includes both denotative and connotative meanings. The L2 learner of Icelandic, for example, becomes, bit by bit, increasingly tuned to the Icelandic-specific meanings and usage of *regnhlíf* ‘umbrella’ over time.

As this example should make clear, when one is learning novel L2 vocabulary, the formal component of vocabulary is both critical and largely prognostic of success, but mapping word form to word meaning and learning L2-specific meanings and uses is also important. In the case of the Icelandic word *regnhlíf*, for example, no amount of reflection on the semantic front is going to solve the problem of needing to attend to, process, and retain a novel L2 word form such as this one. To illustrate this point further, consider the following possible novel word forms for the English word *apple* in five different languages: *sagar* (Basque), *epli* (Icelandic), *mela* (Italian), *wiizijo* (Zapotec), and *omena* (Finnish). Here are the words for *happy* in the same five languages: *zoriontsu* (Basque), *hammingjusamur* (Icelandic), *felice* (Italian), *caye’che* (Zapotec), and *onnellinen* (Finnish). Remember also that written examples provided here and throughout this module make reference to spoken forms that require phonological encoding; they are represented here in written form only because this module is written. The interested reader is encouraged to explore spoken (phonological) forms of words in different languages by exploring online dictionaries that provide examples of this nature.

These words are just a small sampling of how truly novel the forms of words and lexical phrases can be in the different languages of the world. When learning an L2, one’s ability to encode and retain novel forms of this nature is critical to successful vocabulary learning and lexical development over time. Of course, novel forms have to be mapped to their meanings, and knowledge of L2-specific meanings and uses of each form needs to be refined over time, but the formal component of L2 vocabulary learning is clearly critical to both short-term and long-term success when it comes to this particular realm of human learning. The degree of novelty of the ten L2 word forms presented above should help to illustrate how challenging L2 vocabulary learning can be on the formal front. Of course, the presence of cognates can be helpful when they are not misinterpreted as false cognates (e.g., misinterpreting Spanish *carpeta* ‘folder’ as English ‘carpet’) and are part of the target L2 vocabulary and can be recognized (e.g., *hunder* > *hound* > ‘dog’ in one case above), but the overall process of learning and retaining novel L2 word forms can be very challenging.

Processing Resource Allocation for Different Components of Vocabulary Learning

As mentioned previously in this module, the processing and learning counterparts of the formal, semantic, and mapping-oriented components of vocabulary are largely dissociable. In other words, these three types of processing (and their learning counterparts) can be seen as being largely independent from one another and, as such, can affect other types of processing and their learning counterparts in particular ways. Given that all learners are limited in the total amount of processing resources that they can allocate for lex-IP during a limited amount of time, increased processing for one of these three components (form, meaning, or mapping) can increase learning for that particular component and, at the same time, decrease processing for the other two components. Given these considerations, it is important to have learners perform tasks that increase the type(s) of processing that correspond to the vocabulary-related learning outcome one desires, such as, for example, increased word form learning.

If, for example, one is attempting to learn (intentionally) a set of novel L2 Spanish words, such as *cabestrillo* ‘sling,’ *imán* ‘magnet,’ *ardilla* ‘squirrel,’ and so forth, asking the learner to focus extensively on (and therefore increase processing for) the semantic aspects of the target Spanish words by having them think about the meaning of the target words (e.g., “think about the last time *cabestrillo* ‘sling’ was important in your life”) should not be expected to increase processing of the word forms in question. To the contrary, the semantically oriented task actually can *decrease* processing and learning of the target word forms in question if the semantic task taps limited processing resources on the semantic front that otherwise could have been utilized on the formal front. Likewise, asking the learner to focus extensively on (and therefore increase processing for) the formal aspects of the target words, such as by having them count the number of letters in target words or try to relate the novel word forms to known L1 word forms, should not be expected to increase processing of semantic components of the words in question. Increased form-oriented processing of this nature can, at least potentially, decrease processing and learning of the semantic or meaning-oriented aspects of the target vocabulary in question. Finally, neither increased semantic processing nor increased form-oriented processing should be expected to benefit the mapping component of vocabulary learning, given that the mapping component is also, at least largely, dissociable from these other two types of processing.

In other words, what is critical when predicting the likely effect of a particular type of task and the type of processing it invokes is to *be specific*. (1) Form-oriented tasks and the form-oriented processing that they invoke should facilitate learning formal aspects of vocabulary but not others. (2) Semantically oriented tasks and the semantic processing that they invoke

should be expected to facilitate learning semantic (meaning-oriented) components of vocabulary but not others. (3) Mapping-oriented tasks and the type of processing that they invoke should be expected to facilitate learning mapping-oriented components of vocabulary but not others. As these three guidelines suggest, language instructors, language program directors and coordinators, and developers of language-learning materials need to consider carefully the probable specific learning outcome(s) of different possible tasks and the different types of processing that they invoke. The formal, semantic, and mapping-oriented components of vocabulary learning cannot be lumped together if effective and evidence-based vocabulary instruction is the goal. The empirical support and rationale for this general principle should become clearer as we consider effects of different types of semantic and structural tasks in the next section.

Input- and Task-Based Effects: How Does X Affect Y and Z in L2 Word Learning?

Input-Based Effects

Manipulating the manner in which target lexical items appear in the input is one way of impacting how well target vocabulary is learned. Above we mentioned the benefits of increased exposure to target items, a ubiquitous positive effect that is intuitive and is consistent with the benefits of repetition in other realms of human memory. Another way of manipulating (or structuring) the input to facilitate L2 vocabulary learning is to present target words that are (a) spoken by multiple talkers (instead of a single talker); (b) spoken in multiple speaking styles or voice types (instead of one speaking style or voice type); (c) spoken at multiple rates (instead of at one rate); and (d) in the case of speakers of tone languages, but not others, spoken in multiple levels of fundamental frequency or tone. Additionally, the size of the positive effects of the different types of acoustic variability listed here are in no way as small as one might think. In the case of using multiple talkers instead of a single talker to present target words (assuming six repetitions by one talker as compared to one repetition each by six different talkers), increases from 38% to 64% in target word learning can be expected. Gains of this degree were obtained with no change in the overall number of times each target word appeared and with no change in the overall amount of time allotted to attempt to learn the target words.

Task-Based Effects

In light of the points clarified in the previous section regarding processing resource allocation, task type, processing type, and learning outcomes associated with different types of tasks and the types of processing that

they invoke, let us consider the effects of three specific tasks on L2 word learning:

1. Writing the target words in original sentences
2. Addressing questions about the meanings of the target words
3. Making pleasantness ratings* about the meanings of the target words

(*Example of pleasantness rating: While viewing the Spanish word *ardilla* ‘squirrel’ below a picture of a squirrel, rate on a scale of 1–7 how positive the meaning of this word [the animal to which it refers] makes you feel.)

Before providing research findings regarding effects, note that all three of these tasks are *semantic* or meaning-oriented in nature. Therefore, each task should increase semantic processing but in so doing possibly decrease other types of processing, such as formal and mapping-oriented processing, and, in turn, decrease learning for the formal and mapping-oriented aspects of the target words in question. From this perspective, then, it should not be so surprising or unintuitive that all three of the tasks listed above have been found to produce *negative* effects on L2 word form learning.

Interestingly, another task that has been found to produce negative effects on L2 word learning is word copying, or the act of simply copying target words at the same time one is attempting to learn them. In contrast to traditional beliefs about the benefits of copying to improve memory, word copying is a type of output without access to meaning that does not facilitate and actually detracts from L2 word form learning. Therefore, the traditional saying, “If you want to remember something, write it down” needs to be rethought, at least when it comes to L2 vocabulary learning.

Not all tasks negatively affect L2 word learning, however. As previously mentioned, providing learners with opportunities to retrieve and produce target words on their own after they have had sufficient opportunity to process the words as input has been found to positively affect L2 word learning, both in intentional and incidental contexts. A critical point here, however, is that when learners are provided with opportunities to generate target words on their own, they are provided with a cue (a picture of the word referent or an L1 translation of the word) and asked to attempt to map that cue onto the appropriate target word form and to generate the target word form. This type of output with access to meaning differs dramatically from word copying, as described above. As such, the act of attempting to retrieve and generate target words on one’s own focuses substantially on the formal and mapping-oriented components of vocabulary learning. It does so in contrast to the three semantically oriented tasks listed above. The utility of output with access to meaning in no way minimizes the pivotal and necessary role of target words being presented (frequently and repeatedly) in the input. Instead,

it should be viewed as a complementary element, something that can enhance vocabulary learning once necessary (and preferably optimal) input-related provisions have been put into place.

Reflection

The practice of requiring students to write new words in original sentences or to copy target words while attempting to learn them is not rare in traditional language instruction. Why do you think so many language instructors might assume that such tasks are effective when it comes to language learning? What do you believe to be the source of misunderstanding in traditional language instruction regarding the effects of these tasks?

One General Pedagogical Implication of Input- and Task-Based Effects

We have seen that there are effects from different techniques for presenting target words in the input. We have also seen that there are effects for different tasks. What do these observed effects suggest regarding language instruction? Although we present a more complete and detailed version of instructional implications in the next section, from a general perspective the patterns observed in this area suggest the following take-away message:

Present target vocabulary in the input frequently and in an enhanced manner, but do not get in the learner's way of processing the target vocabulary by requiring them to perform tasks that can decrease their ability to learn new word forms.

When language instructors require students to perform semantic tasks such as sentence writing during the initial stages of learning novel L2 words, they do so based on the belief that semantic tasks of this nature should help students to learn the words in question. In light of ample evidence to the contrary, this practice should be avoided. Instead, the focus should be on presenting target vocabulary in the input repeatedly in a salient (noticeable) manner and, when possible, in an enhanced manner so that learners have sufficient opportunity to process the target vocabulary as input. Additionally, when target vocabulary appears in meaningful sentence- and discourse-level contexts, learners are able to build up appropriate knowledge of L2-specific meanings and uses of the target vocabulary over time. The ten principles and examples presented in the next section are designed to help language instructors implement this general approach to vocabulary in a more complete and detailed manner.

Implications for Contemporary Language Teaching

Having explored the nature of vocabulary knowledge and how vocabulary is learned, in this final section we focus on implications for language teaching. Specifically, we consider ten principles of effective vocabulary instruction that emphasize the role of input and the gradual development of different aspects of vocabulary knowledge, including L2-specific meanings and uses, over time. As should become evident, the ten principles and the general approach that they depict are consistent with contemporary language programs that are communicative, task-based, and content-oriented in nature. The reader is referred to the 2012 book listed in the *Suggested Further Reading* section for a more detailed account of the *input-based incremental* (IBI) vocabulary instruction and for fourteen sample IBI lessons.

In general terms, the IBI approach can be distinguished on the basis of its emphasis on (a) presenting target vocabulary frequently while using meaningful and sufficiently comprehensible input; (b) considering the limited processing resources of the learner; (c) specifying the relationship between the type of task and the processing and learning counterparts a given task is likely to produce (e.g., semantic tasks such as sentence writing should not be expected to be effective at promoting the formal component of novel word learning); and (d) developing vocabulary knowledge incrementally but as completely as possible, including L2-specific meanings and uses, over time. As such, the approach is consistent with contemporary **communicative language teaching** (CLT), which is guided by foundational tenets such as *Provide learners with large amounts of meaning-bearing and (at least largely) comprehensible input* and *Design activities that are meaningful in nature and that require interaction on the part of the learners*, among others. It is also consistent with **task-based language teaching** (TBLT), which emphasizes authentic language use for the purpose of performing different types of tasks, and **content-based instruction** (CBI), which emphasizes language acquisition during the studying of different areas of subject matter. The sample IBI lesson provided at the end of this section demonstrates how the approach works in tandem with TBLT in particular. Due to space limitations, for other types of CLT- and CBI-oriented IBI lessons the reader is again referred to the 2012 book on IBI vocabulary instruction.

Ten Principles of Effective Vocabulary Instruction

Below are ten principles of effective vocabulary instruction following the input-based incremental (IBI) approach:

1. Develop and implement a vocabulary acquisition plan.
2. Present new words frequently and repeatedly in the input.
3. Promote both intentional and incidental vocabulary learning.

4. Use meaning-bearing comprehensible input when presenting new words.
5. Present new words in an enhanced manner.
6. Limit forced output without access to meaning during the initial stages.
7. Limit forced semantic elaboration during the initial stages.
8. Promote learning L2-specific word meanings and usage over time.
9. Progress from less demanding to more demanding activities over time.
10. Apply research findings with direct implications for vocabulary instruction.

In what follows we review each of the ten principles one by one, clarifying what each one means and providing examples when appropriate and possible. The complete sample lesson that follows exemplifies the approach in a larger context of language instruction.

1. Develop and implement a vocabulary acquisition plan.

Having a plan for vocabulary learning throughout a language program is vital. Instructors and language program coordinators can consider different bases on which course syllabi are designed. Traditional grammatically oriented syllabi oftentimes set aside sufficient focus on lexical development whereas task-based and content-oriented syllabi can benefit from having concrete lexical goals. When performing different task-based activities, increased lexical competence allows learners to go much further as they perform tasks in a more successful and fluent manner. *Word frequency*, or how frequently different words appear in a language, can also be considered in course design by consulting a corpus or frequency dictionary for the target language in question. Communicative use of a language naturally involves more frequent words, but setting goals to reach specific frequency thresholds may be useful. In a first-year program students may learn the 2,000 most frequent words in a language by engaging in a variety of communicative acts and tasks over time, but what about targeting the 3,000, 4,000, or even 5,000 most frequent words in the target language as well? Depending on the nature of the language program (number of contact hours and various other considerations), some target thresholds may be too high and inappropriate, but targeting an ambitious threshold level based on word frequency may otherwise strengthen a language program.

In addition to these considerations, which are likely to involve language program directors and coordinators, instructors at specific levels of language instruction (first-semester, second-semester, and so forth) can also benefit from planning for vocabulary instruction and learning. At the beginning of a new semester, an instructor may consider:

What is the target vocabulary for this semester? To what extent will I rely on indirect instruction and incidental vocabulary learning to

promote learning of these items? How much direct instruction and intentional vocabulary learning should be involved to promote learning of these items? Which items should be taught directly and why? How will they be taught directly? How will direct vocabulary instruction be integrated within the larger communicative, task-based, and content-oriented goals of the course? How much vocabulary do I expect students to learn through reading? How much pre-teaching of challenging words within readings should I prepare?

Questions such as these can help instructors to prepare for effective vocabulary instruction on a semester-by-semester basis.

2. Present new words frequently and repeatedly in the input.

As pointed out previously, vocabulary learning, like all language acquisition, begins with input. Target words and other types of lexical items need to be presented in the input so that learners can process them as input and eventually learn them. The term *frequently* in this principle refers to presenting target lexical items not just once or even twice but numerous times in a given input set. The term *repeatedly* refers to not just presenting a given lexical item at one time but presenting again and again over days, weeks, months, and so forth. *Repeatedly* in this sense refers to what is sometimes called “recycling” in language instruction. Providing learners with multiple exposures of this nature over time makes them more likely to be able to encode the novel forms of the items and map them to their meanings. Furthermore, as target items are presented repeatedly over time in meaningful contexts (see also Principle 4 below), the learner is more likely to acquire all of the statistical properties of the target item in question, including the collocates next to which the item tends to appear and all of its various L2-specific meanings and uses.

Different Ways of Presenting Target Vocabulary in the Input

Many language students have experienced what it is like to study target words from a translated list at the end of a chapter in a textbook. If the instructional program in which the student is enrolled does not provide alternative ways of being exposed to target vocabulary in the input, the translated list may end up being the student’s only option. However, target vocabulary can also be presented by (a) using pictures to clarify the meaning of each lexical item, (b) using *realia* (real-world items) to clarify the meanings of words, (c) providing definitions of words, (d) giving a series of examples of the meaning of target words, (e) having students in the class prepare ahead of time and give presentations of target vocabulary, and (f) relying on the context of different types of readings to present target vocabulary, among others. Varying the ways in which target

vocabulary is presented to students should be much more engaging than relying on one technique only.

3. Promote both intentional and incidental vocabulary learning.

Given that vocabulary learning occurs both incidentally and with varying degrees of intentionality, why not promote vocabulary learning at both ends of the incidental-intentional continuum and everywhere in between? In contrast to purely naturalistic vocabulary learning, in an instructed setting, specific goals for vocabulary learning can be established and met by relying on not only incidentally acquired but also intentionally learned lexical items. In fact, there is a large body of research indicating that if instructors and students relied solely on incidental vocabulary learning, such as incidental vocabulary learning during reading, the outcome could be quite disappointing given that pick-up rates in such contexts tend to be fairly low, at least when compared to combining both incidental and intentionally oriented instruction. Additionally, it is often the case that L2 learners are not exposed to the numerous types of multiword expressions, such as idioms, to which native speakers are exposed. For L2 learners, direct instruction and intentional learning of expressions of this nature can help them to gain more native-like competence in this area. Furthermore, intentional vocabulary learning of this nature can be enjoyable. If an L2 learner is taught directly (and learns intentionally) the L2 Spanish phrase *echar la casa por la ventana* , which translates literally as ‘to throw the house out of the window’ and means ‘to let go’ or ‘to let loose,’ the act of learning the expression and perhaps attempting to use it in an appropriate context can be in and of itself enjoyable.

Reflection

Consider how the meaning of “explicit instruction” changes when it refers to teaching a grammatical structure as compared to teaching a set of target vocabulary. Keep in mind issues discussed in the first section of this module about different types of form-meaning mapping. Is the meaning of “explicit instruction” different enough to advocate more explicit instruction for one of these types of knowledge (vocabulary or grammar) and less explicit instruction for the other?

4. Use meaning-bearing comprehensible input when presenting new words.

A basic tenet of communicative language teaching is that learners should be provided with copious amounts of meaning-bearing and comprehensible

input over extended periods of time. Meaning-bearing implies that the input in question conveys a message that is intended to be understood and is not just an example of a sentence in the language to demonstrate “how the language works.” Comprehensible means that the input in question can be understood by students to whom it is directed, at least to a large degree. When it comes to vocabulary, a target item can appear in isolation or within the context of an individual sentence or larger discourse. When it appears in isolation, reference to a picture or an L1 translation can clarify its meaning fairly readily. However, when it appears within a sentence or larger discourse, the context provided needs to be sufficiently clear if the meaning of the word is to be inferred successfully by the learner. Consider the Swahili word *sungura*, which means ‘rabbit.’ This word could appear in a variety of different types of sentences, such as:

1. There is a *sungura* in the garden.
2. There is a *sungura* eating carrots in the garden.
3. There is a *sungura* with long floppy ears hopping and eating carrots in the garden.

Clearly, Sentence 3 is the most likely of the three to allow a learner the opportunity to infer the meaning of the word *sungura* from context, whereas Sentences 1 and 2 exemplify the challenges that we face when it comes to inferring novel word meaning from context, which often tends to be very challenging and sometimes can be impossible. As such, one might argue against relying on context for inferring the meaning of target vocabulary in favor of simply using pictures, definitions, or translations, which typically provide immediate clarification of the meaning of target words. Although this option might be appropriate some of the time, there is an important fallacy with overreliance on this approach. The fallacy is that in order for learners to acquire all of the statistical properties of words that they need to acquire, properties such as collocation, the grammatical properties (and syntactic projections) of words, and so forth, learners need access to the target vocabulary in the context of sentences and larger discourse. For this reason (among others), the presentation of target vocabulary in the context of sentence- and discourse-level comprehensible (or largely comprehensible) input is a necessary ingredient for successful vocabulary learning. Intentional learning of isolated lexical items can be helpful, but it is not a substitute for being exposed to target vocabulary as part of larger sentence- and discourse-level input.

Example of Spoken Input with Repetition of Target Vocabulary

Is it possible to present target words in the input frequently while using input that is truly meaning-bearing? Yes, it is, even if it is not necessarily

what many interlocutors would naturally do. Consider the following input segment, which is part of a larger discussion on gardening, and includes the target vocabulary items *rake*, *pumpkin*, and *seeds* (among many others in the complete lesson):

How many of you like to work in gardens? I have a garden in an urban park, but it is very small. Even so, I was there the other day with my rake and pumpkin seeds. OK, so this is a rake [showing a picture of a rake on a screen at the front of the class], and these are seeds [showing picture], and these are pumpkins [showing picture]. How many of you have ever planted pumpkin seeds and grown pumpkins? I found that the rake actually wasn't all that necessary because I could use my hands to plant the seeds. So anyway, the seeds are planted, the rake wasn't all that necessary, and I'll be waiting to see if I have any pumpkins within a couple of months or so . . . What do you think?

The focus here is clearly on meaning while still providing substantial repetition of the target vocabulary in a fairly seamless manner within the sentence- and discourse-level input.

Vocabulary Learning During Reading

A large amount of research on L2 vocabulary has focused on the extent to which learners can pick up novel L2 words during reading and how different text-based and other types of modifications and tasks might affect the degree to which learners can infer word meaning and the extent to which they are likely to attend to novel L2 words in this context. For example, the more words one knows in a text and the more familiar one is with the topic of a text, the more likely it is that one will pick up new words in the text. The reader is encouraged to explore this area of research further; its findings point to both the challenges of low pick-up rates and various techniques, such as increasing the frequency of exposure and providing different types of glosses (both textual and digital) for novel words, that can increase the likelihood of learning target words within texts.

5. Present new words in an enhanced manner.

This principle encourages enhancing target words in the input in different ways. As discussed above, in the aural mode, presenting target words spoken by multiple talkers, in multiple speaking styles, at multiple speaking rates, and (for tone-language speakers only) multiple fundamental-frequency or tone levels can increase vocabulary learning substantially. In the written mode, other techniques that may be helpful in drawing attention to target words include bolding, underlining, altering color,

increasing font size, and so forth. Most research on textual enhancement techniques of this nature has focused on their effects related to target grammatical structures, but they may be useful in drawing attention to target lexical items as well.

6. Limit forced output without access to meaning during the initial stages.

As discussed above, parroting-like acts such as copying target words do not facilitate L2 vocabulary learning and, in fact, they can get in the way of effective lex-IP and negatively affect L2 vocabulary learning. As such, Principle 6 discourages activities that involve forced output without access to meaning during the initial stages of learning new words. One option is to have no output of this nature early on during novel vocabulary learning, which indeed would be consistent with Principle 6, but the larger issue is to understand when output without access to meaning can be detrimental and when output with access to meaning can be beneficial. Besides word copying, another activity that might fall within this category is choral repetition of target words. More research is needed on the precise effects of choral repetition, but to the extent that choral repetition (or repetition when alone in the laboratory or listening at home) parallels word copying as a type of output without access to meaning, it should be questioned heavily when it comes to its effects on vocabulary learning in light of the negative effects that have been observed on a number of occasions for word copying.

7. Limit forced semantic elaboration during the initial stages.

The negative effects of tasks like sentence writing, addressing questions about word meaning, and making pleasantness ratings speak strongly against requiring learners to elaborate on the meaning of target L2 words during the initial stages of processing the words as input. Tasks of this nature invoke semantic processing, which can, in turn, decrease processing resources available for processing the formal and mapping components of L2 word learning. In this way, tasks of this nature can decrease L2 word learning and, as such, should be avoided during the initial stages. During later stages of L2 word learning, such as when learners need to expand their knowledge of L2-specific meanings and usage (see Principle 8), semantically oriented tasks directed toward such meanings and uses may be of greater utility.

8. Promote learning L2-specific word meanings and usage over time.

The principle of promoting L2-specific meanings and usage over time may be easy to state, but it is a challenging hurdle when it comes to learning target L2 vocabulary in an increasingly complete manner. Focusing on various

communicatively oriented tasks and content can help substantially in this regard, but oftentimes, learners still do not have the same level of exposure and opportunities to learn all of these L2-specific properties as native speakers do. In light of this state of affairs, it may be useful to focus explicitly on different L2-specific meanings and usage in an intentional vocabulary learning context. For example, Japanese learners of L2 English may have learned word forms and primary meanings of words such as *plug* in the sense related to an electrical outlet (コンセント) but not in the sense of advertising something (宣伝する), *dish* as in the sense of a container (皿) but not in the sense of gossiping (噂する), and *man* in the sense of male (男) but not in the sense of manning a ship (配置する). In order to promote learning the unknown L2-specific meanings of the word forms in question, an instructor can design a lesson to teach them, either very directly or less than directly, and in this way ensure that the learners have opportunities to map the alternative meanings of these English word forms.

Reflection

Make a list of advantages and a list of disadvantages of teaching L2-specific meanings and uses of target vocabulary explicitly. When making the lists, make sure to consider (a) how likely or unlikely it is that learners will be exposed to all L2-specific meanings and uses through regular contact with the language alone and (b) the goal of achieving implicit (unconscious) fluency when it comes to knowing the full range of these particular meanings and uses.

9. Progress from less demanding to more demanding activities over time.

One of the foundations of the input-based incremental approach advocated here concerns how learners need sufficient opportunity to process novel L2 words as input when they are first exposed to them. For this reason instructors should not engage learners in demanding activities that tax their limited processing resources in such circumstances. Instead, learners should be allowed to allocate resources as needed toward the challenging task of encoding novel word forms and mapping those forms onto their appropriate meanings. As time passes, however, learners can be challenged with regard to their knowledge of the formal and semantic components of the words in question, including L2-specific meanings and usage. For a target word in L2 German, such as *Eichhörnchen* ‘squirrel,’ a learner will benefit from multiple exposures to the target word form in a sufficiently clear context to isolate the word’s meaning without being required to copy the word, write it in a sentence, or think of recent occasions in which the learner has come into contact with a squirrel.

After the word form has been learned to a sufficient degree, however, the learner can be provided with opportunities to retrieve it and use it in context. At a later stage, the learner may be provided opportunities to refine knowledge of the German-specific meanings and uses of this word and to “unlearn” English-specific associations of the word when communicating in German. The key here is that the process should be gradual, moving from less to more demanding activities over time as a general principle.

10. Apply research findings with direct implications for vocabulary instruction.

Finally, the tenth principle advocates making use of a wide range of research findings that have immediate implications with regard to vocabulary instruction. Such findings can vary drastically from one another when it comes to the various theoretical issues that the studies in question were designed to assess. To provide just a small number of examples, the following provisions should facilitate L2 vocabulary learning: (a) present the target words in thematic instead of semantic sets (as explained previously); (b) play classical background music but not music with lyrics when presenting target L2 words; (c) provide hypertext glosses for words presented in readings in digital texts; and (d) allow learners opportunities to retrieve target words on their own after they have had sufficient opportunity to process the target words as input; among many others. The general idea of Principle 10 is that language instructors, language program coordinators and directors, and developers of materials for language instruction should be aware of research findings of this nature and should make use of them like a variety of tools in a toolbox when they have opportunities to create the conditions in which L2 vocabulary should be learned in an increasingly effective manner. In addition to numerous other principles, example (d) above of Principle 10 is incorporated in the sample lesson that follows.

Sample Lesson

Below is a brief sample lesson designed to illustrate what the integration of the principles above looks like in the context of contemporary language teaching. Note that the example is truncated but should nevertheless help to demonstrate how IBI principles can be put into practice. The steps in the lesson center on an **information exchange activity** (an activity that requires students to exchange information, which may include collecting information, making comparisons/contrasts, organizing information, or doing something else with a given set of information) that also involves content related to the Spanish-speaking world. The activity, when conducted for L2 Spanish, could be used in a third- or fourth-semester

Spanish course. It takes place over two days, which provides an opportunity for learners to be exposed to, to attempt to learn, and to retrieve target vocabulary beyond the time constraints of one class period.

Touring Madrid with the Help of the Subway

Target vocabulary. *tourist site, intriguing, subway, turnstile, lean out, slip, free entry, short on time, street vendor*, and other vocabulary related to using the subway, visiting tourist sites, and completing the information exchange activity in this lesson.

Materials needed. Map of the Madrid metro system, sheet with descriptions (each 2–3 sentences in length) of various tourist sites in Madrid.

Day 1

Step 1. Inform students that they will be utilizing descriptions of places of interest in Madrid and a map of the Madrid subway system to plan, in pairs, a day of sightseeing and tourism in Madrid. Show them a list of target vocabulary (without glosses) on a screen at the front of the class and let them know that this vocabulary will be useful as they complete the activity.

Step 2. Tell the students the following: *Before you begin to plan for a day of visiting different tourist sites in Madrid, such as maybe the Plaza de España or the Parque del Retiro, as you can see here [showing photos of the two places], let me tell you about a memorable day that I spent in a particular city using the subway to visit different tourist sites. It will also give me an opportunity to clarify the meaning of some of the target vocabulary you see [the vocabulary continues to appear on the screen]. So on the day in question, I visited a lot of intriguing, or very interesting, tourist sites while using the fantastic subway system in this city. The subway system was very clean and had a lot of local art, which I found to be really intriguing. After buying my ticket, as I was walking through the turnstile (the turnstile is what you push as you enter the subway [acting out the movement]), I noticed . . .*

Step 3. Administer an ungraded quiz in which students match all of the target vocabulary with their corresponding definitions and go over them.

Step 4. Have a class discussion about what students already know about Madrid, incorporating target vocabulary when appropriate.

Step 5. Have students work in pairs to do the information exchange activity. One student has a map of the Madrid subways with names of key tourist attractions at different stops. The other has descriptions of the attractions only. The students work together to plan a day of tourism using the subway system in Madrid.

Step 6. Compare and discuss the different daily itineraries prepared by different pairs.

Step 7. Assign each student a target vocabulary item to discuss for 1–2 minutes with the rest of the class. Instruct the students (as an activity to do outside of class) to find additional uses of the term by exploring online resources.

Day 2

Step 8. At the beginning of the next class, have students present the additional uses of the terms they encountered. Help to fill in missing information, emphasizing L2-specific meanings and uses of the target items.

Step 9. Have a discussion of other Spanish-speaking cities, such as Mexico City, where the subway can be used to visit various tourist sites.

[Optional: Additional steps can be added, including possibly another information exchange activity focused on tourist attractions and the subway system in another Spanish-speaking city.]

Quiz

Take the following quiz to see what you have learned. Answers are given at the end, so try not to look ahead until you are finished.

1. Vocabulary learning begins with . . .
 - a. allocation of processing resources in the mind.
 - b. exposure to novel lexical items in the input.
 - c. reorganization of networks in the mental lexicon.
2. Novel words and lexical phrases are learned better when . . .
 - a. presented repeatedly in a spaced manner.
 - b. presented repeatedly in a massed manner.
 - c. presented once in a naturalistic manner.
3. Which of the following is correct about novel L2 word forms?
 - a. They can be very challenging to learn and retain.
 - b. They are always cognates in one way or another.
 - c. They always have phonemes that do not exist in L1.
4. Which of the following is *not* correct about the formal, semantic, and mapping-oriented components of L2 vocabulary?
 - a. All three are represented in the (bilingual) mental lexicon.
 - b. Only one is important for successful vocabulary learning.
 - c. Processing for each of the three is largely dissociable.

5. Of the following three tasks, which has positive effects on L2 word learning?
 - a. writing target words in original sentences
 - b. having opportunities to retrieve target words
 - c. answering questions about the meaning of target words
6. What kind of effect does increasing the number of talkers, speaking styles (voice types), and speaking rates used to produce target L2 words have on vocabulary learning?
 - a. no effect
 - b. negative effects
 - c. positive effects
7. How can learners acquire the collocational properties of new L2 words?
 - a. By focusing on word forms and comparing them to other word forms.
 - b. By processing the words in the context of sentences and discourse.
 - c. By explicitly analyzing the origin and evolution of the words over time.
8. What is an advantage of presenting a target word and its corresponding picture?
 - a. The input provides a clear depiction of the meaning of the word.
 - b. The input is rich in meaning and examples of L2-specific usage.
 - c. The input is of little use because our visual field is not linguistic.
9. The type of input used when presenting target L2 vocabulary should be . . .
 - a. meaning-bearing and largely comprehensible.
 - b. transparent and easily translatable to L1 counterparts.
 - c. divorced from meaning and easily processed as form only.
10. Which of these two should be limited during the initial stages of learning L2 vocabulary?
 - a. forced output without access to meaning
 - b. forced semantic elaboration
 - c. both (a) and (b)

[Answers: 1. b; 2. a; 3. a; 4. b; 5. b; 6. c; 7. b; 8. a; 9. a; 10. c]

Summary and Conclusion

In this module we began by focusing on the critical role that vocabulary knowledge plays in successful communication. Following this discussion, we focused on the nature of vocabulary knowledge, including the network-like composition of the mental lexicon, different types of words and lexical items, and the critical role of form, meaning, and mapping as key components of vocabulary knowledge. We then addressed how humans learn vocabulary, which encompasses different contexts of vocabulary learning (L1 or L2, incidental or intentional, and naturalistic or instructed); the general process of vocabulary learning (always beginning with input and involving its incremental and piecemeal nature); the role of lexical input processing and processing resource allocation; and the sometimes very pronounced negative or positive effects of specific tasks (sentence writing, word copying, target word retrieval, and so forth) and different ways of presenting vocabulary in the input (using increased and spaced repetition, increasing talker variability, and so forth). Finally, this module delineated and exemplified implications for contemporary language teaching by reviewing ten principles of effective vocabulary instruction and presenting a sample lesson. The principles emphasize presenting target vocabulary in a repeated manner in meaning-bearing input, avoiding ineffective tasks and types of output that can detract from word learning during the early stages, enhancing the input, and promoting the gradual build-up of knowledge of L2-specific meanings and usage of target vocabulary over time.

Although future research should continue to improve our understanding of the overall process of learning vocabulary and the effects of previously untested tasks and ways of presenting input, basic precepts about vocabulary learning should endure. These include the need for vocabulary to appear in the input, the benefits of repetition, the facilitative or disruptive effects of certain tasks on specific components of lexical knowledge, and the incremental nature of vocabulary learning. Similarly, with regard to language instruction, new research and technological innovation is not likely to undermine basic principles of effective vocabulary instruction discussed in this module, such as those related to having a plan for vocabulary development; presenting words in meaning-bearing input in a repeated and appropriately enhanced manner (such as via talker, speaking-style, or speaking-rate variability); designing instructional sequences to avoid the negative effects of certain tasks and enhance the positive effects of others at different stages of vocabulary learning; promoting development of L2-specific meanings and usage over time; and applying research findings with direct implications for vocabulary instruction. Instead, future research and technological innovation should complement and enrich our ability to implement these principles. Innovation in digital technology, for example, should continue to enhance our

ability to present target vocabulary in the input in novel ways, broadening our ability to *present new words frequently and repeatedly in the input* (Principle 2) and to incorporate the other input-related principles of effective vocabulary instruction that we have discussed.

Discussion Questions and Projects

1. Try to think of some examples of lexical errors that involve *false cognates*, such as the example of Spanish word *embarazada*, which means ‘pregnant,’ even though sometimes an English speaker learning Spanish might try to use *embarazada* to mean ‘embarrassed.’ Non-native lexical choices of this nature can sometimes lead to humorous or embarrassing outcomes when a learner is attempting to communicate in an L2. Generate a written list of the examples that occur to you. Which of the examples do you think may lead to the most humorous outcomes when a language learner/user is attempting to communicate?
2. Prepare a list of 2- and 3-word collocations, such as *baby blue*, *strong tea*, *take a risk*, and *make progress*. Generate about ten of these in the target language of your choice. After you have compiled the list of acceptable collocations, take each one and create an unacceptable version, such as **infant blue*, **burly tea*, **seize a risk*, and **build progress*. What do the unacceptable ones indicate about the role of collocation in language and successful communication? Your examples should help to clarify why collocation is an integral part of language and communication and not only a minor detail.
3. Which of the effects mentioned in the section on input- and task-based effects was (or were) the most counter-intuitive to you? Write a brief essay identifying the effect(s) in question, explaining why you found it (or them) to be the most counter-intuitive and how information provided in this module can help you to understand the effect(s) from a new angle and in this way view it (or them) as being much more intuitive.
4. Select, read, and summarize at least one study related to the acquisition of L2 vocabulary during reading. What do the findings of the study indicate about learning L2 vocabulary during reading? What are the instructional implications (if any) of the study?
5. Select two different introductory level (first year) language textbooks and examine how each one deals with vocabulary. How is novel vocabulary presented in each textbook? To what extent is the target vocabulary presented in meaningful contexts? To what extent does the input provide information about the collocational properties of the vocabulary? Finally, which of the ten principles of effective vocabulary instruction discussed in this module might be used to improve the treatment of vocabulary in each of the two textbooks?

6. Following the samples of input provided in the section Example of Spoken Input with Repetition of Target Vocabulary and in Step 2 of the lesson *Touring Madrid with the Help of the Subway*, prepare an input segment that at once (a) is meaning-oriented and (b) has target vocabulary repeated a number of times. Begin by selecting a “mini-set” of target vocabulary (e.g., five target words or lexical phrases) and identifying a larger theme for the lesson. Then write the input segment based on the assumption that it would be spoken to students during class. In other words, the language may be more informal than would be the case with some types of written input.

Suggested Further Reading

Vocabulary Knowledge and the Mental Lexicon

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- Barcroft, J. (2012). *Input-based incremental vocabulary instruction*. Alexandria, VA: TESOL International Association.
- Nation, I.S.P. (2013). *Learning vocabulary in another language*. 2nd ed. Cambridge, UK: Cambridge University Press.
- Rott, S. (2007). The effect of frequency of input-enhancements on word learning and text comprehension. *Language Learning*, 57, 2, 165–199.
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