

# Morphological Awareness and Second Language Learners

by Gloria Ramírez

## The Power of Awareness

Lupe: [Reading from a science text] To some extent, fecundity is related to nidification patterns. However, some species have primitive nidification and relatively high fecundity.

Researcher: Do you know what nidification means?

Lupe: No.

Researcher: Let's just focus on one part of the word at a time: *nid-* does this word look or sound familiar to a word in Spanish?

Lupe: Yes, it looks like *nido* (nest).

Researcher: OK, so now that you know what this part means. Can you figure out what nidification means?

Lupe: Yes! The process of making a nest!

Every learner should be able to experience the same excitement that Lupe experienced when she was able to figure out the meaning of the word *nidification*. Knowing the meaning of *nidification* was critical to understand the passage she was reading and to have access to the academic knowledge the passage provides. Access to the meaning of the word *nidification* was only possible when attention was brought to the root morpheme *nid-* and when Lupe was cued to think of a word in Spanish similar to *nid-*; such is the power of morphological awareness, particularly when combined with cognate awareness (i.e., the ability to recognize words shared across languages, even if there are differences in spelling and pronunciation). This article examines the importance of morphological awareness in second language vocabulary learning and reading and provides practical suggestions for teachers. In particular, I seek to explain how morphological awareness can be used to facilitate access to meaning of new vocabulary for second language learners and to enhance reading comprehension.

Morphological awareness involves the ability to identify the smaller chunks of meaning (morphemes) contained in a morphologically complex word, and to use that knowledge effectively to deduce the meaning of unfamiliar vocabulary. This awareness is developed partly due to the types of word formation processes that occur in a language. In English, multi-morphemic words are formed by inflection, derivation, and compounding. Inflectional suffixes are added after a root to provide grammatical information, such as number (e.g., *book*, *books*), tense (e.g., *talk*, *talked*), and person, (e.g., *work*, *works*). Derivations are morphemes attached to the root (either before or after) to provide additional semantic and syntactic information and can either slightly or radically change the meaning of the word (e.g., *resource*, *resourceful*, *unresourceful*). Compounding is the process of combining two or more words to create a new term (e.g., *bedbug*). Morphological awareness is particularly valuable when reading academic material.

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In English, it has been shown that 60% of the academic vocabulary found in school reading passages is composed of morphologically complex words (Nagy & Anderson, 1984). Not surprisingly, research shows that children with better morphological awareness have also larger vocabularies (McBride-Chang, Shu, Ng, Meng, & Penney, 2007; Pacheco & Goodwin, 2013) and are more successful at comprehending written passages (Carlisle, 2000; Katz, 2004; Tong, Deacon, & Cain, 2014). Any learner can benefit from morphological awareness, but it may be particularly important for children who struggle with reading (see Arnbak & Elbro, 2000; Elbro & Arnbak, 1996), including those learning to read in a second language.

## Understanding the Needs of Second Language Learners

Morphological awareness plays a key role in the literacy development of English learners with different first language backgrounds (Marinova-Todd, Siegel, & Mazabel, 2013), and poor morphological awareness is characteristic of dyslexic first and second language learners (Siegel, 2008). These findings suggest that morphological awareness should be integrated into the reading assessment toolkit for second language learners. On the other hand, morphological awareness can be used as a compensatory strategy by learners experiencing literacy difficulties (Elbro & Arnbak, 1996; see Goodwin & Ahn, 2010 for a meta-analysis). There are several ways in which morphological awareness impacts reading for second language learners: through its contribution to word reading accuracy and fluency (Ramírez, Chen, Geva, & Luo, 2011; Saiegh-Haddad & Geva, 2008; Schiff & Calif, 2007), vocabulary knowledge (McBride-Chang, Wagner, Muse, Chow, & Shu, 2005), and reading comprehension (Kieffer & Lesaux, 2012).

At the word level, morphological awareness aids rapid and accurate reading by providing readers with cues for efficient reading of multiletter units loaded with meaning (Verhoeven & Perfetti, 2011). To illustrate, it may be easier for a reader to assign the corresponding sound combination to *-ous* than to *-ight*. Both are common letter combinations found at the end of words in English, but only *-ous* (an adjective suffix relating to the quality or property of something) carries meaning, which may make it more memorable. This mnemonic device can be

*Continued on page 36*



particularly important for second language readers because unlike native speakers of a language, they have fewer opportunities for language exposure. In relation to vocabulary, readers can deduce the meaning of morphologically complex words containing unfamiliar morpheme combinations through identification of the root morpheme and the way affixes affect its meaning (Anglin, 1993). For example, a reader encountering the word *disassociation* for the first time, may not immediately recognize its meaning. However, once it is chunked into its morphological constituents, the reader may recognize familiar words such as *associate*, and recurrent morphemes such as *dis-* and *-ion*, which appear in more familiar words such as *dislike* and *competition*, and successfully infer the meaning of the new word. Finally, morphological awareness can disambiguate the meaning of sentences by drawing attention to the syntactic clues that derivational suffixes convey. “For example, the difference between *Observant investigators proceed carefully* and *Observe investigators’ procedures carefully* is signaled completely by suffixes” (Nagy, 2007, p. 64). That is, in the first sentence, the suffix *-ant* in the word *observant* signals an adjective describing a quality about the investigators (that they are observant), whereas in the second sentence, it signals a verb, thus changing completely the meaning of the sentence. Moreover, the suffixes *-ure* and *-s* in the word *procedures* signal a noun in plural in the second sentence, whereas in the first sentence the absence of these suffixes signal a verb or action.

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Comprehending academic reading material is one of the biggest obstacles for millions of second language learners who are challenged with learning academic content in a language in which they are still not proficient. Numerous studies show that overall, second language learners catch up rather quickly with their first language learning peers in basic skills such as word reading, but continue lagging behind in vocabulary (Farnia & Geva, 2011; Mancilla-Martinez & Lesaux, 2011) and reading comprehension (August, Carlo, Dressler, & Snow, 2005; Farnia & Geva, 2013) even after six or more years of instruction in the second language. Given the importance of reading for academic learning, weaknesses in text comprehension can have a negative impact on academic performance. This issue is exacerbated after grade 4, when school reading material becomes increasingly complex (Chall, 1996) and the vocabulary found in written text is more specialized.

Similar to many monolingual children, some second language learners have persistent challenges with reading despite high quality instruction (Limbos & Geva, 2001). Learners in upper elementary grades who have mastered basic reading skills, but struggle with comprehension, show weaknesses in morphological awareness (Tong, Deacon, Kirby, Cain, & Parrila, 2011; Tong, Deacon, & Cain, 2014). Learning morphologically complex words entails developing mental representations of morphemes (Carlisle, 2007); thus, capitalizing on morphological awareness is to some extent contingent on language proficiency. It is important to differentiate when a second language learner is struggling with reading as a result of insufficient language proficiency or lack of experience and background knowledge, and when the struggle is a consequence of a learning disability (Cárdenas-Hagan, 2016) such as dyslexia (Geva & Wiener, 2015). Although morphological awareness would be beneficial for both types of second language learners, more extensive and individualized instruction may be needed for second language learners with a learning disability rooted in cognitive processes such as phonological awareness, specific language impairment, or memory.

Once basic word reading skills are mastered, higher order language skills, including vocabulary, become the most influential factors in reading comprehension. Unfortunately, of all the language challenges affecting second language reading comprehension, vocabulary is the most persistent one. Even after six years of instruction in English, second language learners know the meaning of significantly fewer words than their monolingual peers (Farnia & Geva, 2011) and have precarious knowledge of words important for academic activities (Jean & Geva, 2009). Morphological awareness can have a significant impact in second language reading comprehension by facilitating access to the meaning of new words and disambiguating syntactic structure in sentences. For example, a learner may be able to more easily decode and get access to the meaning of multisyllabic and highly morphologically complex word such as *intergovernmental* by identifying familiar words within it and any prefixes and suffixes. The first step would be to identify *govern* or *government* (whichever of the two might be more familiar to the learner). The next step would be to identify the prefix *inter-* and the suffix *-al* and recognize (or learn if encountered for the first time) that the prefix *inter-* means between or among and the suffix *-al* is attached to nouns to change them into adjectives to indicate “having characteristics of” as in *nature-natural*.

### **Capitalizing on Second Language Learners’ Knowledge Foundation**

It is important to identify reading-related skills from learners’ first language that can facilitate their second language reading development (Cárdenas-Hagan, 2016; Geva & Herbet, 2012). Although languages vary in morphological richness (Vannest, Bertram, Järviö, & Niemi, 2002), morphology is a key word creation mechanism in any language. Some languages like Chinese rely mostly on compounding. Spanish, French,



and other Latin-derived languages form new words predominantly through a process of derivation and change grammatical properties of words through a rich system of inflections (e.g., a verb can have up to 47 different inflections depicting tense, mood, person, among other aspects). English by contrast, uses a limited system of inflections, but a rich system of derivations and compounds. Despite variations in morphological structure, morphological awareness plays a role in learning to read across different writing systems (Koda & Zehler, 2008; Kuo & Anderson, 2006).

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Numerous research studies across several languages, including those with alphabetic and non-alphabetic scripts, show the importance of morphological awareness in various reading processes. The majority of these studies have been conducted in English (e.g., Carlisle, 2000; Nagy, Berninger, & Abbott, 2006; Pacheco & Goodwin, 2013), but evidence from a variety of languages is rapidly increasing. Some of the research available to date shows that morphological awareness supports the development of language and literacy skills in Spanish (Ramírez, Chen, Geva, & Kiefer, 2010), French (Casalis & Colé, 2009; Colé, Royer, Leuwers, & Casalis, 2004; Roy & Labelle, 2007), Italian (Marcolini, Traficante, Zoccolotte, & Burani, 2011), Hebrew (Bar-On & Ravid, 2011), Dutch (Verhoeven, Schreuder, Haarman, 2006), Finnish (Häikiö, Bertram, & Hyönä, 2011), Malay (Zhang, 2016), Japanese (Hayashi & Murphy, 2013), Korean (Wang, Ko, & Choi, 2009), and Chinese (Zhang, & Koda, 2014), among others. Noteworthy, “the role of morphology may vary across languages depending on their orthographic depth” (Frost, Katz, & Bentin, 1987, as cited by Verhoeven & Perfetti, 2011, p. 461).

More interestingly, studies show that learners can transfer morphological awareness skills from their first language to facilitate language and literacy development in a second or third language. At a very basic level, this cross-linguistic transfer is evident when the performance on morphological awareness tasks in learners’ first language is positively associated with their performance in parallel skills in their second language. For example, Ramírez et al. (2010) observed that the better Spanish-speaking children with English as their second language performed on a task requiring them to transform a word (e.g., *farm*) into a derived form (e.g., *farmers*) to appropriately complete a sentence (e.g., My uncle is a \_\_\_\_\_) in Spanish, the better they performed on a parallel task in English. At a higher level, this cross-linguistic transfer occurs when morphological awareness in the first language is positively associated with literacy skills in the second language. For example, in a study of Spanish-speaking children learning to read in English, researchers found that Spanish morphological awareness of derivational suffixes predicted English word

reading (Ramírez et al., 2010), English vocabulary (Chen, Ramírez, Luo, Geva, & Ku, 2012), and reading comprehension (Ramírez, Chen, & Pasquarella, 2013). Further exploration revealed that the unique association between Spanish morphological awareness and English reading comprehension was mediated by vocabulary that is common between the two languages (i.e., cognates). Recognizing cognates is particularly valuable in content areas such as science, which have a high concentration of cognate words (Bravo, Hiebert, & Pearson, 2007; Lubliner & Hiebert, 2011) with a Latin and Greek origin, some of which (those with a Latin origin which came to English through French, e.g., *frigid*) appear more frequently in learners’ first language (Bravo, Hiebert, & Pearson, 2007). Table 1 provides examples of cognates with higher frequency in Spanish than in English.

**TABLE 1. Spanish-English Cognates Found in English Content Areas**

Word in Spanish	Word in English
Carbón	Carbon
Cerebral	Cerebral
Frio, frígido	Frigid
Insecto	Insect
Circular	Circular
Habitual	Habitual
Transportar	Transport
Libertad	Liberty
Solar	Solar
Triple	Triple

The transfer of first language morphological awareness to second language vocabulary and reading comprehension has also been observed in Chinese speakers learning English (Zhang & Koda, 2014). In this study, which involved Chinese children in grade 6 learning English as a foreign language, Chinese compound awareness contributed to English vocabulary and reading comprehension. Similar patterns of cross-linguistic transfer have been observed between English and French (Deacon, Wade-Woolley, & Kirby, 2007), Japanese and English (Hayashi & Murphy, 2013), and Korean and English (Wang, Ko, & Choi, 2009), to name a few. The research findings from cross-linguistic transfer of morphological awareness are promising. They suggest that it is possible to build on learners’ first language skills to help them develop stronger word reading, vocabulary, and reading comprehension in their second language.

It is important to note that the aspects of morphological awareness that can be transferred across languages depend on similarities between the morphological systems of the two languages in question (Geva & Ramírez, 2015; Koda & Zehler, 2008). For example, as compounding in Chinese is the main mechanism for the creation of morphologically complex words and shares similarities with compounding in English

*Continued on page 38*



(e.g., usually the modifier is in the left and the head on the right, as in *bookshelf*), Chinese-English bilinguals are more prone to transfer these skills to English than Spanish-English bilinguals. By contrast, Spanish-English bilinguals are more adept at transferring derivational awareness (Ramírez et al., 2011) because in both Spanish and English, derivation is a major tool for creating new words, and many of the suffixes are the same or similar (e.g., the suffix *-al* in the Spanish word *elemental* and the corresponding English word *elemental* or the prefix *inter-* in the Spanish word *internacional* and the English word *international*). Second language learners need substantial amounts of exposure and explicit instruction on aspects of morphology that are unique to the second language in order to take full advantage of the benefits of morphological awareness. For example, Chinese speakers learning to read in English would need intentional instruction on how a derivational suffix such as *-ly* is attached to an adjective (*slow, slowly*) to indicate the manner in which an action is performed or how *-er* is attached to a verb (*bake, baker*) to indicate how an agent performing a given action is called. By contrast, Spanish speakers learning to read in English would need more focused instruction on how in compound words such as *bookshelf*, the word on the left (*book*) provides a description for the word on the right (*shelf*), which is the opposite to the structure of most compound words in Spanish.

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There are many languages that share words with the same etymological roots. The meaning and spelling of these words are similar across the languages involved; these words are called cognates. Thousands of words are cognates between English and Spanish (Nash, 1997) and a large amount is found in academic reading material (Lubliner & Hiebert, 2011), and similar percentages are likely with other Latin-derived languages such as French, Portuguese, Italian, Romanian, and Catalan. English also shares a large proportion of cognate words with languages such as German, Dutch, and Swedish. Cognate awareness is the ability to identify these words and access their meaning in the second language through knowledge of its meaning in the first language. Although there may be slight variations in spelling and pronunciation across the two languages, a learner with cognate awareness is able to recognize their semantic association. This knowledge facilitates understanding of words in the second language, and is very helpful in deriving meaning from morphologically complex words (Dressler, Carlo, Snow, August, & White, 2011) when the root (e.g., *completamente* and its corresponding English version *completely*) is a cognate, and sometimes both the

root and the prefix (e.g., *prenatal*) or the root and the suffix (e.g., *considerable*) are cognates.

As illustrated in the vignette introducing this article, cognate awareness allows second language readers to capitalize on the benefits of morphological parsing and analysis. Therefore, it is important to consider morphological awareness together with cognate awareness when the two languages involved offer this opportunity. In fact, research has shown that second language learners are better able to capitalize on morphological analysis to deduce the meaning of unfamiliar vocabulary when the root of a morphologically complex word in the target language is a cognate with the learner's first language (Dressler et al., 2011; Hancin-Bhatt & Nagy, 1994; Ramírez et al., 2013) and that the two combined (morphological and cognate awareness) facilitate reading comprehension (Ramírez et al., 2013).

### General Principles of Effective Instruction for Second Language Learners

Not all second language learners develop an intuitive ability to chunk words into morphemes (Carlisle & Katz, 2006) and to identify cognates to deduce the meaning of morphologically complex words (Garcia & Nagy, 1993; Hancin-Bhatt & Nagy, 1994); therefore, the teacher's role is critical in equipping second language learners with this powerful language and literacy learning toolkit. Explicit and systematic instruction on how to divide words into units of meaning, in identifying the root as the primary meaning-carrying morpheme, and the way prefixes and suffixes alter its meaning, can go a long way in vocabulary development and reading comprehension for second language learners with and without a learning difficulty. Table 2 provides some pedagogical principles that teachers can use for effective instruction of morphological awareness. These principles are informed by morphological awareness intervention research involving first and second language learners with literacy difficulties (e.g., see Goodwin & Ahn, 2010 for a meta-analysis; Wolter & Green, 2013).

### Identifying Needs and Strengths

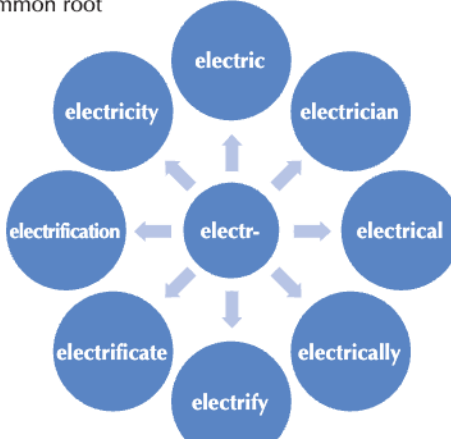
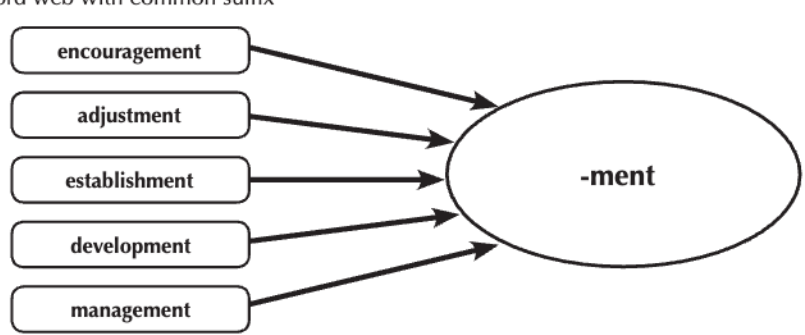
When considering second language readers, it is important to understand the unique challenges they face as well as the foundations of knowledge they may have. Effective morphological awareness instruction taps into both aspects. It helps second language readers overcome difficulties in different areas of reading such as word recognition, vocabulary, and syntactic understanding and at the same time it helps them capitalize on skills and knowledge developed through their first language.

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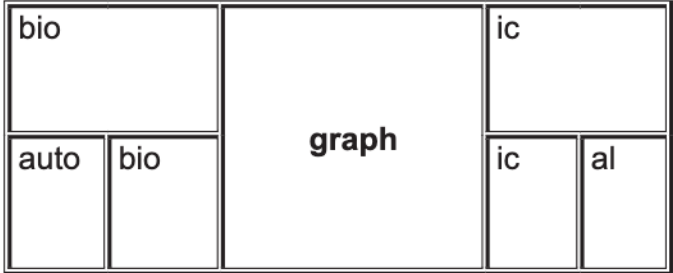
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*Continued on page 40*

**TABLE 2. Tips and Resources for Effective Teaching of Morphological Awareness to Second Language Learners**

Tips/Teaching Principles	Resources/Comments
Provide explicit and systematic training on morphological awareness by teaching students the meanings of prefixes, roots, and suffixes using a meaningful context.	WordWorks by Peter Bowers provides a number of resources including video demonstrations on how to teach morphological analysis <a href="http://www.wordworkskingston.com/WordWorks/About_WordWorks.html">http://www.wordworkskingston.com/WordWorks/About_WordWorks.html</a>
Identify common morphemes in relevant curricular units and prioritize teaching of those over less frequent ones.	Chapter 10 (pp. 227–282) of <i>The Vocabulary Teacher’s Book of Lists</i> (Fry, 2004) provides master lists of the most common prefixes and suffixes.
Capitalize on students’ knowledge developed in their first language by acknowledging the aspects of morphology that students are already familiar with in their first language and bring their attention to the similarities and differences in the second language.	Haspelmath and Sims (2010) in <i>Understanding Morphology</i> ( <a href="https://arkitekturadellenguaje.files.wordpress.com/2012/12/understanding-morphology-second-edition.pdf">https://arkitekturadellenguaje.files.wordpress.com/2012/12/understanding-morphology-second-edition.pdf</a> ) provide an introduction to morphological analysis using examples across several languages. See also the <i>World Atlas of Language Structures Online</i> (Dryer, 2013) <a href="http://wals.info/chapter/26">http://wals.info/chapter/26</a> for maps showing the use of morphological structures across languages.
Provide differentiated instruction considering first language learners’ characteristics.	For example, Chinese children may need more explicit instruction in English inflections (e.g., when to add <i>-ed</i> to a verb to indicate past tense, <i>s</i> to a noun to indicate plural, etc.) and derivations (e.g., when <i>-or</i> is added to a noun to indicate “one who” as in <i>sail-sailor</i> ), while Spanish children may need more training in English compounding (e.g., to understand that contrary to Spanish, the word that describes is on the left and what is being described is on the right as in <i>police dog</i> which in Spanish is <i>perro policia</i> ).
Whenever possible, help learners develop cognate awareness by asking them if any of the morphemic chunks look similar to lexical and sublexical units in their first language.	For example, in the word <i>bioaccumulation</i> , bring the learner’s attention to <i>-accumula-</i> which corresponds to the Spanish word <i>acumula</i> . Then bring attention to <i>bio-</i> which is spelled exactly the same in Spanish and refers to life. Proceed to explaining that <i>-tion</i> corresponds to the Spanish ending <i>-ción</i> , which is a suffix found in nouns. For a list of common Latin and Greek prefixes, roots, and suffixes see McEwan, Nielsen, and Edison (2008), pp. 63–92.
Embed morphological awareness instruction in content areas.	For example, when a morphologically complex word such as <i>hypothermia</i> is found in a science passage, divide the word into its constituent morphemes and explain their meaning ( <i>hypo</i> = less, <i>therm</i> = heat).
Elicit morphologically complex words from reading passages to create word webs with words that share a root morpheme (e.g., <i>electric, electrician, electrical, electronic, electrify, electrification, electronically, hydroelectric, hydroelectricity</i> ).	<p>Word web with common root</p> 
Elicit morphologically complex words from reading passages to create word webs with words that share affixes (e.g., <i>beautiful, wonderful, hopeful, helpful, meaningful, etc.</i> ).	<p>Word web with common suffix</p> 



Tips/Teaching Principles	Resources/Comments
<p>Create anchor charts (also called Word Matrix, Bowers &amp; Kirby, 2009) for morphological analyses and build daily routines around them to develop a habit of morphological analysis. This will greatly enrich children’s morphological knowledge and increase awareness.</p>	<p>For a video demonstration of how to use anchor charts for morphological analysis, go to <a href="https://www.youtube.com/watch?v=M9FZiaQP2io">https://www.youtube.com/watch?v=M9FZiaQP2io</a></p> 
<p>Make morphological analysis fun by adding a competitive aspect and transforming activities into games.</p>	<p>Find games and other resources in:                      Vocabulogic <a href="https://vocablog-plc.blogspot.ca/">https://vocablog-plc.blogspot.ca/</a>                      Florida Center for Reading Research <a href="http://www.fcrr.org/resources/resources_sca.html">http://www.fcrr.org/resources/resources_sca.html</a>  <a href="http://www.fcrr.org/documents/sca/G4-5/45VPartTwo_Morphemic_Elements.pdf">http://www.fcrr.org/documents/sca/G4-5/45VPartTwo_Morphemic_Elements.pdf</a></p>
<p>Consider learners’ contextual factors and developmental needs at the cognitive and linguistic levels.</p>	<p>For example, teach morphological analyses of compounds (e.g., <i>teapot, seaweed, bookmark</i>) and a small number of common prefixes and suffixes (e.g., <i>-ful, -or</i>) to K–3 students and gradually introduce less frequent ones from grade 4 and onwards.</p>

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