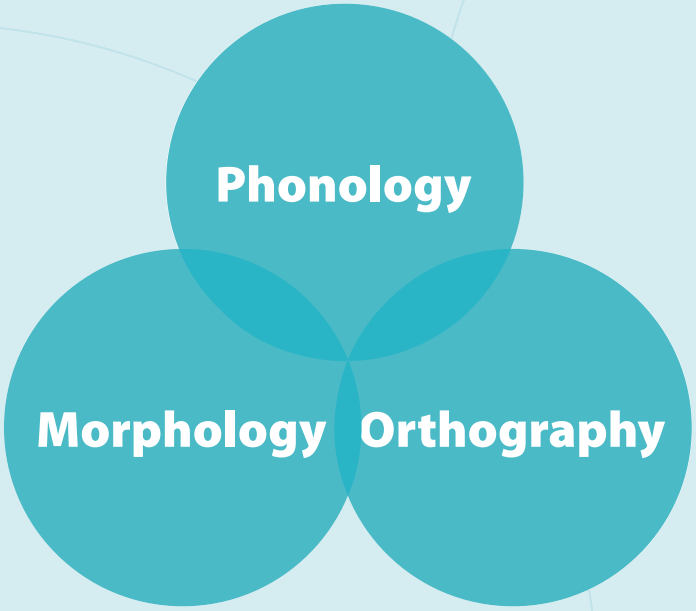
Teaching Total Word Structure

Systematic, Explicit, and Integrated Instruction in Phonology, Morphology, and Orthography



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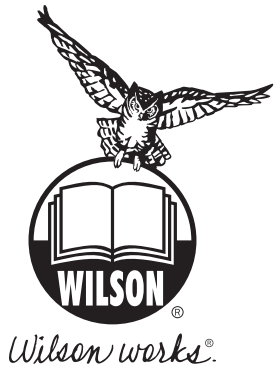

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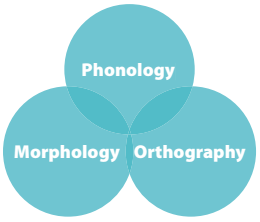
For individuals to become fluent readers, they need to develop automatic word reading, or decoding, skills (Biancarosa & Snow, 2006; Compton, Appleton, & Hosp, 2004). Likewise, for students to develop proficient writing, transcription skills (including spelling) must be intact (Coleman, Gregg, McLain, & Bellair, 2009; Gentry & Graham, 2010). Students whose word-level foundational skills are not well established have lower overall literacy achievement. In many cases, their reading and writing are significantly hindered as they progress to the upper grades in school (Hock, Deshler, Marquis, & Brasseur, 2005; Hock, et al., 2009).

Systematic instruction in total word structure is necessary for word-level mastery—both for decoding and for spelling. This is true for students in elementary grades as well as students in upper elementary and beyond (Scammacca et al., 2007). In brief, systematic word-level instruction should include three integrated areas of study:

Phonology	Morphology	Orthography
The study of sounds	The study of word elements (prefixes, suffixes, Latin and Greek base elements)	The study of rules that govern English spellings



Direct and explicit instruction in these three overlapping areas of word study have a positive bearing on students' literacy skills (Bowers, Kirby, & Deacon, 2010; Goodwin & Ahn, 2013; Moats, 1995).

Phonology

Phonology: The Study of Sounds

Fluent decoding alone will not result in proficient reading, but it is necessary. With the ability to isolate sounds and link them to letters, students can read 70% of regular monosyllabic words (Ziegler, Stone, & Jacobs, 1997).

The ability to decode words requires both phonemic awareness and mastery of the alphabetic principle (the linking of sounds to letters) (Ehri, Nunes, Stahl, & Willows, 2001; Lonigan, Purpura, Wilson, Walker, & Clancy-Mechnetti, 2013; NICHD, 2000). Phonemic awareness is the ability to hear, identify, segment, and manipulate phonemes (the smallest units of sound). Mastery of the alphabetic principle means that students are able to connect sound-letter correspondences for reading and writing.

Thus, phonemic awareness training should be closely linked with the direct teaching of the alphabetic principle (letter-sound/grapheme-phoneme correspondences).

Research supports direct instruction in phonemic awareness (Ehri et al., 2001; Lonigan & Shanahan, 2009; Melby-Lervåg, Lyster, & Hulme, 2012) and demonstrates that it is most effective when students are taught to manipulate phonemes by using the letters of the alphabet (NICHD, 2000; Shaywitz, 2003). Thus, phonemic awareness training should be closely linked with the direct teaching of the alphabetic principle (letter-sound/grapheme-phoneme correspondences).

Because English is a sound-based and alphabetic language, fluent reading depends upon fluent and automatic sound knowledge as well as an understanding of which sound(s) a letter or cluster of letters makes (Allen, Neuhaus, & Beckwith, 2011). Systematic phonics programs, necessary for students with reading deficits, are characterized by explicit teaching of an identified, sequential set of grapheme to phoneme correspondences (Mathes et al., 2005; Torgesen et al., 2001).

Phoneme segmentation—the ability to pull apart the sounds in a given word—is a critical phonemic awareness skill for reading and spelling success. Poor readers often need direct teaching of this. The segmentation of a spoken word into its individual sounds is complicated by the fact that these sounds run together seamlessly in spoken language. That is, sounds within a spoken word are co-articulated, or folded into one another without clearly defined breaks between the sounds within a word. This makes it difficult for individuals with a phonologically based reading disability to segment a word into individual phonemes (Bruno et al., 2007). Direct instruction in this skill helps individuals with a phonologically based reading disability unlock the alphabetic code that forms the basis of the written form of the English language (Ehri et al., 2001).

In addition to direct instruction in letter-sound correspondence and phoneme segmentation skills, teaching students more detail about word structure helps them accurately apply the sounds in longer words. Syllable patterns are an important part of that instruction because the type of syllable regulates the vowel sound. The following are the six syllable patterns that make up English words and their corresponding vowel sounds:

Closed Syllable	drĭp (c)	Final Stable Syllable	tāble (o fs)
Vowel-Consonent-e Syllable	cāke (v-e)	R-Controlled Syllable	bark (r)
Open Syllable	shē (o)	Double Vowel "D" Syllable	bait (d)

Instruction that emphasizes these syllable types strengthens students' word-analysis and spelling skills (Bhattacharya & Ehri, 2004; Curtis & Longo, 1999; Wilson, 1996).

Morphology: The Study of Word Elements

English is a morphophonemic system; that is, spelling relies on the smallest units of meaning (morphemes) and the smallest units of sounds (phonemes). As previously discussed, the written form of a phoneme (smallest unit of sound) is called a grapheme (letter). Similarly, the written form of a morpheme (smallest unit of meaning) is called a word element. Prefixes (**dis**, **un**, **re**), Latin bases (**rupt**, **dict**), and suffixes (**ful**, **ed**) are examples of word elements—written forms of morphemes.

The direct teaching of morphology—and more specifically—written word elements, is an effective means to help students understand word structure and apply that knowledge to decode and spell words (Carlisle, 2003; Kruk & Berman, 2013; National Institute for Literacy, 2007; Pacheco & Goodwin, 2013). Morphological awareness (MA) refers to students' ability to understand, analyze, and manipulate morphemes within words, contributing greatly to a student's ability to decode, spell, and comprehend (Carlisle, 2010; Keiffer & Lesaux, 2008; Kruk & Bergman, 2013; Nagy, 2007; Pacheco & Goodwin, 2013; Wolter & Dilworth, 2014). Morphological awareness requires a simultaneous focus on sound, pattern, and meaning (Apel, Diehm & Apel, 2013; Apel & Henbest, 2016; Bowers et al., 2010). It aids accurate and automatic word recognition as students learn to recognize a string of letters with meaning (Verhoeven & Perfetti, 2011).

The direct teaching of morphology—and more specifically—written word elements, is an effective means to help students understand word structure and apply that knowledge to decode and spell words.

Instruction in morphological awareness and word elements may be especially important for individuals with dyslexia (Deacon, Parrila, & Kirby, 2008; Reed, 2008), and it may reduce the number of struggling readers beyond the elementary grades, as these students have been found to have a poor grasp of word elements (Mahoney, 1994; Nagy, Berninger, & Abbott, 2006).

Studies have shown that morphological awareness makes contributions to academic achievement in word identification, spelling, and vocabulary (Berninger, Abbott, Nagy, & Carlisle, 2010). The goal then, of studying morphology, is to develop vocabulary, decoding, and spelling skills, as well as to provide a base of knowledge for continued (and endless) morphological word study. If morphology is introduced in a systematic way, it will help students master word structure.

Word elements combine to form thousands of words in written English. In fact, complex words (containing more than one word element) account for approximately 60% of the vocabulary students beyond a fourth-grade level encounter while reading (Egan & Pring, 2004; Nagy, Anderson, Schommer, Scott, & Stallman, 1989).

By teaching both the six syllable types and word elements, students can use two ways to investigate a word in order to identify and/or spell it.

1. Use the syllable and sound structure as previously described: students analyze the syllables in a word to help decode and spell it. For example, a word such as **combat** has two syllables and these are both closed syllables with short vowel sounds.

2. Determine specific word elements used to construct a word. For example, a word such as **disrupted** has three word elements: a prefix (**dis**), a Latin base element (**rupt**), and a suffix (**ed**).

These two methods of word analysis provide students with truly integrated word recognition and spelling skills. Furthermore, since one way may be more relevant or effective for a given word than another, knowing how to break down a word with both methods is extremely useful.

Orthography: The Study of Rules that Govern English Spellings

As students progress in their study of word structure, they should move from a phonological (sound) focus to a more orthographical (visual) focus. The exploration of morphemes is an important part of orthography. If students study prefixes, suffixes, and Latin and Greek base elements, they will more efficiently recognize these word parts when reading. Likewise, they will more automatically be able to spell words with these elements. Without knowledge of the patterns that make up longer words, students with word-level deficits demonstrate limited orthographic awareness (Bruck, 1990). By studying syllable structure, word elements, and orthographic rules for spelling (which involve base words and suffixes), students cumulatively learn to process words more quickly.

The direct and systematic instruction in English spelling rules provides another important key to student mastery of word structure. Initially, instruction should be limited to easier patterns such as adding suffixes to unchanging base words (**bug-bugs**; **sing-singing**; **help-helpful**; **ship-shipment**). Eventually, students should learn how to add suffixes to base words that change when the suffix is added (**ship-shipping**; **exhale-exhaling**; **empty-emptied**). Instruction must be done systematically and cumulatively, beginning with easier concepts and building upon that knowledge. Mastery, through sufficient practice, is key before adding more rules about how words in English "work."

Students with a language-based learning disability can learn these rules, although they might have difficulty with the *language* or actual wording of the rules. For these students, instruction that includes demonstration and practice with manipulatives helps to clarify verbal explanations (Banks, Guyer, & Guyer, 1993; Janney & Snell, 2004; Wilson, 1996). Although students may write down for

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Since "words get in their way," manipulating word parts helps students see and understand the structure. As students demonstrate mastery of application, another rule can be introduced while continuing to practice and review all rules previously taught. Students should overlearn the application of the rule as opposed to the wording of the rule.

Supporting struggling readers with spelling rules

Explaining the rule with words alone	VS	Explaining the rule using manipulation

The 1-1-1 Doubling Rule - cup

- With a one-syllable base word with a closed syllable, one vowel, and one consonant after the vowel, when adding a consonant suffix, just add the suffix. When adding a vowel suffix, double the final consonant.

The 1-1-1 Doubling Rule - c u p

- Is this a 1-1-1 word?
  Is it a word with **one** closed syllable (✓), **one** vowel (✓) and **one** consonant after the vowel (✓)?
  (✓- Yes)

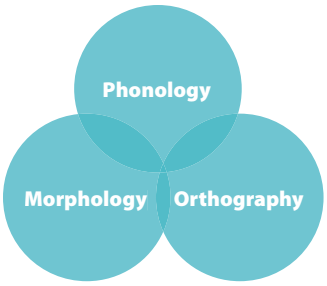
Vowel Suffix	Consonant Suffix
-es	-s
-ed	-ful
-ing etc.	-ly etc.

- When adding a vowel suffix, the last consonant in the base word is doubled.

c u p ★p -ed

- When adding a consonant suffix, just add the suffix.

c u p -ful



An Integrated and Systematic Study of Phonology, Morphology, and Orthography

A cumulative and systematic study of sounds, syllable patterns, and word elements is key for student mastery of word recognition and spelling. Instruction should incrementally interweave phonology, morphology, and orthography, thus systematically teaching students the rules that govern English written language. With all aspects of word construction, systematic and cumulative instruction should begin with easier concepts before layering on more challenging ones.

Although instruction must begin with the development of the alphabetic principle and phonemic awareness, all sounds need not be mastered prior to initiating morphology and orthography instruction. For example, when students are studying initial letter-sound correspondences and are only able to segment and blend three-sound words, the concept of a suffix can be introduced with non-changing bases (**bug-bugs**; **box-boxes**), thus also introducing both morphology and orthography. When studying about prefixes, students should initially add them to words that stand alone (**plug-unplug**; **stop-nonstop**). Later, they will also learn to combine prefixes with a Latin base to form a complex word (**predict**, **contract**, **disrupt**).

This systematic and integrated instruction of phonology, morphology, and orthography provides key foundational skills for word-level mastery for reading and writing and is key for the development of linguistic awareness.

Students should gradually learn letter-sound correspondences, six syllable types, prefixes, suffixes, and Latin and Greek base elements, as well as how to combine these word parts to construct (and deconstruct) longer words. The systematic and integrated instruction of phonology, morphology, and orthography provides key foundational skills for word-level mastery for reading and writing and is key for the development of linguistic awareness (Bowers et al., 2010; Ebbers, 2017; Wolter & Collins, 2017). Mastery of these foundational word skills is a necessary (and possible) component to achieving higher level literacy skills for life.

To learn more about how these concepts are integrated into Wilson programs, please visit: http://www.wilsonlanguage.com/programs/.

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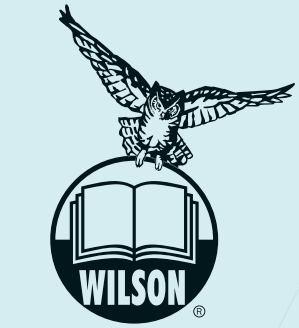

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