

Morphemes Matter: A Framework for Instruction

by Marcia K. Henry

Why do morphemes matter? Since morphemes are the smallest units of meaning in words, and meaning (comprehension) is the goal of reading, morphemes are of prime importance. Most English words are polysyllabic and often contain prefixes and suffixes to extend and expand the meaning of the base element (often called the *root* in instructional settings). These morphemes provide students with numerous strategies for decoding (reading) and encoding (spelling) as well as enhancing vocabulary (Henry, 1988, 1993, 2010a). As children learn the common prefixes, suffixes, and Latin and Greek bases, they gain new understanding of these meaning-based building blocks in English words.

In the past 35 years, especially in the current decade, research in the area of morphology has continued to evolve. Although many studies still emphasize phonemic awareness and phonics, more and more attention has been paid to morphological awareness (i.e., an awareness of morphemic patterns in words and their meanings; Nunes, Bryant, & Evans, 2010) as a major research area. Those students who could use this morphological awareness were said to have morphological knowledge. The work of many researchers and educators illustrates the need to introduce morphology, which was once thought to be useful only in the upper elementary and secondary grades, in the early grades. Ebbers (2008) found that even second graders encounter inflections, compounds, and derivations in both narrative and informative text. Apel and Henbest (2016) gained support in their study of first through third graders "... for how students might use morphological problem solving to read unknown multimorphemic words successfully" (p. 148). Bowers and Kirby (2010) and Bowers and Cooke (2012) emphasized the importance of including morphology in literacy instruction, especially for less able and younger students. Devonshire, Morris, and Fluck (2013) concluded that using explicit instruction of morphology and etymology (i.e., the historical origins of words) should be taught in addition to traditional phonics beginning as early as kindergarten and first grade.

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Similarly, recent professional practice guidelines have emphasized the importance of morphological awareness and etymology. The Knowledge and Practice Standards for Teachers of Reading, Section B, developed by the International Dyslexia Association's Professional Standards and Practices Committee in 2010, includes the Knowledge of the Structure of Language. Section B2 recognizes the importance of understanding the etymology of words, the "broad outline of historical influences on English spelling patterns, especially Anglo-Saxon, Latin (Romance) and Greek." Section B3 recognizes the necessity to "identify and categorize common morphemes in English, including Anglo-Saxon compounds, inflectional suffixes, and derivational suffixes; Latin-based prefixes, roots, and derivational suffixes; and Greek-based combining forms."

Given the recent research and professional practice guideline emphases on morphological awareness and etymology, this article focuses on a useful framework for thinking about English words based on word origin and word structure. Specifically, the article provides suggestions for assessment and instruction of morphological awareness and etymology in general and special education classrooms. (See Table 1 for resources.) As a prelude to these topics, morpheme patterns from Old English, Latin, and Greek origins are reviewed.

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TABLE 1. Morphology and Etymology Resources

The following websites provide information on both morphology and etymology:

- **English-Word Information**
www.wordinfo.info
- **LEX**
www.linguisteducatorexchange.com
- **Online Etymology Dictionary**
www.etymonline.com
- **Real Spelling**
www.realspelling.fr
- **Vocabulogic**
www.vocablog-plc.blogspot.com
- **WordFlex**
<http://wordflex.com>
- **Word Nerderly**
www.wordinquiry.wordpress.com
- **Word Root Quick Reference**
www.espindle.org/roots.html
- **Word Searcher**
www.neilramden.co.uk/spelling
- **WordWorks**
www.wordworkskingston.com

Word Origins

Words are built differently depending on the language of origin. For example, the *Old English* bases stemming primarily from the Germanic and Norse languages are often short, everyday, down-to-earth words like *laugh, jump, run, blood, eye, skin, wake, friend, and heart*. Noticeably, many of these words are irregular in their vowel sounds. The Old English bases expand by both compounding (e.g., *flashlight, lamppost*) and by affixing (e.g., *speller, respelling*).

When children learn about 40 prefixes and 50 suffixes, along with 40 or so Latin and Greek bases, they have the tools to unlock numerous words for decoding and spelling.

In contrast, Latin-based words, often called Romance-based words, usually affix as in *disruptive* (i.e., adding the prefix <dis> and the suffix <ive>) and *instruction* (i.e., adding the prefix <in> and the suffix <ion>). A majority of words in English come from the Latin layer of language. Although often thought of as more advanced words, the spelling is relatively straightforward. Latin bases contain few vowel digraphs (i.e., ea, oi, oa) that are often difficult for struggling readers. Most Latin bases contain short vowels (e.g., *rupt, struct, script, dict, duct, and flect*). A few contain vowel-consonant-e patterns (e.g., *scribe, duce*) or –r controlled vowel patterns (e.g., *form, port, fer, vert*). It should be mentioned that some Latinate bases share “twin” forms such as *vers/vert, stru/struct, mis/miss* and *pel/puls*, in which the meaning of the base word is the same despite different spellings.

Greek-based words, found primarily in science and math texts, generally compound as in *micro-scope* and *physi-ology*. Students need to learn the unique letter-sound correspondences found frequently in Greek-based words (e.g., <ch> for /k/, <ph> for /f/, <y> as a short or long i sound, and the less common <ps>, <mn>, <pt>, and <rh>). A student unsure about how to spell *photograph*, will be helped by knowing both *photo* and *graph* as Greek bases so the <ph> is needed for the /f/ sound.

Considering the fact that there are now over a million words in English, a relatively few morphemes contribute to hundreds of thousands of words. When children learn about 40 prefixes and 50 suffixes, along with 40 or so Latin and Greek bases, they have the tools to unlock numerous words for decoding and spelling. In addition, since morphemes are units of meaning, each morpheme brings either semantic or syntactic information with it. Bases hold semantic meaning, that is, vocabulary meaning, as do prefixes (e.g., *tell, retell; spell, misspell*). Suffixes, however, often contain syntactic, that is grammatical, information. For example, in the word *respelled*, the prefix <re> means *again* and the suffix <ed> forms the past

tense of the verb, *spell*. Let’s consider the pronunciations and meanings of <est> and <ist>. Both are pronounced as /əst/, but their meanings differ. <est> is the superlative degree of an adjective (e.g., *greenest, happiest, longest*, while <ist> is always a noun and a person (e.g., *dentist, humorist, scientist*). Consider, also, the differences in <ous> and <ess>, both pronounced as /əs/. <ous> is used as an adjective ending (as in *dangerous, humorous, generous*), while <ess> represents a feminine noun (e.g., *hostess, lioness, princess*). These grammatical distinctions are why people moderating spelling bees provide not only the origin of the word, but also the part of speech for each word.

Another important distinction is that between a free base and a bound base. A free base (often called a free morpheme) can stand on its own. *Help, run, and stop* are all free bases as they can stand alone. In contrast, most Latin and Greek bases are bound bases as they are generally affixed or compounded and rarely stand alone. Prefixes and suffixes are bound morphemes as they affix to a free base or a bound base. For example the word *unhelpful* affixes <un> and <ful> to the free base *help*. In contrast, in the word *respective* none of the morphemes <re>, <spect>, and <ive> can stand alone. They are all bound morphemes.

Informal Assessment

While numerous commercial assessment instruments are available for decoding and spelling ability, few assess morphological understanding of written bases and affixes. Teachers can informally assess their students’ understanding of morphemes, either individually or as a group. The teacher can write a word like “respelled” on the board. Students read the word and the teacher asks what it means. Most students will respond with something like “to spell a word again.”

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Teachers can see if students know what part of the word is the main part, the base (i.e., *spell*). Next, they can see if they know what represents *again* in the word “respelled.” Do they know the term *prefix*? Do they know the term *suffix*? What it is (<ed>) and what it represents (past tense of the verb)? Teachers can reiterate that while prefixes generally have specific semantic meanings, suffixes generally provide grammatical/syntactic meaning. Teachers can then provide other examples (e.g., *respelling, misplaced, unlikeable, hopelessly*) on the board or give groups of children several words to find bases and affixes. A pre-quiz is useful to see which morphemes students recognize such as compounds, bases, prefixes, and suffixes. Varied tasks can be used to assess their knowledge. Students circle the prefixes in a word, the suffixes, or the base. They can circle the constituent words in compound words (see Henry, 2010b for specific examples).

Instruction

Prior to instruction, teachers need to be sure students understand the structure of polysyllabic words containing morphemes. Students need to understand that compound words are generally composed of two free bases joined together to form a new, meaning-based word (e.g., *stop* + *light* = *stoplight*). Teachers should remind students that free bases can stand alone as a word in English. In contrast, bound bases do not stand alone; they require affixes to be a complete word (e.g., *instruct*).

Instruction with students in first and second grades can begin by having them add suffixes to words requiring no change in the base form (e.g., *help*, *helpless*; *time*, *timely*). By the mid-second grade, students must learn rules for adding suffixes that affect some base words, such as when to double a final consonant (as in *swim*, *swimmer*), drop the final e (as in *slide*, *sliding*), or change a y to i (as in *cry*, *cried*).

Teachers then can begin introducing common prefixes and suffixes to short Old English base words. The first prefixes taught can include <in>, <un>, <dis>, <mis>, <fore>, <re>, <de>, <pre>, and <a>. The inflected suffixes, <s>, <es>, <ed>, <er>, <est>, and <ing> can be among the first suffixes taught, along with <ly>, <less>, <ness>, <ship>, <fold>, and <ment>. As new affixes are introduced, teachers can make 3 x 5 or 4 x 6 cards for each morpheme. Color coding is useful with prefix cards as one color and suffixes as another. Cards can also be made for each Latin and Greek base with meaning and several examples on the back of the card (e.g., one card for <struct>, with the sample words containing *struct* on the back). Commercially available cards representing prefixes, suffixes, and bases also are available (e.g., Henry & Redding, 2002). Although some educators decry the use of card drills, these cards do assist in making affixes and Latin and Greek bases automatic. Visual card drills, done periodically, improve automaticity in decoding. This automaticity likely contributes to both fluency and comprehension. Auditory drills are less effective; while spelling is consistent, pronunciation often shifts as derivational suffixes are added. Usually, the accent falls on the base, but stress patterns can be fairly complex as noted by Wade-Woolley and Heggie (2015). Cooke (2016) cites the example of the pronunciation of *cred* in *credit*, *credential*, *credence* and *incredulous*, as the vowel <e> changes from word to word as different suffixes are added.

Numerous instructional activities reinforce these morphemes. Graphic organizers in the form of word webs, word sums, and matrices are all useful as students learn about morphology. Students can make word webs, such as the web on <rupt>. Students generate words containing <rupt>. They determine ways to categorize the words (e.g., putting words containing like prefixes together, compound words together, or other logical categories). Students and their teachers can discuss meaning of unknown words.

Bowers (2013), Bowers & Cooke (2012) and Cooke (2015) provided detailed information on two reliable tools developed to investigate and make sense of the English writing system in their description of word sums and word matrices, both representing the structure of morphological word families. This work stems from Structured Word Inquiry (Bowers & Kirby, 2010), based on Real Spelling (www.realspelling.fr). Figure 2 illustrates a matrix and word sums for the Latinate base <litera> .

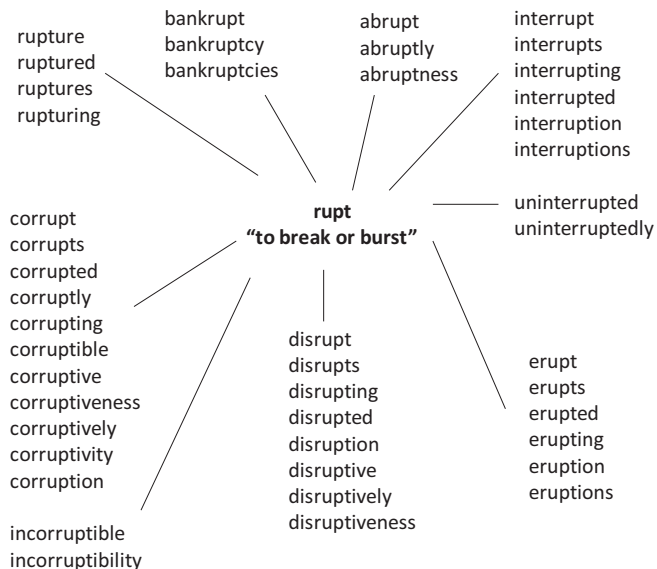


Figure 1. Web on the Latin base element, rupt.

al bi il ob trans	liter "letter"	acy ary	
		al	ly
		ate	ed ing ion s ure
			ive

<liter> + <al>	→	<literal>
<liter> + <al> + <ly>	→	<literally>
<bi> + <liter> + <acy>	→	<biliteracy>
<il> + <liter> + <ate>	→	<illiterate>

Figure 2. Sample word matrix (top) and word sum (bottom) showing the addition of prefixes and suffixes to the Latinate base liter. (Used by kind permission of Gina Cooke, Matrix Study Sheets; www.LinguistEducatorExchange.com)

Matrices show the order and regularity of the English writing system. Base elements are printed in large letters and affixes printed in smaller letters. Matrices are read from left to right. Students make only single, complete words from a matrix. They use only one element from a column at a time.

Word sums are seen as a powerful route to spelling memory (Bowers & Cooke, 2012). Students analyze target words into prefix(es), base(s), and suffix(es).

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Follow-up and Reinforcement

Numerous activities, including apps, can be used for follow-up and reinforcement in classroom, individual, and small group settings. Here are a few possibilities:

Ask students to:

- Discuss word pairs (e.g., compare the behavior of an *extrovert* and an *introvert*; how do *intrastate* and *interstate* highways differ?)
- Match prefixes with their meanings.
- Match suffixes with their parts of speech.
- Match Latin or Greek bases with their meaning or meaning with the Latin and Greek bases.
- Find the morphemes in a list of words; are they bound or free morphemes?
- Look for Old English-, Latin- or Greek-based words in a content area text book.
- Build a web on a target base.
- Develop a matrix for an Old English, Latin or Greek base.
- Identify the language of origin in a word.
- Generate as many words as possible for a target base. Add words by checking Word Searcher, an online resource that matches sequences of letter strings, including morphemes.
- Make word sums from words in a weekly spelling list.
- Sort a list of words into those that share a twin base.
- Find the etymology of an unknown word by going to www.etymonline.com

Instructional Technology and Online Resources for Instruction and Reinforcement

Winters & Cheesman (2013) recommend using instructional technology to both augment teacher-led instruction and to provide opportunities for independent student practice. Not all apps are grounded in what we know about effective reading instruction, so teachers should review apps carefully before recommending them to students. Cheesman (2016, personal correspondence) noted that effective apps a) link the spelling with the meaning of prefixes, suffixes, Latin roots and Greek combining forms; b) use multimorphemic words in context; c) link morphemes to the language of origin; and d) link suffixes to the associated part of speech. She cites the following apps as useful for enhancing morphology:

- Lexia Core5, www.lexialearning.com
- SpellingCity, www.spellingcity.com
- SoundLiteracy, <http://soundliteracy.com>
- Roots to Words, <http://taptolearn.com>
- Vocab Rootology HD

In summary, it is clear that morphology needs to be a significant part of reading and spelling instruction. Why more reading textbooks don't include it, is a mystery to this author. There are too many high school students reading at elementary levels. If only phonics are taught, many struggling readers

may be unable to read beyond a second-grade level. A thorough grounding of the structure of English words and knowledge of the common morphemes are imperative for teachers to teach beyond a primary reading level. We need to introduce morphology early on and throughout the school years in order to improve our students' reading, spelling, and vocabulary knowledge and thus, both reading comprehension and written composition.

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