VOCABULARY
through Morphemes

Second Edition

Suffixes, Prefixes, and Roots for Intermediate and Secondary Grades

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CURRICULUM GOALS

One of the goals of *Vocabulary Through Morphemes* is to foster interest in and engagement with words. Another is to learn the meanings of key *morphemes* (prefixes, roots, suffixes) and to promote fluent reading of morphologically complex words. A third goal is to increase vocabulary knowledge. However, the ultimate goal is for students to confidently infer unknown word meanings during independent reading in any subject area. Students can be taught to make this inference by combining information gleaned from the outside clues (the context that surrounds the word) and the inside clues (the morphemes inside the word). This is called the outside-in strategy (Ebbers and Denton, 2008). Specific objectives include the following:

- Fluently read morphologically complex words, including academic words

- Analyze compound words, describing how they convey meaning

- State the meaning and grammatical function of the more common affixes and roots

- Analyze morphologically complex derivations that involve affixation to a root

- Use word and sentence clues to determine the meaning of unknown words

- Apply a independent word-learning strategy to connected text (outside-in strategy)

- Describe the relationships expressed in analogies

- Describe the denotations and connotations of a set of synonyms

- Create networks of antonyms, synonyms, and morphologically related words

- Develop greater competence with morphologically complex academic words

- Chronicle main events in the history of the English language

- Trace the historical origins of various English words (e.g., Latin/French, German, Greek)

Vocabulary Through Morphemes (VTM) reflects the academic content standards for English/language arts spanning grades 4–12 in many states, including California, Texas, and Florida. VTM targets specific learning expectations pertaining to structural analysis, affixes, roots, analogies, and word relationships. Grade-level expectations pertaining to word origins (including etymologies and the history of the English language), connotations and shades of meaning, and use of context clues are also addressed in this program. VTM embodies academic language and incorporates the scholarly meanings found in the *Academic Word List* (Coxhead, 2000), promoting comprehension of the formal language used in lectures, texts, and assessments. Most of the Greek roots taught in VTM are the basis for scientific terms (*biomass, thermonuclear, hydroscopic*). Although VTM is not strictly a phonics program, students learn to decode longer words in morphemic chunks. Spelling improves, because word formation rules are peppered throughout, such as "drop the final -*e* before adding a suffix that begins with a vowel" including -*y*, -*ive*, -*ity*, -*ate*, and so on. Students practice "morphological math" when they combine multiple affixes with a root, making all the necessary spelling adjustments as they do so and successfully reading long, morphologically complex words. Also, grammar improves as students learn that the derivational suffix determines the part of speech. For example, words ending with the suffix -*ful* tend to be adjectives, as with *joyful* and *plentiful*, but words ending with the suffix -*ion* tend to be nouns, as when we change the verb *educate* to the noun *education*, or we change the verb *divide* to the noun *division*.

It is most effective to teach the four units—introduction, suffixes, prefixes, and roots—in the sequence provided. This is a systematic approach to learning the most common morphemes in the English language, yet it is also a spiraling curriculum, because previously learned morphemes are folded in to new lessons even as the content becomes more complex and cognitively challenging.

Introductory unit: First, set the stage—teach the brief introductory unit on the history of the English language. Then teach suffixes, prefixes, and finally roots.

Suffix unit: Students often know what a word means, basically, but they misuse it in context, perhaps using an adjective as a noun. Derivational suffixes drive syntax, helping us understand the grammatical function of a word. English derivations are *morphosyntactic*—syntax is encoded into the suffixes. For example, most words ending with the derivational suffix *-ic* are adjectives, as in *heroic, fantastic*, and *exotic*, and most words ending with the derivational suffix *-ate* are verbs, as in *educate, exaggerate,* and *hyperventilate*. Why does this matter? It is not uncommon for students to learn the basic meaning of a word—to get the gist—but to misuse it when speaking or writing. This happens because the student does not have a good grasp of derivational morphology—the student has not learned how a derivational suffix directs the part of speech. Changes in syntax occur when the suffix changes. Thus, *create* is a verb, as are many words that end with the suffix *-ate*, but *creative* is an adjective, as are many words that end with the suffix *-ive*, and *creativity* and *action* are abstract nouns, as are most words that end with the suffixes *-ity* and *-ion*. For learners to grasp abstract academic word meanings and become adept at using words correctly when speaking and writing, they must get a sense of the suffix and they must tune their ears to hear "the ring" of sound syntax. Note that this is not about memorizing the meanings of the suffixes—the meanings of most suffixes are cumbersome and opaque—rather, the goal is to improve grammar. If students understand syntax fairly well, yet need to broaden and deepen their vocabulary, move quickly to prefixes.

Prefixes influence word meaning. In many words, the meaning is clearly mapped into the prefix, as in *interior, exterior, posterior, anterior*, and *ulterior*. In many cases, prefixes change the flavor, or connotation, of the word. For example, *deport* is more negative than *support,* and *supermolecule* is more impressive than *molecule*. Furthermore, the prefix is easy to find, because it is always at the beginning of the word—although it becomes tricky when the word has multiple prefixes, as in *insubstantial*. As students learn the prefixes, they will continue to encounter the suffixes they learned in the first section. This provides an opportunity to review suffixes and check for understanding over time. Distributed practice is a key component of this program.

Roots. Finally, students master the most common roots. Greek and Latin roots are ubiquitous to academic textbooks beginning in intermediate grades. Greek roots are essential to words used in the sciences. Most academic words contain a Greek or Latin root, so learning these morphemes should promote academic vocabulary. Previously taught suffixes and prefixes are integrated into the roots section to ensure a more complete understanding of the word. This allows the student to revisit and rehearse previously learned prefixes and suffixes.

Options: Depending on the needs of the students and the time allocated for instruction, these lessons could be truncated and combined. It is not always necessary for every student in every setting to fully explore every table on every instructional page and to complete every practice page. In some settings—for example, after-school and summer school programs—teachers have successfully truncated and combined sections, focusing on the most essential morphological skills, including suffixes and prefixes. For at-risk readers, the Latin and Greek roots are an advanced concept, but understanding the affixes is more immediately essential to literacy.

Pacing and timing: There are 90 lessons, plus several assessments. Plan for about 10–20 minutes a day, depending on the students' needs. With each instructional page, teach the new morpheme, reading aloud with the class, circling roots, discussing meaning. The next day, or for homework, students complete the practice page as modeled by the teacher. The entire program takes one full school year, if the instructional page is completed on one day and the practice page is completed on the next day. If the practice page is completed the same day as the instructional page, the program takes one full semester. Do not teach toward mastery and memorization of each vocabulary word. Rather, provide an understanding of the morphological concept and model the outside-in strategy for integrating context clues and morpheme clues to predict meaning. Then move on to the next lesson. The curriculum is recursive; previously taught concepts will be addressed again as review. On occasion, use flash cards and games (see Optional Games and Activities section, page 20) to review previously learned affixes and roots. Also, apply morphemic analysis to context frequently when reading any text. For summer school, spend about 20–30 minutes a day and combine two affixes or roots in one lesson. If time is very tight, use summer school to teach prefixes and perhaps a few roots.

ANNOTATED SPREAD FROM STUDENT BOOK

A typical **instructional page** takes 10-20 minutes, depending on the group. Use this page to teach the linguistic principles with explicit and deductive methods. Prompt instructional conversations (whole group and partner). The goal of the instructional page is to learn the new morpheme, not to memorize a page of words. For suffixes, the primary goal is to develop syntactic awareness (e.g., words ending with **–ic** are adjectives).

Read the content aloud with the class at least once. If reading is not fluent, use active reading methods, including choral reading in groups and partner reading.

Develop silent and oral reading fluency. Learn to identify morphemes.

The Greek form **path**

'suffering, disease'

Read silently and read aloud. Circle roots and underline affixes in target words.

	TARGET WORD	SENTENCE
1.	pathos	The doctor felt great pathos, but the sick child did not want pity.
2.	pathogen	A deadly pathogen can destroy a liver.
3.	pathogenic	Several diseases are caused by pathogenic bacteria.
4.	pathology	Dr. Petra studies pathology, including the causes of diseases.
5.	pathologist	Suffering from leprosy, we all visited a pathologist.
6.	pathological	A pathological liar has mental illness.
7.	pathetic	The rich man's lonely lifestyle seemed pitiful, sad, and pathetic.
8.	apathetic	He is apathetic about life; we can't interest him in anything.
9.	sympathy	Sara felt sympathy for Jan when Jan's grandmother passed away.
10.	sympathetic	The sympathetic teacher comforted the sad child.
11.	empathy	Joe felt empathy; he felt Mitch's pain as if it were his own.
12.	sociopath	The criminal is a dangerously ill sociopath.

Students circle learned roots and underline learned affixes in every target word.

Teacher models how to pronounce the morpheme /sīk/. Students say it aloud /sīk/. Provide explicit feedback.

The Greek form **psych**

'the mind, mental'

	TARGET WORD	SENTENCE
1.	psychic	A psychic tries to foretell the future.
2.	psyched	The team got psyched up before the big game.
3.	psyche	A psyche may be damaged by extreme fear.
4.	psychology	Psychology is the study of the mind, mental processes, and behavior.
5.	psychologist	The psychologist asked Marcos many questions about his past.
6.	psychological	A positive attitude is psychological, but it affects physical well-being.
7.	psychiatrist	Dr. Soon, a psychiatrist, prescribes medication for depression.
8.	psychopath	The pathetic psychopath was imprisoned for his crimes.
9.	psychotherapy	Psychotherapy is a type of psychological treatment.

Analogies: Discuss the relationships.
- **Microphone** is to **sound** as **microscope** is to **sight**.
- **Pathogen** is to **illness** as **antibodies** are to **health**.
- **Sympathy** is to **kindness** as **ridicule** is to **cruelty**.
- **Psychotherapy** is to **Sigmund Freud** as **electricity** is to **Benjamin Franklin**.

This icon prompts peer conversation. Teacher provides explicit closure.

A typical **practice page** takes 10-20 minutes, depending on the student. Ensure that students understand how to complete each type of task. Clarify the directions and model at least one example. In some cases, allow students to work with a partner. Provide explicit and timely feedback. Use these pages as a formative measure, an assessment for learning. Adjust the pace, complexity, and intensity of subsequent lessons based on this data.

Part A: *Pronouncing Greek words. When an English word flows from Greek, the final* ***e*** *is often pronounced, as in* **psychē**. *This is not a rule; it is a tendency.*

Read the words. Circle the words that end with a long **ē** sound, and mark the **e** with a line. If the word ends with a silent **e**, draw a slash through the final **e**. First, study the examples.

cape   (psychē)   apostrophe   acne

Aphrodite   catastrophe   congregate   Penelope

sesame   hyperbole   propose   epitome

Part B: *Morphotextual Mastery: Read the story. With a partner, define the bold-type words. Examine context and morphemes for clues. Then, read the story aloud.*

Greek Mythology—Aphrodite, Psyche, and Eros

The ancient Greeks created stories about gods and mortals to explain human **psychology**. In Greek mythology, Aphrodite was the goddess of love. She was exceedingly beautiful and she knew it. Aphrodite was vain and prideful—**pathetically** absorbed in her own reflection.

One day, a lovely babe named Psyche was born. Psyche was the daughter of a mortal king. As the years passed, Psyche developed into an astoundingly beautiful princess. Aphrodite became increasingly jealous of Psyche's beauty. In her **pathological** jealousy, she decided to punish the innocent princess.

Aphrodite's son, Eros, was the god of love. When he shot his invisible arrows at humans, they instantly fell in love with the first person they saw. Aphrodite told her son to make Psyche fall for an old man with rotting teeth. Eros argued with his **psychotic** mother, urging her to see a **psychotherapist**, but she would not. Finally, he agreed to do as she asked.

Standing invisible, an arrow in his hand, Eros watched Psyche. He felt **compassion** because he knew she would be miserable with the old man. Sadly he rubbed his chin, accidentally scratching himself with his own arrow. In that instant, Eros fell **passionately** and wholeheartedly in love with Psyche.

What does Aphrodite do? How does Eros fight for Psyche? Find out for yourself. Different variations of this myth are stored on the World Wide Web.

BONUS ACTIVITY   **Multisensory, see page 227**

Morphotextual Mastery: Students read the passage independently and discuss it with a peer. Finally, they read it aloud with a peer to promote fluent reading. This task measures the likelihood that the student will apply morphemic analysis to context.

Bonus Activity: This page is located at the end of the unit. This activity may be done any time after the student has learned the roots *psych* and *path*. Bonus pages provide for distributed, collaborative, multisensory practice.
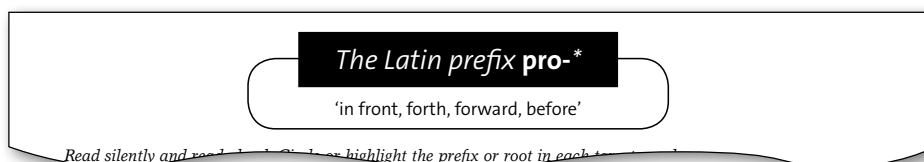
The Objectives and Overarching Goals of Instruction

The primary reason for using *Vocabulary Through Morphemes* is not to memorize vocabulary words, even though the student's mental lexicon will expand. The ultimate goal of this curriculum is to teach students to be independent word learners through the strategic application of morphemic analysis to context. This ability—to infer word meaning by digging into external context clues and internal morpheme clues—will enable students to more confidently and capably approach academic texts, because academic texts contain a great many morphologically complex words (Baumann, Edwards, Font et al., 2002; Baumann, Edwards, Boland, et al., 2003; Edwards, Font, Baumann et al., 2004; Baumann, Ware, and Edwards, 2007; Butler et al., 2004; Nagy and Anderson, 1984).

How to Use the Instructional Pages

Use the instructional pages in *Vocabulary Through Morphemes* as a vehicle for explicit instruction and active learning. Encourage oral language, peer discussion, and silent reflection. Teach pronunciation and/or articulation of morphemes and complex words. Read aloud and read silently. Teach students to annotate each page by circling roots or base words, underlining affixes, highlighting interesting words, writing a question mark beside unknown words, and so on. Maintain a brisk pace, completing each instructional page in about 15 minutes, depending on the needs of the group.

Page title: Read the title of the page together. Be sure students can identify the language origin, the morpheme (affix or root), and the meaning. Example:

> ### The Latin prefix **pro-***
> 'in front, forth, forward, before'
>
> *Read silently and read aloud. Circle or highlight the prefix or root in each to*

- *Language origin:* Latin (remind students that Latin was used by the Romans 2000 years ago; it's no longer a spoken language, but is still used in legal documents and during religious ceremonies, and so on, and it's heard in some common expressions like "pros and cons" or "status quo")
- *Morpheme:* the prefix *pro-* (have students say and spell the morpheme)
- *Meaning: pro-* denotes 'in front, forth, forward, before' (students say the meaning)

Numbered rows of text: Give the class a minute or two to silently read the first section of numbered rows. Discuss the linguistic pattern(s). Then, have students read the text aloud, reading across each row. Use an echo-reading format in which the teacher reads a bit and students echo, or divide the class into speaking groups and have one group read each column. This is important; do not skip this step. The numbered sentences must be read aloud so students have the opportunity to say and hear the "resounding ring" of English syntax and usage.

In each row, make the relationship between columns explicit. For example, say, "See how the verb *calculate* in this column became the noun *calculation* in this column." Say, "See how the final vowel is replaced by the first vowel in the suffix. This column displays the word *create*, a word that ends in the vowel **e**. The next column displays *creative*—the final **e** is dropped when we add the suffix **-ive**."

Speaking aloud and annotating text: For each row on the instructional pages, students read silently and then they read aloud. Assign different groups of students to read the different columns in the table, reading across each row. Alternatively, read aloud in partners, one column per partner, as illustrated below. In the target words, teach students how to circle or highlight morphemes they have learned.

Encourage interest in complex words with multiple morphemes. Playfully pronounce them, treating them like tongue twisters, perhaps. Help students learn to put the accent on the correct syllable.

> Partner B or Group B reads column 2 aloud.

> Everyone reads column 3 together, aloud.

> Read across rows. Partner A or Group A reads column 1 aloud.

The Latin suffix -ary

Suffixes Influence Syntax

Read silently and read aloud. Circle or highlight the suffix or base in each target word.

✓ The suffix **-ary** denotes 'a place for things or a collection of things' (noun).

	Noun	Place or collection	Phrase
Example:	library	a place for books	numerous books at the library
1.	vocabulary	a collection of words used	speaks with an interesting vocabulary
2.	dictionary	a collection of definitions	multiple words in the dictionary
3.	glossary	a collection of terms in a text	a glossary at the back of the book
4.	summary	a collection of main ideas	a summary, summing up of the ideas
5.	granary	a place for grain, wheat	farmers filling the granary
6.	statuary	a collection of statues	a group of statues in a statuary
7.	topiary	a collection of sculpted shrubs	animal-shaped shrubs at the topiary
8.	apiary	a place for bees	an apiary filled with buzzing bees
9.	itinerary	a collection of travel plans	an exciting travel itinerary
10.	obituary	a collection of death reports	reading the obituary column
11.	mortuary	a place for preparing the dead	took flowers to the mortuary
12.	seminary	a place for studying scriptures	studies at the seminary
13.	sanctuary	a place of safety and refuge	had to find a peaceful sanctuary
14.	infirmary	a place for healing the sick	many patients in the infirmary
15.	aviary	a place for birds	visit birds in the aviary

✓ *Cemetery* ends with **-ery**, but the function and meaning is the same as **-ary** in this case.

★ **Read and discuss:** A ***bestiary*** is a book or manuscript—a collection of stories about real and imaginary beasts. Several bestiaries were written in Old English and in Latin. In a bestiary, one can expect to find pictures of the mythical unicorn and the legendary griffin. What other animals might one expect to find in a bestiary? Which authors might refer to a bestiary to construct their plot?

Griffin
(eagle and lion)

✓ **Additional meaning:** The suffix **-ary** also denotes 'one who, a person who.'

	Noun	Sentence
1.	missionary	Mother Teresa served for decades as a missionary in Calcutta.
2.	dignitary	England's prime minister is an important dignitary.
3.	contemporary	Francis chatted with a contemporary from New York.
4.	secretary	Typing furiously, the secretary finished the report by noon.
5.	emissary	The king sent his emissary to speak to the citizens.
6.	adversary	Queen Beth dealt her opponent a fatal blow.
7.	beneficiary	Who is the beneficiary? Who will inherit Uncle Sam's fortune?

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Vocabulary Through Morphemes / Suffixes

Instant Discussions—Talking Topics: Instructional pages display the ✴ to prompt brief discussions. Topics vary. As students converse with each other, the teacher walks about listening. After a few minutes, the teacher opens the discussion to the whole group, providing explicit feedback. Several different examples are shown here, with teaching tips for each type:

Etymology: *The Study of Word Origins*

One of the strengths of the English language is its willingness to adopt words from foreign fields. Adopted words are called loanwords. India lent us the word *shampoo;* from the Spanish we got *amigo*, from China *ketchup,* from Arabia *sofa,* from Denmark *cookie* (originally meaning 'little cake'), and from West Africa *zombie*. From Irish/Gaelic flowed *whiskey, slogan*, and *truant. Potato* is from Haiti. Do you know any other loanwords?

TEACHING TIP: As a way to kindle interest and engagement with words, use word histories (etymologies) to illustrate that English words flow from a variety of different languages and that word meanings are prone to change over time. Consider pinning word cards on a map of the world and/or have students write words on the map on page 5 in their book.

Discuss the denotations and connotations:
- How are *unfed* and *underfed* different in meaning? How are they the same?
- How are *unpaid* and *underpaid* different in meaning? How are they the same?
- Compare *uneducated* and *undereducated*. Contrast them, too.

TEACHING TIP: Use this type of talking point to illustrate that morphemes make a big difference to meaning. For example, if a person is *unfed*, that person has had no food, but if a person is *underfed*, that person has had some food, but not enough. Remind students to be precise with vocabulary when speaking and writing.

Synonyms: Discuss the meaning, nuance, or connotations.

childlike	childish	child
innocent, young, naïve, trusting, open, simple-minded	selfish, immature, spoiled, bratty, infantile, self-centered	baby, infant, toddler, youngster, offspring, son, daughter, kid, youth

TEACHING TIP: Use this type of talking point (1) to show how suffixes change words, from *child*, to *childlike*, to *childish*; (2) to illustrate the importance of word choice and help students become more discerning when listening or reading and more particular when speaking and writing; and (3) to make students aware of nuance, connotations, and shades of meanings. Connotations are the feelings that a word triggers, whether positive, neutral or negative. Ask partners to rank the synonymous words as positive, negative, or neutral. There is no correct answer, and responses will vary, because connotations are unique to each person based on his or her experiences with that word (authentic experiences or secondhand experiences gained through books and movies). Nevertheless, there will be some agreement for some words. For example, the words *innocent*, *open*, and *trusting* are fairly positive; *young* is neutral; but *naïve* and *simple-minded* may trigger uncomfortable feelings and negative responses—these words might be used pejoratively to insult, offend, or label people. Remind students to be aware of connotations and to be thoughtful and considerate with vocabulary when speaking and writing.

Discuss the connotations of the boldface words.

If Roman soldiers were disobedient, their ***centurion*** (who commanded 100 men) would decimate the troop as punishment, killing (***decimating***) every tenth soldier as they stood in a line. ***Mutiny*** (disobedience) resulted in ***capital punishment***. The word ***decimation*** has fearful connotations. When should it be used?

TEACHING TIP: Use this type of talking point to teach word origins, the numeric prefix *deci-* ('ten'), and the difference between denotations (the definition of a word) and connotations (the feelings, images, and associations a word triggers). Remind students to be aware of connotations and to be thoughtful and considerate with vocabulary when speaking and writing.

Morphotextual Mastery. *Read. Discuss the meaning of the boldface words.*

> In Greek mythology, Cronos was time itself, for he was the son of the very first god. However, time taught Cronos nothing; he was wickedly ambitious. **Eventually**, the **psycho** killed his own father. In death, his father prophesied, "In the **chronicles** of time it will come to pass that your own children will rise up and **dethrone** you, just as you have dethroned me, for crime **begets** crime!" . . . [The passage continues.]

TEACHING TIP: Brief passages allow students to apply newly learned morphemes in context (in this case, the prefixes *de-* and *be-* and the roots *psych* and *chron*). The goal is to develop an independent word learning strategy: To infer the meaning of unknown words, we look outside the word at the context clues and inside the word at the morphemes. We merge the clues and use them to validate our hypothesis. This is called the outside-in strategy. Teachers should use explicit modeling, including a think-aloud method, to teach students how to strategically glean word information from context and morphemes. With a think-aloud process, circle context clues and highlight morphemes that help a reader infer word meaning. For more details on this strategy, see student page 13.

Analogies: *Discuss how the words are related.*

- ***Chilly*** is to ***sweater*** as ***wintry*** is to ***overcoat***.
- ***Scrooge*** is to ***tightfistedness*** as ***Snow White*** is to ***kindheartedness***.
- ***Forgiveness*** is to ***peace*** as ***vengeance*** is to ***war***.

TEACHING TIP: Use this type of talking point to help students think analytically and to focus on grammatical word class. An analogy displays a relationship between ideas, but the relationship is not transparent or immediately obvious. The relationship between the first two words must be the same as the relationship between the second two words, creating a balanced equation.

In the example, the first analogy relates an adjective to a noun: *chilly* (adjective) weather calls for a *sweater* (noun) just as *wintry* (adjective) weather calls for an *overcoat* (noun). Tell students to highlight *chilly* and *wintry* in one color (a color used for adjectives). Highlight *sweater* and *overcoat* in another color (a color used for nouns). Under *chilly* write "cold," and under *wintry* write "even colder." Through discussion, lead the students to see that you wear a sweater when it is *chilly* and you wear an overcoat when it is *wintry*. By degree, *wintry* is colder than *chilly*.

(continued)

In the second analogy, we see a relationship that involves personality traits: the noun (*Scrooge*) is known for his noun (*tightfistedness*) <u>just as</u> the noun (*Snow White*) is known for her noun (*kindheartedness*). Have students color-code the words by grammatical word class as described in the previous paragraph.

In the last analogy, we see a relationship that involves causation. *Forgiveness* (noun) causes *peace* (noun) just as *vengeance* (noun) causes *war* (noun). Have students color-code the words to make the relationships obvious.

Academic Vocabulary

What is an academic word? Many of the exemplar words in VTM are academic words—words that replace primary-grade synonyms and that appear across domains of study. For example, a primary word is *job* and its academic counterpart is *profession*. Students might encounter the word *profession* in math, science, social studies, literature, and so on. Cross-curricular exposure makes the word more worth teaching, as does morphological relatedness.

Application: From any given instructional page, the teacher might select an academic word and teach it. Briefly elaborate on the meaning and use of the academic word. Have students generate statements that include the academic word.