



W.V.C.ED
www.wvced.com

W.V.C.ED
P.O. Box 8418
Greenville, SC 29604
wvanceleave@wvced.com
wvced.com • facebook: W.V.C.ED

Word Smarts

Using Morphology to Develop Vocabulary & Word Attack Skills

William Van Cleave • Educational Consultant • W.V.C.ED
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I. Introduction

- a. word knowledge & active vs. passive vocabulary
- b. motivation for teaching morphology
- c. terminology
- d. difference between phonological & morphological study (“cat”)
- e. Anglo-Saxon, Latin, Greek: sorting by origin

II. First Level Morphology

- a. Anglo-Saxon base words & affixes
- b. basic parts of speech for suffixing

III. Second Level Morphology - Latinate Words

- a. Latin roots & affixes
- b. elements of a lesson
- c. suffixes vs. final stable syllables
- d. Latin template & connectives

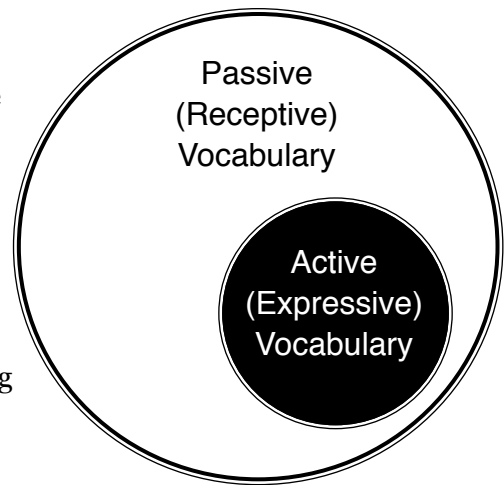
IV. More Advanced Elements (as time permits)

- a. Greek template
- b. Greek combining forms
- c. -ti-, -ci-, & -tu-
- d. assimilated/chameleon prefixes

Different Kinds of Vocabulary & Levels of Word Knowledge

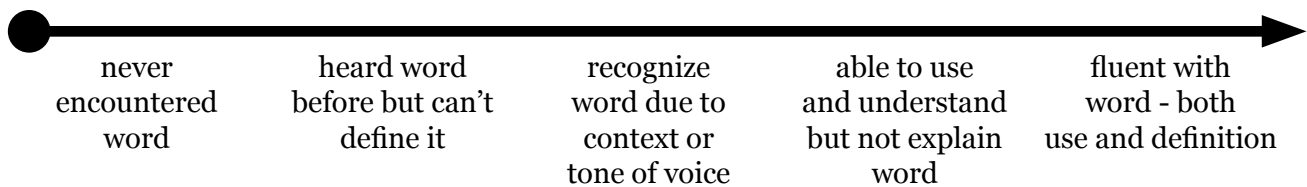
Passive & Active Vocabulary:

It is important to understand the difference between **passive** (receptive) and **active** (expressive) vocabulary. Usually, a person's active vocabulary is much smaller than her passive vocabulary, and most if not all of that person's active vocabulary is included in her passive vocabulary. The words she uses in conversation and writing are typically a subset of those she understands (when she either listens or reads). Most readers encounter many words in text that are not commonly spoken. This knowledge is essential when selecting vocabulary words for students and also when deciding how to help those students learn the selected words.



Word Knowledge:

A person's understanding of individual words can also be seen on a continuum. Consider the following:



Vocabulary Categories:

Notes:

Reading vocabulary:

words you recognize when you read
(typically the largest vocabulary)

Listening vocabulary:

words you recognize when listening to
speech
(increased by context and tone of voice)

Speaking vocabulary:

words you use in speech
(typically a subset of listening vocabulary)

Writing vocabulary:

words you use when you write
(many written words do not usually occur
in speech)

Terminology for Advanced Word Structure

<u>affix</u>	morpheme that is attached to the root (usually either a prefix or a suffix)
<u>assimilated prefix</u>	prefix (often nicknamed chameleon) where, for ease of pronunciation, the final letter changes according to the initial letter of the base to which it is attached (e.g., <u>ad</u> changes to <u>ar</u> before <u>range</u> to make <u>arrange</u> ; <u>in</u> changes to <u>ir</u> before <u>regular</u> to make <u>irregular</u>)
<u>base word</u>	(also called root word) free morpheme; word with no prefixes and suffixes (e.g., <u>-port-</u> , <u>-kind-</u>)
<u>combining form</u>	(also called element) often used to describe Greek-based morphemes (rather than specifying whether they are roots or affixes) (e.g., <u>-phon-</u> , <u>-crac-</u> / <u>-crat-</u> , <u>-bio-</u>)
<u>connective</u>	letter(s) in English words used to combine two morphemes; connectives function as “glue” and are not morphemes themselves
<i>Latin-based</i>	connect a root to a suffix or two suffixes to each other (e.g., <u>media</u> , <u>grad</u> <u>ient</u> , <u>reg</u> <u>ular</u>). three common Latin connectives: <u>-i-</u> , <u>-u-</u> , and <u>-ul-</u> .
<i>Greek-based</i>	connective <u>-o-</u> often joins two combining forms or elements (e.g., <u>photograph</u> , <u>democ</u> <u>rac</u> <u>ry</u>)
<u>final stable syllable</u>	cluster of letters at the end of a word whose pronunciation remains consistent regardless of the word in which it appears (e.g., <u>-tion</u> , <u>-ble</u> , <u>-ture</u>); <i>not</i> synonymous with the term suffix
<u>morpheme</u>	smallest component of a word that has meaning
<i>bound morpheme</i>	morpheme that only appears as part of a larger word (e.g., <u>-struct-</u>)
<i>free morpheme</i>	morpheme that can stand alone; often called base word or root word (e.g., <u>-port-</u> , <u>-kind-</u>)
<u>phoneme</u>	smallest unit of sound (e.g., /b/, /ch/)
<u>prefix</u>	affix placed before the root of a word (e.g., <u>pre-</u> , <u>ab-</u>)
<u>root</u>	core meaning in a word; some are bound morphemes (e.g., <u>-struct-</u>), and some are free morphemes (e.g., <u>-port-</u>); all words have at least 1 root
<u>suffix</u>	affix placed after the root of a word; typically determines part of speech
<i>vowel suffix</i>	suffix that begins with a vowel (e.g., <u>-ed</u> , <u>-ing</u> , <u>-ous</u> , <u>-ive</u> , <u>-ate</u> , <u>-us</u>)
<i>consonant suffix</i>	suffix that begins with a consonant (e.g., <u>-ment</u> , <u>-ly</u> , <u>-ful</u> , <u>-tude</u> , <u>-less</u>)

note: In linguistics, the term “root” refers to the word (in another language) from which our current stem or base is derived. Typically, however, in word study with students, the term “root” is used interchangeably with “stem” and “base.”

Selecting Word Origins

Label each word as AS = Anglo-Saxon; G = Greek; or L = Latin

bang	surreptitious	regenerate	hundred
mutual	what	phase	evacuate
chromosome	telepathy	those	phonics
forty	from	abbreviate	incredulous
declension	manuscript	phonograph	moat
pyre	pathology	epidemic	recuperate
expenditure	does	miss	
laugh	white	abnormal	<i>bonus words:</i>
orchid	biology	contraception	biodegradable
distribute	consequence	elbow	graphomotor
psychology	watch	philanthropist	subatomic

Identifying Morphemes

Underline the root. Box the affixes (prefixes and suffixes).

cook	preheat	unworthy
cooking	overheated	worthlessness
cookery	like	worthiest
overcooked	likely	understandable
heat	liking	underactive
heating	likelihood	hopefully
heater	worth	unwholesome

Suffixes Both Determine & Change Part of Speech

noun	verb	adjective	adverb
joy	rejoice(s,ing,ed) enjoy(s,ing,ed)	joyous joyful	joyfully
peace		peaceful	peacefully
hunger	hunger(s) hungered hungering	hungry	hungrily
expanse expansion expansiveness	expand(s) expanding expanded	expansive expandable	expansively
darkness dark	darken(s) darkened darkening	dark darker darkest	darkly
act action actor	act(s) acted acting	active	actively
loudness	-	loud louder loudest	loudly
dependence	depend(s) depended depending	dependent dependable	dependently
sleep sleeper sleepiness	sleep(s)	sleepy	sleepily

Note: -ed and -ing verbs can also serve as adjectives (called participles).

Morpheme Instruction at the Elementary Level: A Week's Lesson

1. Introduce.
 - a. Write the morpheme for students to see. Write affixes with dashes to show they attach to bases. (e.g., -s, un-)
 - b. Have students pronounce, trace, and write the morpheme.
 - c. If the morpheme is bound, write it in a keyword to show how it is used.
 - d. Have students pronounce, trace, and write the keyword.
 - e. Explain and write the meaning of the morpheme. (Use either direct instruction or, wherever possible, help students use discovery learning to uncover its meaning.)
 - f. Provide or ask students to create a personal card with the morpheme on the front and its keyword and meaning on the back.
 - g. Using a Post-it, add the morpheme to the morpheme wall.
2. Generate with the students a list of words that contain the new morpheme.
3. Ask questions to help students generate other known words that contain the morpheme. (e.g., for un-: "What would a word be for 'not kind'?" (unkind)
(e.g., for -port-: "What would a word be for 'to carry back'?" (report))
4. Have students build a matrix for the morpheme.
5. Have students locate and underline the morpheme in a list of words containing it. Alternatively, have the students complete word sorts.
6. Have students participate in morphemic awareness activities (oral manipulation of morphemes in words). Use felts or chips to represent the morphemes you move just as you would for phonemic awareness activities. (Donah's *Improving Morphemic Awareness* scripts this task for a number of morphemes but contains difficult morphemes for older students. A lower level book is in the works.)

Instructor: Say teach.

Student: teach

Instructor: Add /ing/ to teach.

Student: teaching

Instructor: Change /ing/ in teaching to /able/.

Student: teachable

Instructor: Add the prefix un- to teachable.

Student: unteachable

7. Have students read phrases/sentences that include examples of words containing element.
 8. Provide word, phrase, and sentence dictation that includes examples of words containing element.
 9. Have students write sentences with words containing element.
 10. Have students locate words that contain familiar prefixes and roots in paragraphs or longer pieces.
- * *Games and other activities can be added or even used instead of some of the activities above. See separate page of supplemental activities.*

Morpheme Instruction at the Middle & High School Level: A Week's Lesson

1. Introduce.
 - a. Write the morpheme for students to see. Include dashes that demonstrate where other morphemes can be added. (e.g., pre-, contra-, -ment, -age, -port-, -struct-)
 - b. Have students pronounce, trace, and write the morpheme.
 - c. Write the morpheme in a keyword to show how it is used.
 - d. Explain and write the meaning of the morpheme. (Use either direct instruction or, wherever possible, help students use discovery learning to uncover its meaning.)
 - e. Provide or ask students to create a personal card with the morpheme on the front and its keyword and meaning on the back.
2. Generate with the students a list of words that contain the new morpheme.
3. Provide definitions, and have students retrieve from memory other, recognizable but less familiar, words that contain the studied element.
4. Have students build a matrix for the morpheme.
5. Have students locate and underline the morpheme in a list of words containing it. Alternatively, have the students complete word sorts.
6. Have students participate in morphemic awareness activities (oral manipulation of morphemes in words). Use felts or chips to represent the morphemes you move just as you would for phonemic awareness activities. (See Donah's text for scripted activities.)

Instructor: Say constructed.

Student: constructed

Instructor: Change the /ed/ in constructed to /ing/.

Student: constructing

Instructor: Add re to the beginning of constructing.

Student: reconstructing

Instructor:

Drop the first prefix and

the /ing/ in reconstructing.

Student: construct

Instructor: Add /iv/ to the end of construct.

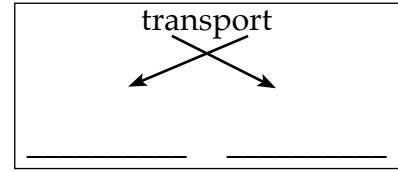
Student: constructive.

7. Have students read phrases/sentences that include examples of words containing element.
8. Provide word, phrase, and sentence dictation that includes examples of words containing element.
9. Have students write sentences with words containing element.
10. Have students locate words that contain familiar prefixes and roots in paragraphs or longer pieces.

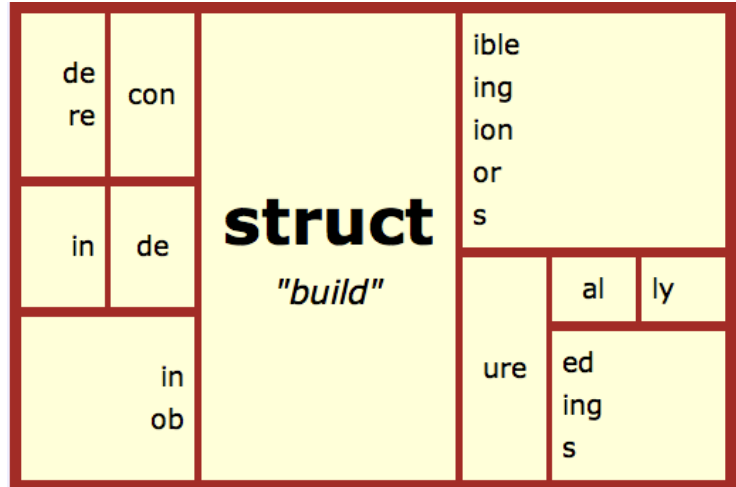
* *Games and other activities can be added or even used instead of some of the activities above. See separate page of supplemental activities.*

Supplemental Activities

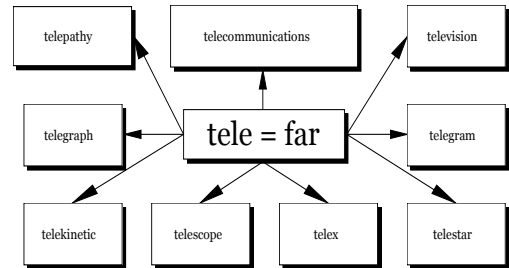
1. Have students write literal definition of given word using knowledge of element meaning, or have them provide word to match provided literal definition (criss-cross sheets). An example is at right.



2. Have students build matrix from list of words containing studied element, or have students use teacher-made matrix to generate list of words containing studied element. An example of a matrix for the base **-struct-** is at right. (Bowers' *Teaching How the Written Word Works* explores this practice and is available at wvced.com.)



3. Have students write a prefix or root in the center, and map or web words that come from that word part. More advanced students can even link those webbed words to other prefixes and roots. An example of a simple word web for the Greek element **-tele-** is at bottom right.



4. Have students locate words that contain familiar prefixes and roots in magazine or newspaper articles. This practice teaches students to recognize learned word parts and proves their frequency and therefore the usefulness of studying them.

5. Provide students with a “word of the day,” which they must analyze at the phonological (phonemes, syllables, blends/digraphs, etc.) and morphological (language of origin, prefix/root/suffix, advanced structures, meaning if possible) levels. This provides both review and a fascinating study!

6. Here’s an activity to generate words from a single root.

Instructions:

- Add prefixes and/or suffixes to the root to create a different word for each blank. Do not use the suffixes **-s**, **-ed**, and **-ing**.
- Many words can be created using two or more suffixes. Occasionally, two prefixes can be used in a single word as well.
- An **-s** can be added to many of the verbs and nouns you will create. **-ed** and **-ing** can be added to many of the verbs you will create to change tense.

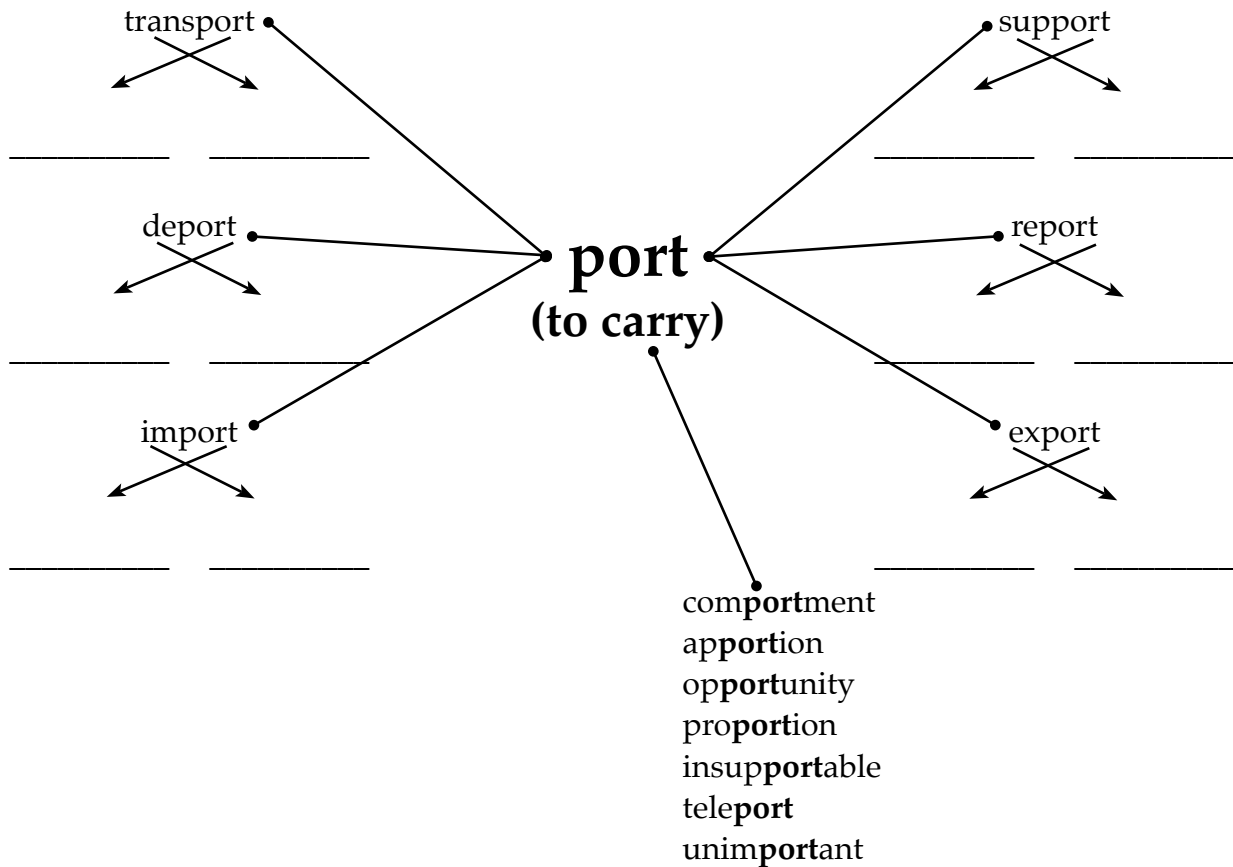
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|-----------------|----------------|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|
| ab- | -abl(e) | | | | | | | | | | | | | | | | | | | |
| ad- | -al | | | | | | | | | | | | | | | | | | | |
| con- | -at(e) | | | | | | | | | | | | | | | | | | | |
| de- | -(i)fy | | | | | | | | | | | | | | | | | | | |
| e- | -il(e) | | | | | | | | | | | | | | | | | | | |
| in- | -ion | | | | | | | | | | | | | | | | | | | |
| inter- | -ist | | | | | | | | | | | | | | | | | | | |
| non- | -ity | | | | | | | | | | | | | | | | | | | |
| ob- | -iv(e) | | | | | | | | | | | | | | | | | | | |
| pro- | -ly | | | | | | | | | | | | | | | | | | | |
| re- | -ness | | | | | | | | | | | | | | | | | | | |
| sub | -or | | | | | | | | | | | | | | | | | | | |
| tra(ns)- | -or(y) | | | | | | | | | | | | | | | | | | | |
| un- | -ur(e) | | | | | | | | | | | | | | | | | | | |

Supplemental Activities (continued)

7. Suffixes often determine part of speech. Examine these words to see how their parts of speech change as different suffixes are added:

prefix	prefix	root	connective	suffix	connective	suffix	suffix
inter	de	part		ment		al	ly
dis	pro	port		ion		ate	ly
	ad	vent		ur(e)		ous	
		nat		ur(e)		al	ly
	re	med	i	at(e)		ion	
	ir	reg	ul	ar		ly	

8. A variety of word webs are useful for advanced word structure study. Examine this web for the Latin root port, meaning “to carry.”



A Note on Procedure for Word Origins

A significant conceptual difference exists between basic phonological decoding (division by sound) and morphological work (division by meaning).

With morphology we no longer examine words based on straightforward syllabication; rather, we examine them based on parts for meaning. Examples are above at right. Morphological study leads to an understanding of more challenging spellings and an enhanced vocabulary.

phonological division	morphological division
e la tion	e lat ion
in som ni a	in somn i a
con tra dic tion	contra dict ion

Recall & Recognition Drills (taken from Shirley A. Kokesh)

After a concept has been taught, it must be drilled if it is to be remembered. Drills are on two levels:

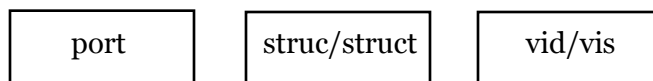
1. Recognition: Instructor provides a set of potential answers and one question.
Student must choose the correct answer from the given set.
2. Recall: Instructor provides one question.
Student must provide the answer from memory.

A great deal of student failure occurs because teachers tend to go from teaching directly to the higher level drill of recall...or testing! While a small percentage of students can function well in such a system, it places most in a position of threat, uncertainty, and insecurity. If students fail, many times the instructor repeats the procedure instead of adding necessary lower level drills of recognition.

For example: After explaining the meanings of three to six morphemes (teaching), if you then say, "Now let's go through these morphemes again, only this time you tell me the definitions," you are testing (recall) not practicing (recognition).

Instead, after teaching the meanings of several new roots or prefixes, insert the following recognition drill:

1. Put three of the word part cards in front of the student:



2. Define one of these roots: "to build"
3. The student "recognizes" the root he thinks is right by tapping or removing it, saying, "struc/struct."
4. The teacher places a new card on top of, or in place of, struc/struct and gives the second definition of the drill.
5. If the student chooses the wrong answer, say, "Try again!" Don't display a new card. Rather, define the word that was mistaken so that the student can get immediate feedback to correct his error.
6. When all cards have been drilled, then it is appropriate to go to the testing level (recall). Gather cards in a deck. Flash and test: "Give me the definitions for each card you see."

A Suggested Sequence for Advanced Language Study: First Level Morphology

(Numbers in parentheses cross reference this sequence with my text,
Everything You Want To Know & Exactly Where To Find It.)

Below is a sequence to be used as a guideline for elementary students and those who have word attack skills at the elementary level:

1. Elementary students (and those with fledgling word attack skills) should learn what base words, prefixes, and suffixes are and how they influence a word's meaning. Stick with roots that can stand by themselves as words (free morphemes). (80-89)

Focus your study on several key areas:

- understanding basewords, prefixes, and suffixes
- identifying basewords in longer words (e.g., like in unlikely, chair in chairs)
- understanding how prefixes change meaning (e.g., misuse means to use *wrongly*)
- understanding how suffixes change meaning (e.g., cats is more than one cat)

2. Begin a pack of basic prefixes (front is prefix followed by a dash, back is key word above meaning). Some instructors use green (for "go") for prefixes. Students should look at the prefix ("un-" for example) and say "un-, unhappy, not," in that order. (Anglo-Saxon prefixes to start 85)
3. Then, build a pack of basic suffixes (front is suffix preceded by dash, back is key word above part of speech). Where useful, include meaning. Often, meanings are abstract and obscure, and studying part of speech is more fruitful. Students should look at the suffix ("-ly" for example) and say "ly, likely, usually an adverb" in that order. (89)
4. Continue to add basic prefixes and suffixes to the students' learned stacks of cards as you introduce other elements of study. Once you have exhausted those that come from Anglo-Saxon, move into the more basic Latin affixes.
5. Teach (or review) noun, verb, adjective, and adverb. Without this knowledge students will not be able to apply their knowledge of suffixes.

Some common suffixes by part of speech:

- | | |
|------------|----------------------------------------------------------------------|
| noun: | -ion, -acy, -ance, -ence, -hood, -or, -ism, -ist, -ment, -ness, -ity |
| adjective: | -al, -ful, -ic, -ish, -like, -ous, -able, -ible |
| adverb: | -ly |
| verb: | -fy, -ate (pronounced /āte/), -ise, -ize, -en |

6. Teach the way suffixes can change bases; include the terms consonant suffix and vowel suffix.

- silent-e: drop the e before a vowel suffix (95)

e.g., hope + ing = hoping *but* hope + less = hopeless

- cvc doubling: 1 syl. word ending in cons.-vowel-cons., double before a vowel suffix (97)

e.g., tap + ing = tapping *but* ship + ment = shipment
send + ing = sending
cook + ed = cooked

- y: never drop the y. keep it or change it. vowel-y, keep the y (99)

cons.-y, change the y to i unless the suffix begins with i.

e.g., cry + ed = cried *but* stay + ed = stayed
cry + ing = crying

7. Often in elementary school, students will have learned some final stable syllables. If these stable syllables are introduced at an earlier stage, it is only for decoding and spelling.

Useful stable syllables to study at first: -tion (155), -ture (161), -age (147),
-ous (151), -sion (155), -ate (149), -ive (173)

Put these on cards, complete with hyphen. On the front should be the final stable syllable. On the back should be the pronunciation and a key word.

8. (for students with at least 4th grade word attack) Teach the two sounds of c and g. A number of upper elementary and middle school words contain soft c and g, and a number of bound roots at the next level of morphology contain soft c and g as well.

- two sounds of c and g (c and g are soft before e, i, and y) (37)

e.g., cent, cider, cyst, gentle, ginger, gym (words)

e.g., -cid-, -cess-, -gen-, -cept-, -ced-, -cycl- (bound roots)

9. (for students with at least 4th grade word attack) Teach the Greek Code for reading/decoding. Have your students read words that contain elements of the Greek code on cards. Where appropriate, such words can also be dictated for spelling. Students should learn that words containing these elements usually come from the Greek.

- y acts as i; ch says /k/; ph says /f/ (131)

e.g., cyclone, python, echo, chronic, phylum, elephant

A Suggested Sequence for Advanced Language Study: Second Level Morphology

(Numbers in parentheses cross reference this sequence with my text,
Everything You Want To Know & Exactly Where To Find It.)

Though advanced language study is flexible, it is useful to have in mind a sequence to guide your teaching. This sequence depends on the level of the student, the academic courses that student is taking, or a combination of both. Below is a sequence to be used as a guideline for students who have achieved at least fourth grade word attack skills. *Cover concepts on First Level Morphology sequence before beginning with these more advanced elements:*

1. Begin a pack of four or five basic prefixes (front is prefix followed by a dash, back is key word above meaning). Some instructors use green (for “go”) for prefixes. While assimilated (chameleon) prefixes are some of the most common, if you use them at this stage, stick to their base forms and avoid their assimilations (e.g., study in but not im, il, or ir). Students should look at the prefix (“pre-” for example) and say “pre, preview, before,” in that order. (regular prefixes - 112-4; assimilated prefixes - 115-23)

8 good prefixes to study at first: pre-, in-, con-, re-, inter-, trans-, ex-, dis-

2. Then, build a pack of four or five roots (front is root surrounded by dashes, back is key word above meaning). Students should look at the root (“-rupt-” for example) and say “rupt, interrupt, to break,” in that order. (124-7)

6 good roots to study at first: -port-, -rupt-, -dic-/-dict-, -ject-, -mit-/-mis-,
-spec-/-spect-/-spic-

3. From there, build separate packs of prefixes and roots. Stick to one language of origin for a time before introducing elements of another language.

4. If you have already introduced the stable syllables mentioned in the First Level Morphology sequence for decoding, return to them and layer in part of speech and other useful information for meaning and vocabulary development. Continue to build your pack of stable syllables and suffixes. Have your students practice reading and spelling words containing these elements. (Note: Make sure that students have a basic understanding of the key parts of speech.) Here are a few examples of useful stable syllables; more can be found in the text:

- a. useful stable syllables to study at first:

-ment (noun):	argument, investment	(146)
-ist (people noun):	florist, dentist	(147)
-or (people noun):	instructor, tutor	(147)
-ture (noun):	nature, adventure	(161)
-ize (verb):	utilize, systematize	(171)
-ive (adjective):	talkative, active	(173)

A Technique for Reviewing Word Parts & Vocabulary Terms Independently

To study your cards use

“The Box Method”!

1) Put down 4 cards to form your “BOX”

Word up, definition down:

democracy	convention
primary	delegate

2) Quiz yourself

Pick up a card, do you know the definition?

YES! Set it aside, and place a new card in your box.

NO... carefully review the back of the card until you feel you know it, then put it back in your box, and choose another card from your box to answer.

No card leaves the box until you get it right once.
Keep putting aside the cards you know and reviewing the ones you don't until you know them all!

3) Now try it with the definitions up!

This is a much more effective way to learn your cards than just flipping through the deck!

“The Box Method” William Van Cleave & Shirley Kokesh
Instruction sheet by Susan Schambach and Cheryl Swanson, Triad Academy, Winston-Salem, N.C.

Identifying Morphemes: The /shun/ Question

1. Underline the root.
2. Box the affixes.

contraction

regression

magician

Guess c o n t r a c t i o n r e g r e s s i o n m a g i c i a n

Correct Answer c o n t r a c t i o n r e g r e s s i o n m a g i c i a n

Sample Activity: Sister Words for Shared Meaning

challenge	sister word	shared meaning
perturbed	disturb	-----
benefactor	benefit	-----
rupture	disrupt	-----
amiable amicable	amigo	-----
envision	vision	-----
enclosure	close	-----
antibiotic	antisocial	-----
	biology	-----
autobiography	automobile	-----
	biology	-----
	paragraph	-----
euphony	euphemism	-----
euthanasia	eulogy	-----
geothermal	geography	-----
	Thermos	-----

Sample Activity: Latin and Greek Word Generation

Underline a morpheme and list other words that share that morpheme.

beneficial

biography

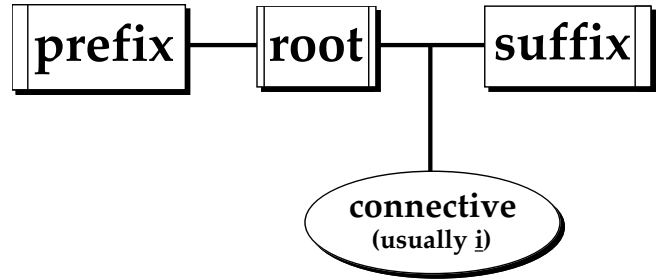
thermometer

autograph

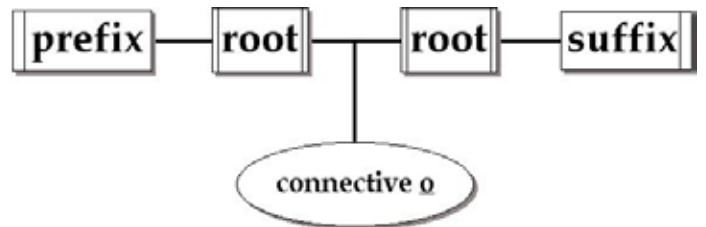
legal

position

Latin template: 55% of English words



Greek template: 11% of English words



Sample Activity: Identifying Morphemes

Underline the root. Box the prefix(es) and/or suffix(es).

confide

psychometrics

eruption

photographic

counterproposal

synchronize

regenerative

sympathetic

Sample Activity: Using Advanced Matrices for Word Building

de re	con	struct "build"	ible		<i>structure</i>
in	de		ing		
in ob			or	s	
		ure	al	ly	
		ed ing s			

Sample Activity: Sort Words by Common Morpheme

benevolent	compelling	benefactor	pedal
pedometer	polygamy	compulsory	impulsivity
polyester	expedient	polygon	beneficial
repulsive	benign	impediment	polyglot

<u>ped</u>	<u>poly</u>	<u>bene</u>	<u>pel / puls</u>
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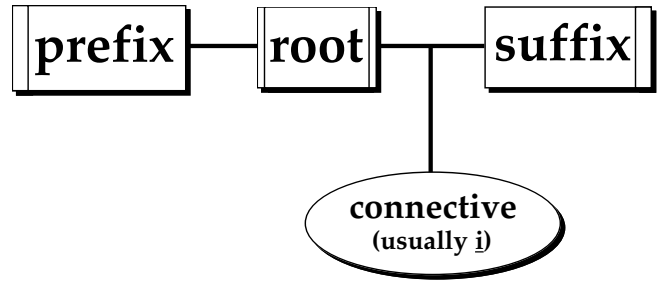
Sample Activity: Continuum Vocabulary

angry	irascible	smart	shrewd
raging	infuriated	intelligent	insightful
wild	enraged	clever	brainy
tempestuous	irate	fast	wise
wrathful	provoked	sharp	bright
furious	aggravated	astute	brilliant
mad	livid		
huffy	indignant		
hot under the collar	outraged		

Latin Connectives Practice Sheet

Underline roots, circle connectives, and box affixes.

expedient	spatula
muscular	alleviate
petunia	testimony
magnitude	impediment
virtuous	imperial
continual	egregious
gratify	radiant
hysteria	unofficial
spectacular	appreciate
monument	editorial
cautious	malicious
deficiency	exponential
popular	suburbia
evaluate	injurious
tempestuous	parsimonious
brilliant	marsupial



Three key Latin connectives are i, u, and ul. You should accent the syllable that comes before the Latin connective:

sól i tude món u ment rég ul ate

u and ul are always long:

promiscuus manuul muscuul

Latin connective i is by far the most common.

Use these rules for pronouncing it:

1. i = /ē/ before a vowel suffix: curious
2. i = /y/ after l or n: peculiar
3. i = /ĩ/ before a consonant: multitude

A sampling of useful suffix rules:

-ous = adjective -ate /āt/ = verb
 -us = noun -ate /ět/ = adj./noun

Exploring Assimilated Prefixes

Explanation: For ease of pronunciation, the final letter of an assimilated prefix changes according to the initial letter of the base to which it is attached. These prefixes are often nicknamed chameleons because a chameleon changes its colors to blend with its surroundings, much like the assimilated prefix.

ex and dis:

ex drops x (e.g., eject), dis, drops s (e.g., divide)

ex changes to ef before f (e.g., effect), dis changes to dif before f (e.g., differ)

(rare ex: ex changes to ec in some situations)

ad:

ad retains d before d (e.g., addition)

ad to ac before c (e.g., accelerate)

ad to af before f (e.g., affect)

ad to ag before g (e.g., aggressive)

ad to al before l (e.g., alliance)

ad to an before n (e.g., announce)

ad to ap before p (e.g., apply)

ad to ar before r (e.g., arrange)

ad to as before s (e.g., assert)

ad to at before t (e.g., attract)

Examples	
ex	→ ef + fort = effort
dis	→ dif + fer = differ
ad	→ ar + rest = arrest
ob	→ op + posite = opposite
sub	→ sup + pose = suppose
in	→ im + bibe = imbibe
con	→ com + bine = combine

ob and sub:

ob to oc before c (e.g., occasion), sub to suc before c (e.g., succeed)

ob to of before f (e.g., offer), sub to suf before f (e.g., suffer)

ob to op before p (e.g., opponent), sub to sup before p (e.g., support)

(rare ob: o before m; os before c or t)

(rare sub: sug before g; sum before m; sur before r; sus before c, p, or t)

in and con:

in can retain n before n (e.g., innate), con retains n before n (e.g., connect)

(rare: in can change to ig before n)

in to im before b, m, p (e.g., imbalanced), con to com before b, m, p (e.g., combine)

in to il before l (e.g., illegal), con to col before l (e.g., collect)

in to ir before r (e.g., irrational), con to cor before r (e.g., correct)

sample
activities

in + regular = irregular

in + regular = irregular

irregular = not regular

not regular = irregular

Note: These morphemes and accompanying word lists were developed for high school students.

Morphemes in the Content Areas: Content-area teachers have the opportunity to show students how morphemes function in words they are required to know for content knowledge. Generating words, exploring words' common morphemes and shared meanings, and understanding their meanings and applications all prove fruitful activities for students who are developing vocabulary.

gen - birth, origin

androgen	eugenics	genitalia	hydrogen
allogenic	exogen	genitals	hypoallergenic
biogenesis	geneology	genius	neurodegenerative
biogenetic	general	genteel	overgeneralize
carcinogen	generalize	gentle	oxygen
congenital	generate	gentleman	pathogen
congenitally	generative	gentry	photogenetic
degenerate	genetic	genus	primogenitor
eugeneticist	geneticist	heterogeneous	regenerate
estrogen	genial	homogeneous	transgenerational

crat/cracy - rule or government by

aristocracies	meritocracy
aristocrat	mobocracy
aristocratic	monocrat
autocrat	nondemocratic
bureaucrat	technocrat
bureaucracy	theocracy
bureaucratic	theocrat
democracy	undemocratically
democrat	
isocracy	

arch - chief/principal

anarchy	matriarchy
anarchism	monarch
antihierarchical	monarchies
archbishop	monarchy
archdiocese	nonhierarchical
heptarchy	oligarchy
hierarchical	patriarch
hierarchy	patriarchal
matriarch	patriarchy
matriarchal	tetrarchy

Science Morphemes (Ron Yoshimoto compilation)

morpheme	meaning	sample word	morpheme	meaning	sample word
aero	air	aerobes	enter	intestine	gastroenteritis
amphi	both	amphibian	entom	insect	entomology
angio	vessel	angiogram	epi	upon/on	epidermis
antho	flower	another	erg	work	ergonomics
anti	against	antibody	exo	out	exotoxin
arthro	joint	arthritis	ferro	iron	ferite
astro	star	astronomy	fiss	split	fission
atmo	vapor	atmosphere	gastro	stomach	gastropods
atom	vapor	atomic	gen	origin	genetics
aud/audi	hear	audiometer	geo	earth	geology
aur	gold	Aurora	germ	related/vital	germinate
auto	self	autotrophic	gest	carry	digestion
baro	pressure	barometer	glyc	sweet	glycerine
bath	deep	bathyscaph	gram/graph	write	seismograph
bio	life	biological	grav	heavy	gravity
blasto	embryo	blastocyst	gyn	female	gynecology
brachio	arm	brachium	gymno	naked	gymnosperm
branchio	gills	branchia	gyro	turn	gyroscope
bronch	windpipe	bronchial	helio	sun	heliotropic
calor	heat	caloric	hema/hemo	blood	hemoglobin
cardi/cardio	heart	cardiogram	hepat	liver	hepatitis
carn	meat/flesh	carnivore	hetero	different	heteromorphic
cephalo	head	cephalopod	hibern	winter	hibernation
chlor	green	chlorophyll	hist	tissue	histology
chrom	color	chromosome	homo	same	homozygous
chron	time	chronometer	hydro/hydra	water	hydrometer
coel	hollow	coelenterates	hyper	over	hyperacidity
corp	body	corpuscle	ichthy	fish	ichthyologist
cosmo	universe/world	microcosm	ign	fire	igneous
cranio	skull	intracranial	infra	beneath	infrared
cyan	blue	cyanide	intra	within	intracellular
cyclo	circle	cyclotron	ite	mineral	granite
cyt	cell	cyclotron	itis	inflammation	appendicitis
dentr	tree	dentrite	ium	element	radium
derm	skin	dermatology	kine	motion	kinetic
diplo	double	diplococcus	lepsy	attack	epilepsy
dorm	sleep	dormancy	leuko/leuc	white	leukemia
dors	back	dorsal	lign	mineral/fossil	halite
dyna	power	dynamite	lith	rock	lithium
dys	bad	dysentery	luc/lum	light	lumen
echin	spiny	echinodermata	luna	moon	lunar
eco	house	ecology	lys	breakdown	dialysis
ecto	outer	ectoplasm	macro	large	macrobiotics
endo	within	endoplasm	mal	bad	malignant

morpheme	meaning	sample word	morpheme	meaning	sample word
mar	sea	marine	pter	wing	pterodactyl
melano	black	melanoma	pyro	fire	pyrotechnic
meta	change	metamorphosis	radi	ray	radiation
meter	measure	millimeter	rhiz	root	rhizome
micro	small	microscope	rhodo	rose	rhododendrum
moll	soft	mollusk	saur	lizard	dinosaur
morph	shape	metamorphosis	scope	see	microscope
mut	change	mutation	sect	cut	dissection
myo	muscle	myocardium	sphere	ball	hydrosphere
neo	new	neonatal	sol	sun	solar
neuro	nerve	neurology	solv	loosen	solvent
nuc	center	nucleus	som	body	somatic
ocul	eye	ocular	sperm	seed	spermatophyte
oid	appearance	asteroid	spir(e)	breathe	respiration
ology	study of	dermatology	spor(e)	seed	sporophyte
oma	tumor	carcinoma	stell	star	interstellar
omni	all	omnivore	stero	solid	steroscope
ophthal	eye	ophthalmology	strat	layer	stratosphere
ornith	bird	ornithology	sub	below	substratum
oscu	mouth	osculum	sym/syn	with/together	symbiosis
ose	sugar	glucose	taxis	arrangement	taxonomy
osis	condition	osmosis	tele	far	telescope
osteo	bone	osteopath	therm	heat	thermometer
ov/ovi	egg	oviduct	tomy	cut	anatomy
patho	disease	pathogen	tox	poison	toxins
ped/pod	foot	bipeds	trich	hair	trichinosis
petr	rock	petroglyph	troph	turn	troposphere
phag	eat	phagocyte	troph	nourishment	autotrophic
phasia	speech	aphasia	ultra	beyond	ultraviolet
phen	appearance	phenotype	vac	empty	vacuole
phono	sound	phonon	vas	vessel	vascular
phor	carry	chromatophore	vect	carry	convection
photo	light	photosynthesis	ventri	belly	ventral
phyll	leaf	chlorophyll	vermin	worm	vermin
phylo	kind	phylum	vert	turn	vertebra
physi	nature	physics	viv/vita	life	vitamin
phyte	plant	saprophyte	volcan/	fire	volcano
plasm	form	cytoplasm	vulcan		
plasto	molded	plastid	volv	roll	revolution
platy	flat	platypus	vore	eat	herbivore
pneumo	lung	pneumonia	xylo	wood	xylem
prim	first	primate	zo(o)	animal	zoology
proto	first	protoplasm	zygo	yoke	zygote
pseudo	false	pseudopod	zym	ferment	enzyme

Math Morphemes (Ron Yoshimoto compilation)

morpheme	meaning	sample word	morpheme	meaning	sample word
alt	high	altitude	mut	change	commutative
circum	around	circumference	nom	name	denominator
col/com/con	with/together	collinear	numer	number	numerator
de	down/away	denominator	oid	resembling	trapezoid
dia	across	diagonal	para	beside	parabola
digit	finger	digital	pend	hang	perpendicular
equi	equal	equilateral	peri	around	perimeter
fer	bring/carry	circumference	ply/plic	fold	multiply
fract	break	fraction	put(e)	think	compute
gon	angle	polygon	radi	ray	radius
grade	step	centigrade	rect	right/straight	rectangle
gram/graph	write	kilogram	sect	cut/divide	bisect
hedron	sided object	tetrahedron	sphere	ball	spherical
hypo	under	hypotenuse	sub	below/under	subtract
inter	between/ among	intersect	sym/syn/syl	with/together	symmetric
iso	equal	isocetes	tang	touch	tangent
lat	side	collateral	therm	heat	thermometer
lin	line	collinear	tract	drag/pull	protractor
medi	middle	median	verse/vert	turn	vertex
meter/metry	measure	symmetrical			

Number Prefixes				
#	Latin	sample word	Greek	sample word
1	uni-	unicorn	mono	monopoly
2	bi	bicycle	di	digraph
	du(o)	dual		
3	tri	tricycle	ter	tertiary
4	quadr/quar	quarter	tetra	tetragon
5	quint	quintuplets	pent	pentagon
6	sex	sextuplets	hex	hexagon
7	sept	septuplets	hept	heptagon
8	octa/octo*		octa/octo*	octagon
9	nona/nove	November		
10	dec/deca/deci*		dec/deca/deci*	decade
100	cent	cent	hect	hectogram
1000	mille	millipede	kilo	kilometer

* same for Latin and Greek

Social Sciences Morphemes (Ron Yoshimoto compilation)

morpheme	meaning	sample word	morpheme	meaning	sample word
ab	away, from	abdicate	medi	middle	medieval
acro	high	acropolis	mega/ megalo	large	megalopolis
alt	high	altitude	meso	middle	mesozoic
anni/annu	year	annuity	migr	wander	migration
ante	before	antebellum	mony	condition	ceremony
anthropo	man	anthropology	nat	born	native
archaeo	ancient	archaeology	neo	new	Neolithic
arch(y)	ruler/gov't	monarchy	nesin	island	Melanesia
auto	self	autonomy	oid	resembling	anthropoid
capit/capt	head/leader	capitalism	olig(o)	few	oligarchy
cata	down	catacombs	ology	study of	archaeology
ceed/cede/ cess	go	recession	pac	peace	pacifism
circum	around	circumnavigate	paleo	old	paleontology
cis(e)/cid(e)	cut/kill	genocide	pan	all	pantheism
civ	citizen	civilization	pater/patri	father	patriarchy
clud(e)/ clus(e)	shut	exclusion	pend/pens	hang	independence
dem	people	democracy	petr	rock	petroglyph
dic/dict	say	dictator	phil/philo	love	philosophy
ethno	race/culture	ethnocentrism	phobia	fear	acrophobia
fac	make	factory	pict	paint	pictograph
feder	trust/faith	federalism	plu/plur	more	pluralism
frat	brother	fraternal	polis	city	metropolis
gamy	marriage	polygamy	pop	people	populist
gen	origin	indigenous	port	bring/carry	export
grad/gress	step	Congress	pos(e)	place	depose
gram/graph	write	pictograph	pre	before	preliterate
hab/habit	live	habitat	prim	first	primogeniture
hum	earth	humanity	proto	first	protohuman
ideo	idea	ideograph	psych	mind/soul	psychological
inter	between/among	interdependent	se	apart/away	secession
intra	within	intragroup	sed	sit	sedentary
ism	doctrine	communism	simil/simul	resembling	assimilate
ist	one who	anarchist	socio	society	sociology
ize	make	decentralize	soph	wisdom	philosophy
jud/jur/jus	law	jurisdiction	stitu	pace	constitution
leg	law	legislature	sub	below	suburban
liber	free	liberty	techni	skill/art	technocracy
lith	rock	paleolithic	theo	god	theology
liter	letter	preliterate	topo	place	topography
mania	madness	kleptomania	trans	across	transcontinental
manu	hand	manufacture	trib	pay	tribute
matri	mother	matrilineal	urb	city	urban
			vinc/vict	conquer	victory

Useful Resources (* not available at wvced.com)

Advanced Word Structure & History of the English Language:

- Anderson, C. Wilson, T. Elli Cross, and Joan Stoner. *VAK Tasks, Intermediate Prefixes, Roots and Suffixes series, Essential Roots series, Essential Prefixes series. Workbook of Resource Words for Phonetic Reading.* wvced.com.
- Barr, Cooper, Follis, Lindsay, Parsons. *Prefixes, Roots, Suffixes.* (3 separate reference texts.) wvced.com.
- * Beck, Isabel L., Margaret G. McKeown, Linda Kucan. *Bringing Words to Life, Second Edition: Robust Vocabulary Instruction.* 2013. guilford.com.
- * Beck, Isabel L., Margaret G. McKeown, Linda Kucan. *Creating Robust Vocabulary: Frequently Asked Questions and Extended Examples.* 2008. guilford.com.
- Bowers, Peter. *Teaching How the Written Word Works.* wvced.com.
- * Carreker, Suzanne. *Word Detective: Discovering The History of The English Language.* neuhaus.org.
- Donah, Sandra. *Improving Morphemic Awareness Using Latin Roots & Greek Combining Forms.* wvced.com.
- Gold, Diane Hickey, Elaine Russo, Linda Wallace, Judy Shapiro. *PS: Prefixes, Suffixes, Roots (A Resource of Lists, Phrases, Sentences, Poems, and Stories).* wvced.com.
- Kemmer, Suzanne. *Words In English (website).* ruf.rice.edu/~kemmer/Words04
- * King, Diana Hanbury. *English Isn't Crazy! The Elements Of Our Language And How To Teach Them.* proedinc.com.
- Kleiber, Margaret. *Specific Language Training: An Orton-Gillingham Curriculum for Adolescents.* wvced.com.
- Morgan, Kenneth B. *Dynamic Roots - Language Training Program.* wvced.com.
- Van Cleave, William. *Everything You Want To Know & Exactly Where To Find It: A Reference Guide for Teachers of Orton-Gillingham & Other Multisensory Approaches.* wvced.com.
- Van Cleave, William. *Phrases & Sentences for Reading & Spelling.* wvced.com.

Vocabulary & Morphology Websites:

dictionary.com vocabulary.com etymonline.com visualthesaurus.com

matrix maker (Bowers & Ramsden): <http://www.neilrammsden.co.uk/spelling/matrix/index.html>

Some Good Morpheme Lists:

- <http://drpaulasprescriptions4pd.wikispaces.com/file/view/Root+words+in+content+areas.pdf>
- <http://www.4gaslps.com/CommonRootWd4MSciSocSt.pdf> (simple lists for math, science, social studies)
- <http://www.owasso.k12.ok.us/webpages/rcollins/files/greek%20and%20latin%20root%20words.pdf>
(biology morphemes)
- <http://academic.cuesta.edu/acasupp/as/506.HTM> (morphemes grouped in interesting ways)
- <http://www.biologycorner.com/worksheets/language.html> (science roots)
- http://www.asdk12.org/middlelink/LA/vocabulary/forms/Greek_Latin_Roots.pdf
(1 simple page for each of math, science, social studies, and language arts)
- http://scking.files.wordpress.com/2013/01/list_-_root_words.pdf (more comprehensive science morpheme list)
- <http://www.readwritethink.org/files/resources/printouts/content-area-roots.pdf> (roots cross referenced by content with words for each content)
- <http://ancienthistory.about.com/od/mathematics/a/061210EtymologyGeometryTerms.htm>
(math terms in depth)

Research Supporting Morphological Intervention:

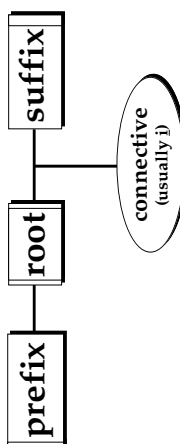
- Bowers, P. N., Kirby, J. R., & Deacon, S.H. 2010. "The effects of morphological instruction on literacy skills: A systematic review of the literature." *Review of Educational Research*, 80, 144–179.
- Goodwin, A. P., & Ahn, S. 2010. "A meta-analysis of morphological interventions: effects on literacy achievement of children with literacy difficulties." *Annals of Dyslexia*, 60, 183–208.
- Goodwin, A. P. & Ahn, S. 2013. "A Meta-Analysis of Morphological Interventions in English: Effects on Literacy Outcomes for School-Age Children." *Scientific Studies of Reading*, 1–29, 2013.

Tracking Word Origins

A two-color poster-size version of this chart is available from W.V.C. ED.
Please do NOT copy this chart except for personal reference.

Latin Words: 55%


General Trends



usually multisyllabic words
few vowel teams besides ai: assail, retain

Common Structures

connectives i, u, and ul: mediate, monument, muscular, solitude
ti, si, and ci = /sh/: notation, crucial
tu = /choo/: eventual, fortunate, spatula
ture = /cher/: adventure, signature, nature
chameleon prefixes:
attention, collapse, difference, illegal
ct, pt: act, tempt
soft c before e or i:
certain, city




Anglo-Saxon Words: 20%

General Trends

usually one syllable words
numbers 1-1000: one, twenty
basic color words: brown, green
simple body parts: arm, throat
most sight words: could, do
most vowel teams: boat, house
short words with silent letters: ghost, know

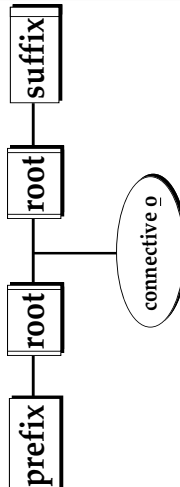
Common Structures

ff-ll-ss words: cliff, tall, grass
ch = /ch/: chore, chin, bench
ck, tch, and dge: back, witch, edge
th in short words: than, thin, thick
k in short words: keep, kill, kind
wh: when, whisper
ng: hang, song, sting
wr: wrist, write
wild/old words: child, mind, post, told
2 syllable consonant-
le words: table, fizzle, hurdle



Greek Words: 11%

General Trends



often involve science, school, or the arts

Common Structures

connective o: democrat, photograph
y = i: cyclone, gym, myth, type
ph = /f/: phobia, phonics, typhoon
ch = /k/: monarch, orchid, school
k in longer words: kilometer, kinesthetic
th in longer words: athlete, thyroid
silent initial p: pneumonia, psychology
ending -ology:
archaeology, biology
ending -ic: charismatic, chronic, music

