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Word Smarts

Using Morphology to Develop Vocabulary & Word Attack Skills

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- c. terminology
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- e. Anglo-Saxon, Latin, Greek: sorting by origin

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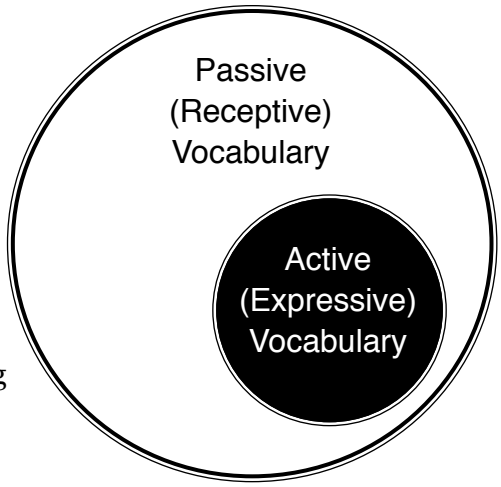
Different Kinds of Vocabulary & Levels of Word Knowledge

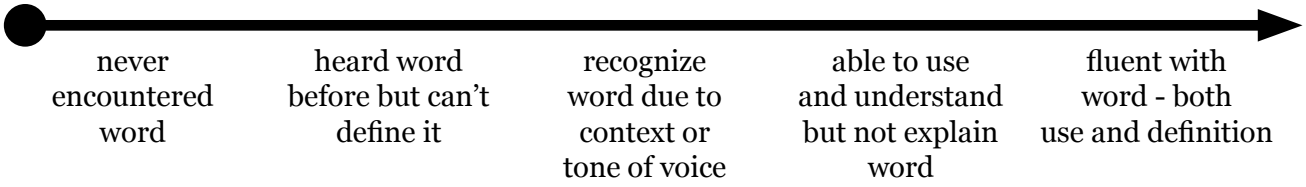
Passive & Active Vocabulary:

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:

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)

Notes:

Terminology for Advanced Word Structure

affix	morpheme that is attached to the root (usually either a prefix or a suffix)
final stable syllable	cluster of letters at the end of a word whose pronunciation remains consistent regardless of the word in which it appears (e.g., -tion, -ble, -ture); *not* synonymous with the term suffix
morpheme	smallest component of a word that has meaning
bound morpheme	morpheme that only appears as part of a larger word (e.g., -struct-)
free morpheme	morpheme that can stand alone; often called base word or root word (e.g., -port-, -kind-)
phoneme	smallest unit of sound (e.g., /b/, /ch/)
prefix	affix placed before the root of a word (e.g., pre-, ab-)
root	core meaning in a word; some are bound morphemes (e.g., -struct-), and some are free morphemes (e.g., -port-); all words have at least 1 root
suffix	affix placed after the root of a word; typically determines part of speech
vowel suffix	suffix that begins with a vowel (e.g., -ed, -ing, -ous, -ive, -ate, -us)
consonant suffix	suffix that begins with a consonant (e.g., -ment, -ly, -ful, -tude, -less)

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assimilated prefix	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., ad- changes to ar- before range to make arrange; in- changes to im- before pact to make impact)
base word	(also called root word) free morpheme; word with no prefixes and suffixes (e.g., -port-, -kind-)
combining form	(also called element) often used to describe Greek-based morphemes (rather than specifying whether they are roots or affixes) (e.g., -phon-, -crac-/-crat-, -bio-)
connective	letter(s) in English words used to combine two morphemes; connectives function as "glue" and are not morphemes themselves
Latin-based	connect a root to a suffix or two suffixes to each other (e.g., media, gradient, regular). three common Latin connectives: -i-, -u-, and -ul-.
Greek-based	connective -o- often joins two combining forms or elements (e.g., photograph, democracy)

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."

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- *free morpheme* — morpheme that can stand alone; often called base word or root word (e.g., -port-, -kind-)

phoneme — smallest unit of sound (e.g., /b/, /ch/)

prefix — affix placed before the root of a word (e.g., pre-, ab-)

root — core meaning in a word; some are bound morphemes (e.g., -struct-), and some are free morphemes (e.g., -port-); all words have at least 1 root

suffix — affix placed after the root of a word; typically determines part of speech

- *vowel suffix* — suffix that begins with a vowel (e.g., -ed, -ing, -ous, -ive, -ate, -us)
- *consonant suffix* — suffix that begins with a consonant (e.g., -ment, -ly, -ful, -tude, -less)

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Selecting Word Origins

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

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

Identifying Morphemes

Underline the base words. 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

Basic Word Matrix

un re pre mis	**teach**	able er es ing

teach + er → teacher

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

Discovery Learning

trees = _____

_____ = _____

examples: _____

_____ _____

unhappy = _____

_____ = _____

examples: _____

_____ _____

larger = _____

_____ = _____

examples: _____

_____ _____

leader = _____

_____ = _____

examples: _____

_____ _____

_____ = _____

_____ = _____

examples: _____

_____ _____

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. (Either use 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. (See Donah's text for scripted activities.)

Instructor: Say <u>teach</u>.	*Student:* <u>teach</u>
Instructor: Add /ing/ to <u>teach</u>.	*Student:* <u>teaching</u>
Instructor: Change /ing/ in <u>teaching</u> to /able/.	*Student:* <u>teachable</u>
Instructor: Add the prefix <u>un-</u> to teachable.	*Student:* <u>unteachable</u>

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. (Either use 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 <u>constructed</u>.	*Student:* <u>constructed</u>
Instructor: Change the /ed/ in <u>constructed</u> to /ing/.	*Student:* <u>constructing</u>
Instructor: Add <u>re</u> to the beginning of <u>constructing</u>.	*Student:* <u>reconstructing</u>
Instructor: Drop the first prefix and the /ing/ in <u>reconstructing</u>.	*Student:* <u>construct</u>
Instructor: Add /iv/ to the end of <u>construct</u>.	*Student*: <u>constructive</u>.

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.

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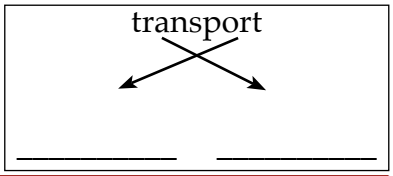
Supplemental Activities

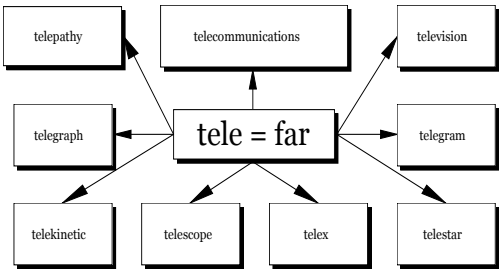
1. Have students write literal definition of given word using knowledge of element meaning, or have them provide word to match provided literal definition (crisscross sheets). An example is at right.



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.)

de re	con	**struct** *"build"*	ible ing ion or s	
in	de		ure	al / ly
in ob				ed ing s

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.

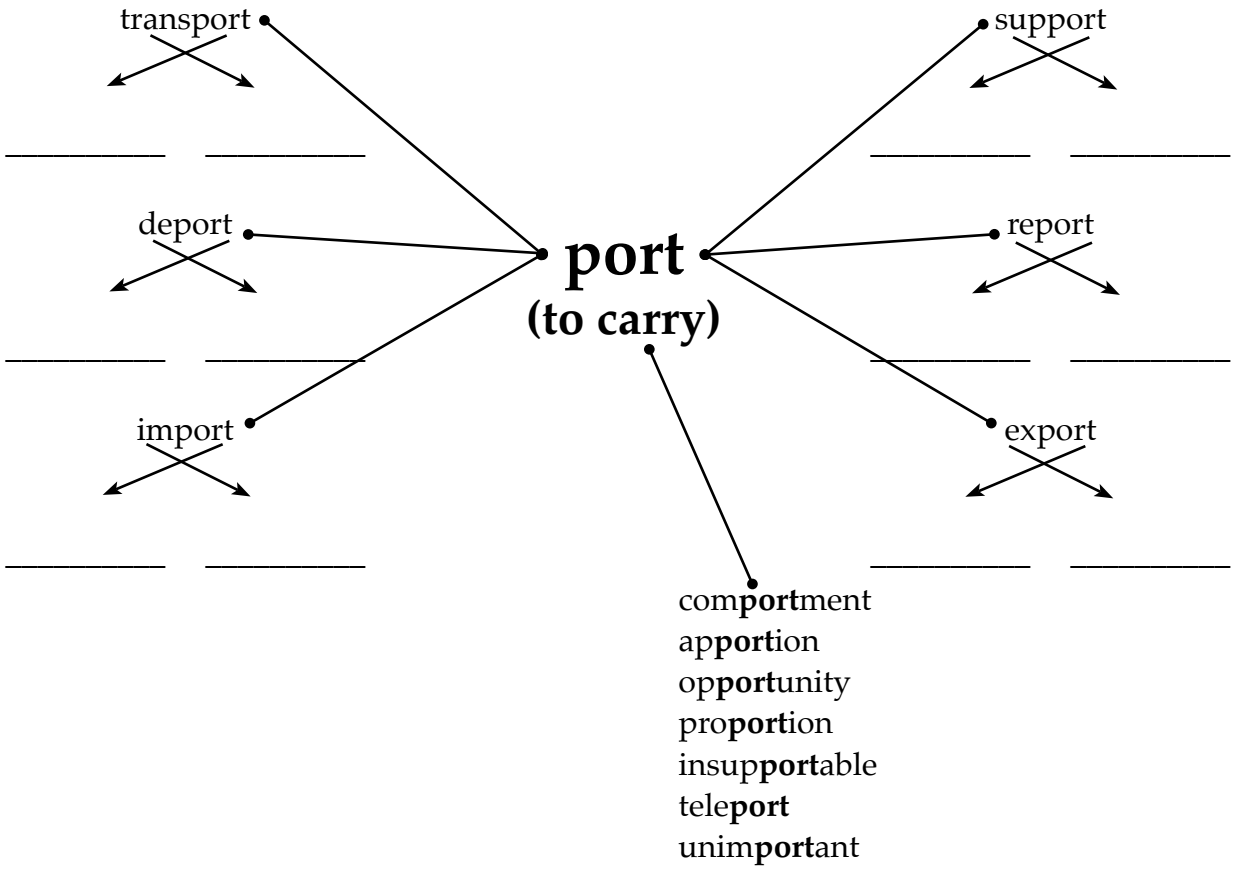
ab- **-abl(e)**
ad- **-al**
con- **-at(e)**
de- **-(i)fy**
e- **-il(e)**
in- **-ject-** **-ion**
inter- (to throw) **-ist**
non- **-ity**
ob- **-iv(e)**
pro- **-ly**
re- **-ness**
sub **-or**
tra(ns)- **-or(y)**
un- **-ur(e)**

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 <u>port</u>, meaning "to carry."



A Note on Procedure for Word Origins

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

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.

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:

port	struc/struct	vid/vis

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., <u>like</u> in <u>unlikely</u>, <u>chair</u> in <u>chairs</u>)
   - understanding how prefixes change meaning (e.g., <u>mis</u>use means to use *wrongly*)
   - understanding how suffixes change meaning (e.g., cat<u>s</u> 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 <u>in</u> but not <u>im</u>, <u>il</u>, or <u>ir</u>). 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)

b. -tion: most common	-sion (/shun/): after s, n, l (/zhun/): after vowels/r	-cian: for people (155)
nation	propulsion, invasion	musician

c. -ous (adjective): dangerous -us (noun): circus (151)

d. -ate (/āt/ - verb): verb -ate (/ĕt/ - adjective/noun): immediate, pirate - (149)

5. As students build packs of prefixes, roots, and stable syllables, introduce the major word origins (Anglo-Saxon, Latin, Greek, and maybe French), and discuss their characteristics. Have students practice identifying words by their origins. Remember that the study of advanced word structure is cognitive. In other words you need to teach *how* the language works. Little of this concerns rote memory. (176-8)

6. Teach students that -ti- and -ci- say /sh/. Use students' base knowledge of -tion to get to this. (In other words, "if tion says /shun/, what does ti say?") Then, expand your stable syllable pack with /sh/ syllables. You should have a large pack of multisyllabic words that contain these /sh/ structures for reading and eventually spelling. (152-7)

-tion = /shun/ -ti- = /sh/		-cian = /shun/ -ci- = /sh/	
-tial = initial	-tious = nutritious	-cial = racial	-cious = ferocious
-tient = patient	-tiate = initiate	-cient = ancient	-ciate = associate
		-ciency = efficiency	

7. Then, teach students -ture (as you taught -tion) and -tu- (as you taught -ti-). (158-9)

   -ture = /cher/ as in adventure
   -tu- = /choo/ as in mutual, spatula

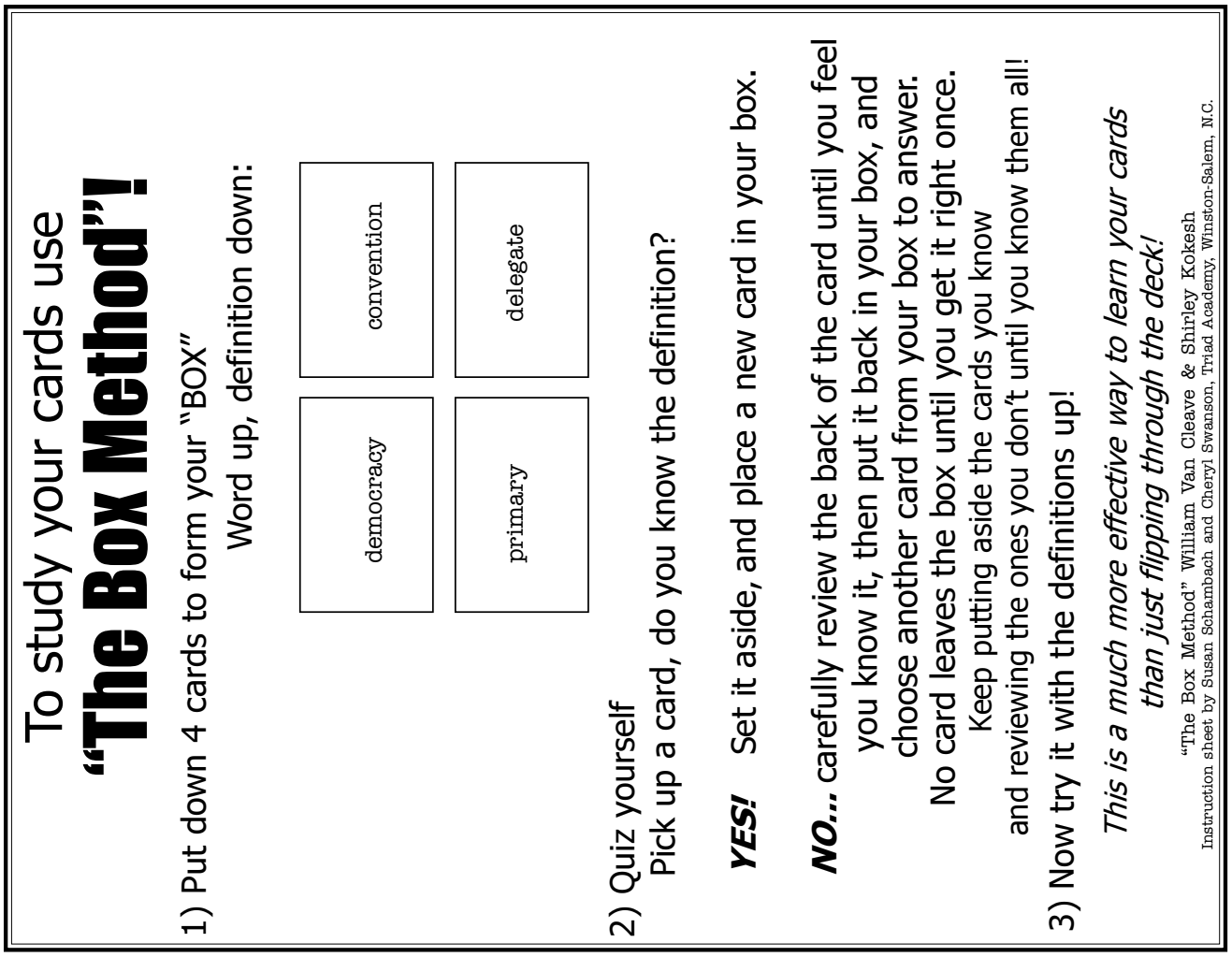
8. As students continue to build packs of prefixes, roots, and stable syllables, examine the template of a typical Latinate word. Teach the three Latin connectives (-i-, -u-, -ul-). Teach the pronunciations of Latin connective i (e.g., medium, million, aptitude). (111)

9. Eventually, teach the breakdown of a Greek word (including elements and connective o). (129)

10. Teach assimilated/chameleon Latin prefixes. (115-23)

    e.g., ad- changes to ar- before r to make arrange
    dis- changes to dif- before f to make differ
    in- changes to im- before b, m and p to make imbibe, immobile, and impolite

A Technique for Reviewing Word Parts & Vocabulary Terms Independently



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

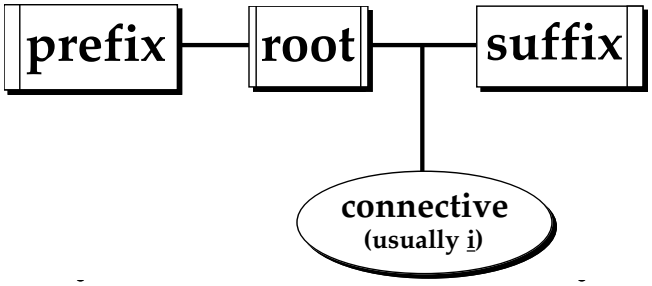
challenge	sister word	shared meaning
perturbed	disturb	_____
benefactor	benefit	_____
rupture	disrupt	_____
amiable amicable	amigo	_____
envision	vision	_____
enclosure	close	_____
antibiotic	antisocial	_____
	biology	_____
autobiography	automobile	_____
	biology	_____
	paragraph	_____
euphony	euphemism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

Sample Activity: Latin and Greek Word Generation

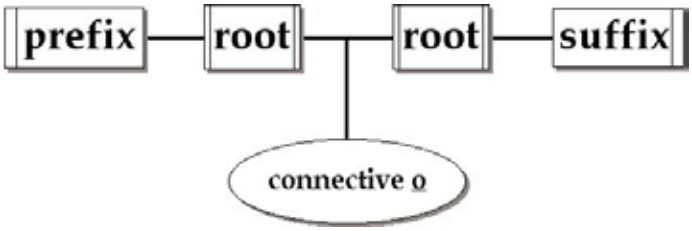
Underline a morpheme and list other words that share that morpheme.

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

eruption

counterproposal

regenerative

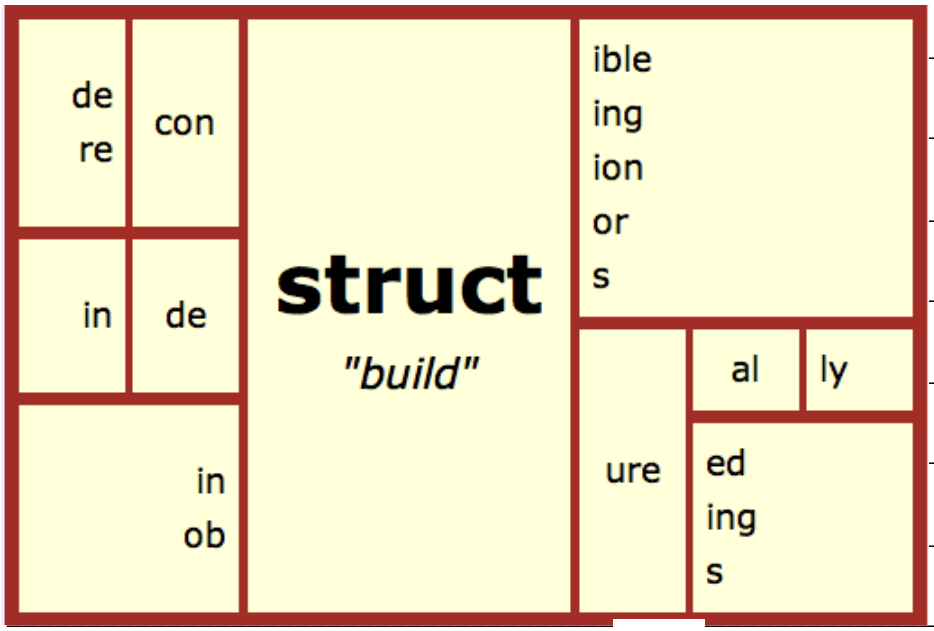
psychometrics

photographic

synchronize

sympathetic

Sample Activity: Using Advanced Matrices for Word Building



structure

Sample Activity: Sort Words by Common Morpheme

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

ped	poly	bene	pel/puls
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____

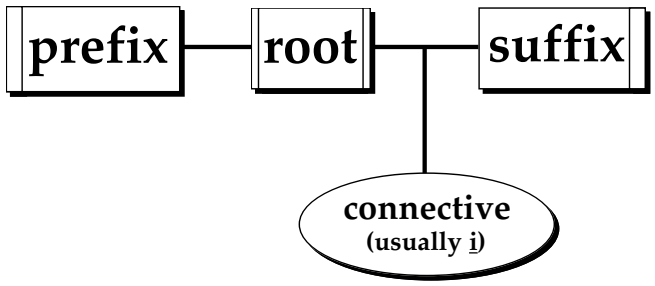
Sample Activity: Continuum Vocabulary

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:

promiscuous manual muscular

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 = /ĭ/ before a consonant: multitude

A sampling of useful suffix rules:

-ous = adjective -ate /āt/ = verb
-us = noun -ate /ĕt/ = 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: The word lists accompanying these morphemes were developed for **high school** students. Some words should be omitted for younger students.*

Morphemes in the Content Areas: Content-area instructors have the opportunity to show how morphemes function in words specific to their subject. Exploring words' common morphemes and shared meanings proves fruitful for vocabulary development—to help students understand both words instructors are teaching and those that may be encountered in the future.

gen - birth, origin (common science morpheme)

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

crat/cracy - rule or government by

(common history morpheme)

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

arch - chief/principal

(common history morpheme)

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

Science Morphemes (Ron Yoshimoto compilation)

morpheme	meaning	sample word
aero	air	aerobes
amphi	both	amphibian
angio	vessel	angiogram
antho	flower	another
anti	against	antibody
arthro	joint	arthritis
astro	star	astronomy
atmo	vapor	atmosphere
atom	vapor	atomic
aud/audi	hear	audiometer
aur	gold	Aurora
auto	self	autotrophic
baro	pressure	barometer
bath	deep	bathyscaph
bio	life	biological
blasto	embryo	blastocyst
brachio	arm	brachium
branchio	gills	branchia
bronch	windpipe	bronchial
calor	heat	caloric
cardi/cardio	heart	cardiogram
carn	meat/flesh	carnivore
cephalo	head	cephalopod
chlor	green	chlorophyll
chrom	color	chromosome
chron	time	chronometer
coel	hollow	coelenterates
corp	body	corpuscle
cosmo	universe/world	microcosm
cranio	skull	intracranial
cyan	blue	cyanide
cyclo	circle	cyclotron
cyt	cell	cyclotron
dendr	tree	dendrite
derm	skin	dermatology
diplo	double	diplococcus
dorm	sleep	dormancy
dors	back	dorsal
dyna	power	dynamite
dys	bad	dysentery
echin	spiny	echinodermata
eco	house	ecology
ecto	outer	ectoplasm
endo	within	endoplasm

morpheme	meaning	sample word
enter	intestine	gastroenteritis
entom	insect	entomology
epi	upon/on	epidermis
erg	work	ergonomics
exo	out	exotoxin
ferro	iron	ferrite
fiss	split	fission
gastro	stomach	gastropods
gen	origin	genetics
geo	earth	geology
germ	related/vital	germinate
gest	carry	digestion
glyc	sweet	glycerin
gram/graph	write	seismograph
grav	heavy	gravity
gyn	female	gynecology
gymno	naked	gymnosperm
gyro	turn	gyroscope
helio	sun	heliotropic
hema/hemo	blood	hemoglobin
hepat	liver	hepatitis
hetero	different	heteromorphic
hibern	winter	hibernation
hist	tissue	histology
homo	same	homozygous
hydro/hydra	water	hydrometer
hyper	over	hyperacidity
ichthy	fish	ichthyologist
ign	fire	igneous
infra	beneath	infrared
intra	within	intracellular
ite	mineral	granite
itis	inflammation	appendicitis
ium	element	radium
kine	motion	kinetic
lepsy	attack	epilepsy
leuko/leuc	white	leukemia
lign	mineral/fossil	halite
lith	rock	lithium
luc/lum	light	lumen
luna	moon	lunar
lys	breakdown	dialysis
macro	large	macrobiotics
mal	bad	malignant

morpheme	meaning	sample word
mar	sea	marine
melano	black	melanoma
meta	change	metamorphosis
meter	measure	millimeter
micro	small	microscope
moll	soft	mollusk
morph	shape	metamorphosis
mut	change	mutation
myo	muscle	myocardium
neo	new	neonatal
neuro	nerve	neurology
nuc	center	nucleus
ocul	eye	ocular
oid	appearance	asteroid
ology	study of	dermatology
oma	tumor	carcinoma
omni	all	omnivore
ophthal	eye	ophthalmology
ornith	bird	ornithology
oscu	mouth	osculum
ose	sugar	glucose
osis	condition	osmosis
osteo	bone	osteopath
ov/ovi	egg	oviduct
patho	disease	pathogen
ped/pod	foot	bipeds
petr	rock	petroglyph
phag	eat	phagocyte
phasia	speech	aphasia
phen	appearance	phenotype
phono	sound	phonon
phor	carry	chromatophore
photo	light	photosynthesis
phyll	leaf	chlorophyll
phylo	kind	phylum
physi	nature	physics
phyte	plant	saprophyte
plasm	form	cytoplasm
plasto	molded	plastid
platy	flat	platypus
pneumo	lung	pneumonia
prim	first	primate
proto	first	protoplasm
pseudo	false	pseudopod

morpheme	meaning	sample word
pter	wing	pterodactyl
pyro	fire	pyrotechnic
radi	ray	radiation
rhiz	root	rhizome
rhodo	rose	rhododendron
saur	lizard	dinosaur
scope	see	microscope
sect	cut	dissection
sphere	ball	hydrosphere
sol	sun	solar
solv	loosen	solvent
som	body	somatic
sperm	seed	spermatophyte
spir(e)	breathe	respiration
spor(e)	seed	sporophyte
stell	star	interstellar
stereo	solid	stereoscope
strat	layer	stratosphere
sub	below	substratum
sym/syn	with/together	symbiosis
taxis	arrangement	taxonomy
tele	far	telescope
therm	heat	thermometer
tomy	cut	anatomy
tox	poison	toxins
trich	hair	trichinosis
trop	turn	troposphere
troph	nourishment	autotrophic
ultra	beyond	ultraviolet
vac	empty	vacuole
vas	vessel	vascular
vect	carry	convection
ventri	belly	ventral
vermin	worm	vermin
vert	turn	vertebra
viv/vita	life	vitamin
volcan/ vulcan	fire	volcano
volv	roll	revolution
vore	eat	herbivore
xylo	wood	xylem
zo(o)	animal	zoology
zygo	yoke	zygote
zym	ferment	enzyme

Math Morphemes (Ron Yoshimoto compilation)

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

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

Textbook Vocabulary Activity Sheet Book Title: _____ Page(s): _____

1. List all words your **average** student won't know.

2. **Necessary** content words your average student won't know.

3. **Necessary** "life" words your average student won't know.

4. **Unnecessary** content words your average student won't know.

Useful Resources

Advanced Word Structure & History of the English Language:

(* not available at wvced.com)

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 & Caroline Dover. *Phrases & Sentences for Reading & Spelling*. wvced.com.

Vocabulary & Morphology Websites:

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

matrix maker (Bowers & Ramsden): http://www.neilramsden.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://sscking.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.

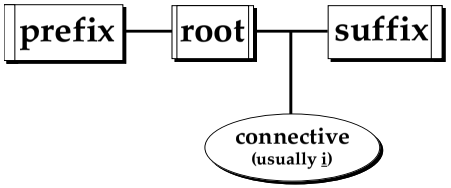
Goodwin, A. P., & Ahn, S. 2010. "A meta-analysis of morphological interventions: effects on literacy achievement of children with literacy difficulties." *Annals of Dyslexia*, 60, 183–208.

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

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

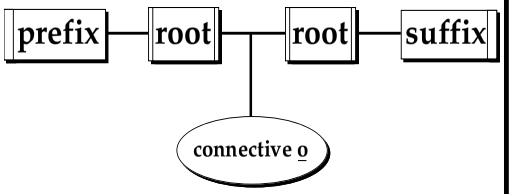
wr: wrist, write

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

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.