

OELAS Conference 2013
Focusing Instruction Through the Language Lens
Marriott Tucson



Arizona
 Department of Education

**The Sound and Sense
 of Suffixes, Prefixes, and Roots:
 Building Vocabulary Across the Grades**

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**"I know we're human, but I forget
 if we're pre, near, or sub!"**

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Do You Know These Terms?	No	Some	YES
prefixes			
affixes			
derivational suffixes			
compound words			
bases			
roots			
derivations			
morphological family			
morphological awareness			
morphology			
morpheme			

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MORPHOLOGY

"The mental system involved in word formation or the branch of linguistics that deals with words, their internal structure, and how they are formed."
 -Aronoff & Fudeman, 2005, p. 21

structural analysis
 word analysis
 morphemic analysis
 morphological problem solving

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COMPOUND WORDS



At-risk second-grade readers failed to understand the meanings of compound words and did not recognize related word (e.g., *quick*, *quickly*, *quicksand*, *quicken*)
 (Nagy, Berninger, Abbott, Vaughan, & Vermeulen, 2003)

What would you call grass where bees like to hide?
beegrass or *grassbee*?

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COMPOUND WORDS

Which are More Literal?

- doghouse
- ice cube
- red-winged blackbird
- pickpocket
- Lazy Susan

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THE STUDY OF MORPHOLOGY: TERMINOLOGY

Morpheme: The smallest unit of meaning in a word, the building blocks of language

Common English Morphemes:

- roots: inspector, phonics
- base word: unlikely light house
- prefix: re-, un-, dis-
- suffix: -able, -ive, -ly

} **affixes**

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AFFIX THE AFFIX TO THE BASE
AFFIX THE PREFIX BEFORE THE BASE
AFFIX THE SUFFIX AFTER THE BASE

CONVICT A CONVICT
EXTRACT SOME EXTRACT
REFUSE THE REFUSE

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MORPHOLOGICALLY RELATED WORDS

share a similar **form** and **meaning**

- govern, governs, governed, governing, governor, governable, ungovernable, governability, government, antigovernment, etc.

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MORPHOLOGICAL AWARENESS (MA)

- Knowledge
- Insight
- Aptitude
- Self-efficacy



MA is "The ability to reflect upon and manipulate morphemes and employ word formation rules in one's language" (Kuo & Anderson, 2006, p. 161).

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AZ VOCAB STANDARDS GRADES 1-2 (STAGE II)

AZ ELP Standards	AZ Common Core
HI-6: determining the meaning of compound words using knowledge of individual words.	2.L.4.d
HI-7: reading contractions.	
HI-8: constructing meaning by applying knowledge of prefixes.	1.L.4.b,c 2.L.4.b
HI-9: constructing meaning by applying knowledge of suffixes.	1.L.4.b,c

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AZ VOCAB STANDARDS GRADES 3-5 (STAGE III)

ELP Standards	AZ Common Core
HI-5: determining the meaning of compound words using knowledge of individual words.	(2.L.4.d)
HI-6: applying contractions in context.	
HI-7: using knowledge of base/root words and affixes (prefixes and suffixes) to determine the meaning of unknown grade-level content words.	3.L.4.b,c 4.L.4.b 5.L.4.b
HI-12: using context clues in a variety of content texts to confirm the intended meaning of grade-level content words.	3.L.4.a 4.L.4.a 5.L.4.a

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AZ VOCAB STANDARDS GRADES 6-8 (STAGE IV)
 ELP Standards | AZ Common Core

HI-5: analyzing compound words in context.	(2.L.4.d)
HI-6: applying contractions in context.	
HI-7: analyzing the effect of affixes on base/root words (e.g., adding <i>-ful</i> to <i>beauty</i> makes it an adjective).	8.L.4.b

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AZ Vocab Standards Grades 9-12 (STAGE V)
 ELP Standards | AZ Common Core

HI-7: analyzing how affixes change base/root words. (e.g., adding <i>-ly</i> to <i>quick</i> makes it an adverb instead of an adjective.)	(8.L.4.b)
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An average sixth grader should be able to infer about 60% of the word meanings in printed school texts, through knowledge of their morphemes, applied to context (Nagy & Anderson, 1984)



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The OUTSIDE-IN STRATEGY
 (Baumann et al., 2003, 2007; Ebbers & Denton, 2008)

1. Look outside the word at context clues.
2. Look inside the word for meaningful bits, or draw an analogy to a similar word.
3. Combine the clues.
4. Test your hypothesis--try the idea in the sentence.

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Outside-In Strategy
 pneumonoultramicroscopicsilicovolcanoconiosis

1. Look outside the word at context: In the coal mine, the air felt stifled and dusty. The miners coughed, suffering from pneumonoultramicroscopicsilicovolcanoconiosis. Many of them died.
2. Look inside the word for known word parts: pneumono ultra microscopic silico volcano coniosis
3. Use the analogy strategy: "I don't know this sickness, but I know pneumonia and I know volcano, so by analogy, this sickness might have something to do with lungs and heat—maybe they are inflamed."

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SHOW STUDENTS THAT THE STRATEGY DOESN'T ALWAYS WORK

Joe and Stan arrived at the party at 7:00 o'clock. By 9:30, the evening seemed to drag for Stan. But Joe really seemed to be having a good time at the party. "I wish I could be as gregarious as he is," thought Stan.

Adapted from *Bringing Words to Life* Beck, McKeown, and Kucan, 2002



hmmm... it's something positive full of gregar ?? likes to party?

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WORKS BEST WITH PARSABLE WORDS

Joe and Stan arrived at the party at 7:00 o'clock. By 9:30, the evening seemed to drag for Stan. But Joe really seemed to be having a good time at the party. "I wish I could be as gregarious **sociable** as Stan."

hmmm...socialize, antisocial, sociopath, society
social worker, ice cream social, social studies,
social + able
hmmm...able to be social?

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At a boycott meeting, a young Baptist minister came forward to speak. Not widely known at the time, **Dr. Martin Luther King, Jr.**, made an impact on the crowd. He declared:

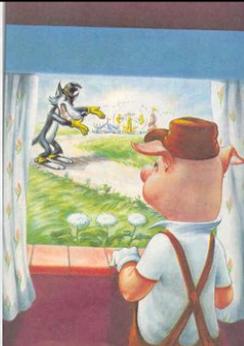
"We're here because, first and foremost, we are American citizens, and we are determined to acquire our citizenship to the fullness of its meaning. We are tired—tired of being segregated and humiliated, tired of being kicked about by the brutal feet of oppression."

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The wolf was very angry, but he still pretended not to be.

He went to the little pig's house and knocked on the door. "Little pig," he said, "if you will be ready at four o'clock this afternoon, I will take you to the fair. We will have some fun on the swings and roundabouts."

"Very well," said the little pig.



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Jamie tenderly murmurs and gives him a cuddle. The courageous new friends form a weather-bound huddle.



Jamie's Journey: The Savannah (Ebbers, 2012)

WILL THE REAL PREFIX PLEASE STAND UP?

reheat
red
return
read
rebuild
rewind
rest
rescue

prefix re-	not prefix re-
reheat	red

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THE POWERFUL PREFIX!



interior
exterior
posterior
anterior
ulterior
deteriorate

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THE PERIPATETIC PREFIX

gress: Latin root "to step"

pro (forward)	progress	step forward
re (back, again)	regress	step back
con (with, together)	congress	step together
di (away from)	digress	step away
trans (across)	transgress	step across
e (out)	egress	step out

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COIN OR CLIP NEW WORDS

(Latin prefix bene: good)



benefit
beneficial
beneficiary
benefactor
benediction
benevolent
Benedict Arnold
très bien

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SOME LINGUISTIC TYPES OF WORDS

From simple to Increasingly Complex

basic word or base word	boy	can stand alone; cannot be further parsed
inflection (inflectional suffix)	boys	a form of the word, in the same grammatical category
compound	boyfriend	
derivation (derivational suffix or prefix)	boyish, boyishly, boyhood	a new word, often abstract and nuanced; often a different grammatical category

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DERIVATIONAL SUFFIXES

"one who" (noun-makers)

-ist	--or	--ian	--er	--eer
scientist	governor	librarian	teacher	engineer
pianist	mayor	dietician	painter	mountaineer
cartoonist	senator	politician	leader	pioneer

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TAKE 2: LINGUISTIC TYPES OF WORDS

basic word or base word	farm	can stand alone; cannot be further parsed
inflection (inflectional suffix)	farms, farmed, farming	a form of the word, in the same grammatical category
compound	farmhouse, farmland	
derivation (derivational suffix or prefix)	farmer, farmable, micro-farming	a new word, often abstract and nuanced; often a different grammatical category

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SORT BY LINGUISTIC TYPE BASE WORD, INFLECTION, DERIVATION

establish	establishment	established
supported	supportively	support
sincere	sincerity	sincerely
freely	freeing	freedom
acts	activate	activity

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SHIFTING SOUNDS OR SPELLINGS OBSTACLES TO WORD RECOGNITION

- heal → → healer → → health
- wise → → wisely → → wisdom
- vapor → → vaporize → → evaporate
- please → → pleasant → → pleasure
- ignite → → ignition
- provide → → provision

shift happens,
frequently

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DERIVATIONS, WITH DERIVATIONAL SUFFIXES

Suffix	Creates	Example
-ic	Adj.	angel → angelic
-ive	Adj.	mass → massive
-ly	Adv.	quick → quickly
-ate	Verb	vaccine → vaccinate
-ness	Noun	happy → happiness
-ity	Noun	active → activity
-ship	Noun	champion → championship

There are more derivational suffixes.

Adding a derivational suffix creates a complex new word, often nuanced, usually of a different grammatical category

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DERIVATIONS WITH -ISM SUFFIX

-ism generates a noun
an abstract noun

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The Latin prefix pro-

"in front, forth, forward, before"

PREFIX	ROOT	SUFFIX	SENTENCE WITH TARGET WORD
1. pro-	act	-ive	I am a proactive problem solver.
2. pro-	ceed		Please proceed to the nearest exit.
3. pro-	fess	-or	Professor Pundit steps forward.
4. pro-	pos(e)	-al	We submitted a proposal to build a bridge.
5. pro-	ject	-ed	We're looking at the projected image.

Student Book

VOCABULARY

through Morphemes

Second Edition

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AVOID TEACHING WORDS IN ISOLATION

Teach the Target Word and a Few Derivations (including compound words and prefixed words)

spin	
rough	
wide	
heart	
like	
fortune	
vapor	
reptile	

Work alone, writing derivations. Then compare answers.

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and many more!

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DERIVATIONS OF SOL



sol
Latin for 'sun'

solar
solstice
parasol
girasol
solarium
solar energy
lunisolar
solariphobic

Scientia sol mentis
Knowledge, the sun of the mind.
Motto of Delaware College, USA.

Sol lucet omnibus
The sun shines for everyone.

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ANGLIN, 1993

(Interviewed children in grades 1, 3, 5)

Fifth-Grader (excerpt, p. 100)

Anglin: What does the word treelet mean?

OK. Maybe it means like a tree and maybe like for Christmas you can put lights on it...

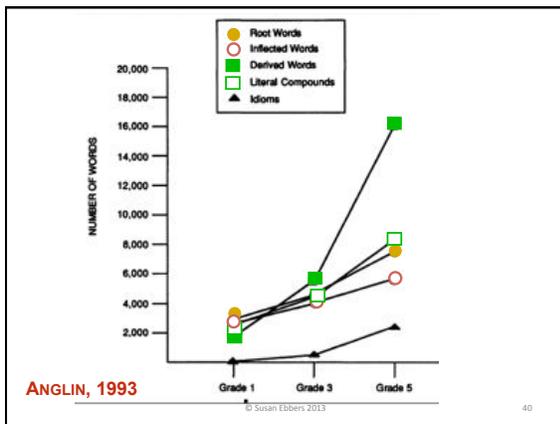
Anglin: Can you tell me anything more about treelet?

Is it [spelled] l-e-t or l-i-t?

Anglin: Actually, it's l-e-t.

I'm not sure about this, but it might mean a baby tree...

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PREDICTING ACADEMIC VOCABULARY DERIVATIONS ARE STRONG INDICATOR

Table 13
Proportion of Low Frequency Word, 3-or-More-Syllable-Word, and Derived Word Types Identified as Academic Word Types by Subject

Subject	Low freq.	3-or-more-syllables	Derived
Math	.20	.34	.33
Science	.61	.52	.81
Social Studies	.58	.54	.64

see Butler et al., 2004, p. 48

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COORDINATE LINGUISTIC COMPONENTS (IS THIS REFLECTED IN CCSS?)

- Phonological Awareness – (PA)
- Orthographic Awareness – (OA)
- Morphological Awareness – (MA)



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MORPHOLOGICAL INSIGHT & VOCABULARY CLOSELY RELATED CONSTRUCTS

“It is hard to overstate the importance of morphology in vocabulary growth”

(Nagy & Scott, 2000, p. 275)

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For every word known by the average reader who utilizes morphemic and contextual information, an additional one to three words should be understandable (Nagy & Anderson, 1984)

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DERIVATIONAL SUFFIXES!

Beware the Jabberwock, my son!
The jaws that bite, the claws that catch!
Beware the Jubjub bird, and shun
The frumious Bandersnatch!"

What a ____ idea!
(ribatism, ribatious, ribation, ribatize)

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lemon drop gum drop teardrop eye dropper eye droppers dropper droplet droplets drop drops dropping dropped "drop in" for a pit just "drop by"

drop

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A DERIVATIONAL WORD WALL

SPEAK IT, GRASP THE PATTERN, CHANGE IT OUT

	syntax shift	un = not, opposite
I am...	predictable	unpredictable
I act...	predictably	unpredictably
I show...	predictability	unpredictability

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Part 1: Word Families

burn	furry	starburst	curlers
burner	curled	burns	blur
burning	turn	bursting	blurring
fur	sunburn	curl	curly
curling	blurry	burnt	burned
burst	turning	turned	turner

SUPERCHARGED READERS
Decodable Chapter Books

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White, Sowell, and Yanagihara (1989) found that third-graders who were given training on **the nine most common prefixes** and a strategy for decomposing words into roots and suffixes outperformed a control group on several measures of word meaning.

They concluded that teaching at least the top nine prefixes (**if not all twenty**) to middle school students would pay dividends in increased vocabulary learning.

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20 MOST COMMON PREFIXES IN SCHOOL TEXTS

1. <u>un</u> able	10. <u>sub</u> marine
2. <u>re</u> view	11. <u>pre</u> heat
3. <u>in</u> edible (<u>im</u> mobil <u>e</u> , <u>im</u> polit <u>e</u> , <u>il</u> legal, <u>ir</u> responsible)	12. <u>int</u> erview
4. <u>dis</u> trust	13. <u>fore</u> warn
5. <u>en</u> lighten (<u>em</u> power)	14. <u>der</u> ail
6. <u>non</u> sense	15. <u>trans</u> fer
7. <u>in</u> side (<u>im</u> plant)	16. <u>super</u> sonic
8. <u>over</u> load	17. <u>semi</u> circle
9. <u>mis</u> guide	18. <u>anti</u> freeze
	19. <u>mid</u> term
	20. <u>under</u> fed

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The most common prefixes in printed school English for grades 3-9

Rank	Prefix	Number of different words with the prefix*	Percentage
1	un-	782	26
2	re-	401	14
3	in-, im-, ir-, il-, 'not'	313	11
4	dis-	216	7
5	en-, em-	132	4
6	non-	126	4
7	in-, im-, 'in or into'	105	4
8	over- 'too much'	98	3
9	mis-	83	3
10	sub-	80	3
11	pre-	79	3
12	inter-	77	3
13	fore-	76	3
14	dis-	71	2
15	trans-	47	2
16	super-	43	1
17	semi-	39	1
18	anti-	33	1
19	mid-	33	1
20	under- 'too little'	25	1
	All others	100 (estimated)	3
Total		2,959	100%

*From John B. Carroll, Peter Davies, and Barry Fichman, *The American Heritage Word Frequency Book*, Boston, MA: Houghton Mifflin, 1971.

definition
To fracture something is to break it. A fracture is a break.

root
fract (Latin, "to break")

target word
fracture

antonym or synonym
build, repair, heal

morph related words
fraction
fractional
fractionalize
fractal

grammatical category
verb or noun

cognate
fractură

sketch

sentence(s)
Jose fell from the tree and fractured his leg. His fracture will heal.

Matrix on *Vocabulogic* website, provided courtesy of Real Spelling and Pascal Mira (© 2010)

in ac dis	crede	"believe, trust"	ible		ibly		
			ibility				
			ence				
			ent		i	al	s
			able				
			ably				
or							
it	ate	ion					
ule	ity	ous					

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human, humankind, inhuman, dehumanizing rage, raging, enraged, outrageous, etc.

Standing with God and the crushed and bleeding slave on this occasion, I will, in the name of humanity which is outraged, in the name of liberty which is fettered [held back], in the name of the constitution and the Bible, which are disregarded and trampled upon, dare to call in question and to denounce, with all the emphasis I can command, everything that serves to perpetuate slavery—the great sin and shame of America! announce/ denounce-dethrone/ pronounce

—Frederick Douglass, "What to the Slave is the Fourth of July?" speech, presented to the Rochester Ladies' Antislavery Society, July 5, 1852

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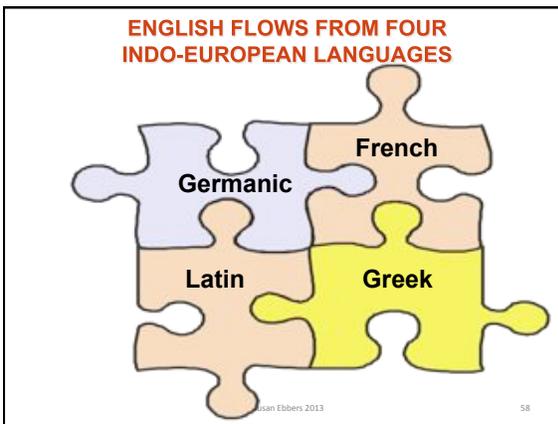
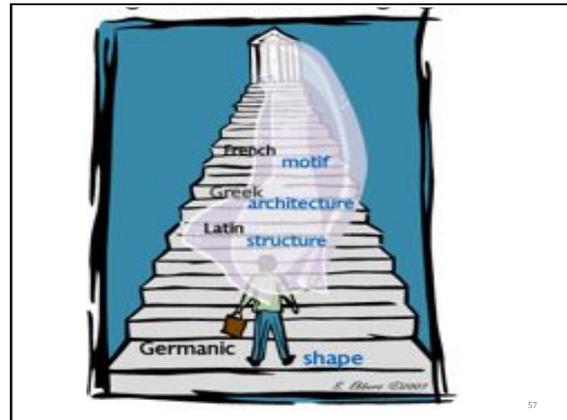
Beeping indicates the phone line is busy.
A red light indicates the traffic must stop
A pulse indicates the heart is still beatin
And a fever indicates the body is hot.

Thunder is indicative of rain on the way
A frown is indicative of pain or dismay.
A nod of the head is indicative of "yes,"
And a minus sign often indicates less.

Whisper to indicate Baby is sleeping.
Scream to indicate fear or alarm.
Blush when shy, or coy, or embarrassed.
Smile to indicate friendship and charm.

Ebbers & Carroll, 2009, *Daily Oral Vocabulary Exercises*

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Germanic	French	Latin	Greek
bathroom	toilet	lavatory	
drawing	portrait	picture	photograph
Sort each row of synonyms by origin:			
• royal, king, monarch, regal			
• chaperone, watchman, sentinel			
• chagrin, shame, embarrassment			
• victory, win, triumph			
• motion picture, show, cinema, theater			

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Germanic	French	Latin	Greek
drawing	portrait	picture	photograph
king (C.)	royal	regal	monarch
wreck	sabotage	subvert	
watchman	chaperone	sentinel, sentry	
shame	chagrin	embarrassment, humiliation	
hearten	encourage	inspire	
show	cinema	motion picture	theater
fatherly		paternal	patriarchal
thought	perspective, opinion		idea
win		victory	triumph
holy	sacred	consecrated	

See also Bryson, 1990; King, 2000; Lederer, 1991

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FRIGHTFUL SCIENCE SPELLINGS

ps /s/ psoriasis, pseudopod, psychosis
 pn /n/ pneumonia, pneumatics, pneumonic
 ch /k/ mitochondria, arachnid, archaeology
 ph /f/ asphyxiate, phenomenon, diaphragm
 rh /r/ rhizome, rhodium, rheology, hemorrhage
 x /z/ xenia, xylem, xenon

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CONTENT-SPECIFIC GREEK TERMS

Anatomy and Medical Terms

esophagus, thyroid, diagnosis, psoriasis, dyslexia

Studies and Sciences

biology, seismology, morphology, geochronometry

Animals and Plants

arachnid, amphibian, chlorophyll, dinosaur, nectar

Theatre and the Arts

charisma, drama, chorus, muse, symphony, orchestra

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approach

Exercise A: Take turns reading each word form aloud with its part of speech.

noun	verb	adjective	adverb
(an) approach	to approach	approachable unapproachable	

Exercise B: Check the box by each phrase that means nearly the same thing as approach.

<input type="checkbox"/> approach (v): getting closer	<input type="checkbox"/> approach (n): plan or way
---	--

Daily Oral Vocabulary Exercises
(Ebbers & Carroll)



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READER FRIENDLY RESEARCH ON MA

- See Baumann, Edwards, Boland, & Olejnik, 2003
– *Vocabulary Tricks...*
- See Edwards, Font, Baumann, & Boland, 2004
– *Unlocking Word Meanings*
- See Baumann, Ware, & Edwards, 2007
– *Bumping into Spicy, Tasty Words...*
- See Ebbers & Denton, 2008
– *A Root Awakening...*
- See my blog *Vocabulogic*
- See various articles in the CDL Online library

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