Herding Chickens:
Four Principles of Grapheme Use
Bruce Rosow, Ed. D.

Introduction

In a previous article in Teaching Reading in Brief, I explained why emergent readers need phonemic awareness (PA) instruction. When students identify the sequence of phonemes in a spoken word, they build the mental "parking spots" in which to park the letters. However, in that article, I note how and why phoneme identity can be elusive. The purpose of this article is to identify four principles to guide us when we teach and learn about the English spelling system and to highlight what must be considered in linking oral language to print – parking the letters in their parking spots.

The Facts and Four Principles of English Spelling

The facts: There are about 44 phonemes (speech sounds) in English (there is some argument about the exact number). There are 26 letters in the English Language alphabet (Big Bird, 1969). There are plainly not enough letters. We are not sure who messed up! To help us navigate our beloved English system of spelling, with only 26 letters to spell 44

phonemes, we can recognize how these four principles work:

One, letters can be combined to spell or represent phonemes. Any letter or letter combination that spells a phoneme is called a **grapheme**. Combining letters in graphemes allows us to spell phonemes that are not spelled with one letter alone.
Examples: *sh, tch, oy, au, igh, ough*

Two, chameleon graphemes spell more than one phoneme. Examples:
C – *cat, cent*
TH – **th**en, **th**in
Y – **y**up, g**y**m, cr**y**, happ**y**
OW – **co**w, t**ow**

Three, a phoneme can be spelled by more than one grapheme. Examples:
/k/: **c**at, **k**it, **qu**it, ti**ck**, **ch**ord, anti**que**
/ē/: **ea**t, s**ee**, b**e**ware, man**i**ac, happ**y** monk**ey**

In addition, the position of the sound in a word or syllable can constrain or determine its spelling.

Four, language of origin, Old English, Latin, or Greek, can inform grapheme choice. Examples:
Old English: **k**i**ck**
Greek: **ch**orus
Latin via French: baro**que**

Curious Question:
What are the ten most common suffixes in English?

Phoneme Awareness (PA) is Distinct from Phonics

Tracking phonemes using markers (cubes, blocks, etc.) or tapping a spoken word out with fingers is PA instruction. PA instruction focuses on oral language; it does not involve letters, although it should be linked to the phonics or spelling concepts being taught as soon as possible. We use PA instruction to identify, segment, blend, and manipulate phonemes so that students are prepared to link them to graphemes (Ehri, 2004). If we move to graphemes before identifying phonemes, we run the risk of students not being able to map graphemes to phonemes. Instead, students may try to memorize letter strings that are not anchored to the spoken word. However, students can make great gains in their PA skills when receiving phonics instruction with letters (McCandliss et al., 2003). Our capacity for rote memorization of letter strings is very limited without the clue and glue of the phoneme sequence. PA segmentation builds the foundation for spelling. PA blending builds the foundation for reading words. phoneme/grapheme relationships.

Letters! When we map or match phonemes to graphemes, we are now teaching phonics. We have long known that phonemic awareness instruction combined with phonics instruction is effective in helping emergent readers learn the alphabetic system (Liberman, 1989; Blachman, 1995). When a young reader first gains insight into the alphabetic principle – that a spoken word can be broken into phonemes, each spelled with a grapheme – they now have the keys to the kingdom.

Students can now develop orthographic mapping skills. Orthographic mapping leads to the development of sight word knowledge – the ability to automatically recognize words on sight (Ehri, 2014).

Old English

The hundred most common words come from Old English (OE), so instruction starts there. History notes that speech and spelling of Old English were influenced by poor dental care, a lot of ale, and muttering while herding sheep in the dark, wet cold. This led to spelling filled with funky graphemes. Think of teaching the grapheme or graphemes in the letter string *ough*, used in the following: ***I went ploughing through, though thoroughly besought with a rough cough.*** Ouch! This brings to mind a question that persists: Is teaching spelling basically like herding chickens, or is there actual rhyme and reason to English spelling? Our befuddlement over spelling, noted in this question, can be blamed on our Anglo-Saxon heritage.

Spelling Vowels: The Great Vowel Shift

For years, chickens won (though not in the example below) as Old English spelling remained inventive for centuries. Consider this:

Take fayre garbagys of chykonys, as the hed, the fete, the lyuerys, an the gysowrys (Medieval Cookery, 2012).

This is the first part of a Medieval recipe for chicken soup from a 15th-century cookbook, written during the time of the great vowel shift that occurred between about 1400 and 1700 in England. Over these 300 years, Middle English speakers shifted how they spoke long vowels as they chewed on chicken livers and gizzards. This broth brought forth fluid and unsavory spelling.

Shifting vowels muddied English vowel spelling. On the vowel chart, /ā/ and /ē/ are just two steps apart. In words like **break, steak** and **great**, **ea** spells /ā/ as it did before the Great Vowel Shift. After the Great Vowel Shift, /ā/ shifted up to /ē/ – a vowel made with jaw more closed (higher). While the vowel sound rose, the spelling often stayed the same. In this way the **ea** spelling gradually came to spell /ē/ over /ā/ (**bean** and **speak**). Even today, in a few areas in Ireland and Northern England, **steal** is pronounced "stale," and **meat**, "mate," just like in Middle English. It is no wonder that **ea** spellings are irksome and slippery.

Four Principles Applied to Vowel Graphemes
Let's return to the four principles noted above about English spelling as they are applied to vowels, and look at several examples of exercises that can be used to reinforce understanding of each principle.

Principle 1: A vowel grapheme can be between 1-4 letters. For clarity, call any 2-4 letter vowel grapheme a vowel team as distinct from consonant digraphs or trigraphs. A vowel team is one of the six syllable types in English, in which 2-4 letters group up to make one vowel sound, short, long, diphthong or other (/ŏŏ/ (**book**), /aw/ (**saw**)).

Exercise: Identify Vowel Graphemes using Phoneme-Grapheme Matching

Below are exercises to do together with your students taken from *Spellography* (Moats & Rosow, 2024). Segment the phonemes in each word, saying each one separately. Agree on how many phonemes there are in the word. Write the graphemes that stand for each phoneme in the matching cells below and then give examples of vowel graphemes in the table.

Word	1	2	3
lock	l	o	ck
poach	p	oa	ch
though	th	ough	
sway	s	w	ay
eight	eigh	t	
sight	s	igh	t
ties	t	ie	s

1 letter	2 letters	3 letters	4 letters
o	oa, ay, ie	igh	ough, eigh

So what? Vowel graphemes can have from 1 to 4 letters. Some vowel graphemes use letters we think of as consonant letters, including w (ow, aw), y (ay, ey), and h (igh).

Principle 2: Chameleon vowel graphemes spell more than one phoneme. Here are two example exercises working with chameleon vowel teams.

Exercise: *Cow Tow*: If you need to use a cow for a tow, that's probably not good.
Star the words where ***ow*** = /ou/. Then read across each row.

*brow	blow	*row	*vow	slow	*how
glow	*chow	row	throw	*plow	crow

Exercise: *Goofy Cook*: The /ŏŏ/ phoneme is usually spelled with oo (***cook***); however, ***oo*** more commonly spells /ū/ (***goofy***). In a few words like ***flood*** and ***blood***, oo also spells /ŭ/. Sort these words based on the vowel phoneme spelled with the ***oo*** vowel team.

brook　　　　boom　　　tooth　　　shook　　　teaspoon　　cookbook

understood　　shootout　　loophole　　childhood　　deadwood　　toadstool

oo = /ŏŏ/ (took)	oo = /ū/ (moo)
brook, shook, cookbook, understood, childhood, deadwood	boom, tooth, teaspoon, shootout, loophole, toadstool

So What? The more students work with these spellings, including activities like word sorts, word finding, cloze exercises, speed reads, and dictation with immediate correction, the more recognizable these patterns become in everyday reading and writing.

Principle 3: *Position Disposition*. We use different graphemes to spell the same vowel phoneme, as noted in the phoneme-grapheme match above:

　　/ō/: ***oa, ough***　　　/ā/: ***ay, eigh***　　　/ī/: ***igh, ie***

Spelling choices often depend on the position of the vowel in a word or syllable. Knowledge of spelling by position gives a speller super-power. Word sorts can be used to investigate vowel spelling by position – whether the sound is in the beginning, middle, or end of a word or syllable.

Exercise: Sort these words, matching vowel phonemes with vowel team graphemes by their position in a word.

aid	trait	stray	decay	aim	braid
window	toad	oaf	boast	flow	oak
fraud	straw	autumn	sought	flaw	ought

Vowel Phoneme	Beginning	Middle	End
/ā/	**ai**d **ai**m	br**ai**d tr**ai**t	str**ay** dec**ay**
/ō/	**oa**f **oa**k	t**oa**d b**oa**st	fl**ow** wind**ow**
/aw/ (saw)	**au**tumn **ough**t	c**au**se s**ough**t	str**aw** fl**aw**

Speed Read: Use targeted speed reads to reinforce the pattern.
Read across the rows with accuracy. Try to increase speed with a reread.

August	auburn	autumn	authentic
saucer	faucet	fauna	nautical
ought	aught	taught	sought
saw	paw	craw	macaw

Time 1:   Time 2:

So What? Consider how you would review this sort with your students:
- First work on each vowel sound separately.
- Ask students to highlight the vowel teams used, noting the position.
- Ask students to add new words with the same vowel spelling pattern to each cell.
- Use cloze activities for students to fill in the correct vowel team based on position.
- Use speed reads to increase the efficiency of recognition.
- Use spelling dictations for learning to think about spelling vowels by position and as a diagnostic tool to see if students are learning the concept.

Principle 4: Language of origin can influence vowel spelling. For example, in Old English spelling, there are more, and more varied, vowel-teams than in Latin or Greek.

Exercise: Compare open syllable spellings for long /ī/ by completing these words with *i* or *y*.

OE: tr_y_   b_y_   cr_y_   sh_y_   spr_y_
Latin: b_i_sect   m_i_grate   sc_i_ence   v_i_tal   adv_i_sor
Greek: c_y_clone   c_y_toplasm   h_y_personic   h_y_drolic   d_y_nasty

So what?

Final open **y** spells /ī/ in a few short, common, Old English words.

Usually spell /ī/ with open **i** in words from Latin.

Usually spell /ī/ with open **y** in words from Greek.

Four Principles Applied to Consonant Graphemes

The basic principles of English spelling also pertain to consonants.

Principle 1: A consonant grapheme can be between 1-3 letters. Two-letter consonant graphemes are digraphs. Silent letter spellings like **gn**, **kn**, and **mb**, are types of digraphs. Three-letter graphemes, including **dge** and **tch**, are trigraphs.

Principle 2: Many consonant graphemes spell more than one phoneme. We call these chameleon consonant spellings.

Exercise: Use phoneme-grapheme matching to spell mid and back nasals using the graphemes **n** and **ng**.

	1	2	3	4	5	
stun	s	t	u	n		**So what?** The grapheme **n** is a chameleon consonant spelling /n/ or /ng/. In the final position, **n** spells the middle nasal /n/ when alone or before middle consonants (/t/, /d/, /ch/, /j/). The letter **n** spells the back nasal /ng/ before the back consonant /k/. Use the digraph **ng** to spell /ng/ when it is alone in final position.
stunt	s	t	u	n	t	
stung	s	t	u	ng		
stunk	s	t	u	n	k	

Principle 3: We use different graphemes to spell the same consonant phoneme, often depending on the position in a word or syllable.

Exercise: Notice the final position spelling pattern for /k/, /ch/ and /j/ in these phoneme-grapheme matching sets. Write the grapheme that represents each phoneme.

Final spelling for /k/

Word	1	2	3
tack	t	a	ck
take	t	a-(e)	k
peak	p	ea	k
book	b	oo	k

Final spelling for /ch/

Word	1	2	3	4
patch	p	a	tch	
pinch	p	i	n	ch
pooch	p	oo	ch	

Final spelling for /j/

Word	1	2	3	4
ridge	r	i	dge	
range	r	a	n	ge
rage	r	a-(e)	ge	
gouge	g	ou	ge	

So what? Use the extra letter, *ck, tch or dge*: after a single short vowel.
Use just *k, ch* or *ge* after a consonant, or after a vowel team or silent-e vowel spelling.

Learning one of these final consonant spellings reinforces the other two. Reviewing them together allows students to generalize the pattern rather than memorize specific words. An even larger pattern is that short vowels attract consonants. Examples include the extra letter in final /k/, /ch/ and /j/; the "floss" rule for doubling *f, l, s, z*; the doubling rule for adding suffixes; and the use of final consonant blends after short vowels. When we teach these larger principles, we are teaching students a way of thinking about English spelling that brings order to the henhouse.

Principle 4: Language of origin, Old English, Latin or Greek, can inform spelling.

Exercise: Write the graphemes that represent each word's phonemes in the boxes.

Final spelling for /sh/					
Word	**1**	**2**	**3**	**4**	**5**
ship	sh	i	p		
chef	ch	e	f		
motion	m	o	ti	on*o ([ə])	n
social	s	o	ci	al*a ([ə])	l

So What? We use **sh** to spell /sh/ in Old English words, and **ch** in Norman French words. Latin based words commonly use **ti**, **ci** and occasionally **xi** either as a connector or as part of vowel suffixes to spell /sh/.

* Syllabic Consonants: Some phonemes that we think of as consonants have vowel-like features. In these words, /l/ in the second syllable of social, and /n/ in the second syllable of motion act as syllabic consonants.

The Question that Persists

Let's return to the question that persists: Is teaching spelling basically like herding chickens, or is there actual rhyme and reason to English spelling? Diana King wrote a beautiful little book, *English Isn't Crazy* (2000) as her answer. She notes that English is complex because it combines at least three main language streams, Old English, Latin and Greek. Each has its own history, patterns and habits, from grapheme use to word building. Her argument is that, in understanding the rules and patterns that evolved in each language stream we can make order out of a complex, but largely pattern- or rule-based English Language system.

The four principles of grapheme use presented here help to teach spelling and decoding as a problem-solving activity. We train students as word detectives to use these principles as clues. We want them to go further than sounding-out. What is the position of a phoneme in a word or syllable? If it is a short vowel, does it attract consonants? What are the possible spellings in that position? What language did it come from? What does it mean and how is it used? Train students to solve spelling and reading challenges by applying principles as conceptual tools to gain mastery of our complex writing system.

Answer to this issue's Curious Question:
-s/-es, -ed, -ing, -ly, -er/-or, -tion, -able/-ible, -al, -y, and ***-ness.***

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Meet the Writers and Editors

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Dr. Rosow has been an educator for 39 years. He has worked with students from pre- kindergarten through graduate school. Dr. Rosow began his career as an intermediate grade classroom teacher at Guilford Elementary School. Starting in 1991, he began training in structured literacy instruction, studying with Dr. Louisa Moats at the Greenwood Institute. In 2008, Dr. Rosow completed his doctoral studies in educational psychology at American International College. Over this time, and for close to a decade, Dr. Rosow served as the Academic Dean of the Greenwood School working with middle and high school students.
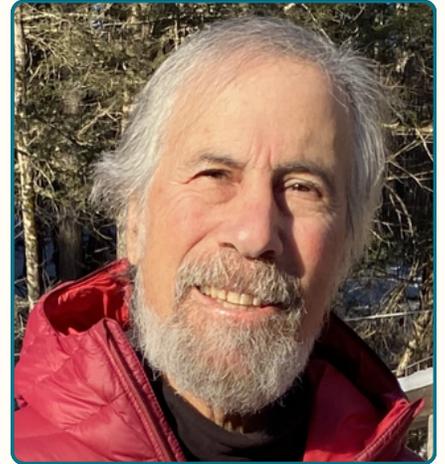
He then returned to public education, working in the Windham Central Supervisory Union, where he created and ran the Language Lab providing remedial instruction to struggling readers. For almost two decades, Dr. Rosow also taught in the Language and Literacy Program at The Reading Institute, Simmons College and Bay Path University. Dr. Rosow and Dr. Moats recently completed the revision of Spellography, a word study curriculum for intermediate grade students (95% Group, 2024). Dr. Rosow also co-authored the Speech to Print Workbook, 3rd Edition with Dr. Moats (Brookes, 2020). Dr. Rosow continues to tutor students, to write curriculum, to train teachers, and to advocate for students with learning differences.

Kathryn Grace, M. Ed, CAGS, served as a classroom teacher, special educator, literacy coach, learning specialist, and language arts coordinator for over 40 years in Vermont's public schools. Ms. Grace was a professional developer for the Stern Center for Language and Learning and an adjunct professor at Trinity College. She is the proprietor of Learning Roots, an educational consulting, tutoring, and student advocacy business, and continues to offer literacy workshops and educational materials. First published in 1991, Really Great Reading will soon release the 4th edition of Ms. Grace's *Phonics and Spelling through Phoneme-Grapheme Mapping*. The recipient of numerous awards in education and active in the local community, she has lived in Waterbury for 46 years.

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Dorinne Dorfman has served as a teacher and principal for nearly 30 years in Vermont schools. After completing her undergraduate studies at Goddard College, she earned her Master's and Doctorate in Educational Leadership at the University of Vermont. As a postdoctoral Fulbright Scholar, she taught at the Technical University of Berlin and conducted research on democratic education in Germany. Since completing an Education Specialist Degree in Reading and Literacy Instruction at Bay Path University, Dr. Dorfman teaches evidence-based literacy at Barre Town Middle School.